



Test Report issued under the responsibility of:



TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment

Part 1: Safety requirements

Report Number: E467988-A6004-CB-1

Date of issue.....: 2020-09-13

Total number of pages: 49

Applicant's name.....: FAIRCHILD SEMICONDUCTOR TECHNOLOGY (SHANGHAI) CO LTD
Address: UNIT 01-07, 7F, LONGEMONT YES TOWER
NO.399 KAI XUAN RD, CHANGNING DISTRICT
SHANGHAI
200050 CHINA

Name of Test Laboratory: UL-CCIC Company Limited

preparing the Report: No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China

Test specification:

Standard: IEC 62368-1:2014 (Second Edition)

Test procedure: CB Scheme

Non-standard test method.....: N/A

Test Report Form No.....: IEC62368_1B

Test Report Form(s) Originator: UL(US)

Master TRF.....: 2014-03

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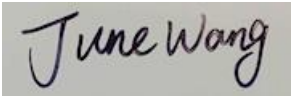

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.

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| | | |
|--|---|---|
| Test Item description | : Over-Voltage, Over-Current Protection Load Switch | |
| Trade Mark | : ON  | |
| Manufacturer | : ON SEMICONDUCTOR PHILIPPINES INC. – CEBU MACTAN ECONOMIC ZONE 1, LAPU-LAPU CITY, CEBU, 6015 PHILIPPINES | |
| Model/Type reference | : FPF2895UCX, FPF2895CUCX | |
| Ratings | : (Optional) Input Voltage Range: 4Vdc to 22Vdc Current Limit Rating: 500mA to 5A | |
| Testing procedure and testing location: | | |
| <input checked="" type="checkbox"/> CB Testing Laboratory: | | |
| Testing location/ address | : UL-CCIC Company Limited, No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China | |
| Tested by (name + signature) | June Wang / Project Handler |  |
| Approved by (name + signature) | Jie Qian / Reviewer |  |
| Testing procedure: CTF Stage 1 | | |
| Testing location/ address | : | |
| Tested by (name + signature) | | |
| Approved by (name + signature) | | |
| Testing procedure: CTF Stage 2 | | |
| Testing location/ address | : | |
| Tested by (name + signature) | | |
| Witnessed by (name + signature) | | |
| Approved by (name + signature) | | |
| Testing procedure: CTF Stage 3 | | |
| Testing procedure: CTF Stage 4 | | |
| Testing location/ address | : | |
| Tested by (name + signature) | | |

| | | |
|--|--|--|
| Witnessed by (name + signature).....: | | |
| Approved by (name + signature) | | |
| Supervised by (name + signature) | | |

List of Attachments (including a total number of pages in each attachment):

National Differences (30 pages)

Enclosures (54 pages)

Summary of testing:**Tests performed (name of test and test clause):**

IC CURRENT LIMITERS (ANNEX G.9)

Testing Location:**CBTL: UL-CCIC Company Limited, No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China**

Test data accepted based on CBTR Ref. No. E482061-A3-CB-2 Reissue, dated 2016-11-14 and E482061-A3-CB-2 correction 1, dated 2016-11-16, CBTC Ref. No. DK-59397-UL issued date 2016-11-16 issued by UL (Demko); E482061-A3-CB-2 correction 2, dated 2017-02-14, CBTC Ref. No. DK-59397-M1-UL issued date 2017-02-17 issued by UL (Demko); E482061-A3-CB-2 Amendment 1, dated 2017-11-14, CBTC Ref. No. DK-59397-A1-UL issued date 2017-11-15 issued by UL (Demko); E482061-A3-CB-2 Amendment 2, dated 2020-05-12, CBTC Ref. No. DK-59397-A2-UL issued date 2020-05-13 issued by UL (Demko); The result complied with Annex G.9 of IEC 62368-1.

Summary of compliance with National Differences:

List of countries addressed: Australia / New Zealand, EU Group and National Differences, Japan, USA / Canada

EU Group and National Differences applies to CENELEC member countries: Austria , Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom

☒ **The product fulfils the requirements of:** EN 62368-1:2014 + A11:2017

Copy of Marking Plate - Refer to Enclosure titled Marking Plate for copy.

| TEST ITEM PARTICULARS: | |
|--|--|
| Classification of use by | Ordinary person |
| Supply Connection | External Circuit - not Mains connected |
| Supply % Tolerance | not directly connected to the mains |
| Supply Connection – Type | not directly connected to the mains |
| Considered current rating of protective device as part of building or equipment installation | N/A |
| Equipment mobility | for building-in |
| Over voltage category (OVC) | OVC I |
| Class of equipment | Class III |
| Access location | operator accessible |
| Pollution degree (PD) | PD 2 |
| Manufacturer's specified maximum operating ambient (°C) | 85 |
| IP protection class | IPX0 |
| Power Systems | N/A |
| Altitude during operation (m) | Maximum 2000 m |
| Altitude of test laboratory (m) | 2000 m or less |
| Mass of equipment (kg) | approximately 0.015g |
| | |
| POSSIBLE TEST CASE VERDICTS: | |
| - test case does not apply to the test object..... : | N/A |
| - test object does meet the requirement : | P (Pass) |
| - test object does not meet the requirement : | F (Fail) |
| TESTING: | |
| Date of receipt of test item..... : | 2016-09-20 |
| Date (s) of performance of tests..... : | 2016-10-09 to 2016-10-16 |
| | |
| GENERAL REMARKS: | |
| <p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> | |
| Manufacturer's Declaration per sub-clause 4.2.5 of IEC62368-1: | |
| The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided : | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable |

When differences exist; they shall be identified in the General product information section.**Name and address of factory (ies)**ON SEMICONDUCTOR PHILIPPINES INC. – CEBU
MACTAN ECONOMIC ZONE 1, LAPU-LAPU CITY,
CEBU, 6015 PHILIPPINES**GENERAL PRODUCT INFORMATION:****Report Summary**

All applicable tests according to the referenced standard(s) have been carried out.

Product Description

The component power distribution switch (IC Current Limiter) limits the output current to within the specified output ratings. These devices provide current limiting and short-circuit protection when supplied by a power source (e.g., 250 VA) in accordance with those specified for LPS outputs in Table 2B. These devices are for use in SELV circuits only.

The test circuit of the Evaluation Board is shown in Enclosure Id. 7-01 (IC Current Limiter Testing Results) with Resistor (Rset) is 0.99 Kohm.

Model Differences

Model FPF2895CUCX is identical to model FPF2895UCX except some parameters, see enclosure 3-02 for details.

Additional application considerations – (Considerations used to test a component or sub-assembly) -

The artwork may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

The product is very small, the area is limited, cannot include the model name and trademark, and those information will be printed on the smallest package.

This report is based on previously conducted testing (as listed below) and the review of product construction of original: CBTR Ref. No. E482061-A3-CB-2 Reissue, dated 2016-11-14 and E482061-A3-CB-2 correction 1, dated 2016-11-16, CBTC Ref. No. DK-59397-UL issued date 2016-11-16 issued by UL (Demko); E482061-A3-CB-2 correction 2, dated 2017-02-14, CBTC Ref. No. DK-59397-M1-UL issued date 2017-02-17 issued by UL (Demko); E482061-A3-CB-2 Amendment 1, dated 2017-11-14, CBTC Ref. No. DK-59397-A1-UL issued date 2017-11-15 issued by UL (Demko); E482061-A3-CB-2 Amendment 2, dated 2020-05-12, CBTC Ref. No. DK-59397-A2-UL issued date 2020-05-13 issued by UL (Demko); Refer to Section "Test performed (name of test and test clause)" covering all applicable performance tests and rationale for waived tests.

Modify the Current Limit Rating from "90mA to 4.95A" to "500mA to 5A", no test was considered necessary due to engineering judgment base on the original test data and specification of the product.

Technical Considerations

- These devices were tested in the circuit shown below. If different circuit is used in end product, then the end product engineer shall determine the suitability. Resistor R3 can be between 290 ohms and 11900 ohms.

Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The investigated Pollution Degree is : 2
- 1. The IC current limiters are intended for installation in SELV circuits only. The spacing between the input and output pins are not investigated.
 - 2. The IC current limiters limit the current to the manufacturer's specified value (not more than 5 A) under normal operating conditions with any specified drift taken into account.
 - 3. The IC current limiters are entirely electronic and have no means for manual operation or reset.
 - 4. The IC current limiters limit the current to 5 A, taking into account the manufacturer's specified drift after each of the conditioning tests given in the test programs specified in G.9.3.
 - 5. The terminals of these IC current limiters are for factory wiring only.
 - 6. These devices were tested in the circuit shown in IC Spec. If different circuit is used in end product, then the end product engineer shall determine the suitability. Resistor R3 can be between 290 ohms and 11900 ohms.

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.)

(Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.

Electrically-caused injury (Clause 5):

(Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification)

Example: +5 V dc input

ES1

| Source of electrical energy | Corresponding classification (ES) |
|-----------------------------|-----------------------------------|
| N/A | N/A |

Electrically-caused fire (Clause 6):

(Note: List sub-assembly or circuit designation and corresponding energy source classification)

Example: Battery pack (maximum 85 watts):

PS2

| Source of power or PIS | Corresponding classification (PS) |
|------------------------|-----------------------------------|
| N/A | N/A |

Injury caused by hazardous substances (Clause 7)

(Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.)

Example: Liquid in filled component

Glycol

| Source of hazardous substances | Corresponding chemical |
|--------------------------------|------------------------|
| N/A | N/A |

Mechanically-caused injury (Clause 8)

(Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.)

Example: Wall mount unit

MS2

| Source of kinetic/mechanical energy | Corresponding classification (MS) |
|-------------------------------------|-----------------------------------|
| N/A | N/A |

Thermal burn injury (Clause 9)

(Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.)

Example: Hand-held scanner – thermoplastic enclosure

TS1

| Source of thermal energy | Corresponding classification (TS) |
|--------------------------|-----------------------------------|
| N/A | N/A |

Radiation (Clause 10)

(Note: List the types of radiation present in the product and the corresponding energy source classification.)

Example: DVD – Class 1 Laser Product

RS1

| Type of radiation | Corresponding classification (RS) |
|-------------------|-----------------------------------|
| N/A | N/A |

ENERGY SOURCE DIAGRAM

Indicate which energy sources are included in the energy source diagram. Insert diagram below

☐ **ES** ☐ **PS** ☐ **MS** ☐ **TS** ☐ **RS**

| OVERVIEW OF EMPLOYED SAFEGUARDS | | | | |
|--|--|------------|---------------|---------------------------|
| Clause | Possible Hazard | | | |
| 5.1 | Electrically-caused injury | | | |
| Body Part (e.g. Ordinary) | Energy Source (ES3: Primary Filter circuit) | Safeguards | | |
| | | Basic | Supplementary | Reinforced (Enclosure) |
| N/A | N/A | N/A | N/A | N/A |
| 6.1 | Electrically-caused fire | | | |
| Material part (e.g. mouse enclosure) | Energy Source (PS2: 100 Watt circuit) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| N/A | N/A | N/A | N/A | N/A |
| 7.1 | Injury caused by hazardous substances | | | |
| Body Part (e.g., skilled) | Energy Source (hazardous material) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| N/A | N/A | N/A | N/A | N/A |
| 8.1 | Mechanically-caused injury | | | |
| Body Part (e.g. Ordinary) | Energy Source (MS3:High Pressure Lamp) | Safeguards | | |
| | | Basic | Supplementary | Reinforced (Enclosure) |
| N/A | N/A | N/A | N/A | N/A |
| 9.1 | Thermal Burn | | | |
| Body Part (e.g., Ordinary) | Energy Source (TS2) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| N/A | N/A | N/A | N/A | N/A |
| 10.1 | Radiation | | | |
| Body Part (e.g., Ordinary) | Energy Source (Output from audio port) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| N/A | N/A | N/A | N/A | N/A |
| Supplementary Information: | | | | |
| (1) See attached energy source diagram for additional details. | | | | |
| (2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault | | | | |

| IEC 62368-1 | | | |
|-------------|--|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4 | GENERAL REQUIREMENTS | | Pass |
| 4.1.1 | Acceptance of materials, components and subassemblies | | Pass |
| 4.1.2 | Use of components | | N/A |
| 4.1.3 | Equipment design and construction | | Pass |
| 4.1.15 | Markings and instructions | (See Annex F) | Pass |
| 4.4.4 | Safeguard robustness | | N/A |
| 4.4.4.2 | Steady force tests | (See Annex T.4, T.5) | N/A |
| 4.4.4.3 | Drop tests | (See Annex T.7) | N/A |
| 4.4.4.4 | Impact tests..... | (See Annex T.6) | N/A |
| 4.4.4.5 | Internal accessible safeguard enclosure and barrier tests | (See Annex T.3) | N/A |
| 4.4.4.6 | Glass Impact tests..... | (See Annex T.9, Annex U) | N/A |
| 4.4.4.7 | Thermoplastic material tests | (See Annex T.8) | N/A |
| 4.4.4.8 | Air comprising a safeguard | (See Annex T) | N/A |
| 4.4.4.9 | Accessibility and safeguard effectiveness | | N/A |
| 4.5 | Explosion | | Pass |
| 4.6 | Fixing of conductors | | N/A |
| 4.6.1 | Fix conductors not to defeat a safeguard | | N/A |
| 4.6.2 | 10 N force test applied to | | N/A |
| 4.7 | Equipment for direct insertion into mains socket - outlets | | N/A |
| 4.7.2 | Mains plug part complies with the relevant standard | | N/A |
| 4.7.3 | Torque (Nm)..... | | N/A |
| 4.8 | Products containing coin/button cell batteries | | N/A |
| 4.8.2 | Instructional safeguard | | N/A |
| 4.8.3 | Battery Compartment Construction | | N/A |
| | Means to reduce the possibility of children removing the battery | | — |
| 4.8.4 | Battery Compartment Mechanical Tests..... | (See Table 4.8.4) | N/A |
| 4.8.5 | Battery Accessibility | | N/A |
| 4.9 | Likelihood of fire or shock due to entry of conductive object | (See Annex P) | N/A |

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|-------------|---|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5 | ELECTRICALLY-CAUSED INJURY | | N/A |
| 5.2.1 | Electrical energy source classifications | (See appended table 5.2) | N/A |
| 5.2.2 | ES1, ES2 and ES3 limits | | N/A |
| 5.2.2.2 | Steady-state voltage and current | (See appended table 5.2) | N/A |
| 5.2.2.3 | Capacitance limits | (See appended table 5.2) | N/A |
| 5.2.2.4 | Single pulse limits | (See appended table 5.2) | N/A |
| 5.2.2.5 | Limits for repetitive pulses | (See appended table 5.2) | N/A |
| 5.2.2.6 | Ringing signals | (See Annex H) | N/A |
| 5.2.2.7 | Audio signals | (See Clause E.1) | N/A |
| 5.3 | Protection against electrical energy sources | | N/A |
| 5.3.1 | General Requirements for accessible parts to ordinary, instructed and skilled persons | | N/A |
| 5.3.2.1 | Accessibility to electrical energy sources and safeguards | | N/A |
| 5.3.2.2 | Contact requirements | | N/A |
| | a) Test with test probe from Annex V | | N/A |
| | b) Electric strength test potential (V) | | N/A |
| | c) Air gap (mm) | | N/A |
| 5.3.2.4 | Terminals for connecting stripped wire | | N/A |
| 5.4 | Insulation materials and requirements | | N/A |
| 5.4.1.2 | Properties of insulating material | | N/A |
| 5.4.1.3 | Humidity conditioning | (See sub-clause 5.4.8) | N/A |
| 5.4.1.4 | Maximum operating temperature for insulating materials | (See appended table 5.4.1.4) | N/A |
| 5.4.1.5 | Pollution degree | | — |
| 5.4.1.5.2 | Test for pollution degree 1 environment and for an insulating compound | | N/A |
| 5.4.1.5.3 | Thermal cycling | | N/A |
| 5.4.1.6 | Insulation in transformers with varying dimensions | | N/A |

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|-------------|---|---------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.1.7 | Insulation in circuits generating starting pulses | | N/A |
| 5.4.1.8 | Determination of working voltage | | N/A |
| 5.4.1.9 | Insulating surfaces | | N/A |
| 5.4.1.10 | Thermoplastic parts on which conductive metallic parts are directly mounted | | N/A |
| 5.4.1.10.2 | Vicat softening temperature | (See appended table 5.4.1.10.2) | N/A |
| 5.4.1.10.3 | Ball pressure | (See appended table 5.4.1.10.3) | N/A |
| 5.4.2 | Clearances | | N/A |
| 5.4.2.2 | Determining clearance using peak working voltage | (See appended table 5.4.2.2) | N/A |
| 5.4.2.3 | Determining clearance using required withstand voltage | (See appended table 5.4.2.3) | N/A |
| | a) a.c. mains transient voltage | | — |
| | b) d.c. mains transient voltage | | — |
| | c) external circuit transient voltage | | — |
| | d) transient voltage determined by measurement | | — |
| 5.4.2.4 | Determining the adequacy of a clearance using an electric strength test | (See appended table 5.4.2.4) | N/A |
| 5.4.2.5 | Multiplication factors for clearances and test voltages..... | | N/A |
| 5.4.3 | Creepage distances | (See appended table 5.4.3) | N/A |
| 5.4.3.1 | General | | N/A |
| 5.4.3.3 | Material Group | | — |
| 5.4.4 | Solid insulation | | N/A |
| 5.4.4.2 | Minimum distance through insulation | (See appended table 5.4.4.2) | N/A |
| 5.4.4.3 | Insulation compound forming solid insulation | | N/A |
| 5.4.4.4 | Solid insulation in semiconductor devices | | N/A |
| 5.4.4.5 | Cemented joints | | N/A |
| 5.4.4.6 | Thin sheet material | | N/A |
| 5.4.4.6.1 | General requirements | | N/A |
| 5.4.4.6.2 | Separable thin sheet material | | N/A |
| | Number of layers (pcs) | | N/A |
| 5.4.4.6.3 | Non-separable thin sheet material | | N/A |
| 5.4.4.6.4 | Standard test procedure for non-separable thin sheet material..... | (See appended Table 5.4.9) | N/A |
| 5.4.4.6.5 | Mandrel test | | N/A |

| IEC 62368-1 | | | |
|-------------|--|------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.4.7 | Solid insulation in wound components | | N/A |
| 5.4.4.9 | Solid insulation at frequencies >30 kHz : | (See appended Table 5.4.4.9) | N/A |
| 5.4.5 | Antenna terminal insulation | | N/A |
| 5.4.5.1 | General | | N/A |
| 5.4.5.2 | Voltage surge test | | N/A |
| | Insulation resistance (MΩ) : | | — |
| 5.4.6 | Insulation of internal wire as part of supplementary safeguard : | (See appended table 5.4.4.2) | N/A |
| 5.4.7 | Tests for semiconductor components and for cemented joints | | N/A |
| 5.4.8 | Humidity conditioning | | N/A |
| | Relative humidity (%) : | | — |
| | Temperature (°C) : | | — |
| | Duration (h) : | | — |
| 5.4.9 | Electric strength test..... : | (See appended table 5.4.9) | N/A |
| 5.4.9.1 | Test procedure for a solid insulation type test | | N/A |
| 5.4.9.2 | Test procedure for routine tests | | N/A |
| 5.4.10 | Protection against transient voltages between external circuit | | N/A |
| 5.4.10.1 | Parts and circuits separated from external circuits | (See appended table 5.4.9) | N/A |
| 5.4.10.2 | Test methods | | N/A |
| 5.4.10.2.1 | General | | N/A |
| 5.4.10.2.2 | Impulse test..... : | (See appended table 5.4.9) | N/A |
| 5.4.10.2.3 | Steady-state test : | (See appended table 5.4.9) | N/A |
| 5.4.11 | Insulation between external circuits and earthed circuitry : | (See appended table 5.4.9) | N/A |
| 5.4.11.1 | Exceptions to separation between external circuits and earth | | N/A |
| 5.4.11.2 | Requirements | | N/A |
| | Rated operating voltage U_{op} (V) : | | — |
| | Nominal voltage U_{peak} (V) : | | — |
| | Max increase due to variation U_{sp} : | | — |
| | Max increase due to ageing ΔU_{sa} : | | — |
| | $U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$: | | — |
| 5.5 | Components as safeguards | | N/A |
| 5.5.1 | General | | N/A |

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|-------------|---|------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.5.2 | Capacitors and RC units | | N/A |
| 5.5.2.1 | General requirement | | N/A |
| 5.5.2.2 | Safeguards against capacitor discharge after disconnection of a connector | (See appended table 5.5.2.2) | N/A |
| 5.5.3 | Transformers | (See Annex G.5.3) | N/A |
| 5.5.4 | Optocouplers | (See sub-clause 5.4 or Annex G.12) | N/A |
| 5.5.5 | Relays | (See Annex G.2) | N/A |
| 5.5.6 | Resistors | (See Annex G.10) | N/A |
| 5.5.7 | SPD's | (See Annex G.8) | N/A |
| 5.5.7.1 | Use of an SPD connected to reliable earthing | | N/A |
| 5.5.7.2 | Use of an SPD between mains and protective earth | | N/A |
| 5.5.8 | Insulation between the mains and external circuit consisting of a coaxial cable | (See Annex G.10.3) | N/A |
| 5.6 | Protective conductor | | N/A |
| 5.6.2 | Requirement for protective conductors | | N/A |
| 5.6.2.1 | General requirements | | N/A |
| 5.6.2.2 | Colour of insulation | | N/A |
| 5.6.3 | Requirement for protective earthing conductors | | N/A |
| | Protective earthing conductor size (mm ²) | | — |
| 5.6.4 | Requirement for protective bonding conductors | | N/A |
| 5.6.4.1 | Protective bonding conductors | | N/A |
| | Protective bonding conductor size (mm ²)..... | | — |
| | Protective current rating (A) | | — |
| 5.6.4.3 | Current limiting and overcurrent protective devices | | N/A |
| 5.6.5 | Terminals for protective conductors | | N/A |
| 5.6.5.1 | Requirement | | N/A |
| | Conductor size (mm ²), nominal thread diameter (mm)..... | | N/A |
| 5.6.5.2 | Corrosion | | N/A |
| 5.6.6 | Resistance of the protective system | | N/A |
| 5.6.6.1 | Requirements | | N/A |
| 5.6.6.2 | Test Method Resistance (Ω) | (See appended table 5.6.6.2) | N/A |
| 5.6.7 | Reliable earthing | | N/A |

| IEC 62368-1 | | | |
|-------------|---|----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.7 | Prospective touch voltage, touch current and protective conductor current | | N/A |
| 5.7.2 | Measuring devices and networks | | N/A |
| 5.7.2.1 | Measurement of touch current | (See appended table 5.7.4) | N/A |
| 5.7.2.2 | Measurement of prospective touch voltage | | N/A |
| 5.7.3 | Equipment set-up, supply connections and earth connections | | N/A |
| | System of interconnected equipment (separate connections/single connection) | | — |
| | Multiple connections to mains (one connection at a time/simultaneous connections) | | — |
| 5.7.4 | Earthed conductive accessible parts | (See appended Table 5.7.4) | N/A |
| 5.7.5 | Protective conductor current | | N/A |
| | Supply Voltage (V) | | — |
| | Measured current (mA) | | — |
| | Instructional Safeguard | (See F.4 and F.5) | N/A |
| 5.7.6 | Prospective touch voltage and touch current due to external circuits | | N/A |
| 5.7.6.1 | Touch current from coaxial cables | | N/A |
| 5.7.6.2 | Prospective touch voltage and touch current from external circuits | | N/A |
| 5.7.7 | Summation of touch currents from external circuits | | N/A |
| | a) Equipment with earthed external circuits Measured current (mA) | | N/A |
| | b) Equipment whose external circuits are not referenced to earth. Measured current (mA) | | N/A |

| | | | |
|----------|---|----------------------------|-----|
| 6 | ELECTRICALLY- CAUSED FIRE | | N/A |
| 6.2 | Classification of power sources (PS) and potential ignition sources (PIS) | | N/A |
| 6.2.2 | Power source circuit classifications | | N/A |
| 6.2.2.1 | General | | N/A |
| 6.2.2.2 | Power measurement for worst-case load fault..... | (See appended table 6.2.2) | N/A |
| 6.2.2.3 | Power measurement for worst-case power source fault | (See appended table 6.2.2) | N/A |
| 6.2.2.4 | PS1 | (See appended table 6.2.2) | N/A |
| 6.2.2.5 | PS2 | (See appended table 6.2.2) | N/A |
| 6.2.2.6 | PS3 | (See appended table 6.2.2) | N/A |
| 6.2.3 | Classification of potential ignition sources | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.2.3.1 | Arcing PIS | (See appended table 6.2.3.1) | N/A |
| 6.2.3.2 | Resistive PIS | (See appended table 6.2.3.2) | N/A |
| 6.3 | Safeguards against fire under normal operating and abnormal operating conditions | | N/A |
| 6.3.1 (a) | No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials | (See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6) | N/A |
| 6.3.1 (b) | Combustible materials outside fire enclosure | | N/A |
| 6.4 | Safeguards against fire under single fault conditions | | N/A |
| 6.4.1 | Safeguard Method | | N/A |
| 6.4.2 | Reduction of the likelihood of ignition under single fault conditions in PS1 circuits | | N/A |
| 6.4.3 | Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits | | N/A |
| 6.4.3.1 | General | | N/A |
| 6.4.3.2 | Supplementary Safeguards | | N/A |
| | Special conditions if conductors on printed boards are opened or peeled | | N/A |
| 6.4.3.3 | Single Fault Conditions | (See appended table 6.4.3) | N/A |
| | Special conditions for temperature limited by fuse | | N/A |
| 6.4.4 | Control of fire spread in PS1 circuits | | N/A |
| 6.4.5 | Control of fire spread in PS2 circuits | | N/A |
| 6.4.5.2 | Supplementary safeguards | (See appended tables 4.1.2 and Annex G) | N/A |
| 6.4.6 | Control of fire spread in PS3 circuit | | N/A |
| 6.4.7 | Separation of combustible materials from a PIS | | N/A |
| 6.4.7.1 | General | (See tables 6.2.3.1 and 6.2.3.2) | N/A |
| 6.4.7.2 | Separation by distance | | N/A |
| 6.4.7.3 | Separation by a fire barrier | | N/A |
| 6.4.8 | Fire enclosures and fire barriers | | N/A |
| 6.4.8.1 | Fire enclosure and fire barrier material properties | | N/A |
| 6.4.8.2.1 | Requirements for a fire barrier | | N/A |
| 6.4.8.2.2 | Requirements for a fire enclosure | | N/A |
| 6.4.8.3 | Constructional requirements for a fire enclosure and a fire barrier | | N/A |
| 6.4.8.3.1 | Fire enclosure and fire barrier openings | | N/A |
| 6.4.8.3.2 | Fire barrier dimensions | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.4.8.3.3 | Top Openings in Fire Enclosure: dimensions (mm) | | N/A |
| | Needle Flame test | | N/A |
| 6.4.8.3.4 | Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) | | N/A |
| | Flammability tests for the bottom of a fire enclosure | | N/A |
| 6.4.8.3.5 | Integrity of the fire enclosure, condition met: a), b) or c) | | N/A |
| 6.4.8.4 | Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating | | N/A |
| 6.5 | Internal and external wiring | | N/A |
| 6.5.1 | Requirements | | N/A |
| 6.5.2 | Cross-sectional area (mm ²) | | — |
| 6.5.3 | Requirements for interconnection to building wiring | (See Annex Q.) | N/A |
| 6.6 | Safeguards against fire due to connection to additional equipment | | N/A |
| | External port limited to PS2 or complies with Clause Q.1 | | N/A |

| | | | |
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| 7 | INJURY CAUSED BY HAZARDOUS SUBSTANCES | | N/A |
| 7.2 | Reduction of exposure to hazardous substances | | N/A |
| 7.3 | Ozone exposure | | N/A |
| 7.4 | Use of personal safeguards (PPE) | | N/A |
| | Personal safeguards and instructions | | — |
| 7.5 | Use of instructional safeguards and instructions | | N/A |
| | Instructional safeguard (ISO 7010) | | — |
| 7.6 | Batteries | (See Annex M) | N/A |

| | | | |
|----------|---|--|-----|
| 8 | MECHANICALLY-CAUSED INJURY | | N/A |
| 8.1 | General | | N/A |
| 8.2 | Mechanical energy source classifications | | N/A |
| 8.3 | Safeguards against mechanical energy sources | | N/A |
| 8.4 | Safeguards against parts with sharp edges and corners | | N/A |
| 8.4.1 | Safeguards | | N/A |
| 8.5 | Safeguards against moving parts | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.5.1 | MS2 or MS3 part required to be accessible for the function of the equipment | | N/A |
| 8.5.2 | Instructional Safeguard : | | — |
| 8.5.4 | Special categories of equipment comprising moving parts | | N/A |
| 8.5.4.1 | Large data storage equipment | | N/A |
| 8.5.4.2 | Equipment having electromechanical device for destruction of media | | N/A |
| 8.5.4.2.1 | Safeguards and Safety Interlocks : | (See Annex F.4 and Annex K) | N/A |
| 8.5.4.2.2 | Instructional safeguards against moving parts | | N/A |
| | Instructional Safeguard : | | — |
| 8.5.4.2.3 | Disconnection from the supply | | N/A |
| 8.5.4.2.4 | Probe type and force (N) : | | N/A |
| 8.5.5 | High Pressure Lamps | | N/A |
| 8.5.5.1 | Energy Source Classification | | N/A |
| 8.5.5.2 | High Pressure Lamp Explosion Test : | (See appended table 8.5.5.2) | N/A |
| 8.6 | Stability | | N/A |
| 8.6.1 | Product classification | | N/A |
| | Instructional Safeguard : | | — |
| 8.6.2 | Static stability | | N/A |
| 8.6.2.2 | Static stability test | | N/A |
| | Applied Force : | | — |
| 8.6.2.3 | Downward Force Test | | N/A |
| 8.6.3 | Relocation stability test | | N/A |
| | Unit configuration during 10° tilt : | | — |
| 8.6.4 | Glass slide test | | N/A |
| 8.6.5 | Horizontal force test (Applied Force) : | | N/A |
| | Position of feet or movable parts : | | — |
| 8.7 | Equipment mounted to wall or ceiling | | N/A |
| 8.7.1 | Mounting Means (Length of screws (mm) and mounting surface) : | | N/A |
| 8.7.2 | Direction and applied force : | | N/A |
| 8.8 | Handles strength | | N/A |
| 8.8.1 | Classification | | N/A |
| 8.8.2 | Applied Force : | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.9 | Wheels or casters attachment requirements | | N/A |
| 8.9.1 | Classification | | N/A |
| 8.9.2 | Applied force..... : | | — |
| 8.10 | Carts, stands and similar carriers | | N/A |
| 8.10.1 | General | | N/A |
| 8.10.2 | Marking and instructions | | N/A |
| | Instructional Safeguard : | | — |
| 8.10.3 | Cart, stand or carrier loading test and compliance | | N/A |
| | Applied force..... : | | — |
| 8.10.4 | Cart, stand or carrier impact test | | N/A |
| 8.10.5 | Mechanical stability | | N/A |
| | Applied horizontal force (N)..... : | | — |
| 8.10.6 | Thermoplastic temperature stability (°C) : | | N/A |
| 8.11 | Mounting means for rack mounted equipment | | N/A |
| 8.11.1 | General | | N/A |
| 8.11.2 | Product Classification | | N/A |
| 8.11.3 | Mechanical strength test, variable <i>N</i> : | | N/A |
| 8.11.4 | Mechanical strength test 250N, including end stops | | N/A |
| 8.12 | Telescoping or rod antennas : | (See Annex T) | N/A |
| | Button/Ball diameter (mm) : | | — |
| 9 | THERMAL BURN INJURY | | N/A |
| 9.2 | Thermal energy source classifications | | N/A |
| 9.3 | Safeguard against thermal energy sources | | N/A |
| 9.4 | Requirements for safeguards | | N/A |
| 9.4.1 | Equipment safeguard | | N/A |
| 9.4.2 | Instructional safeguard : | | N/A |
| 10 | RADIATION | | N/A |
| 10.2 | Radiation energy source classification | | N/A |
| 10.2.1 | General classification | | N/A |
| 10.3 | Protection against laser radiation | | N/A |
| | Laser radiation that exists in the equipment: | | — |
| | Normal, abnormal, single-fault : | (See attached laser test report) | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Instructional safeguard..... : | | — |
| | Tool : | | — |
| 10.4 | Protection against visible, infrared, and UV radiation | | N/A |
| 10.4.1 | General | | N/A |
| 10.4.1.a) | RS3 for Ordinary and instructed persons : | | N/A |
| 10.4.1.b) | RS3 accessible to a skilled person : | | N/A |
| | Personal safeguard (PPE) instructional safeguard : | | — |
| 10.4.1.c) | Equipment visible, IR, UV does not exceed RS1 : | | N/A |
| 10.4.1.d) | Normal, abnormal, single-fault conditions : | (See appended table B.3 & B.4) | N/A |
| 10.4.1.e) | Enclosure material employed as safeguard is opaque : | | N/A |
| 10.4.1.f) | UV attenuation : | | N/A |
| 10.4.1.g) | Materials resistant to degradation UV..... : | | N/A |
| 10.4.1.h) | Enclosure containment of optical radiation : | | N/A |
| 10.4.1.i) | Exempt Group under normal operating conditions : | | N/A |
| 10.4.2 | Instructional safeguard : | | N/A |
| 10.5 | Protection against x-radiation | | N/A |
| 10.5.1 | X- radiation energy source that exists equipment : | (See appended table B.3 & B.4) | N/A |
| | Normal, abnormal, single fault conditions | | N/A |
| | Equipment safeguards : | | N/A |
| | Instructional safeguard for skilled person : | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 10.5.3 | Most unfavourable supply voltage to give maximum radiation.....: | | — |
| | Abnormal and single-fault condition.....: | (See appended table B.3 & B.4) | N/A |
| | Maximum radiation (pA/kg) | | N/A |
| 10.6 | Protection against acoustic energy sources | | N/A |
| 10.6.1 | General | | N/A |
| 10.6.2 | Classification | | N/A |
| | Acoustic output, dB(A) | | N/A |
| | Output voltage, unweighted r.m.s.: | | N/A |
| 10.6.4 | Protection of persons | | N/A |
| | Instructional safeguards | | N/A |
| | Equipment safeguard prevent ordinary person to RS2 | | — |
| | Means to actively inform user of increase sound pressure | | — |
| | Equipment safeguard prevent ordinary person to RS2 | | — |
| 10.6.5 | Requirements for listening devices (headphones, earphones, etc.) | | N/A |
| 10.6.5.1 | Corded passive listening devices with analog input | | N/A |
| | Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output | | — |
| 10.6.5.2 | Corded listening devices with digital input | | N/A |
| | Maximum dB(A) | | — |
| 10.6.5.3 | Cordless listening device | | N/A |
| | Maximum dB(A) | | — |

| | | | |
|----------|--|--|------|
| B | NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS | | Pass |
| B.2 | Normal Operating Conditions | | Pass |
| B.2.1 | General requirements | (See Test Item Particulars and appended test tables) | Pass |
| | Audio Amplifiers and equipment with audio amplifiers.....: | (See Annex E) | N/A |
| B.2.3 | Supply voltage and tolerances | | N/A |
| B.2.5 | Input test | (See appended table B.2.5) | N/A |
| B.3 | Simulated abnormal operating conditions | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| B.3.1 | General requirements | (See appended table B.3) | N/A |
| B.3.2 | Covering of ventilation openings | | N/A |
| B.3.3 | D.C. mains polarity test | | N/A |
| B.3.4 | Setting of voltage selector..... | | N/A |
| B.3.5 | Maximum load at output terminals | | N/A |
| B.3.6 | Reverse battery polarity | | N/A |
| B.3.7 | Abnormal operating conditions as specified in Clause E.2. | | N/A |
| B.3.8 | Safeguards functional during and after abnormal operating conditions | | N/A |
| B.4 | Simulated single fault conditions | | N/A |
| B.4.2 | Temperature controlling device open or short-circuited..... | (See appended table B.4) | N/A |
| B.4.3 | Motor tests | | N/A |
| B.4.3.1 | Motor blocked or rotor locked increasing the internal ambient temperature | (See Clause G.5) | N/A |
| B.4.4 | Short circuit of functional insulation | | N/A |
| B.4.4.1 | Short circuit of clearances for functional insulation | | N/A |
| B.4.4.2 | Short circuit of creepage distances for functional insulation | | N/A |
| B.4.4.3 | Short circuit of functional insulation on coated printed boards | | N/A |
| B.4.5 | Short circuit and interruption of electrodes in tubes and semiconductors | | N/A |
| B.4.6 | Short circuit or disconnect of passive components | | N/A |
| B.4.7 | Continuous operation of components | | N/A |
| B.4.8 | Class 1 and Class 2 energy sources within limits during and after single fault conditions | | N/A |
| B.4.9 | Battery charging under single fault conditions | (See Annex M) | N/A |
| C | UV RADIATION | | N/A |
| C.1 | Protection of materials in equipment from UV radiation | | N/A |
| C.1.2 | Requirements | | N/A |
| C.1.3 | Test method | | N/A |
| C.2 | UV light conditioning test | | N/A |
| C.2.1 | Test apparatus | | N/A |
| C.2.2 | Mounting of test samples | | N/A |
| C.2.3 | Carbon-arc light-exposure apparatus | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| C.2.4 | Xenon-arc light exposure apparatus | | N/A |
| D | TEST GENERATORS | | N/A |
| D.1 | Impulse test generators | | N/A |
| D.2 | Antenna interface test generator | | N/A |
| D.3 | Electronic pulse generator | | N/A |
| E | TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS | | N/A |
| E.1 | Audio amplifier normal operating conditions | | N/A |
| | Audio signal voltage (V) : | | — |
| | Rated load impedance (Ω) : | | — |
| E.2 | Audio amplifier abnormal operating conditions | | N/A |
| F | EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS | | Pass |
| F.1 | General requirements | | N/A |
| | Instructions – Language : | | — |
| F.2 | Letter symbols and graphical symbols | | N/A |
| F.2.1 | Letter symbols according to IEC60027-1 | | N/A |
| F.2.2 | Graphic symbols IEC, ISO or manufacturer specific | | N/A |
| F.3 | Equipment markings | | Pass |
| F.3.1 | Equipment marking locations | | Pass |
| F.3.2 | Equipment identification markings | | Pass |
| F.3.2.1 | Manufacturer identification : | ON SEMICONDUCTOR PHILIPPINES INC. – CEBU | — |
| F.3.2.2 | Model identification : | FPF2895UCX, FPF2895CUCX | — |
| F.3.3 | Equipment rating markings | | Pass |
| F.3.3.1 | Equipment with direct connection to mains | | N/A |
| F.3.3.2 | Equipment without direct connection to mains | | Pass |
| F.3.3.3 | Nature of supply voltage : | | — |
| F.3.3.4 | Rated voltage : | (Optional) Input Voltage Range: 4Vdc to 22Vdc | — |
| F.3.3.5 | Rated frequency..... : | | — |
| F.3.3.6 | Rated current or rated power : | (Optional) Current Limit Rating: 500mA to 5A | — |
| F.3.3.7 | Equipment with multiple supply connections | | N/A |
| F.3.4 | Voltage setting device | | N/A |
| F.3.5 | Terminals and operating devices | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| F.3.5.1 | Mains appliance outlet and socket-outlet markings.....: | | N/A |
| F.3.5.2 | Switch position identification marking.....: | | N/A |
| F.3.5.3 | Replacement fuse identification and rating markings.....: | | N/A |
| F.3.5.4 | Replacement battery identification marking.....: | | N/A |
| F.3.5.5 | Terminal marking location | | N/A |
| F.3.6 | Equipment markings related to equipment classification | | N/A |
| F.3.6.1 | Class I Equipment | | N/A |
| F.3.6.1.1 | Protective earthing conductor terminal | | N/A |
| F.3.6.1.2 | Neutral conductor terminal | | N/A |
| F.3.6.1.3 | Protective bonding conductor terminals | | N/A |
| F.3.6.2 | Class II equipment (IEC60417-5172) | | N/A |
| F.3.6.2.1 | Class II equipment with or without functional earth | | N/A |
| F.3.6.2.2 | Class II equipment with functional earth terminal marking | | N/A |
| F.3.7 | Equipment IP rating marking : | | — |
| F.3.8 | External power supply output marking | | N/A |
| F.3.9 | Durability, legibility and permanence of marking | | N/A |
| F.3.10 | Test for permanence of markings | | N/A |
| F.4 | Instructions | | N/A |
| | a) Equipment for use in locations where children not likely to be present - marking | | N/A |
| | b) Instructions given for installation or initial use | | N/A |
| | c) Equipment intended to be fastened in place | | N/A |
| | d) Equipment intended for use only in restricted access area | | N/A |
| | e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1 | | N/A |
| | f) Protective earthing employed as safeguard | | N/A |
| | g) Protective earthing conductor current exceeding ES 2 limits | | N/A |
| | h) Symbols used on equipment | | N/A |
| | i) Permanently connected equipment not provided with all-pole mains switch | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | j) Replaceable components or modules providing safeguard function | | N/A |
| F.5 | Instructional safeguards | | N/A |
| | Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction | | N/A |
| G | COMPONENTS | | Pass |
| G.1 | Switches | | N/A |
| G.1.1 | General requirements | | N/A |
| G.1.2 | Ratings, endurance, spacing, maximum load | | N/A |
| G.2 | Relays | | N/A |
| G.2.1 | General requirements | | N/A |
| G.2.2 | Overload test | | N/A |
| G.2.3 | Relay controlling connectors supply power | | N/A |
| G.2.4 | Mains relay, modified as stated in G.2 | | N/A |
| G.3 | Protection Devices | | N/A |
| G.3.1 | Thermal cut-offs | | N/A |
| G.3.1.1a) &b) | Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b) | | N/A |
| G.3.1.1c) | Thermal cut-outs tested as part of the equipment as indicated in c) | | N/A |
| G.3.1.2 | Thermal cut-off connections maintained and secure | | N/A |
| G.3.2 | Thermal links | | N/A |
| G.3.2.1a) | Thermal links separately tested with IEC 60691 | | N/A |
| G.3.2.1b) | Thermal links tested as part of the equipment | | N/A |
| | Aging hours (H) | | — |
| | Single Fault Condition..... | | — |
| | Test Voltage (V) and Insulation Resistance (Ω) .: | | — |
| G.3.3 | PTC Thermistors | | N/A |
| G.3.4 | Overcurrent protection devices | | N/A |
| G.3.5 | Safeguards components not mentioned in G.3.1 to G.3.5 | | N/A |
| G.3.5.1 | Non-resettable devices suitably rated and marking provided | | N/A |
| G.3.5.2 | Single faults conditions | (See appended Table B.4) | N/A |
| G.4 | Connectors | | N/A |
| G.4.1 | Spacings | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.4.2 | Mains connector configuration | | N/A |
| G.4.3 | Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely | | N/A |
| G.5 | Wound Components | | N/A |
| G.5.1 | Wire insulation in wound components | (See Annex J) | N/A |
| G.5.1.2 a) | Two wires in contact inside wound component, angle between 45° and 90° | | N/A |
| G.5.1.2 b) | Construction subject to routine testing | | N/A |
| G.5.2 | Endurance test on wound components | | N/A |
| G.5.2.1 | General test requirements | | N/A |
| G.5.2.2 | Heat run test | | N/A |
| | Time (s) | | — |
| | Temperature (°C) | | — |
| G.5.2.3 | Wound Components supplied by mains | | N/A |
| G.5.3 | Transformers | | N/A |
| G.5.3.1 | Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1) | | N/A |
| | Position | | — |
| | Method of protection | | — |
| G.5.3.2 | Insulation | | N/A |
| | Protection from displacement of windings | | — |
| G.5.3.3 | Overload test..... | (See appended table B.3) | N/A |
| G.5.3.3.1 | Test conditions | | N/A |
| G.5.3.3.2 | Winding Temperatures testing in the unit | | N/A |
| G.5.3.3.3 | Winding Temperatures - Alternative test method | | N/A |
| G.5.4 | Motors | | N/A |
| G.5.4.1 | General requirements | | N/A |
| | Position | | — |
| G.5.4.2 | Test conditions | | N/A |
| G.5.4.3 | Running overload test | | N/A |
| G.5.4.4 | Locked-rotor overload test | | N/A |
| | Test duration (days) | | — |
| G.5.4.5 | Running overload test for d.c. motors in secondary circuits | | N/A |
| G.5.4.5.2 | Tested in the unit | | N/A |
| | Electric strength test (V)..... | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.5.4.5.3 | Tested on the Bench - Alternative test method; test time (h) | | N/A |
| | Electric strength test (V) | | — |
| G.5.4.6 | Locked-rotor overload test for d.c. motors in secondary circuits | | N/A |
| G.5.4.6.2 | Tested in the unit | | N/A |
| | Maximum Temperature | | N/A |
| | Electric strength test (V) | | N/A |
| G.5.4.6.3 | Tested on the bench - Alternative test method; test time (h) | | N/A |
| | Electric strength test (V) | | N/A |
| G.5.4.7 | Motors with capacitors | | N/A |
| G.5.4.8 | Three-phase motors | | N/A |
| G.5.4.9 | Series motors | | N/A |
| | Operating voltage | | — |
| G.6 | Wire Insulation | | N/A |
| G.6.1 | General | | N/A |
| G.6.2 | Solvent-based enamel wiring insulation | | N/A |
| G.7 | Mains supply cords | | N/A |
| G.7.1 | General requirements | | N/A |
| | Type | | — |
| | Rated current (A) | | — |
| | Cross-sectional area (mm ²), (AWG) | | — |
| G.7.2 | Compliance and test method | | N/A |
| G.7.3 | Cord anchorages and strain relief for non- detachable power supply cords | | N/A |
| G.7.3.2 | Cord strain relief | | N/A |
| G.7.3.2.1 | Requirements | | N/A |
| | Strain relief test force (N) | | — |
| G.7.3.2.2 | Strain relief mechanism failure | | N/A |
| G.7.3.2.3 | Cord sheath or jacket position, distance (mm) ... : | | — |
| G.7.3.2.4 | Strain relief comprised of polymeric material | | N/A |
| G.7.4 | Cord Entry | (See appended table 5.4.11.1) | N/A |
| G.7.5 | Non-detachable cord bend protection | | N/A |
| G.7.5.1 | Requirements | | N/A |
| G.7.5.2 | Mass (g) | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Diameter (m) | | — |
| | Temperature (°C) | | — |
| G.7.6 | Supply wiring space | | N/A |
| G.7.6.2 | Stranded wire | | N/A |
| G.7.6.2.1 | Test with 8 mm strand | | N/A |
| G.8 | Varistors | | N/A |
| G.8.1 | General requirements | | N/A |
| G.8.2 | Safeguard against shock | | N/A |
| G.8.3 | Safeguard against fire | | N/A |
| G.8.3.2 | Varistor overload test | (See appended table B.3) | N/A |
| G.8.3.3 | Temporary overvoltage | (See appended table B.3) | N/A |
| G.9 | Integrated Circuit (IC) Current Limiters | | Pass |
| G.9.1 a) | Manufacturer defines limit at max. 5A. | | Pass |
| G.9.1 b) | Limiters do not have manual operator or reset | | Pass |
| G.9.1 c) | Supply source does not exceed 250 VA | EUT is for building-in and shall be evaluated in end product. | — |
| G.9.1 d) | IC limiter output current (max. 5A) | (Optional) Current Limit Rating: 500mA to 5A | — |
| G.9.1 e) | Manufacturers' defined drift | (Optional) Current Limit Rating: 500mA to 5A | — |
| G.9.2 | Test Program 1 | | N/A |
| G.9.3 | Test Program 2 | See Enclosure Id. 7-01 (IC Current Limiter Testing Results) for details. | Pass |
| G.9.4 | Test Program 3 | | N/A |
| G.10 | Resistors | | N/A |
| G.10.1 | General requirements | | N/A |
| G.10.2 | Resistor test | | N/A |
| G.10.3 | Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable | | N/A |
| G.10.3.1 | General requirements | | N/A |
| G.10.3.2 | Voltage surge test | | N/A |
| G.10.3.3 | Impulse test | | N/A |
| G.11 | Capacitor and RC units | | N/A |
| G.11.1 | General requirements | | N/A |
| G.11.2 | Conditioning of capacitors and RC units | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.11.3 | Rules for selecting capacitors | | N/A |
| G.12 | Optocouplers | | N/A |
| | Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) | | N/A |
| | Type test voltage V _{ini} | | — |
| | Routine test voltage, V _{ini,b} | | — |
| G.13 | Printed boards | | N/A |
| G.13.1 | General requirements | | N/A |
| G.13.2 | Uncoated printed boards | | N/A |
| G.13.3 | Coated printed boards | | N/A |
| G.13.4 | Insulation between conductors on the same inner surface | | N/A |
| | Compliance with cemented joint requirements (Specify construction) | | — |
| G.13.5 | Insulation between conductors on different surfaces | | N/A |
| | Distance through insulation..... | (See appended table 5.4.4.5) | N/A |
| | Number of insulation layers (pcs) | | — |
| G.13.6 | Tests on coated printed boards | | N/A |
| G.13.6.1 | Sample preparation and preliminary inspection | | N/A |
| G.13.6.2a) | Thermal conditioning | | N/A |
| G.13.6.2b) | Electric strength test | | N/A |
| G.13.6.2c) | Abrasion resistance test | | N/A |
| G.14 | Coating on components terminals | | N/A |
| G.14.1 | Requirements | (See G.13) | N/A |
| G.15 | Liquid filled components | | N/A |
| G.15.1 | General requirements | | N/A |
| G.15.2 | Requirements | | N/A |
| G.15.3 | Compliance and test methods | | N/A |
| G.15.3.1 | Hydrostatic pressure test | | N/A |
| G.15.3.2 | Creep resistance test | | N/A |
| G.15.3.3 | Tubing and fittings compatibility test | | N/A |
| G.15.3.4 | Vibration test | | N/A |
| G.15.3.5 | Thermal cycling test | | N/A |
| G.15.3.6 | Force test | | N/A |

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|-------------|---|----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.15.4 | Compliance | | N/A |
| G.16 | IC including capacitor discharge function (ICX) | | N/A |
| G.16 a) | Humidity treatment in accordance with sc 5.4.8 – 120 hours | | N/A |
| G.16 b) | Impulse test using circuit 2 with U_c = to transient voltage | | N/A |
| G.16 C1) | Application of ac voltage at 110% of rated voltage for 2.5 minutes | | N/A |
| G.16 C2) | Test voltage | | — |
| G.16 D1) | 10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer | | N/A |
| G.16 D2) | Capacitance | | — |
| G.16 D3) | Resistance | | — |
| H | CRITERIA FOR TELEPHONE RINGING SIGNALS | | N/A |
| H.1 | General | | N/A |
| H.2 | Method A | | N/A |
| H.3 | Method B | | N/A |
| H.3.1 | Ringling signal | | N/A |
| H.3.1.1 | Frequency (Hz) | | — |
| H.3.1.2 | Voltage (V) | | — |
| H.3.1.3 | Cadence; time (s) and voltage (V) | | — |
| H.3.1.4 | Single fault current (mA): | | — |
| H.3.2 | Tripping device and monitoring voltage | | N/A |
| H.3.2.1 | Conditions for use of a tripping device or a monitoring voltage complied with | | N/A |
| H.3.2.2 | Tripping device | | N/A |
| H.3.2.3 | Monitoring voltage (V) | | — |
| J | INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION | | N/A |
| | General requirements | (See separate test report) | N/A |
| K | SAFETY INTERLOCKS | | N/A |
| K.1 | General requirements | | N/A |
| K.2 | Components of safety interlock safeguard mechanism | (See Annex G) | N/A |
| K.3 | Inadvertent change of operating mode | | N/A |
| K.4 | Interlock safeguard override | | N/A |
| K.5 | Fail-safe | | N/A |

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|-------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Compliance | (See appended table B.4) | N/A |
| K.6 | Mechanically operated safety interlocks | | N/A |
| K.6.1 | Endurance requirement | | N/A |
| K.6.2 | Compliance and Test method..... | | N/A |
| K.7 | Interlock circuit isolation | | N/A |
| K.7.1 | Separation distance for contact gaps & interlock circuit elements (type and circuit location) | | N/A |
| K.7.2 | Overload test, Current (A)..... | | N/A |
| K.7.3 | Endurance test | | N/A |
| K.7.4 | Electric strength test | (See appended table 5.4) | N/A |
| L | DISCONNECT DEVICES | | N/A |
| L.1 | General requirements | | N/A |
| L.2 | Permanently connected equipment | | N/A |
| L.3 | Parts that remain energized | | N/A |
| L.4 | Single phase equipment | | N/A |
| L.5 | Three-phase equipment | | N/A |
| L.6 | Switches as disconnect devices | | N/A |
| L.7 | Plugs as disconnect devices | | N/A |
| L.8 | Multiple power sources | | N/A |
| M | EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS | | N/A |
| M.1 | General requirements | | N/A |
| M.2 | Safety of batteries and their cells | | N/A |
| M.2.1 | Requirements | | N/A |
| M.2.2 | Compliance and test method (identify method) .. : | | N/A |
| M.3 | Protection circuits | | N/A |
| M.3.1 | Requirements | | N/A |
| M.3.2 | Tests | | N/A |
| | - Overcharging of a rechargeable battery | | N/A |
| | - Unintentional charging of a non-rechargeable battery | | N/A |
| | - Reverse charging of a rechargeable battery | | N/A |
| | - Excessive discharging rate for any battery | | N/A |
| M.3.3 | Compliance | (See appended Tables and Annex M.3 and M.4) | N/A |
| M.4 | Additional safeguards for equipment containing secondary lithium battery | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| M.4.1 | General | | N/A |
| M.4.2 | Charging safeguards | | N/A |
| M.4.2.1 | Charging operating limits | | N/A |
| M.4.2.2a) | Charging voltage, current and temperature : | (See Annex M.4) | — |
| M.4.2.2 b) | Single faults in charging circuitry : | (See Annex B.4) | — |
| M.4.3 | Fire Enclosure | | N/A |
| M.4.4 | Endurance of equipment containing a secondary lithium battery | | N/A |
| M.4.4.2 | Preparation | | N/A |
| M.4.4.3 | Drop and charge/discharge function tests | | N/A |
| | Drop | | N/A |
| | Charge | | N/A |
| | Discharge | | N/A |
| M.4.4.4 | Charge-discharge cycle test | | N/A |
| M.4.4.5 | Result of charge-discharge cycle test | | N/A |
| M.5 | Risk of burn due to short circuit during carrying | | N/A |
| M.5.1 | Requirement | | N/A |
| M.5.2 | Compliance and Test Method (Test of P.2.3) | | N/A |
| M.6 | Prevention of short circuits and protection from other effects of electric current | | N/A |
| M.6.1 | Short circuits | | N/A |
| M.6.1.1 | General requirements | | N/A |
| M.6.1.2 | Test method to simulate an internal fault | | N/A |
| M.6.1.3 | Compliance (Specify M.6.1.2 or alternative method) : | | N/A |
| M.6.2 | Leakage current (mA) : | | N/A |
| M.7 | Risk of explosion from lead acid and NiCd batteries | | N/A |
| M.7.1 | Ventilation preventing explosive gas concentration | | N/A |
| M.7.2 | Compliance and test method | | N/A |
| M.8 | Protection against internal ignition from external spark sources of lead acid batteries | | N/A |
| M.8.1 | General requirements | | N/A |
| M.8.2 | Test method | | N/A |
| M.8.2.1 | General requirements | | N/A |
| M.8.2.2 | Estimation of hypothetical volume V_z (m ³ /s) : | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| M.8.2.3 | Correction factors : | | — |
| M.8.2.4 | Calculation of distance d (mm) : | | — |
| M.9 | Preventing electrolyte spillage | | N/A |
| M.9.1 | Protection from electrolyte spillage | | N/A |
| M.9.2 | Tray for preventing electrolyte spillage | | N/A |
| M.10 | Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) : | | N/A |
| N | ELECTROCHEMICAL POTENTIALS | | N/A |
| | Metal(s) used : | Pollution degree considered | — |
| O | MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES | | N/A |
| | Figures O.1 to O.20 of this Annex applied..... : | | — |
| P | SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS | | N/A |
| P.1 | General requirements | | N/A |
| P.2.2 | Safeguards against entry of foreign object | | N/A |
| | Location and Dimensions (mm) : | | — |
| P.2.3 | Safeguard against the consequences of entry of foreign object | | N/A |
| P.2.3.1 | Safeguards against the entry of a foreign object | | N/A |
| | Openings in transportable equipment | | N/A |
| | Transportable equipment with metalized plastic parts : | | N/A |
| P.2.3.2 | Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) : | | N/A |
| P.3 | Safeguards against spillage of internal liquids | | N/A |
| P.3.1 | General requirements | | N/A |
| P.3.2 | Determination of spillage consequences | | N/A |
| P.3.3 | Spillage safeguards | | N/A |
| P.3.4 | Safeguards effectiveness | | N/A |
| P.4 | Metallized coatings and adhesive securing parts | | N/A |
| P.4.2 a) | Conditioning testing | | N/A |
| | T_c (°C)..... : | | — |
| | T_r (°C) : | | — |
| | T_a (°C) : | | — |
| P.4.2 b) | Abrasion testing : | (See G.13.6.2) | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| P.4.2 c) | Mechanical strength testing | (See Annex T) | N/A |
| Q | CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING | | Pass |
| Q.1 | Limited power sources | | Pass |
| Q.1.1 a) | Inherently limited output | | N/A |
| Q.1.1 b) | Impedance limited output | | N/A |
| | - Regulating network limited output under normal operating and simulated single fault condition | | N/A |
| Q.1.1 c) | Overcurrent protective device limited output | | N/A |
| Q.1.1 d) | IC current limiter complying with G.9 | See G.9 for details. | Pass |
| Q.1.2 | Compliance and test method | See G.9 for details. | Pass |
| Q.2 | Test for external circuits – paired conductor cable | | N/A |
| | Maximum output current (A) | | — |
| | Current limiting method..... | | — |
| R | LIMITED SHORT CIRCUIT TEST | | N/A |
| R.1 | General requirements | | N/A |
| R.2 | Determination of the overcurrent protective device and circuit | | N/A |
| R.3 | Test method Supply voltage (V) and short-circuit current (A)). | | N/A |
| S | TESTS FOR RESISTANCE TO HEAT AND FIRE | | N/A |
| S.1 | Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm) | | — |
| | Conditioning (°C) | | — |
| | Test flame according to IEC 60695-11-5 with conditions as set out | | N/A |
| | - Material not consumed completely | | N/A |
| | - Material extinguishes within 30s | | N/A |
| | - No burning of layer or wrapping tissue | | N/A |
| S.2 | Flammability test for fire enclosure and fire barrier integrity | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm) | | — |
| | Conditioning (°C) | | — |

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|-------------|--|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Test flame according to IEC 60695-11-5 with conditions as set out | | N/A |
| | Test specimen does not show any additional hole | | N/A |
| S.3 | Flammability test for the bottom of a fire enclosure | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm) | | — |
| | Cheesecloth did not ignite | | N/A |
| S.4 | Flammability classification of materials | | N/A |
| S.5 | Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm) | | — |
| | Conditioning (test condition), (°C)..... | | — |
| | Test flame according to IEC 60695-11-20 with conditions as set out | | N/A |
| | After every test specimen was not consumed completely | | N/A |
| | After fifth flame application, flame extinguished within 1 min | | N/A |
| T | MECHANICAL STRENGTH TESTS | | N/A |
| T.1 | General requirements | | N/A |
| T.2 | Steady force test, 10 N | (See appended table T.2) | N/A |
| T.3 | Steady force test, 30 N | (See appended table T.3) | N/A |
| T.4 | Steady force test, 100 N | (See appended table T.4) | N/A |
| T.5 | Steady force test, 250 N | (See appended table T.5) | N/A |
| T.6 | Enclosure impact test | (See appended table T.6) | N/A |
| | Fall test | | N/A |
| | Swing test | | N/A |
| T.7 | Drop test | (See appended table T.7) | N/A |
| T.8 | Stress relief test | (See appended table T.8) | N/A |
| T.9 | Impact Test (glass) | | N/A |
| T.9.1 | General requirements | | N/A |
| T.9.2 | Impact test and compliance | | N/A |
| | Impact energy (J) | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Height (m)..... : | | — |
| T.10 | Glass fragmentation test..... : | (See sub-clause 4.4.4.9) | N/A |
| T.11 | Test for telescoping or rod antennas | | N/A |
| | Torque value (Nm) : | | — |
| U | MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION | | N/A |
| U.1 | General requirements | | N/A |
| U.2 | Compliance and test method for non-intrinsically protected CRTs | | N/A |
| U.3 | Protective Screen : | (See Annex T) | N/A |
| V | DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES) | | N/A |
| V.1 | Accessible parts of equipment | | N/A |
| V.2 | Accessible part criterion | | N/A |

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|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| 4.1.2 | TABLE: List of critical components | | | | | Pass |
|---|------------------------------------|--------------|--|----------|--|------|
| Object / part No. | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity ¹⁾ | |
| 01. Current Carrying Parts | -- | -- | Stainless steel, silver, gold, nickel, aluminum, copper or copper alloy. May be plated with tin, lead, silver or gold. | -- | -- , -- | |
| 02. Insulated Coating | -- | -- | Epoxy, and a high pressure, high temperature molding process. | -- | -- , -- | |
| Supplementary information: | | | | | | |
| 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. | | | | | | |

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|---|--|------------------------------------|-----------------------|----------------------------|
| Clause | Requirement + Test | | Result - Remark | Verdict |
| 4.8.4, 4.8.5 | TABLE: Lithium coin/button cell batteries mechanical tests | | | N/A |
| (The following mechanical tests are conducted in the sequence noted.) | | | | |
| 4.8.4.2 | TABLE: Stress Relief test | | | — |
| Part | | Material | Oven Temperature (°C) | Comments |
| | | | | |
| 4.8.4.3 | TABLE: Battery replacement test | | | — |
| Battery part no. : | | | | — |
| Battery Installation/withdrawal | | Battery Installation/Removal Cycle | | Comments |
| | | 1 | | |
| | | 2 | | |
| | | 3 | | |
| | | 4 | | |
| | | 5 | | |
| | | 6 | | |
| | | 8 | | |
| | | 9 | | |
| | | 10 | | |
| 4.8.4.4 | TABLE: Drop test | | | — |
| Impact Area | | Drop Distance | Drop No. | Observations |
| | | | 1 | |
| | | | 2 | |
| | | | 3 | |
| 4.8.4.5 | TABLE: Impact | | | — |
| Impacts per surface | | Surface tested | Impact energy (Nm) | Comments |
| | | | | |
| 4.8.4.6 | TABLE: Crush test | | | — |
| Test position | | Surface tested | Crushing Force (N) | Duration force applied (s) |
| | | | | |
| Supplementary information: | | | | |
| | | | | |

| | | |
|-------|--|-----|
| 4.8.5 | TABLE: Lithium coin/button cell batteries mechanical test result | N/A |
|-------|--|-----|

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|----------------------------|--------------------|-----------------|----------------------------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Test position | Surface tested | Force (N) | Duration force applied (s) |
| | | | |
| Supplementary information: | | | |
| | | | |

| 5.2 | Table: Classification of electrical energy sources | | | | | | N/A |
|---|--|-------------------------------------|----------------------|--------------------|--------------------|----------|----------|
| 5.2.2.2 – Steady State Voltage and Current conditions | | | | | | | |
| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
| | | | | U (Vrms or Vpk) | I (Apk or Arms) | Hz | |
| | | | Normal | | | | |
| | | | Abnormal | | | | |
| | | | Single fault – SC/OC | | | | |
| 5.2.2.3 - Capacitance Limits | | | | | | | |
| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | ES Class | |
| | | | | Capacitance, nF | Upk (V) | | |
| | | | Normal | | | | |
| | | | Abnormal | | | | |
| | | | Single fault – SC/OC | | | | |
| 5.2.2.4 - Single Pulses | | | | | | | |
| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
| | | | | Duration (ms) | Upk (V) | Ipk (mA) | |
| | | | Normal | | | | |
| | | | Abnormal | | | | |
| | | | Single fault – SC/OC | | | | |
| 5.2.2.5 - Repetitive Pulses | | | | | | | |
| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
| | | | | Off time (ms) | Upk (V) | Ipk (mA) | |
| | | | Normal | | | | |
| | | | Abnormal | | | | |
| | | | Single fault – SC/OC | | | | |

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|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | |
|--|--|-----|
| 5.2 | Table: Classification of electrical energy sources | N/A |
| Test Conditions: | | |
| Normal – | | |
| Abnormal - | | |
| Supplementary information: SC=Short Circuit, OC=Open Circuit | | |
| | | |

| | | | | | | | |
|--|--|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|
| 5.4.1.4, 6.3.2, 9.0, B.2.6 | TABLE: Temperature measurements | | | | | | N/A |
| | Supply voltage (V) | | | | | | — |
| | Ambient T _{min} (°C) | | | | | | — |
| | Ambient T _{max} (°C) | | | | | | — |
| | T _{ma} (°C) | | | | | | — |
| Maximum measured temperature T of part/at: | | T (°C) | | | | | Allowed T _{max} (°C) |
| | | | | | | | |
| Supplementary information: | | | | | | | |
| | | | | | | | |
| Temperature T of winding: | | t ₁ (°C) | R ₁ (Ω) | t ₂ (°C) | R ₂ (Ω) | T (°C) | Allowed T _{max} (°C) |
| | | | | | | | |
| Supplementary information: | | | | | | | |
| Note 1: T _{ma} should be considered as directed by applicable requirement | | | | | | | |
| Note 2: T _{ma} is not included in assessment of Touch Temperatures (Clause 9) | | | | | | | |

| | | | |
|----------------------------|--|------------------|-----|
| 5.4.1.10.2 | TABLE: Vicat softening temperature of thermoplastics | | N/A |
| Penetration (mm): | | | — |
| Object/ Part No./Material | Manufacturer/t rademark | T softening (°C) | |
| | | | |
| supplementary information: | | | |
| | | | |

| IEC 62368-1 | | | |
|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | |
|--|---|-----------------------|--------------------------|-----|
| 5.4.1.10.3 | TABLE: Ball pressure test of thermoplastics | | | N/A |
| Allowed impression diameter (mm) | | ≤ 2 mm | | — |
| Object/Part No./Material | Manufacturer/trademark | Test temperature (°C) | Impression diameter (mm) | |
| | | | | |
| Supplementary information: | | | | |
| | | | | |

| | | | | | | | |
|--|--|--------------|------------------------------|------------------|----------------------|-------------------------------|---------|
| 5.4.2.2, 5.4.2.4 and 5.4.3 | TABLE: Minimum Clearances/Creepage distance | | | | | | N/A |
| Clearance (cl) and creepage distance (cr) at/of/between: | Up (V) | U r.m.s. (V) | Frequency (kHz) ¹ | Required cl (mm) | cl (mm) ² | Required ³ cr (mm) | cr (mm) |
| | | | | | | | |
| Supplementary information: | | | | | | | |
| Note 1: Only for frequency above 30 kHz | | | | | | | |
| Note 2: See table 5.4.2.4 if this is based on electric strength test | | | | | | | |
| Note 3: Provide Material Group | | | | | | | |

| | | | | |
|------------------------------|--|----------------------------|------------------|------------------|
| 5.4.2.3 | TABLE: Minimum Clearances distances using required withstand voltage | | | N/A |
| | Overvoltage Category (OV): | | | |
| | Pollution Degree: | | | |
| Clearance distanced between: | | Required withstand voltage | Required cl (mm) | Measured cl (mm) |
| | | | | |
| Supplementary information: | | | | |
| | | | | |

| | | | | |
|-------------------------------|---|---------------------------------------|--------------------|-----|
| 5.4.2.4 | TABLE: Clearances based on electric strength test | | | N/A |
| Test voltage applied between: | Required cl (mm) | Test voltage (kV) peak/ r.m.s. / d.c. | Breakdown Yes / No | |
| | | | | |
| Supplementary information: | | | | |
| | | | | |

| | | | | |
|------------------------------------|--|--|--|-----|
| 5.4.4.2, 5.4.4.5 c) 5.4.4.9 | TABLE: Distance through insulation measurements | | | N/A |
|------------------------------------|--|--|--|-----|

| IEC 62368-1 | | | | | |
|---------------------------------------|--------------------|-----------------|-----------------|-------------------|----------|
| Clause | Requirement + Test | | Result - Remark | | Verdict |
| Distance through insulation di at/of: | Peak voltage (V) | Frequency (kHz) | Material | Required DTI (mm) | DTI (mm) |
| | | | | | |
| Supplementary information: | | | | | |
| | | | | | |

| | | | | |
|-------------------------------|--------------------------------|------------------------|------------------|--------------------|
| 5.4.9 | TABLE: Electric strength tests | | | N/A |
| Test voltage applied between: | | Voltage shape (AC, DC) | Test voltage (V) | Breakdown Yes / No |
| Functional: | | | | |
| | | | | |
| Basic/supplementary: | | | | |
| | | | | |
| Reinforced: | | | | |
| | | | | |
| Routine Tests: | | | | |
| | | | | |
| Supplementary information: | | | | |
| | | | | |

| | | | | | | |
|---|---------------------------------------|----------------------------|---------------------------|------------------------------------|-------------------|-----|
| 5.5.2.2 | TABLE: Stored discharge on capacitors | | | | | N/A |
| Supply Voltage (V), Hz | Test Location | Operating Condition (N, S) | Switch position On or off | Measured Voltage (after 2 seconds) | ES Classification | |
| | | | | | | |
| Supplementary information: | | | | | | |
| X-capacitors installed for testing are: [] bleeding resistor rating: [] ICX: Notes: A. Test Location: Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth B. Operating condition abbreviations: N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition | | | | | | |

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|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| 5.6.6.2 | TABLE: Resistance of protective conductors and terminations | | | | N/A |
|----------------------------|--|------------------|----------------|------------------|-------------------------|
| Accessible part | | Test current (A) | Duration (min) | Voltage drop (V) | Resistance (Ω) |
| | | | | | |
| Supplementary information: | | | | | |
| | | | | | |

| | | | |
|---|---|---|--------------------|
| 5.7.2.2, 5.7.4 | TABLE: Earthed accessible conductive part | | N/A |
| Supply voltage: | | | — |
| Location | | Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7 | Touch current (mA) |
| | | 1 | |
| | | 2* | |
| | | 3 | |
| | | 4 | |
| | | 5 | |
| | | 6 | |
| | | 8 | |
| Supplementary Information: | | | |
| Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable. [5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided. | | | |

| IEC 62368-1 | | | | | | | |
|---|--|--|----------------------|---------------------|-----------------------------------|-------------------|-----|
| Clause | | Requirement + Test | | Result - Remark | | Verdict | |
| 6.2.2 | | Table: Electrical power sources (PS) measurements for classification | | | | | N/A |
| Source | | Description | Measurement | Max Power after 3 s | Max Power after 5 s ^{*)} | PS Classification | |
| A | | | Power (W) : | | | | |
| | | | V _A (V) : | | | | |
| | | | I _A (A) : | | | | |
| Supplementary Information: | | | | | | | |
| (*) Measurement taken only when limits at 3 seconds exceed PS1 limits | | | | | | | |

| 6.2.3.1 | Table: Determination of Potential Ignition Sources (Arcing PIS) | | | | N/A |
|---|--|--|--|---|----------------------|
| Location | | Open circuit voltage After 3 s (V _p) | Measured r.m.s current (I _{rms}) | Calculated value (V _p x I _{rms}) | Arcing PIS? Yes / No |
| | | | | | |
| Supplementary information: | | | | | |
| An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V _p) and normal operating condition rms current (I _{rms}) is greater than 15. | | | | | |

| 6.2.3.2 | Table: Determination of Potential Ignition Sources (Resistive PIS) | | | | N/A |
|--|---|---|--|--|-----------------------|
| Circuit Location (x-y) | Operating Condition (Normal / Describe Single Fault) | Measured wattage or VA During first 30 s (W / VA) | Measured wattage or VA After 30 s (W / VA) | Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment) | Resistive PIS? Yes/No |
| | | | | | |
| Supplementary Information: | | | | | |
| <p>A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.</p> <p>If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.</p> <p>A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.</p> | | | | | |

| | | | | |
|--------------------|---------------------------|--------|------------------------------|-----|
| 8.5.5 | TABLE: High Pressure Lamp | | | N/A |
| Description | | Values | Energy Source Classification | |
| Lamp type | | | — | |
| Manufacturer | | | — | |

| IEC 62368-1 | | | |
|--|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Cat no.: | | — | |
| Pressure (cold) (MPa) | | MS_ | |
| Pressure (operating) (MPa) | | MS_ | |
| Operating time (minutes) | | — | |
| Explosion method | | — | |
| Max particle length escaping enclosure (mm) .: | | MS_ | |
| Max particle length beyond 1 m (mm).....: | | MS_ | |
| Overall result | | | |
| Supplementary information: | | | |
| | | | |

| B.2.5 | TABLE: Input test | | | | | | | N/A |
|---|--------------------------|-------|-------------|-------|-------------|---------|------------|------------------|
| U (V) | Hz | I (A) | I rated (A) | P (W) | P rated (W) | Fuse No | I fuse (A) | Condition/status |
| | | | | | | | | |
| Supplementary information: | | | | | | | | |
| Equipment may be have rated current or rated power or both. Both should be measured | | | | | | | | |

| B.3 | TABLE: Abnormal operating condition tests | | | | | | | N/A |
|---|--|---------------------|----------------|----------|-------------------|----------|------------|-------------|
| Ambient temperature (°C) | | | | | | | | — |
| Power source for EUT: Manufacturer, model/type, output rating ...: | | | | | | | | — |
| Component No. | Abnormal Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| | | | | | | | | |
| Supplementary information: | | | | | | | | |
| Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column "Abnormal/Fault." Specify if test condition by indicating "Abnormal" then the condition for a Clause B.3 test or "Single Fault" then the condition for Clause B.4. | | | | | | | | |

| B.4 | TABLE: Fault condition tests | | | | | | | N/A |
|--|-------------------------------------|---------------------|----------------|----------|-------------------|----------|------------|-------------|
| Ambient temperature (°C) | | | | | | | | — |
| Power source for EUT: Manufacturer, model/type, output rating ...: | | | | | | | | — |
| Component No. | Fault Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| | | | | | | | | |
| Supplementary information: | | | | | | | | |
| | | | | | | | | |

| IEC 62368-1 | | | |
|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | | | | | | | | |
|---|----------------------------|---------------|-------------------------|------------------------|---------------|---------------|---------------|-------------------|---------------|--|
| Annex M | TABLE: Batteries | | | | | | | | N/A | |
| The tests of Annex M are applicable only when appropriate battery data is not available | | | | | | | | | | |
| Is it possible to install the battery in a reverse polarity position? : | | | | | | | | | | |
| | Non-rechargeable batteries | | | Rechargeable batteries | | | | | | |
| | Discharging | | Un-intentional charging | Charging | | Discharging | | Reversed charging | | |
| | Meas. current | Manuf. Specs. | | Meas. current | Manuf. Specs. | Meas. current | Manuf. Specs. | Meas. current | Manuf. Specs. | |
| Max. current during normal condition | | | | | | | | | | |
| Max. current during fault condition | | | | | | | | | | |
| | | | | | | | | | | |
| Test results: | | | | | | | | | Verdict | |
| - Chemical leaks | | | | | | | | | | |
| - Explosion of the battery | | | | | | | | | | |
| - Emission of flame or expulsion of molten metal | | | | | | | | | | |
| - Electric strength tests of equipment after completion of tests | | | | | | | | | | |
| Supplementary information: | | | | | | | | | | |
| | | | | | | | | | | |

| Annex M.4 | Table: Additional safeguards for equipment containing secondary lithium batteries | | | | | N/A |
|----------------------------|---|--------------|---------------------------------------|-------------|-------------|-----|
| Battery/Cell No. | Test conditions | Measurements | | | Observation | |
| | | U | I (A) | Temp (°C) | | |
| | Normal | | | | | |
| | Abnormal | | | | | |
| | Single fault –SC/OC | | | | | |
| Supplementary Information: | | | | | | |
| | | | | | | |
| Battery identification | Charging at T _{lowest} (°C) | Observation | Charging at T _{highest} (°C) | Observation | | |
| | | | | | | |
| Supplementary Information: | | | | | | |
| | | | | | | |

| IEC 62368-1 | | | | | | |
|---|---|---------------------|---------------------|-----------------|--------|---------|
| Clause | Requirement + Test | | | Result - Remark | | Verdict |
| Annex Q.1 | TABLE: Circuits intended for interconnection with building wiring (LPS) | | | | | Pass |
| Note: Measured UOC (V) with all load circuits disconnected: | | | | | | |
| Output Circuit | Components | U _{oc} (V) | I _{sc} (A) | | S (VA) | |
| | | | Meas. | Limit | Meas. | Limit |
| | | | | | | |
| Supplementary Information: | | | | | | |
| SC=Short circuit, OC=Open circuit | | | | | | |

| | | | | | | |
|----------------------------|--------------------------|-------------------|--------------|------------------------|-------------|-----|
| T.2, T.3, T.4, T.5 | TABLE: Steady force test | | | | | N/A |
| Part/Location | Material | Thickness (mm) | Force (N) | Test Duration (sec) | Observation | |
| | | | | | | |
| Supplementary information: | | | | | | |
| | | | | | | |

| | | | | | |
|----------------------------|---------------------|----------------|------------------------|-------------|-----|
| T.6, T.9 | TABLE: Impact tests | | | | N/A |
| Part/Location | Material | Thickness (mm) | Vertical distance (mm) | Observation | |
| | | | | | |
| Supplementary information: | | | | | |
| | | | | | |

| | | | | | |
|----------------------------|-------------------|----------------|------------------|-------------|-----|
| T.7 | TABLE: Drop tests | | | | N/A |
| Part/Location | Material | Thickness (mm) | Drop Height (mm) | Observation | |
| | | | | | |
| Supplementary information: | | | | | |
| | | | | | |

| | | | | | | |
|----------------------------|---------------------------|----------------|-----------------------|--------------|-------------|-----|
| T.8 | TABLE: Stress relief test | | | | | N/A |
| Part/Location | Material | Thickness (mm) | Oven Temperature (°C) | Duration (h) | Observation | |
| | | | | | | |
| Supplementary information: | | | | | | |
| | | | | | | |

Enclosure
National Differences

Australia / New Zealand

EU Group and National Differences

Japan

USA / Canada

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| ATTACHMENT TO TEST REPORT | |
|---|----------------------|
| IEC 62368-1 | |
| (AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES | |
| (Audio/video, information and communication technology equipment) | |
| Differences according to | AS/NZS 62368.1:2018 |
| Attachment Form No. | AU_NZ_ND_IEC62368_1B |
| Attachment Originator | JAS-ANZ |
| Master Attachment | 2019-02-04 |
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| | NATIONAL DIFFERENCES | Pass |
|----------------|--|------|
| Appendix ZZ | Variations to IEC 62368-1:2014 (ED. 2.0) for Australia and New Zealand | Pass |
| ZZ1 Scope | This Appendix lists the normative variations to IEC 62368-1:2014 (ED. 2.0) | Pass |
| ZZ2 Variations | The following modifications are required for Australian/New Zealand conditions: | Pass |
| 2 | <p>Add the following to the list of normative references:</p> <p>The following normative documents are referenced in Appendix ZZ:</p> <p>-AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i></p> <p>-AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i></p> <p>-AS/NZS 3191, <i>Electric flexible cords</i></p> <p>-AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)</i></p> <p>-AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i></p> <p>-AS/NZS 60320.2.2, <i>Appliance couplers for household and similar general purposes Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)</i></p> <p>-AS/NZS 60695.2.11, <i>Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i></p> <p>-AS/NZS 60695.11.5, <i>Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—</i></p> | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p><i>Apparatus, confirmatory test arrangement and guidance</i></p> <p>-AS/NZS 60695.11.10, <i>Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods</i></p> <p>-AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i></p> <p>-AS/NZS 60950.1:2015, <i>Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i></p> <p><i>IEC 61032:1997, Protection of persons and equipment by enclosures—Probes for verification</i></p> <p>-AS/NZS 61558.1:2008 (including Amendment 2:2015), <i>Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 2.1, MOD)</i></p> <p>-AS/NZS 61558.2.16, <i>Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.</i></p> | | |
| 4.1.1 | <p>Application of requirements and acceptance of materials, components and subassemblies</p> <p>1 Replace the text 'IEC 60950-1' with 'AS/NZS 60950.1:2015'.</p> <p>2 Replace the text 'IEC 60065' with 'AS/NZS 60065'.</p> | | N/A |
| 4.7 | Equipment for direct insertion into mains socket-outlets | | N/A |
| 4.7.2 | <p>Requirements</p> <p>Delete the text of the second paragraph and replace with the following:</p> <p>Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.</p> | | N/A |
| 4.7.3 | <p>Compliance Criteria</p> <p>Delete the first paragraph and Note 1 and Note 2 and replace with the following:</p> <p>Compliance is checked by inspection and, if necessary, by the tests in AS/NZS 3112.</p> | | N/A |

| IEC62368_1B - ATTACHMENT | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|-------------------|-----------|--------------|--|-------------------|--|-------------|-----------|-------------|-----------|--|---------------------|---|--------|------|---|-------------------------------|--|--------|--------|-----|
| Clause | Requirement + Test | | Result - Remark | Verdict | | | | | | | | | | | | | | | | | | | |
| 4.8 | Delete existing clause title and replace with the following: 4.8 Products containing coin/button cell batteries | | | N/A | | | | | | | | | | | | | | | | | | | |
| 4.8.1 | General 1 Second dashed point, delete the text and replace with the following: – include coin/button cell batteries with a diameter of 32 mm or less. 2 After the second dashed point, insert the following Note: NOTE 1: Batteries are specified in IEC 60086-2. 3 After the third dashed point, renumber the existing Note as 'NOTE 2'. 4 Fifth dashed point, delete the word 'lithium'. | | | N/A | | | | | | | | | | | | | | | | | | | |
| 4.8.2 | Instructional Safeguard First line, delete the word 'lithium'. | | | N/A | | | | | | | | | | | | | | | | | | | |
| 4.8.3 | Construction First line, after the word 'Equipment' insert the words 'containing one or more coin/button batteries and' | | | N/A | | | | | | | | | | | | | | | | | | | |
| 4.8.5 | Compliance criteria Delete the first paragraph and replace with the following: Compliance is checked by applying a force of 30 N +/-1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time. | | | N/A | | | | | | | | | | | | | | | | | | | |
| 5.4.10.2 | Test Methods | | | N/A | | | | | | | | | | | | | | | | | | | |
| 5.4.10.2.1 | General Delete the first paragraph and replace with the following: In Australia only, the separation is checked by the test of both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test of either Clause 5.4.10.2.2 or Clause 5.4.10.2.3. | | | N/A | | | | | | | | | | | | | | | | | | | |
| Table 29 | Replace the table with the following: <div><table><tr><th rowspan="2">Parts</th><th colspan="2">Impulse test</th><th colspan="2">Steady state test</th></tr><tr><th>New Zealand</th><th>Australia</th><th>New Zealand</th><th>Australia</th></tr><tr><td>Parts indicated in Clause 5.4.10.1 a) ^a</td><td>2.5 kV 10/700 µs</td><td>7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 µs</td><td>1.5 kV</td><td>3 kV</td></tr><tr><td>Parts indicated in Clause 5.4.10.1 b) and c) ^b</td><td colspan="2">1.5 kV 10/700 µs ^c</td><td>1.0 kV</td><td>1.5 kV</td></tr></table><div>^a Surge suppressors shall not be removed. ^b Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment. ^c During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.</div></div> | | | Parts | Impulse test | | Steady state test | | New Zealand | Australia | New Zealand | Australia | Parts indicated in Clause 5.4.10.1 a) ^a | 2.5 kV 10/700 µs | 7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 µs | 1.5 kV | 3 kV | Parts indicated in Clause 5.4.10.1 b) and c) ^b | 1.5 kV 10/700 µs ^c | | 1.0 kV | 1.5 kV | N/A |
| Parts | Impulse test | | Steady state test | | | | | | | | | | | | | | | | | | | | |
| | New Zealand | Australia | New Zealand | Australia | | | | | | | | | | | | | | | | | | | |
| Parts indicated in Clause 5.4.10.1 a) ^a | 2.5 kV 10/700 µs | 7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment. 10/700 µs | 1.5 kV | 3 kV | | | | | | | | | | | | | | | | | | | |
| Parts indicated in Clause 5.4.10.1 b) and c) ^b | 1.5 kV 10/700 µs ^c | | 1.0 kV | 1.5 kV | | | | | | | | | | | | | | | | | | | |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.10.2.2 | <p>After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows:</p> <p>NOTE 201 For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines.</p> <p>NOTE 202 For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.</p> | | N/A |
| 5.4.10.2.3 | <p>After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows:</p> <p>NOTE 201 For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used.</p> <p>NOTE 202 The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.</p> | | N/A |
| 6 | Electrically-caused fire | | N/A |
| 6.1 | <p>General</p> <p>After the first paragraph, <i>insert</i> the following new paragraph:</p> <p>Alternatively, the requirements of Clauses 6.2 to 6.5.2 are considered to be fulfilled if the equipment complies with the requirements of Clause 6.202</p> | | N/A |
| 6.6 | <p>After Clause 6.6, add the new Clauses 6.201 and 6.202 as follows:</p> <p>6.201 External power supplies, docking stations and other similar devices and</p> <p>6.202 Resistance to fire—Alternative tests</p> <p>(see special national conditions)</p> | | N/A |
| 8.5.4 | Special categories of equipment comprising moving parts | | N/A |
| 8.5.4.1 | <p>Large data storage equipment</p> <p>In the first dashed row and the second dashed rows replace 'IEC 60950-1:2005' with 'AS/NZS 60950.1:2015'.</p> | | N/A |
| 8.6 | Stability of equipment | | N/A |
| 8.6.1 and Table 36 | <p>Requirements</p> <p>1. Table 36, <i>insert</i> Footnote c at the end of the 'Glass slide' heading, and add a new Footnote c after the text of Footnote b in the last row of Table 36 as follows:</p> <p>c The glass slide test is not applicable to floor standing equipment, even though the equipment may have controls or a display.</p> | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|---------------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>2. Table 36, fifth row, <i>insert</i> '201' at the end of 'No stability requirements'</p> <p>3. Table 36, ninth row, <i>insert</i> '201' at the end of 'No stability requirements'</p> <p>4. Table 36, add the following new footnote: 201 MS2 and MS3 television sets and display devices, designed only for fixing to a wall, ceiling or equipment rack, are not subjected to stability requirements only if the instructional safeguard of Clause 8.6.1.201 is provided. Otherwise, the glass slide requirements of Clause 8.6.4 and horizontal force requirements of Clause 8.6.5 apply.</p> <p>5. Second paragraph beneath Table 36, delete the words 'MS2 and MS3 television sets' and replace with 'MS2 and MS3 television sets and display devices'</p> | | |
| 8.6.1 | <p>After Clause 8.6.1 <i>add</i> the following new clauses: 8.6.1.201 Instructional safeguard for fixed-mount television sets (see special national conditions)</p> | | N/A |
| Annex F Paragraph F.3.5.1 | <p>Mains appliance outlet and socket-outlet markings <i>Replace</i> 'IEC 60320-2-2' with 'AS/NZS 60320.2.2'.</p> | | N/A |
| Annex G Paragraph G.4.2 | <p>Mains connectors 1 In the second line <i>insert</i> 'or AS/NZS 3123' after 'IEC 60906-1'. 2 In the second line <i>insert</i> 'or AS/NZS 60320 series' after 'IEC 60320 series' 3 <i>Add</i> the following new paragraph: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.</p> | | N/A |
| Paragraph G.5.3.1 | <p>Transformers, General 1 In the third dashed point replace 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 In the fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.</p> | | N/A |
| Paragraph G.7.1 | <p>Mains supply cords, General In the fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'</p> | | N/A |
| Table G.5 | Sizes of conductors | | N/A |

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|-------------------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>1 In the second row, first column, <i>delete</i> '6' and <i>replace</i> with '7.5'</p> <p>2 In the second row, second column, <i>delete</i> '0,75' and <i>replace</i> with '0.75^b'</p> <p>3 <i>Delete</i> Note 1.</p> <p>4 <i>Replace</i> 'NOTE 2' with 'NOTE:'.</p> <p>5 <i>Delete</i> the text of 'Footnote b' and <i>replace</i> with the following:</p> <p>^b This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm² three-core supply flexible cords are not permitted; see AS/NZS 3191).</p> <p>6 In Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'</p> <p>7 In Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'</p> | | |
| Annex M Paragraph M.3.2 | <p>Protection circuits for batteries provided within the equipment, Test method</p> <p>After the first dashed point add the following Note:</p> <p>NOTE 201: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of SELV may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.</p> | | N/A |
| | Special national conditions (if any) | | Pass |
| 6.201 | <p>External power supplies, docking stations and other similar devices</p> <p>For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage—</p> <ul style="list-style-type: none"> – at all ES1 outlets or connectors shall not increase by more than 10% of its rated output voltage under normal operating condition; and – of a USB outlet or connector shall not increase by more than 3 V or 10% of its rated output voltage under normal operating conditions, whichever is higher. | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>For equipment with multiple rated output voltages, the requirements apply with the equipment configured for each rated output voltage in turn.</p> <p>NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries.</p> <p>Compliance shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single-fault conditions of Annex B.4</p> | | |
| 6.202 | Resistance to fire - Alternative tests | | N/A |
| 6.202.1 | <p>General</p> <p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the equipment, or the following:</p> <p>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.</p> <p>b) The following parts which would contribute negligible fuel to a fire:</p> <ul style="list-style-type: none"> – small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; – small electrical components, such as capacitors with a volume not exceeding 1 750 mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. <p>NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.</p> <p><i>Compliance shall be checked by the tests of Clauses 6.202.2, 6.202.3 and 6.202.4.</i></p> <p>For the base material of printed boards, compliance shall be checked by the test of Clause 6.202.5.</p> | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
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| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>The tests shall be carried out on parts of non-metallic material which have been removed from the equipment. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p> | | |
| 6.202.2 | <p>Testing of non-metallic materials</p> <p>Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.</p> <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the relevant part is not thinner than the sample tested.</p> | | N/A |
| 6.202.3 | <p>Testing of insulating materials</p> <p>Parts of insulating material supporting Potential Ignition Sources shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C.</p> <p>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE: Contacts in components such as switch contacts are considered to be connections</p> | | N/A |
| | <p>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test.</p> <p>However, parts shielded by a barrier which meets the needle-flame test need not be tested</p> | | N/A |
| | <p>The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications</p> | | N/A |

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|---------------------------------|---|-----------------------------|-----------------|------------------|--|---------------------------------|--|------------------------------|--|-------------------------------|--|--|--|
| Clause | Requirement + Test | | Result - Remark | Verdict | | | | | | | | | |
| | <table><tr><td>Clause of AS/NZS 60695.11.5</td><td>Change</td></tr><tr><td>9 Test procedure</td><td></td></tr><tr><td>9.2 Application of needle-flame</td><td>Delete the first and second paragraphs and replace with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s +1 s.</td></tr><tr><td>9.3 Number of test specimens</td><td>Replace with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</td></tr><tr><td>11 Evaluation of test results</td><td>Replace with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</td></tr></table> <p>The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the relevant part is not thinner than the sample tested.</p> | Clause of AS/NZS 60695.11.5 | Change | 9 Test procedure | | 9.2 Application of needle-flame | Delete the first and second paragraphs and replace with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s +1 s. | 9.3 Number of test specimens | Replace with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test. | 11 Evaluation of test results | Replace with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s. | | |
| Clause of AS/NZS 60695.11.5 | Change | | | | | | | | | | | | |
| 9 Test procedure | | | | | | | | | | | | | |
| 9.2 Application of needle-flame | Delete the first and second paragraphs and replace with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s +1 s. | | | | | | | | | | | | |
| 9.3 Number of test specimens | Replace with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test. | | | | | | | | | | | | |
| 11 Evaluation of test results | Replace with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s. | | | | | | | | | | | | |
| 6.202.4 | <p>Testing in the event of non-extinguishing material</p> <p>If parts, other than enclosures, do not withstand the glow wire tests of Clause 6.202.3, by failure to extinguish within 30 s after the removal of the glow wire tip, the needle-flame test detailed in Clause 6.202.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of Clause 6.202.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested.</p> <p>NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.</p> | | | N/A | | | | | | | | | |
| 6.202.5 | <p>Testing of printed boards</p> <p>The base material of printed boards shall be subjected to the needle-flame test of Clause</p> | | | N/A | | | | | | | | | |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>6.202.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source.</p> <p>The test is not carried out if—</p> <ul style="list-style-type: none"> – the printed board does not carry any potential ignition source; – the base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or – the base material of printed boards, on which the available equipment power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. <p><i>Conformance</i> shall be determined using the smallest thickness of the material.</p> <p>NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.</p> | | |
| 6.202.6 | <p>For open circuit voltages greater than 4 kV</p> <p>Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a FIRE ENCLOSURE which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10.</p> | | N/A |

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|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.6.1.201 | <p>8.6.1.201 Instructional safeguard for fixed-mount television sets</p> <p>MS2 and MS3 television sets and display devices designed only for fixed mounting to a wall or ceiling or equipment rack shall, where required in Table 36, footnote 201, have an instructional safeguard in accordance with Clause F.5</p> <p>which may be on the equipment or included in the installation instructions or equivalent document accompanying the equipment.</p> <p>The elements of the instructional safeguard shall be as follows:</p> <ul style="list-style-type: none"> – element 1a: not available; – element 2: 'Stability Hazard' or equivalent wording; – element 3: 'The television set may fall, causing serious personal injury or death' or equivalent text; – element 4: the following or equivalent text: <p>To prevent injury, this television set must be securely attached to the floor/wall in accordance with the installation instructions</p> | | N/A |
| 8.6.1.202 | <p>Restraining device</p> <p>MS2 and MS3 television sets and display devices that are not solely fixed-mounted should be provided with a restraining device such as a fixing point to facilitate restraining the equipment from toppling forward. The restraining device shall be capable of withstanding a pull of 100 N in all directions without damage.</p> <p>Where a restraining device is provided, instructions shall be provided in the instructions for installation or instructions for use to ensure correct and safe installation.</p> | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |

| ATTACHMENT TO TEST REPORT | |
|---|--------------------------|
| IEC 62368-1 | |
| EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES | |
| (Audio/video, information and communication technology equipment - Part 1: Safety requirements) | |
| Differences according to | EN 62368-1:2014+A11:2017 |
| Attachment Form No. | EU_GD_IEC62368_1B_II |
| Attachment Originator | Nemko AS |
| Master Attachment | 9/22/2017 |
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|-------------|--|----------|--------------|----------------------|-----------------|-------|------|---|--------|--------|------|-------|--------------|---------|------|----------------------|--------|-------------|--------------|---------|--------|---------|------|---------|------|-------|------|-----------|--------------|-------|------|---------|--------------|-----------------|-----------------|--------|--------|----------|--------|---------|--------|------|
| | CENELEC COMMON MODIFICATIONS (EN) | | | | | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed “Z”. | | | | | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CONTENT S | Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords | | | | | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Delete all the “country” notes in the reference document (IEC 62368-1:2014) according to the following list: <table><tr><td>0.2.1</td><td>Note</td><td>1</td><td>Note 3</td><td>4.1.15</td><td>Note</td></tr><tr><td>4.7.3</td><td>Note 1 and 2</td><td>5.2.2.2</td><td>Note</td><td>5.4.2.3.2.2 Table 13</td><td>Note c</td></tr><tr><td>5.4.2.3.2.4</td><td>Note 1 and 3</td><td>5.4.2.5</td><td>Note 2</td><td>5.4.5.1</td><td>Note</td></tr><tr><td>5.5.2.1</td><td>Note</td><td>5.5.6</td><td>Note</td><td>5.6.4.2.1</td><td>Note 2 and 3</td></tr><tr><td>5.7.5</td><td>Note</td><td>5.7.6.1</td><td>Note 1 and 2</td><td>10.2.1 Table 39</td><td>Note 2, 3 and 4</td></tr><tr><td>10.5.3</td><td>Note 2</td><td>10.6.2.1</td><td>Note 3</td><td>F.3.3.6</td><td>Note 3</td></tr></table> | | | | | 0.2.1 | Note | 1 | Note 3 | 4.1.15 | Note | 4.7.3 | Note 1 and 2 | 5.2.2.2 | Note | 5.4.2.3.2.2 Table 13 | Note c | 5.4.2.3.2.4 | Note 1 and 3 | 5.4.2.5 | Note 2 | 5.4.5.1 | Note | 5.5.2.1 | Note | 5.5.6 | Note | 5.6.4.2.1 | Note 2 and 3 | 5.7.5 | Note | 5.7.6.1 | Note 1 and 2 | 10.2.1 Table 39 | Note 2, 3 and 4 | 10.5.3 | Note 2 | 10.6.2.1 | Note 3 | F.3.3.6 | Note 3 | Pass |
| 0.2.1 | Note | 1 | Note 3 | 4.1.15 | Note | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.7.3 | Note 1 and 2 | 5.2.2.2 | Note | 5.4.2.3.2.2 Table 13 | Note c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.4.2.3.2.4 | Note 1 and 3 | 5.4.2.5 | Note 2 | 5.4.5.1 | Note | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.5.2.1 | Note | 5.5.6 | Note | 5.6.4.2.1 | Note 2 and 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.7.5 | Note | 5.7.6.1 | Note 1 and 2 | 10.2.1 Table 39 | Note 2, 3 and 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.5.3 | Note 2 | 10.6.2.1 | Note 3 | F.3.3.6 | Note 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | For special national conditions, see Annex ZB. | | | | | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Add the following note: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU. | | | | | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.Z1 | Protective devices included as integral parts of the equipment or as parts of the building installation: | | | | | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | a) Included as parts of the equipment | | | | | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | b) For components in series with the mains; by devices in the building installation | | | | | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | c) For pluggable type B or permanently connected: by devices in the building installation | | | | | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.2.3.2.4 | Add the following to the end of this subclause: The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009. | | N/A |
| 10.2.1 | Add the following to c) and d) in table 39: For additional requirements, see 10.5.1. | | N/A |
| 10.5.1 | Add the following after the first paragraph: For RS 1 compliance is checked by measurement under the following conditions: In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or presets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm ² , at any point 10 cm from the outer surface of the apparatus. Moreover, the measurement shall be made under fault conditions causing an increase of the high-voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996. | | N/A |
| 10.6.1 | Add the following paragraph to the end of the subclause: EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply. | | N/A |
| 10.Z1 | Add the following new subclause after 10.6.5. 10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body-mounted devices, attention is drawn to EN 50360 and EN 50566 | | N/A |
| G.7.1 | Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD. | | N/A |

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|--------------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Bibliography | <p>Add the following standards:</p> <p>Add the following notes for the standards indicated:</p> <p>IEC 60130-9 NOTE Harmonized as EN 60130-9.</p> <p>IEC 60269-2 NOTE Harmonized as HD 60269-2.</p> <p>IEC 60309-1 NOTE Harmonized as EN 60309-1.</p> <p>IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series.</p> <p>IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4.</p> <p>IEC 60664-5 NOTE Harmonized as EN 60664-5.</p> <p>IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified).</p> <p>IEC 61508-1 NOTE Harmonized as EN 61508-1.</p> <p>IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1.</p> <p>IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4.</p> <p>IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6.</p> <p>IEC 61643-1 NOTE Harmonized as EN 61643-1.</p> <p>IEC 61643-21 NOTE Harmonized as EN 61643-21.</p> <p>IEC 61643-311 NOTE Harmonized as EN 61643-311.</p> <p>IEC 61643-321 NOTE Harmonized as EN 61643-321.</p> <p>IEC 61643-331 NOTE Harmonized as EN 61643-331.</p> | | Pass |
| ZB | ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN) | | N/A |
| 4.1.15 | <p>Denmark, Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p> | | N/A |
| 4.7.3 | <p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex</p> | | N/A |
| 5.2.2.2 | <p>Denmark</p> <p>After the 2nd paragraph add the following:</p> <p>A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p> | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
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| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.11.1 and Annex G | <p>Finland and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV. <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; • the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14. | | N/A |
| 5.5.2.1 | <p>Norway</p> <p>After the 3rd paragraph the following is added:</p> <p>Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p> | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
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| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.5.6 | Finland, Norway and Sweden To the end of the subclause the following is added: Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2. | | N/A |
| 5.6.1 | Denmark Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse. | | N/A |
| 5.6.4.2.1 | Ireland and United Kingdom After the indent for pluggable equipment type A , the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug. | | N/A |
| 5.6.5.1 | Ireland and United Kingdom To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area. | | N/A |
| 5.7.5 | Denmark To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c. | | N/A |
| 5.7.6.1 | Norway and Sweden To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)"</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway): "Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet." Translation to Swedish: "Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet."</p> | | |
| 5.7.6.2 | <p>Denmark To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p> | | N/A |
| B.3.1 and B.4 | <p>Ireland and United Kingdom The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met</p> | | N/A |
| G.4.2 | <p>Denmark: Appliances rated ≤13 A provided with a plug according to DS 60884-2-D1:2011.</p> | | N/A |

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|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>Class I equipment provided with socket-outlets provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having rated >13 A or poly-phase equipment provided with a supply cord with a plug, plug in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Mains socket outlets intended for providing power to Class II apparatus rated 2,5 A in accordance with DS 60884-2-D1:2011 standard sheet DKA 1-4a.</p> <p>Other current rating socket outlets in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>Mains socket-outlets with earth in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a</p> | | |
| G.4.2 | <p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p> | | N/A |
| G.7.1 | <p>United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p> | | N/A |
| G.7.1 | <p>Ireland</p> <p>To the first paragraph the following is added:</p> <p>Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard</p> | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.7.2 | Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm ² is allowed for equipment which is rated over 10 A and up to and including 13 A. | | N/A |
| ZC | ANNEX ZC, NATIONAL DEVIATIONS (EN) | | N/A |
| 10.5.2 | Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| ATTACHMENT TO TEST REPORT IEC 62368-1 (JAPAN) NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment – Part 1: Safety requirements) | |
|--|-------------------|
| Differences according to | J62368-1 (H30) |
| Attachment Form No..... | JP_ND_IEC62368_1B |
| Attachment Originator | UL (JP) |
| Master Attachment..... | Date 2018-11-22 |
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| | National Differences | — |
|---------|--|-----|
| 4.1.2 | Where the component, or a characteristic of a component, is a safeguard or a part of a safeguard, components shall comply with the requirements of this standard or, where specified in a requirements clause, with the safety aspects of the relevant JIS component standards or IEC component standards, or components shall have properties equivalent to or better than these. | N/A |
| 5.6.1 | Mains socket-outlet and appliance outlet shall comply with Clause G.4.2A if they are incorporated as part of the equipment. | N/A |
| 5.6.2.1 | Mains connection of class 0I equipment: Instructional safeguard in accordance with Clause F.3.6.1A; Mains plug having a lead wire for protective earthing connection of class 0I equipment; Independent main protective earthing terminal installed by ordinary person. | N/A |
| 5.6.2.2 | This requirement does not apply to internal conductor of the cord set that is covered by the sheath of mains cord and is formed together with mains plug and appliance connector. | N/A |
| 5.6.3 | In case of class 0I equipment using power supply cord having two conductors (no earthing conductor), the conductor of protective earthing lead wire shall comply with either of the following: | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | <p>– use of annealed copper wire with 1.6 mm diameter or corrosion-inhibiting metal wire having size and strength that are equivalent to or more than the above copper wire</p> <p>– single core cord or single core cab tire cable with 1.25 mm² or more cross-sectional area</p> | | |
| 5.7.3 | For class 0I equipment that is provided with mains socket-outlet in the configuration as specified in JIS C 8282 series or JIS C 8303, or otherwise being considered to comply with relevant regulations, or that is provided with mains appliance outlet as specified in JIS C 8283-2-2 for the purpose of interconnection, the measurement is conducted on the system of the interconnected equipment having a single connection to the mains. | | N/A |
| 5.7.4 | In case of class 0I equipment, touch current shall not exceed 1.41 mA peak or for sinusoidal wave, 1.0 mA r.m.s. when measured using the network specified in Figure 4 of IEC 60990. | | N/A |
| 6.4.3.3 | <p>A fuse complying with JIS C 6575 series or a fuse having equivalent characteristics shall open within 1 s.</p> <p>For Class A fuse of JIS C 6575, replace “2.1 times” by “1.35 times” and in case of Class B fuse of JIS C 6575, replace “2.1 times” by “1.6 times”. A fuse not complying with JIS C 6575 series shall be tested with the breaking capacity taken into account.</p> | | N/A |
| 8.5.4.2.1 | Only three-phase stationary equipment rated more than 200 V ac can be considered as being for use in locations where children are not likely to be present, when complying with Clause F.4. | | N/A |
| 8.5.4.2.2 | For equipment installed where children may be present, an instructional safeguard shall be provided by easily understandable wording in accordance with Clause F.5, except that element 3 is optional. | | N/A |
| 8.5.4.2.4 | The media destruction device is tested according to Clause V.1.2 with applicable jointed test probes | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | to the opening. And then the wedge probe per Figure V.4 shall not contact any moving part. | | |
| 8.5.4.2.5 | The wedge probe of Figure V.4 and applicable jointed test probes specified in Clause V.1.2 shall not contact any moving part. Instructional safeguard shall not be used instead of equipment safeguard for preventing access to hazardous moving parts. | | N/A |
| 9.2.6, Table 38 | Handles, Knobs, grips, etc. and external surfaces either held, touched or worn against the body in normal use (> 1 min) ^{b,c} | | N/A |
| F.3.5.1 | Instructional safeguard of class 0I equipment in accordance with Clause F.5 when a mains socket-outlet as specified in JIS C 8282 series, JIS C 8303 or relevant regulation to which class I equipment can be connected is provided in accordance with Clause G.4.2A except for the cases where the socket-outlet is accessible only to skilled persons. | | N/A |
| F.3.5.3 | If the fuse is necessary for the safeguard function, the symbols indicating pre-arcing time-current characteristic. | | N/A |
| F.3.6.1A | Marking for class 0I equipment The requirements of Clauses F.3.6.1.1 and F.3.6.1.3 shall be applied to class 0I equipment. For class 0I equipment, a marking of instructions and instructional safeguard shall be provided regarding the earthing connection. | | N/A |
| F.3.6.2.1 | Symbols, IEC 60417-5172 (2003-02) or IEC 60417-6092 (2011-10), shall not be used for class I equipment or class 0I equipment. | | N/A |
| F.4 | Instruction for audio equipment with terminals classified as ES3 in accordance with Table E.1, and for other equipment with terminals marked in accordance with F.3.6.1 and F.3.6.1A. Installation instruction for the protective earthing connection for class 0I equipment provided with independent main protective earthing terminal, where the cord for the protective earthing | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | connection is not provided within the package for the equipment. | | |
| G.3.2.1 | The thermal link when tested as a separate component, shall comply with the requirements of JIS C 6691 or have properties equivalent to or better than that. | | N/A |
| G.3.4 | <p>Except for devices covered by Clause G.3.5, overcurrent protective devices used as a safeguard shall comply with the relevant part of JIS C 6575 (corresponding to IEC60127) or shall have equivalent characteristics.</p> <p>If there are no applicable IEC standards, overcurrent protective devices used as a safeguard shall comply with their applicable IEC standards.</p> | | N/A |
| G.4.1 | This requirement is not applicable to Clauses G.4.2 and G.4.2A. | | N/A |
| G.4.2 | <p>Mains connector shall comply with JIS C 8282 series, JIS C 8283 series, JIS C 8285, JIS C 8303 or IEC 60309 series.</p> <p>Mains plugs and socket-outlets shall comply with JIS C 8282 series, JIS C 8303, IEC 60309 series, or have equivalent or better performance.</p> <p>A power supply cord set provided with appliance connector that can fit appliance inlet complying with JIS C 8283-1 shall comply with JIS C 8286.</p> <p>Construction preventing mechanical stress not to transmit to the soldering part of inlet terminal. Consideration for an equipment rated not more than 125 V provided with Type C14 and C18 appliance coupler complying with JIS C 8283 series.</p> | | N/A |
| G.4.2A | Mains socket-outlet and interconnection coupler provided with the class II, class I and class 0I equipment respectively. | | N/A |
| G.7.1 | A mains supply cord need not include the protective earthing conductor for class 0I | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | equipment provided with independent protective earthing conductor. | | |
| G.8.3.3 | Withstand $1,71 \times 1.1 \times U_0$ for 5 s. | | N/A |

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|--------------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| ATTACHMENT TO TEST REPORT IEC 62368-1 2th Ed. U.S.A. NATIONAL DIFFERENCES Audio/video, information and communication technology equipment – Part 1: Safety requirements | |
|---|---------------------|
| Differences according to | CSA/UL 62368-1:2014 |
| Attachment Form No. | US&CA_ND_IEC623681B |
| Attachment Originator | UL(US) |
| Master Attachment | Date 2015-06 |
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| IEC 62368-1 - US and Canadian National Differences Special National Conditions based on Regulations and Other National Differences | | | |
|---|---|--|-----|
| 1.1 | All equipment is to be designed to allow installation according to the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75. | | N/A |
| 1.4 | Additional requirements apply to some forms of power distribution equipment, including sub-assemblies. | | N/A |
| 4.1.17 | For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC. | | N/A |
| | For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings. | | N/A |
| 4.8 | Lithium coin / button cell batteries have modified special construction and performance requirements. | | N/A |
| 5.6.3 | Protective earthing conductors comply with the minimum conductor sizes in Table G.5, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment | | N/A |
| 5.7.7 | Equipment intended to receive telecommunication ringing signals complies with a special touch current measurement tests. | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.5.1 | PS3 wiring outside a fire enclosure complies with single fault testing in B.4, or be current limited per one of the permitted methods. | | N/A |
| Annex F (F.3.3.8) | Output terminals provided for supply of other equipment, except mains, supply are marked with a maximum rating or references to which equipment it is permitted to be connected. | | N/A |
| Annex G (G.7.1) | Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs. | | N/A |
| Annex G (G.7.3) | Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment. | | N/A |
| | Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC. | | N/A |
| Annex G (G.7.5) | Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms. | | N/A |
| Annex H.2 | Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions. | | N/A |
| Annex H.4 | For circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V d.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions. | | N/A |
| Annex M | Battery packs for stationary applications comply with special component requirements. | | N/A |
| Annex DVA (1) | Equipment intended for use in spaces used for environmental air are subjected to special flammability requirements for heat and visible smoke release. | | N/A |
| | For ITE room applications, automated information storage systems with combustible media greater than 0.76 m ³ (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge. | | N/A |
| | Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. & Canadian Regulations. | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Baby monitors additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors. | | N/A |
| Annex DVA (5.6.3) | For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A. | | N/A |
| Annex DVA (6.3) | The maximum quantity of flammable liquid stored in equipment complies with NFPA 30. | | N/A |
| Annex DVA (6.4.8) | For ITE room applications, enclosures with combustible material measuring greater than 0.9 m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a min. flammability classification of V-1. | | N/A |
| Annex DVA (10.3.1) | Equipment with lasers meets the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370). | | N/A |
| Annex DVA (10.5.1) | Equipment that produces ionizing radiation complies with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370). | | N/A |
| Annex DVA (F.3.3.3) | Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235." | | N/A |
| Annex DVA (F.3.3.5) | Equipment identified for ITE (computer) room installation is marked with the rated current | | N/A |
| Annex DVA (G.1) | Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position | | N/A |
| Annex DVA (G.3.4) | Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. | | N/A |
| Annex DVA (G.4.2) | Equipment with isolated ground (earthing) receptacles complies with NEC 250.146(D) and CEC 10-112 and 10-906(8). | | N/A |
| Annex DVA (G.4.3) | Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable. | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Annex DVA (G.5.3) | Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection. | | N/A |
| Annex DVA (G.5.4) | Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A). | | N/A |
| Annex DVA (Annex M) | For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the ITE room remote power-off circuit. | | N/A |
| Annex DVA (Q) | Wiring terminals intended to supply Class 2 outputs according to the NEC or CEC Part 1 are marked with the voltage rating and "Class 2" or equivalent; marking is located adjacent to the terminals and visible during wiring. | | N/A |
| Annex DVB (1) | Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. | | N/A |
| Annex DVC (1) | Additional requirements apply for equipment intended for mounting under kitchen cabinets. | | N/A |
| Annex DVE (4.1.1) | Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. Components required to comply include: appliance couplers, attachment plugs, battery back-up systems, battery packs, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultra-capacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, data storage equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables. | | N/A |
| Annex DVH | Equipment for permanent connection to the mains supply is subjected to additional requirements. | | N/A |

| IEC62368_1B - ATTACHMENT | | | |
|--------------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Annex DVH (DVH.1) | Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are in accordance with the NEC/CEC. | | N/A |
| Annex DVH (DVH.3.2) | Terminals for permanent wiring, including protective earthing terminals, are suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and are specially marked when specified. | | N/A |
| Annex DVH (DVH.3.2) | Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²). | | N/A |
| Annex DVH (DVH.4) | Permanently connected equipment is required to have a suitable wiring compartment and wire bending space. | | N/A |
| Annex DVH (DVH 5.5) | Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, complies with special earthing, wiring, marking and installation instruction requirements. | | N/A |
| Annex DVI (6.7) | Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses. | | N/A |
| Annex DVJ (10.6.1) | Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements. | | N/A |

Enclosures

Enclosures

| Type | Supplement Id | Description |
|---------------|---------------|--|
| Photographs | 03-01 | ID Phone view of Model FPF2895UCX |
| Photographs | 03-02 | Difference between model FPF2895UCX and model FPF2895CUCX refer to their Spec(see enclosure 4-01 and 4-02 for details) |
| Photographs | 03-03 | ID Phone view of Model FPF2895CUCX |
| Diagrams | 04-01 | Model FPF2895UCX Spec (FPF2895 is FPF2895UCX in this spec) |
| Diagrams | 04-02 | Model FPF2895CUCX Spec (FPF2895C is FPF2895CUCX in this spec) |
| Miscellaneous | 07-01 | IC Current Limiter Testing Results |
| Miscellaneous | 07-02 | Production-Line Test Specification |
| Miscellaneous | 07-03 | Test item |
| Marking Plate | 13-01 | Marking plate for model FPF2895UCX |

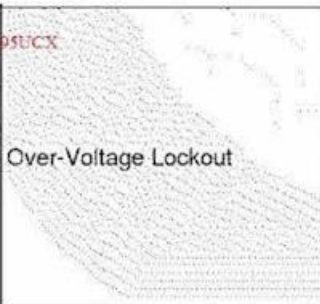
Enclosures


Photographs ID 03-01



Enclosures

Photographs ID 03-02

| | | | | | | | |
|-------------------|---|--------------------|-------------------------|-------|-------|-------|---|
| V _{OVLO} |  | OV1=LOW, OV2=LOW | V _{IN} Rising | 22.54 | 23.00 | 23.46 | V |
| | | | V _{IN} Falling | 22.34 | | | |
| | | OV1=LOW, OV2=HIGH | V _{IN} Rising | 9.90 | 10.00 | 10.10 | |
| | | | V _{IN} Falling | 9.85 | | | |
| | | OV1=HIGH, OV2=LOW | V _{IN} Rising | 13.72 | 14.00 | 14.28 | |
| | | | V _{IN} Falling | 13.52 | | | |
| | | OV1=HIGH, OV2=HIGH | V _{IN} Rising | 5.90 | 5.95 | 6.00 | |
| | | | V _{IN} Falling | 5.85 | | | |

| | | | | | | | |
|-------------------|---|--------------------|-------------------------|-------|-------|-------|---|
| V _{OVLO} |  | OV1=LOW, OV2=LOW | V _{IN} Rising | 22.54 | 23.00 | 23.46 | V |
| | | | V _{IN} Falling | 22.34 | | | |
| | | OV1=LOW, OV2=HIGH | V _{IN} Rising | 9.90 | 10.00 | 10.10 | |
| | | | V _{IN} Falling | 9.85 | | | |
| | | OV1=HIGH, OV2=LOW | V _{IN} Rising | 16.50 | 16.80 | 17.10 | |
| | | | V _{IN} Falling | 16.40 | | | |
| | | OV1=HIGH, OV2=HIGH | V _{IN} Rising | 5.90 | 5.95 | 6.00 | |
| | | | V _{IN} Falling | 5.85 | | | |

Enclosures

Photographs ID 03-03



Enclosures

Diagrams ID 04-01

PRELIMINARY INFORMATION — CONFIDENTIAL AND PROPRIETARY — DO NOT DISTRIBUTE

**FPF2895****28 V / 5 A Rated Current Limit Switch with OVP and TRCB****Features**

- 28 V / 5 A Capability
- Wide Input Voltage Range: 4 V ~ 22 V
- Ultra Low On-Resistance
 - Typ. 27 mΩ at 5 V and 25 C
- Adjustable Current Limit with external RSET
 - 500 mA ~ 5 A
- Selectable OVLO with OV1 and OV2 Logic Input
 - 5.95 V ± 50 mV
 - 10 V ± 100 mV
 - 14 V ± 280 mV
 - 23 V ± 460 mV
- Selectable ON Polarity
- Selectable Over-Current Behavior
 - Auto-Restart Mode
 - Current Source Mode
- True Reverse Current Block
- Thermal Shutdown
- Open Drain Fault FLAGB Output
- Robust ESD Capability
 - 500V HBM & 1 kV CDM
 - 15 kV Air Discharge & 8 kV Contact Discharge under IEC 61000-4-2

Description

The FPF2895 features a 28 V and 5 A rated current limit power switch, which offers Over-Current Protection (OCP), Over-Voltage Protection (OVP), and True Reverse Current Block (TRCB) to protect system. It has low On-resistance of typical 27 mΩ with WL-CSP can operate over an input voltage range of 4V to 22 V.

The FPF2895 supports over-current range of 500 mA to 5 A, flexible operations such as selectable OVP, selectable ON polarity and selectable OCP behavior, which can be optimized according to system requirements.

With external components, FPF2895 can protect the system from short circuit condition.

The FPF2895 is available in a 24-bump, 1.67 mm x 2.60 mm Wafer-Level Chip-Scale Package (WL-CSP) with 0.4 mm pitch.

Applications

- Laptop, Desktop Computing and Monitor
- Power Accessories

Related Resources

- www.fairchildsemi.com

Ordering Information

| Part Number | Operating Temperature Range | Top Mark | Package | Packing Method |
|-------------|-----------------------------|----------|-----------------------------|----------------|
| FPF2895UCX | -40°C ~ +85°C | T9 | 24-Ball, 0.4 mm Pitch WLCSP | Tape & Reel |

Enclosures

Diagrams ID 04-01

PRELIMINARY INFORMATION — CONFIDENTIAL AND PROPRIETARY — DO NOT DISTRIBUTE

Application Diagram

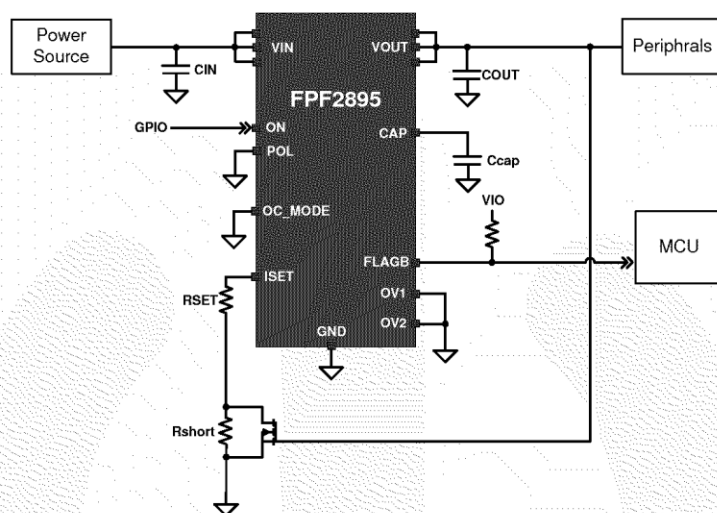


Figure 1. Typical Application

Block Diagram

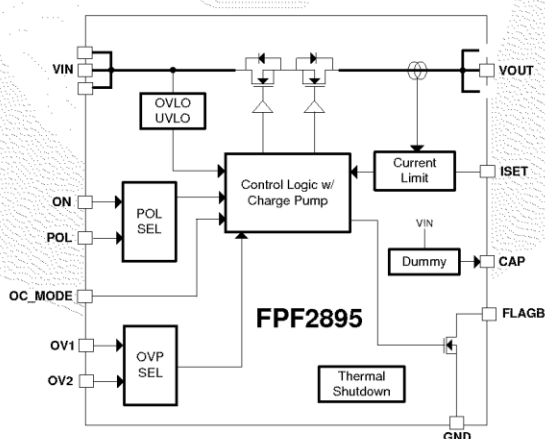


Figure 2. Functional Block Diagram

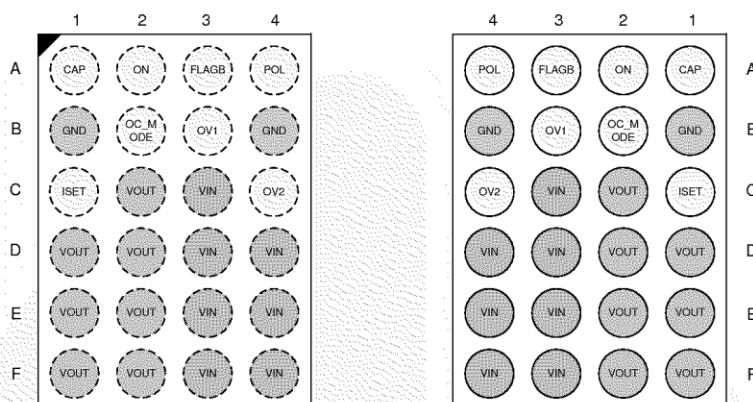
FPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

Diagrams ID 04-01

PRELIMINARY INFORMATION — CONFIDENTIAL AND PROPRIETARY — DO NOT DISTRIBUTE

Pin Configuration



Pin Configuration (Top View)

Pin Configuration (Bottom View)

Figure 3. 24 Ball WL_CSP, 4 x 6 Array, 0.4 mm Pitch, 250 µm Ball

Pin Definitions

| Name | Bump | Type | Description |
|---------|----------------------------|--------------|--|
| VIN | C3, D3, D4, E3, E4, F3, F4 | Input/Supply | Switch Input and Device Supply |
| VOUT | C2, D1, D2, E1, E2, F1, F2 | Output | Switch Output to Load |
| CAP | A1 | Dummy | Dummy output. 4.7uF capacitor to be connected |
| ON | A2 | Input | Internal pull-down resistor of 5 MΩ is included. Active polarity is depending on POL state. |
| POL | A4 | Input | Enable Polarity Selection. Internal pull-up of 5 MΩ is included. HIGH (or Floating): Active LOW LOW: Active HIGH |
| FLAGB | A3 | Output | Active LOW, open drain output indicates an over-current, under-voltage, over-voltage, or over-temperature state. |
| ISET | C1 | Input | A resistor from ISET to ground set the current limit for the switch. |
| OC_MODE | B2 | Input | OCP behavior can be selected. Internal pull-up of 5 MΩ is included. HIGH (or Floating): Auto-restart mode during over-current condition. LOW: Current source mode during over-current condition. |
| OV1 | B3 | Input | Over-Voltage Selection Input 1. Internal pull-up of 5 MΩ is included and see below selection table. |
| OV2 | C4 | Input | Over-Voltage Selection Input 2. Internal pull-up of 5 MΩ is included and see below selection table. |
| GND | B1, B4 | GND | Device Ground |

FPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

Diagrams ID 04-01

PRELIMINARY INFORMATION — CONFIDENTIAL AND PROPRIETARY — DO NOT DISTRIBUTE

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

| Symbol | Parameters | Min. | Max. | Unit |
|------------------------------------|--|---|-------------------|------|
| V _{IN} , V _{OUT} | VIN, VOUT to GND | -0.3 | 28.0 | V |
| V _{PIN} | ON, POL, OC_MODE, ISET, FLAGB, CAP and OVn to GND | -0.3 | 6.0 | V |
| I _{SW} | Continuous Switch Current | | 5.5 | A |
| t _{PD} | Total Power Dissipation at T _A =25°C | | 2.08 | W |
| T _{STG} | Storage Junction Temperature | -65 | +150 | °C |
| T _J | Operating Junction Temperature | | +150 | °C |
| T _L | Lead Temperature (Soldering, 10 Seconds) | | +260 | °C |
| Θ _{JA} | Thermal Resistance, Junction-to-Ambient (1 in. ² pad of 2 oz. copper) | | 60 ⁽¹⁾ | °C/W |
| ESD | Electrostatic Discharge Capability | Human Body Model, ANSI/ESDA/JEDEC JS-001, For pins except for FLAGB pin | 2 | kV |
| | | Human Body Model, ANSI/ESDA/JEDEC JS-001, For FLAGB pin | 0.5 | |
| | | Charged Device Model, JESD22-C101 | 1 | |
| | IEC61000-4-2 System Level | Air Discharge | 15 | |
| | | Contact Discharge | 8 | |

Note:

1. Measured using 2S2P JEDEC std. PCB.

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to Absolute Maximum Ratings.

| Symbol | Parameter | Min. | Max. | Unit |
|------------------------------------|-------------------------------|------|------|------|
| V _{IN} | Supply Voltage | 4.0 | 22.0 | V |
| C _{IN} / C _{OUT} | Input and Output Capacitance | 1.0 | | μF |
| C _{CAP} | CAP Output Capacitance | 4.7 | | μF |
| T _A | Ambient Operating Temperature | -40 | +85 | °C |

FPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

Diagrams ID 04-01

PRELIMINARY INFORMATION — CONFIDENTIAL AND PROPRIETARY — DO NOT DISTRIBUTE

Electrical Characteristics

Unless otherwise noted, $V_{IN}=4$ to 22 V, $T_A=-40$ to 85°C ; typical values are at $V_{IN}=5$ V, $POL = OV1 = OV2 = OC_MODE = GND$, $ON = HIGH$, $C_{IN} = 1$ μF and $T_A = 25^\circ\text{C}$.

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit | |
|--------------------------|------------------------------------|---|-------------------------|-------|-------|-------|---|
| Basic Operation | | | | | | | |
| V _{IN} | Input Voltage | | 4 | | 22 | V | |
| I _{SD_IN} | V _{IN} Shutdown Current | V _{ON} =OFF, V _{IN} =5.5 V, V _{OUT} =Short to GND | | 75 | 100 | μA | |
| I _Q | Quiescent Current | I _{OUT} =0 mA, V _{ON} =ON | V _{IN} =5 V | 270 | 330 | μA | |
| | | | V _{IN} =12 V | 300 | 400 | | |
| | | | V _{IN} =20 V | 350 | 450 | | |
| R _{ON} | On Resistance | T _A =25°C, I _{OUT} =1 A | V _{IN} =5 V | 27 | 39 | mΩ | |
| | | | V _{IN} =12 V | 27 | 39 | | |
| | | | V _{IN} =20 V | 27 | 39 | | |
| I _{ON} | ON Input Leakage | V _{ON} =V _{IN} or GND | | | 2 | μA | |
| V _{IH} | ON Input Logic High Voltage | V _{IN} =3 V~22 V | 1.2 | | | V | |
| V _{IL} | ON Input Logic Low Voltage | V _{IN} =3 V~22 V | | | 0.4 | V | |
| V _{P_LOW} | FLAGB Output Logic Low Voltage | V _{IN} =5 V, I _{SINK} =5 mA | | 0.1 | 0.2 | V | |
| I _{PKG} | FLAGB Output High, Leakage Current | V _{IN} =5 V, Switch ON | | | 1 | μA | |
| Protections | | | | | | | |
| I _{LIM} | Current Limit | V _{IN} =5 V, V _{OUT} =4 V, R _{SET} =2.96 kΩ, T _A = -40 to 85°C | 1.35 | 1.50 | 1.65 | A | |
| | | V _{IN} =5 V, V _{OUT} =4 V, R _{SET} =1.48 kΩ, T _A = -40 to 85°C | 2.7 | 3.0 | 3.3 | | |
| V _{FOLD} | ILIM Foldback Trip Voltage | V _{OUT} under ILIM Mode | | 2 | | V | |
| G _{FOLD} | ILIM Foldback Gain | V _{IN} =5 V, V _{OUT} < V _{FOLD} , T _A =25°C | | 65 | | % | |
| V _{UVLO} | Under Voltage Lockout | V _{IN} Increasing | | 2.70 | 2.95 | V | |
| | | V _{IN} Decreasing | | 2.5 | | | |
| | UVLO Hysteresis | | | 200 | | mV | |
| V _{OVLO} | Over-Voltage Lockout | OV1=LOW, OV2=LOW | V _{IN} Rising | 22.54 | 23.00 | 23.46 | V |
| | | | V _{IN} Falling | 22.34 | | | |
| | | OV1=LOW, OV2=HIGH | V _{IN} Rising | 9.90 | 10.00 | 10.10 | |
| | | | V _{IN} Falling | 9.85 | | | |
| | | OV1=HIGH, OV2=LOW | V _{IN} Rising | 13.72 | 14.00 | 14.28 | |
| | | | V _{IN} Falling | 13.52 | | | |
| | | OV1=HIGH, OV2=HIGH | V _{IN} Rising | 5.90 | 5.95 | 6.00 | |
| | | | V _{IN} Falling | 5.85 | | | |
| t _{OVP} | OVP Response Time ⁽²⁾ | R _L =100 Ω, C _L =0 μF, V _{IN} > V _{OVLO} to V _{OUT} =0.9 × V _{IN} | | | 150 | ns | |
| V _{T_RCB} | TRCB Protection Trip Point | V _{OUT} - V _{IN} | | 25 | 35 | mV | |
| V _{R_RCB} | TRCB Protection, Release Point | V _{IN} - V _{OUT} | | 25 | 35 | mV | |
| t _{RCB} | TRCB Response Time | V _{IN} =5 V, V _{ON} =HIGH/LOW | | 5 | | μs | |
| t _{RCB_Release} | TRCB Release Time | V _{IN} =5 V, Enabled | | 1 | | μs | |
| t _{OC} | Over Current Response Time | V _{IN} =5V, Moderate OC | | 20 | 40 | μs | |
| | | V _{IN} =5V, Hard Short | | 5 | 10 | | |
| I _{SD_OUT} | V _{OUT} Shutdown Current | V _{ON} =OFF, V _{OUT} =5 V, V _{IN} =Short to GND | | | 2 | μA | |

Enclosures

Diagrams ID 04-01

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Electrical Characteristics

Unless otherwise noted, $V_{IN}=4$ to 22 V, $T_A=-40$ to 85°C; typical values are at $V_{IN}=5$ V, $POL = OV1 = OV2 = OC_MODE = GND$, $ON = HIGH$, $C_{IN} = 1 \mu F$ and $T_A = 25^\circ C$.

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------------------|---------------------------------|---|------|------|------|------|
| TSD | Thermal Shutdown ⁽²⁾ | Shutdown Threshold | | 150 | | °C |
| | | Hysteresis | | 20 | | |
| Dynamic Behavior | | | | | | |
| t _{DON} | Delay On Time | R _L =100 Ω, C _L =1 μF | | 1 | | ms |
| t _R | V _{OUT} Rise Time | R _L =100 Ω, C _L =1 μF | | 1 | | ms |
| t _{ON} | Turn-On Time | R _L =100 Ω, C _L =1 μF | | 2 | | ms |
| t _{DOFF} | Delay Off Time | R _L =100 Ω, C _L =1 μF | | 10 | | μs |
| t _F | V _{OUT} Fall Time | R _L =100 Ω, C _L =1 μF | | 200 | | μs |
| t _{OFF} | Turn-Off Time | R _L =100 Ω, C _L =1 μF | | 210 | | μs |
| t _{BLANK} | Over-Current Blanking Time | OC_MODE=HIGH | 5 | 10 | 15 | ms |
| t _{RSTRT} | Auto-Restart Time | OC_MODE=HIGH | 50 | 100 | 150 | ms |
| t _{QUAL} | Over-Current Qualification Time | OC_MODE=LOW | 5 | 10 | 15 | ms |
| t _{DEB} | FLAGB Debounce Time | Re-start during or after OC | 4 | 7 | 10 | ms |

Note:

2. Guaranteed by characterization and design.

PPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

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Table 1. ILIM vs. RSET Look-up Table (1% Tolerance Resistor and Over-Temperature, measured by set VIN-VOUT=1V)

| RSET [kΩ] | ILIM [mA] | | |
|-----------|-----------|------|------|
| | Min. | Typ. | Min. |
| 8.89 | 450 | 500 | 550 |
| 7.41 | 540 | 600 | 660 |
| 6.35 | 630 | 700 | 770 |
| 5.56 | 720 | 800 | 880 |
| 4.94 | 810 | 900 | 990 |
| 4.45 | 900 | 1000 | 1100 |
| 4.04 | 990 | 1100 | 1210 |
| 3.71 | 1080 | 1200 | 1320 |
| 3.42 | 1170 | 1300 | 1430 |
| 3.18 | 1260 | 1400 | 1540 |
| 2.96 | 1350 | 1500 | 1650 |
| 2.78 | 1440 | 1600 | 1760 |
| 2.62 | 1530 | 1700 | 1870 |
| 2.47 | 1620 | 1800 | 1980 |
| 2.34 | 1710 | 1900 | 2090 |
| 2.22 | 1800 | 2000 | 2200 |
| 2.12 | 1890 | 2100 | 2310 |
| 2.02 | 1980 | 2200 | 2420 |
| 1.93 | 2070 | 2300 | 2530 |
| 1.85 | 2160 | 2400 | 2640 |
| 1.78 | 2250 | 2500 | 2750 |
| 1.71 | 2340 | 2600 | 2860 |
| 1.65 | 2430 | 2700 | 2970 |
| 1.59 | 2520 | 2800 | 3080 |
| 1.53 | 2610 | 2900 | 3190 |
| 1.48 | 2700 | 3000 | 3300 |
| 1.43 | 2790 | 3100 | 3410 |
| 1.39 | 2880 | 3200 | 3520 |
| 1.35 | 2970 | 3300 | 3630 |
| 1.31 | 3060 | 3400 | 3740 |
| 1.27 | 3150 | 3500 | 3850 |
| 1.24 | 3240 | 3600 | 3960 |
| 1.20 | 3330 | 3700 | 4070 |
| 1.17 | 3420 | 3800 | 4180 |
| 1.14 | 3510 | 3900 | 4290 |
| 1.11 | 3600 | 4000 | 4400 |
| 1.08 | 3690 | 4100 | 4510 |
| 1.06 | 3780 | 4200 | 4620 |
| 1.03 | 3870 | 4300 | 4730 |
| 1.01 | 3960 | 4400 | 4840 |
| 0.99 | 4050 | 4500 | 4950 |

FPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

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Timing Diagrams

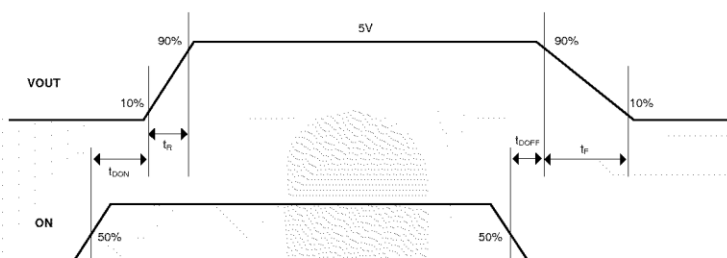


Figure 4. Normal ON/OFF Operation by ON (POL=GND)

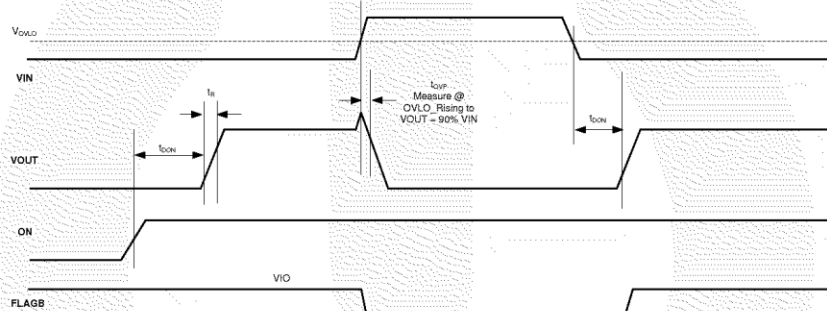


Figure 5. OVLO Operation (POL=GND & FLAGB is pulled up with an external VIO)

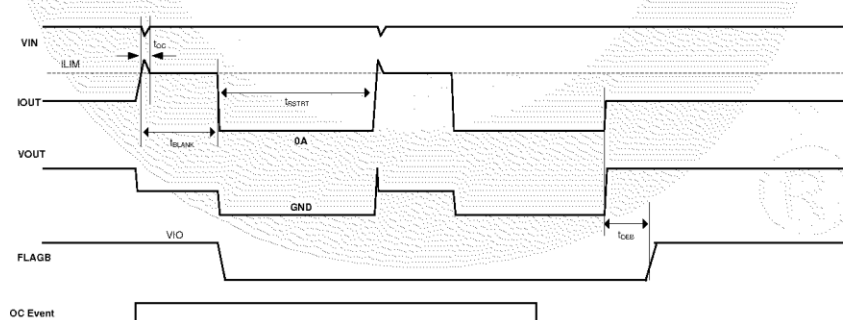


Figure 6. Current Limit Operation (OC_MODE=HIGH & FLAGB is pulled up with an external VIO)

FPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

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Timing Diagrams (Continued)

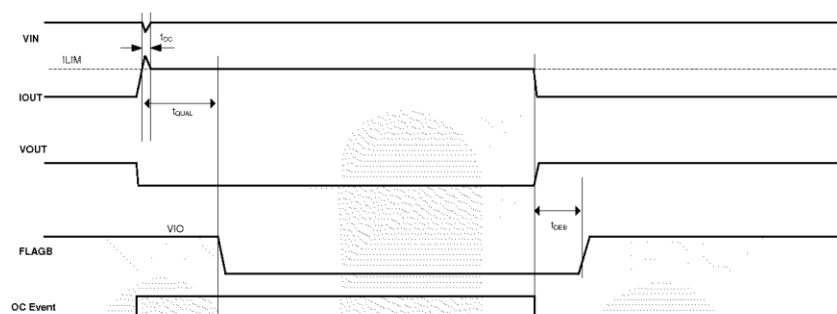


Figure 7. Current Limit Operation (OC_MODE=LOW & FLAGB is pulled up with an external VIO)

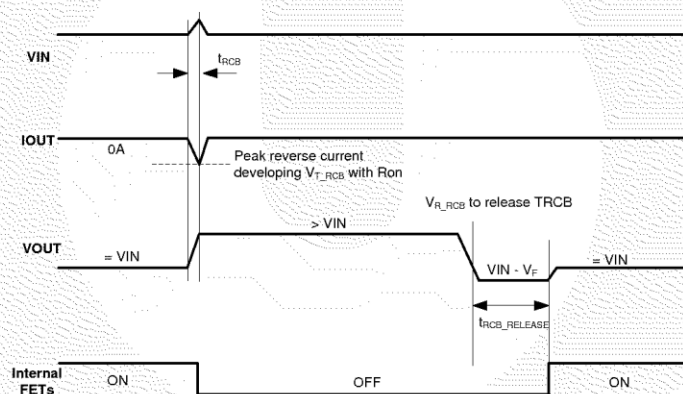


Figure 8. TRCB Operation (Device is Enabled)

FPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

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Physical Dimensions

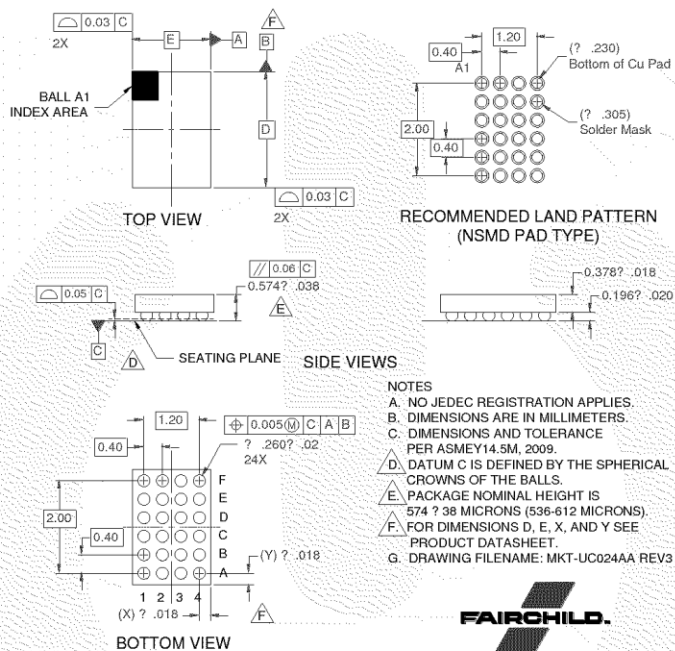


Figure 10 – 24-Ball, 4x6 Array, 0.4 mm Pitch, Wafer-Level Chip-Scale Package (WLCSP)


Product-Specific Dimensions

| D | E | X | Y |
|-----------------|-----------------|----------------|----------------|
| 2600 μm ± 30 μm | 1670 μm ± 30 μm | 235 μm ± 18 μm | 300 μm ± 18 μm |

Enclosures

Diagrams ID 04-01

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| AX-CAP™ | GreenBridge™ | PowerXS™ | TinyCell™ |
| BitSiC™ | Green FPS™ | Programmable Active Droop™ | TinyLogic® |
| Build It Now™ | Green FPS™ e-Series™ | QFET® | TINYOPTO™ |
| CorePLUS™ | Gmax™ | OS™ | TinyPower™ |
| CorePOWER™ | GTO™ | Quiet Series™ | TinyPWM™ |
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| Definition of Terms | | |
|--------------------------|-----------------------|---|
| Datasheet Identification | Product Status | Definition |
| Advance Information | Formative / In Design | Datasheet contains the design specifications for product development. Specifications may change in any manner without notice. |
| Preliminary | First Production | Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design. |
| No Identification Needed | Full Production | Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design. |
| Obsolete | Not In Production | Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only. |

Rev. 177

PPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

Diagrams ID 04-02


September 2017

ON Semiconductor®

FPF2895C

28 V / 5 A Rated Current Limit Switch with OVP and TRCB

Features

- 28 V / 5 A Capability
- Wide Input Voltage Range: 4 V ~ 22 V
- Ultra Low On-Resistance
 - Typ. 27 mΩ at 5 V and 25 °C
- Adjustable Current Limit with external RSET
 - 500 mA ~ 5 A
- Selectable OVLO with OV1 and OV2 Logic Input
 - 5.95 V ± 50 mV
 - 10 V ± 100 mV
 - 16.8 V ± 300 mV
 - 23 V ± 460 mV
- Selectable ON Polarity
- Selectable Over-Current Behavior
 - Auto-Restart Mode
 - Current Source Mode
- True Reverse Current Block
- Thermal Shutdown
- Open Drain Fault FLAGB Output
- UL60950-1 & IEC 60950-1 Certification 5 A Max Loading
- Robust ESD Capability
 - 2 kV HBM & 1 kV CDM
 - 15 kV Air Discharge & 8 kV Contact Discharge under IEC 61000-4-2

Description

The FPF2895C features a 28 V and 5 A rated current limit power switch, which offers Over-Current Protection (OCP), Over-Voltage Protection (OVP), and True Reverse Current Block (TRCB) to protect system. It has low On-resistance of typical 27 mΩ with WL-CSP can operate over an input voltage range of 4 V to 22 V.

The FPF2895C supports ±10% of current limit accuracy, over-current range of 500 mA to 2 A and ±5% of current limit accuracy, over-current range of 2 A to 5 A, flexible operations such as selectable OVP, selectable ON polarity and selectable OCP behavior, which can be optimized according to system requirements.

The FPF2895C is available in a 24-bump, 1.67 mm x 2.60 mm Wafer-Level Chip-Scale Package (WL-CSP) with 0.4 mm pitch.

Applications

- Laptop, Desktop Computing and Monitor
- Power Accessories

Ordering Information

| Part Number | Operating Temperature Range | Top Mark | Package | Packing Method |
|-------------|-----------------------------|----------|-----------------------------|----------------|
| FPF2895CUCX | -40 °C – +85 °C | 3G | 24-Ball, 0.4 mm Pitch WLCSP | Tape & Reel |

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Application Diagram

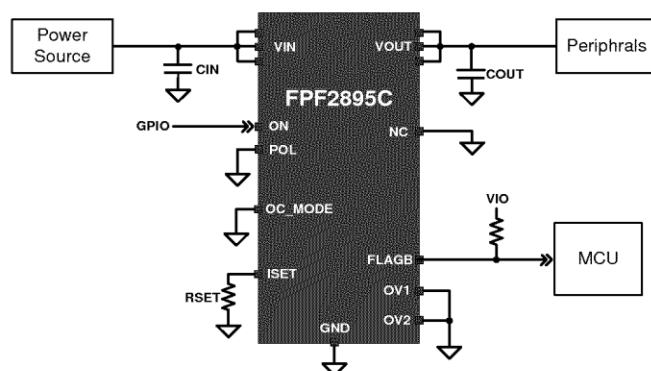


Figure 1. Typical Application

Block Diagram

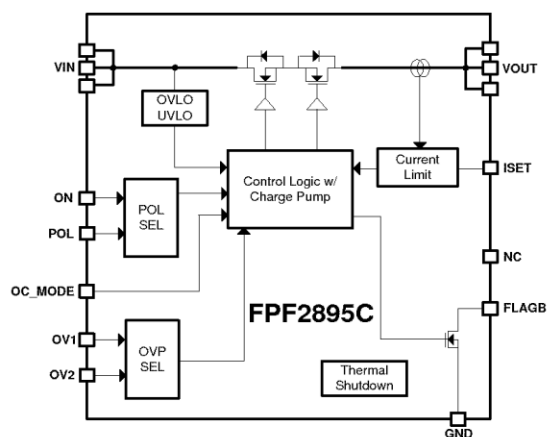


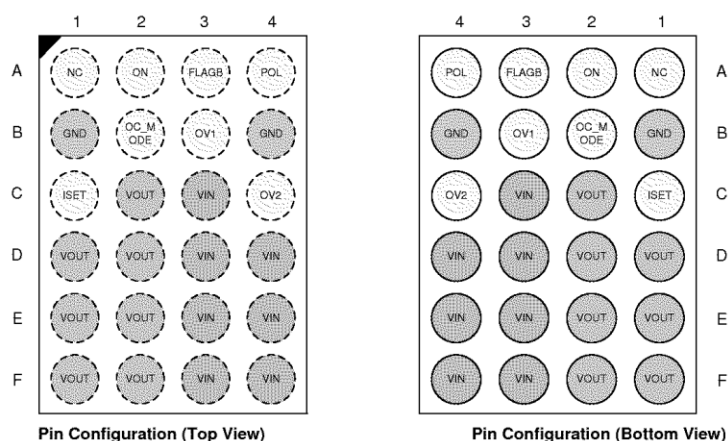
Figure 2. Functional Block Diagram

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Pin Configuration



Pin Configuration (Top View)

Pin Configuration (Bottom View)

Figure 3. 24 Ball WL_CSP, 4 x 6 Array, 0.4 mm Pitch, 250 µm Ball

Pin Definitions

| Name | Bump | Type | Description |
|---------|----------------------------|--------------|---|
| VIN | C3, D3, D4, E3, E4, F3, F4 | Input/Supply | Switch Input and Device Supply |
| VOUT | C2, D1, D2, E1, E2, F1, F2 | Output | Switch Output to Load |
| NC | A1 | Dummy | Recommended to connect to GND |
| ON | A2 | Input | Internal pull-down resistor of 1 MΩ is included. Active polarity is depending on POL state. ⁽¹⁾ |
| POL | A4 | Input | Enable Polarity Selection. Internal pull-up of 1 MΩ is included. HIGH (or Floating): Active LOW LOW: Active HIGH ⁽¹⁾ |
| FLAGB | A3 | Output | Active LOW, open drain output indicates an over-current, under-voltage, over-voltage, or over-temperature state. |
| ISET | C1 | Input | A resistor from ISET to ground set the current limit for the switch. See below selection table 1. |
| OC_MODE | B2 | Input | OCP behavior can be selected. Internal pull-up of 1 MΩ is included. HIGH (or Floating): Auto-restart mode during over-current condition. LOW: Current source mode during over-current condition. ⁽¹⁾ |
| OV1 | B3 | Input | Over-Voltage Selection Input 1. Internal pull-up of 1 MΩ is included and see below selection table 2. ⁽¹⁾ |
| OV2 | C4 | Input | Over-Voltage Selection Input 2. Internal pull-up of 1 MΩ is included and see Table 2. ⁽¹⁾ |
| GND | B1, B4 | GND | Device Ground |

Note:

1. To avoid external noise influence when floating, recommend to connect these pins to a certain level.

PPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

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Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

| Symbol | Parameters | Min. | Max. | Unit |
|------------------------------------|---|--|-------------------|------|
| V _{IN} , V _{OUT} | V _{IN} , V _{OUT} to GND | -0.3 | 28.0 | V |
| V _{PIN} | ON, POL, OC_MODE, ISET, FLAGB and OV _n to GND | -0.3 | 6.0 | V |
| I _{SW} | Continuous Switch Current | | 5.5 | A |
| t _{PD} | Total Power Dissipation at T _A =25 °C | | 2.08 | W |
| T _{STG} | Storage Junction Temperature | -65 | +150 | °C |
| T _J | Operating Junction Temperature | | +150 | °C |
| T _L | Lead Temperature (Soldering, 10 Seconds) | | +260 | °C |
| Θ _{JA} | Thermal Resistance, Junction-to-Ambient (1in. ² pad of 2 oz. copper) | | 60 ⁽²⁾ | °C/W |
| ESD | Electrostatic Discharge Capability | Human Body Model, ANSI/ESDA/JEDEC JS-001 | 2 | kV |
| | | Charged Device Model, JESD22-C101 | 1 | |
| | IEC61000-4-2 System Level | Air Discharge | 15 | |
| | | Contact Discharge | 8 | |

Note:

2. Measured using 2S2P JEDEC std. PCB.

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. ON does not recommend exceeding them or designing to Absolute Maximum Ratings.

| Symbol | Parameter | Min. | Max. | Unit |
|------------------------------------|-------------------------------|------|------|------|
| V _{IN} | Supply Voltage | 4.0 | 22.0 | V |
| C _{IN} / C _{OUT} | Input and Output Capacitance | 1.0 | | μF |
| T _A | Ambient Operating Temperature | -40 | +85 | °C |

FPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

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Electrical Characteristics

Unless otherwise noted, $V_{IN}=4$ to 22 V, $T_A=-40$ to 85°C ; typical values are at $V_{IN}=5$ V, $C_{IN}=C_{OUT}=1$ μF , $ON=HIGH$, $POL=OV1=OV2=OC_MODE=GND$ and $T_A=25^\circ\text{C}$.

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit | |
|--------------------------|---|---|-------------------------|-------|-------|-------|----|
| Basic Operation | | | | | | | |
| V _{IN} | Input Voltage | | 4 | | 22 | V | |
| I _{SD_IN} | V _{IN} Shutdown Current | V _{ON} =OFF, V _{IN} =5.5 V, V _{OUT} =Short to GND | | 75 | 100 | μA | |
| I _Q | Quiescent Current | I _{OUT} =0 mA, V _{ON} =ON | V _{IN} =5 V | 270 | 330 | μA | |
| | | | V _{IN} =12 V | 300 | 400 | | |
| | | | V _{IN} =20 V | 350 | 450 | | |
| R _{ON} | On Resistance | T _A =25°C, I _{OUT} =1 A | V _{IN} =5 V | 27 | 39 | mΩ | |
| | | | V _{IN} =12 V | 27 | 39 | | |
| | | | V _{IN} =20 V | 27 | 39 | | |
| I _{ON} | ON Input Leakage | V _{ON} =V _{IN} or GND | | | 10 | μA | |
| V _{IH} | ON Input Logic High Voltage | V _{IN} =3 V~23 V | 1.2 | | | V | |
| V _{IL} | ON Input Logic Low Voltage | V _{IN} =3 V~23 V | | | 0.4 | V | |
| V _{P_LOW} | FLAGB Output Logic Low Voltage | V _{IN} =5 V, I _{SINK} =5 mA | | 0.1 | 0.2 | V | |
| I _{LKG} | FLAGB Output High, Leakage Current | V _{IN} =5 V, Switch ON | | | 1 | μA | |
| Protections | | | | | | | |
| I _{LIM} | Current Limit ⁽³⁾ | V _{IN} =5 V, V _{OUT} =4 V, R _{SET} =3.01 kΩ, T _A = -40 to 85 °C | 1.35 | 1.50 | 1.65 | A | |
| | | V _{IN} =5 V, V _{OUT} =4 V, R _{SET} =1.54 kΩ, T _A = -40 to 85 °C | 2.85 | 3.00 | 3.15 | | |
| V _{FOLD} | ILIM Foldback Trip Voltage ⁽³⁾ | V _{OUT} under ILIM Mode | | 2 | | V | |
| I _{FOLD} | ILIM Foldback Current ⁽³⁾ | V _{IN} =5 V, V _{OUT} < V _{FOLD} , T _A =25 °C, OC_MODE=HIGH | | 500 | | mA | |
| | | V _{IN} =5 V, V _{OUT} < V _{FOLD} , T _A =25 °C, OC_MODE=LOW | | 250 | | | |
| V _{UVLO} | Under-Voltage Lockout | V _{IN} Increasing | | 2.70 | 2.95 | V | |
| | | V _{IN} Decreasing | | 2.5 | | | |
| | | UVLO Hysteresis | | | 200 | | mV |
| V _{OVLO} | Over-Voltage Lockout | OV1=LOW, OV2=LOW | V _{IN} Rising | 22.54 | 23.00 | 23.46 | V |
| | | | V _{IN} Falling | 22.34 | | | |
| | | OV1=LOW, OV2=HIGH | V _{IN} Rising | 9.90 | 10.00 | 10.10 | |
| | | | V _{IN} Falling | 9.85 | | | |
| | | OV1=HIGH, OV2=LOW | V _{IN} Rising | 16.50 | 16.80 | 17.10 | |
| | | | V _{IN} Falling | 16.40 | | | |
| | | OV1=HIGH, OV2=HIGH | V _{IN} Rising | 5.90 | 5.95 | 6.00 | |
| | | | V _{IN} Falling | 5.85 | | | |
| t _{OVP} | OVP Response Time ⁽³⁾ | R _L =100 Ω, C _L =0 μF, V _{IN} > V _{OVLO} to V _{OUT} =0.9 × V _{IN} | | | 150 | ns | |
| V _{T_RCB} | TRCB Protection Trip Point | V _{OUT} - V _{IN} | | 25 | 40 | mV | |
| V _{R_RCB} | TRCB Protection, Release Point | V _{IN} - V _{OUT} | | 25 | 40 | mV | |
| t _{RCB} | TRCB Response Time ⁽³⁾ | V _{IN} =5 V, V _{ON} =HIGH/LOW | | 5 | | μs | |
| t _{RCB_Release} | TRCB Release Time ⁽³⁾ | V _{IN} =5 V, Enabled | | 1 | | μs | |
| t _{OC} | Over Current Response Time ⁽³⁾ | V _{IN} =5 V, Moderate OC | | 20 | | μs | |
| | | V _{IN} =5 V, Hard Short | | 5 | | | |

FPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

Diagrams ID 04-02

Electrical Characteristics

Unless otherwise noted, $V_{IN}=4$ to 22 V, $T_A=-40$ to 85°C; typical values are at $V_{IN}=5$ V, $C_{IN}=C_{OUT}=1$ μ F, $ON=HIGH$, $POL=OV1=OV2=OC_MODE=GND$ and $T_A=25^\circ\text{C}$.

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|------------------|--|---|------|------|------|------|
| ISD_OUT | VOUT Shutdown Current | VON=OFF, VOUT=5 V, VIN=Short to GND | | | 2 | μA |
| TSD | Thermal Shutdown ⁽³⁾ | Shutdown Threshold | | 150 | | °C |
| | | Hysteresis | | 20 | | |
| Dynamic Behavior | | | | | | |
| tDON | Delay On Time | RL=100 Ω, CL=1 μF | | 1 | | ms |
| tr | VOUT Rise Time | RL=100 Ω, CL=1 μF | | 1 | | ms |
| ton | Turn-On Time | RL=100 Ω, CL=1 μF | | 2 | | ms |
| tDOFF | Delay Off Time | RL=100 Ω, CL=1 μF | | 10 | | μs |
| tr | VOUT Fall Time | RL=100 Ω, CL=1 μF | | 200 | | μs |
| tOFF | Turn-Off Time | RL=100 Ω, CL=1 μF | | 210 | | μs |
| tBLANK | Over-Current Blanking Time ⁽³⁾ | OC_MODE=HIGH | | 5 | | ms |
| trSTRT | Auto-Restart Time ⁽³⁾ | OC_MODE=HIGH | | 200 | | ms |
| tQUAL | Over-Current Qualification Time ⁽³⁾ | OC_MODE=LOW | | 5 | | ms |
| tDEB | FLAGB De-bounce Time ⁽³⁾ | Restart-up during or after OC | | 3 | | ms |
| | | Restart-up during or after Thermal shutdown | | 15 | | |
| | | Restart-up during or after UVLO | | 1 | | |

Note:

3. Guaranteed by characterization and design, not production test.

PPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

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Setting Current Limit

FPF2895C current limit is set with an external resistor connected between I_{SET} and GND. This resistor is selected using the following equation:

$$R_{SET}(k\Omega) = \left(\frac{4674.89}{I_{SET} mA} \right)^{1/1.0326} \quad (1)$$

Resistor tolerance of 1% or less is recommended. 5% tolerance can be achieved only when ILIM is set to larger than 2A.

Note:

4. Passed UL&CB certification with max. 5 A output current.
5. 6 A absolute limit current value. See Figure 9. for protection timing diagram.

Table 2. OVLO Level Selection

| OV1 | OV2 | OVLO |
|-----------------|-----------------|---------------------|
| LOW | LOW | 23 V \pm 460 mV |
| LOW | HIGH (Floating) | 10 V \pm 100 mV |
| HIGH (Floating) | LOW | 16.3 V \pm 300 mV |
| HIGH (Floating) | HIGH (Floating) | 5.95 V \pm 50 mV |

Table 3. Device Enable Polarity Selection

| POL | ON | Device State | ON Polarity |
|-----------------|----------------|--------------|-------------|
| LOW | LOW (Floating) | OFF | Active HIGH |
| LOW | HIGH | ON | |
| HIGH (Floating) | LOW (Floating) | ON | Active LOW |
| HIGH (Floating) | HIGH | OFF | |

FPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

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Table 1. ILIM vs. RSET Look-up Table

| RSET [kΩ] | ILIM [mA] | | |
|-----------|-----------|------|------|
| | Min. | Typ. | Max. |
| 8.75 | 450 | 500 | 550 |
| 7.35 | 540 | 600 | 660 |
| 6.30 | 630 | 700 | 770 |
| 5.55 | 720 | 800 | 880 |
| 4.95 | 810 | 900 | 990 |
| 4.45 | 900 | 1000 | 1100 |
| 4.06 | 990 | 1100 | 1210 |
| 3.73 | 1080 | 1200 | 1320 |
| 3.45 | 1170 | 1300 | 1430 |
| 3.21 | 1260 | 1400 | 1540 |
| 3.01 | 1350 | 1500 | 1650 |
| 2.82 | 1440 | 1600 | 1760 |
| 2.66 | 1530 | 1700 | 1870 |
| 2.52 | 1620 | 1800 | 1980 |
| 2.39 | 1710 | 1900 | 2090 |
| 2.28 | 1900 | 2000 | 2100 |
| 2.17 | 1995 | 2100 | 2205 |
| 2.07 | 2090 | 2200 | 2310 |
| 1.99 | 2185 | 2300 | 2415 |
| 1.91 | 2280 | 2400 | 2520 |
| 1.83 | 2375 | 2500 | 2625 |
| 1.77 | 2470 | 2600 | 2730 |
| 1.70 | 2565 | 2700 | 2835 |
| 1.64 | 2660 | 2800 | 2940 |
| 1.59 | 2755 | 2900 | 3045 |
| 1.54 | 2850 | 3000 | 3150 |
| 1.49 | 2945 | 3100 | 3255 |
| 1.44 | 3040 | 3200 | 3360 |
| 1.40 | 3135 | 3300 | 3465 |
| 1.36 | 3230 | 3400 | 3570 |
| 1.32 | 3325 | 3500 | 3675 |
| 1.29 | 3420 | 3600 | 3780 |
| 1.25 | 3515 | 3700 | 3885 |
| 1.22 | 3610 | 3800 | 3990 |
| 1.19 | 3705 | 3900 | 4095 |
| 1.16 | 3800 | 4000 | 4200 |
| 1.14 | 3895 | 4100 | 4305 |
| 1.11 | 3990 | 4200 | 4410 |
| 1.08 | 4085 | 4300 | 4515 |
| 1.06 | 4180 | 4400 | 4620 |

FPF2895 — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

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Table 1. ILIM vs. RSET Look-up Table (Continued)

| RSET [kΩ] | ILIM [mA] | | |
|---------------------|-----------|------|---------------------|
| | Min. | Typ. | Max. |
| 1.04 ⁽⁴⁾ | 4275 | 4500 | 4725 |
| 1.02 | 4370 | 4600 | 4830 |
| 0.99 | 4465 | 4700 | 4935 |
| 0.97 | 4560 | 4800 | 5040 |
| 0.96 | 4655 | 4900 | 5145 |
| 0.94 | 4750 | 5000 | 5250 ⁽⁵⁾ |

Timing Diagrams

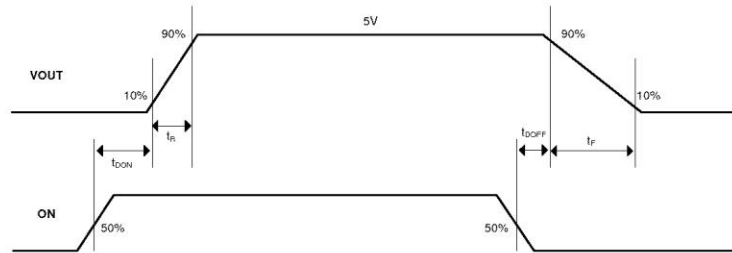


Figure 4. Normal ON/OFF Operation by ON (POL=GND)

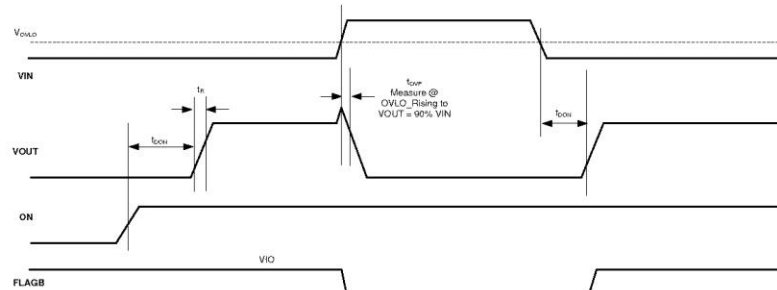


Figure 5. OVLO Operation (POL=GND & FLAGB is pulled up with an external VIO)

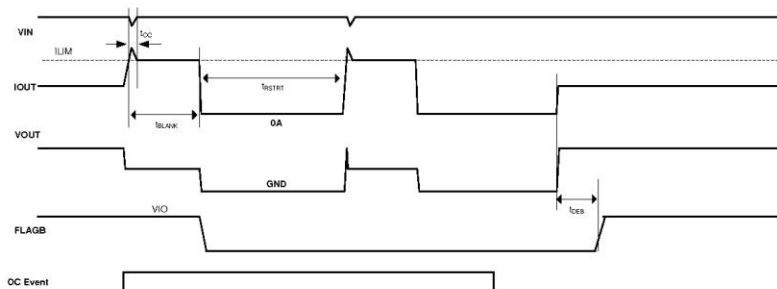
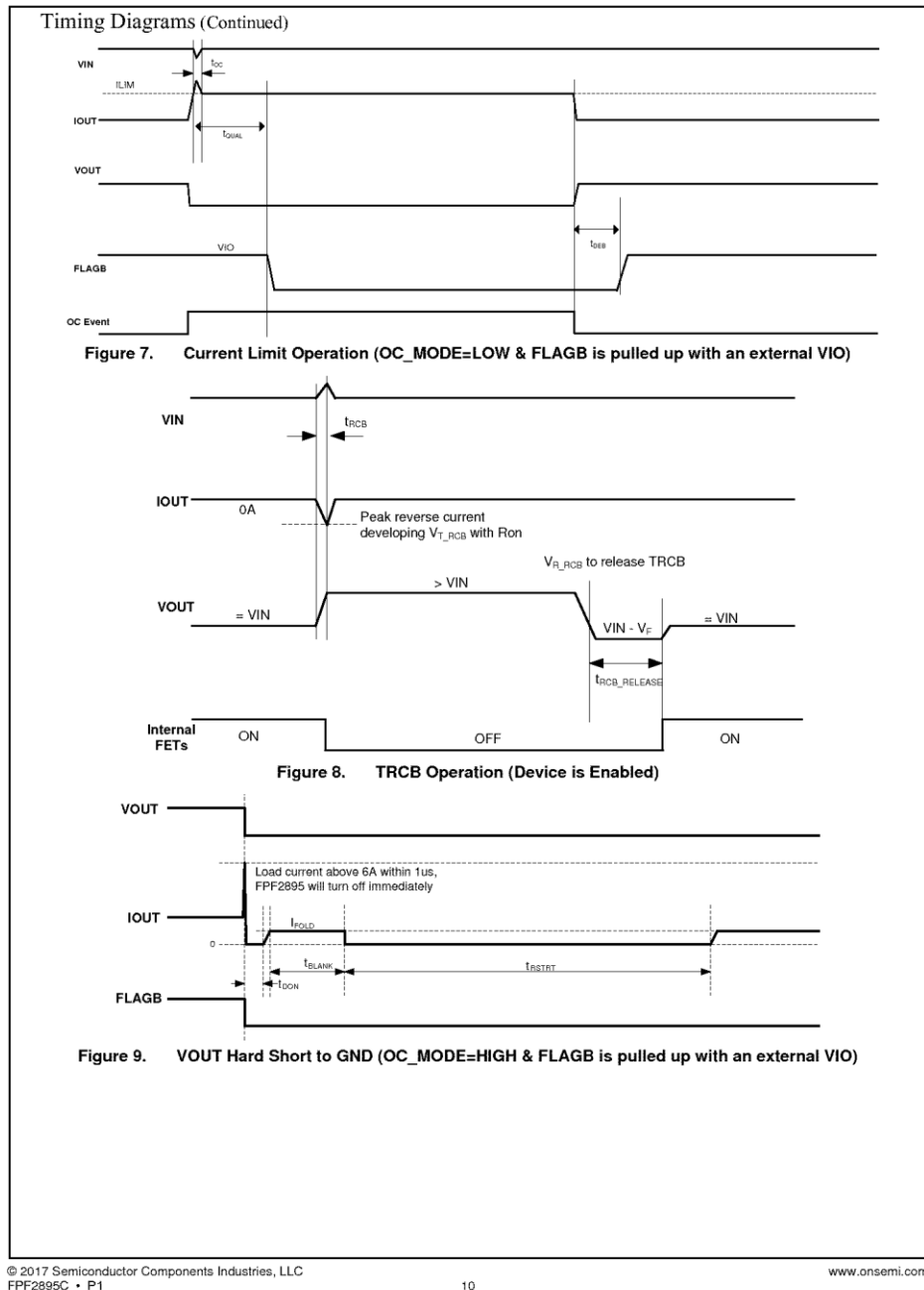


Figure 6. Current Limit Operation (OC_MODE=HIGH & FLAGB is pulled up with an external VIO)

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FPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

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The table below pertains to the Marketing outline drawing on the following page.

Product-Specific Dimensions

| D | E | X | Y |
|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|
| 2600 $\mu\text{m} \pm 30 \mu\text{m}$ | 1670 $\mu\text{m} \pm 30 \mu\text{m}$ | 235 $\mu\text{m} \pm 18 \mu\text{m}$ | 300 $\mu\text{m} \pm 18 \mu\text{m}$ |

FPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

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Physical Dimensions

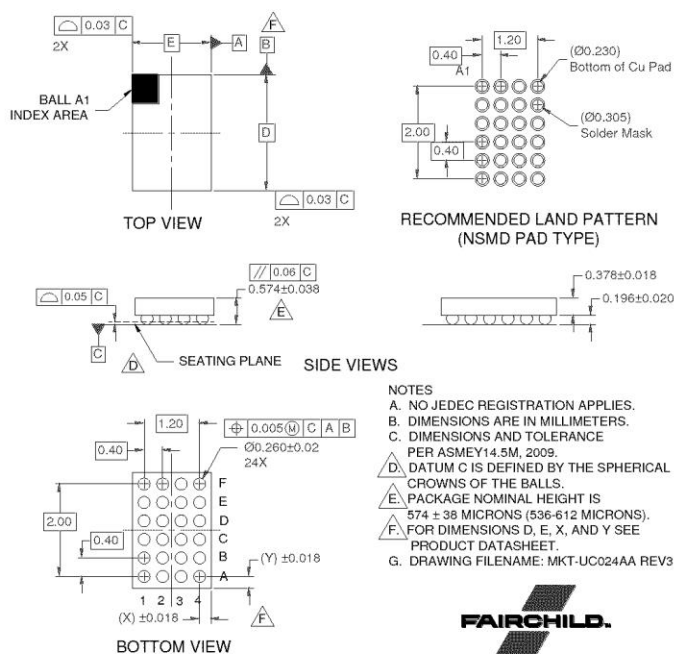


Figure 10 – 24-Ball, 4x6 Array, 0.4 mm Pitch, Wafer-Level Chip-Scale Package (WLCSP)

FPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

Enclosures

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FPF2895C — 28 V/5 A Rated Current Limit Switch with OVP and TRCB

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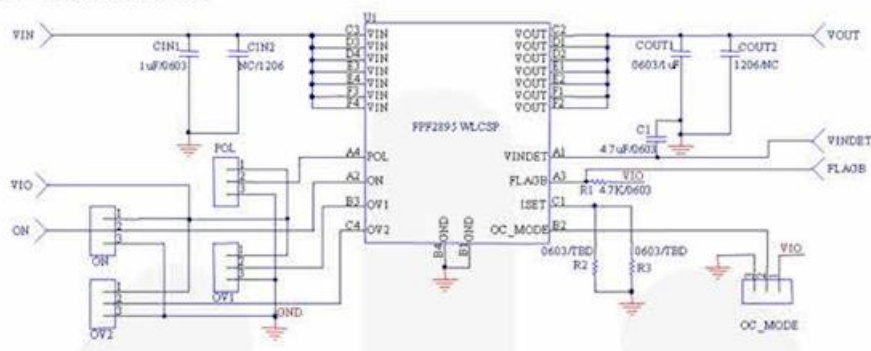
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| Test No. | Sample # | Circuit output tested | Did become open circuit ? | Limiting current (A) | |
|----------------------------|----------|-----------------------------|---|----------------------|-------|
| | | | | Rated | Meas. |
| 1 | 1# | Pin No. <u>Vout: 4.0Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.78 |
| 1 | 1# | Pin No. <u>Vout: 22 Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.77 |
| 2 | 2# | Pin No. <u>Vout: 4.0Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.78 |
| 2 | 2# | Pin No. <u>Vout: 22 Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.74 |
| 3 | 3# | Pin No. <u>Vout: 4.0Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.77 |
| 3 | 3# | Pin No. <u>Vout: 22 Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.75 |
| 4 | 4# | Pin No. <u>Vout: 4.0Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.77 |
| 4 | 4# | Pin No. <u>Vout: 22 Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.78 |
| 5 | 5# | Pin No. <u>Vout: 4.0Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.76 |
| 5 | 6# | Pin No. <u>Vout: 22 Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.78 |
| 6 | 7# | Pin No. <u>Vout: 4.0Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.77 |
| 6 | 8# | Pin No. <u>Vout: 22 Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.78 |
| 7 | 9# | Pin No. <u>Vout: 4.0Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.79 |
| 7 | 10# | Pin No. <u>Vout: 22 Vdc</u> | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 4.05-4.95 | 4.78 |
| supplementary information: | | | | | |

5. Schematics



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Tests Statistics

| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
|---------|-----------|-------|------|-----------------|----------------|----------------------|----------------------|-----------------------|----------------------|--------------|------|
| 1000000 | Gross | -40C | P | -1e-007 AMPS | 5e-007 AMPS | 1.99405e-008 AMPS | 4.09859e-009 AMPS | 1.29243e-008 AMPS | 2.61722e-008 AMPS | 24.40 | 9.75 |
| 1000000 | Gross | 25C | P | -1e-007 AMPS | 5e-007 AMPS | 7.71599e-008 AMPS | 4.16545e-008 AMPS | -8.43728e-009 AMPS | 1.63519e-007 AMPS | 2.40 | 1.42 |
| 1000000 | Gross | 85C | P | -1e-007 AMPS | 5e-007 AMPS | 2.30958e-007 AMPS | 1.14866e-008 AMPS | 2.0294e-007 AMPS | 2.52225e-007 AMPS | 8.71 | 7.81 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000000 | Cont_VIN | -40C | P | -1.0 VOLTS | -0.3 VOLTS | -0.645013 VOLTS | 0.00106366 VOLTS | -0.647224 VOLTS | -0.643697 VOLTS | 109.68108.12 | |
| 2000000 | Cont_VIN | 25C | P | -1.0 VOLTS | -0.3 VOLTS | -0.561761 VOLTS | 0.000114738 VOLTS | -0.561973 VOLTS | -0.561594 VOLTS | 1016.8760.46 | |
| 2000000 | Cont_VIN | 85C | P | -1.0 VOLTS | -0.3 VOLTS | -0.503971 VOLTS | 0.000978709 VOLTS | -0.505525 VOLTS | -0.502053 VOLTS | 119.20 69.47 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000001 | Cont_VOUT | -40C | P | -1.0 VOLTS | -0.3 VOLTS | -0.645782 VOLTS | 0.00166493 VOLTS | -0.648748 VOLTS | -0.642972 VOLTS | 70.07 69.23 | |
| 2000001 | Cont_VOUT | 25C | P | -1.0 VOLTS | -0.3 VOLTS | -0.562858 VOLTS | 0.000989946 VOLTS | -0.564279 VOLTS | -0.561021 VOLTS | 117.85 88.51 | |
| 2000001 | Cont_VOUT | 85C | P | -1.0 VOLTS | -0.3 VOLTS | -0.505875 VOLTS | 0.0010412 VOLTS | -0.50742 VOLTS | -0.503408 VOLTS | 112.05 65.91 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000002 | Cont_ON | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -0.808438 VOLTS | 0.001279 VOLTS | -0.81202 VOLTS | -0.806656 VOLTS | 117.28102.05 | |
| 2000002 | Cont_ON | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.747233 VOLTS | 0.00402723 VOLTS | -0.754689 VOLTS | -0.736837 VOLTS | 37.25 37.02 | |
| 2000002 | Cont_ON | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.703994 VOLTS | 0.000815057 VOLTS | -0.705505 VOLTS | -0.702088 VOLTS | 184.04165.22 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000003 | Cont_POL | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -1.02288 VOLTS | 0.00448321 VOLTS | -1.03198 VOLTS | -1.01457 VOLTS | 33.46 13.17 | |
| 2000003 | Cont_POL | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.911186 VOLTS | 0.00352775 VOLTS | -0.917521 VOLTS | -0.899234 VOLTS | 42.52 27.29 | |
| 2000003 | Cont_POL | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.848275 VOLTS | 0.00226626 VOLTS | -0.853452 VOLTS | -0.842641 VOLTS | 66.19 51.73 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |

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|---------|-------------|-------|------|------------|-------------|-----------------|-------------------|-----------------|-----------------|--------------|-----|
| 2000004 | Cont_OCMODE | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -0.809576 VOLTS | 0.00104019 VOLTS | -0.811506 VOLTS | -0.807664 VOLTS | 144.20125.11 | |
| 2000004 | Cont_OCMODE | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.748202 VOLTS | 0.00555351 VOLTS | -0.764138 VOLTS | -0.739021 VOLTS | 27.01 26.90 | |
| 2000004 | Cont_OCMODE | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.705244 VOLTS | 0.000820826 VOLTS | -0.70705 VOLTS | -0.703691 VOLTS | 182.74164.57 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000005 | Cont_OV1 | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -0.809454 VOLTS | 0.00102319 VOLTS | -0.810938 VOLTS | -0.806984 VOLTS | 146.60127.23 | |
| 2000005 | Cont_OV1 | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.7473 VOLTS | 0.00415711 VOLTS | -0.755066 VOLTS | -0.737157 VOLTS | 36.08 35.87 | |
| 2000005 | Cont_OV1 | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.705338 VOLTS | 0.000898155 VOLTS | -0.706954 VOLTS | -0.70337 VOLTS | 167.01150.43 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000006 | Cont_OV2 | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -0.808718 VOLTS | 0.00103666 VOLTS | -0.810939 VOLTS | -0.806567 VOLTS | 144.70125.82 | |
| 2000006 | Cont_OV2 | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.745157 VOLTS | 0.0055099 VOLTS | -0.74862 VOLTS | -0.732001 VOLTS | 27.22 26.93 | |
| 2000006 | Cont_OV2 | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.704574 VOLTS | 0.00101025 VOLTS | -0.706117 VOLTS | -0.702959 VOLTS | 148.48133.49 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000007 | Cont_FLAGB | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -0.726512 VOLTS | 0.00192347 VOLTS | -0.72936 VOLTS | -0.722494 VOLTS | 77.98 73.91 | |
| 2000007 | Cont_FLAGB | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.654185 VOLTS | 0.00155668 VOLTS | -0.656646 VOLTS | -0.651325 VOLTS | 96.36 75.84 | |
| 2000007 | Cont_FLAGB | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.604267 VOLTS | 0.00169841 VOLTS | -0.607662 VOLTS | -0.600962 VOLTS | 88.32 59.72 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000008 | Cont_VINDET | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -0.614415 VOLTS | 0.00189779 VOLTS | -0.618905 VOLTS | -0.609944 VOLTS | 79.04 55.22 | |
| 2000008 | Cont_VINDET | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.65788 VOLTS | 0.00140978 VOLTS | -0.661268 VOLTS | -0.655182 VOLTS | 106.40 84.62 | |
| 2000008 | Cont_VINDET | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.608313 VOLTS | 0.00133206 VOLTS | -0.610433 VOLTS | -0.604947 VOLTS | 112.61 77.15 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 2000009 | Cont_ISET | -40C | P | -1.2 VOLTS | -0.3 VOLTS | -0.794237 VOLTS | 0.00218246 VOLTS | -0.798409 VOLTS | -0.789358 VOLTS | 68.73 61.97 | |
| 2000009 | Cont_ISET | 25C | P | -1.2 VOLTS | -0.3 VOLTS | -0.730208 VOLTS | 0.00175912 VOLTS | -0.732948 VOLTS | -0.726254 VOLTS | 85.27 81.52 | |
| 2000009 | Cont_ISET | 85C | P | -1.2 VOLTS | -0.3 VOLTS | -0.68541 VOLTS | 0.0015543 VOLTS | -0.688102 VOLTS | -0.681869 VOLTS | 96.51 82.65 | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000000 | Abs_VIN | -40C | P | 0.0 AMPS | 0.0001 AMPS | 5.75582e-005 | 3.13455e-006 | 5.21712e-005 | 6.39431e-005 | 5.32 4.51 | |

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|---------|------------|-------|------|----------|-------------|---------------|--------------|---------------|--------------|-------|-------|
| 3000000 | Abs_VIN | 25C | P | 0.0 AMPS | 0.0001 AMPS | AMPS | AMPS | AMPS | AMPS | | |
| | | | | | | 6.34266e-005 | 2.9065e-006 | 5.84596e-005 | 6.9196e-005 | 5.73 | 4.19 |
| 3000000 | Abs_VIN | 85C | P | 0.0 AMPS | 0.0001 AMPS | AMPS | AMPS | AMPS | AMPS | | |
| | | | | | | 6.67283e-005 | 2.73191e-006 | 6.19859e-005 | 7.21027e-005 | 6.10 | 4.06 |
| | Test Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000001 | Abs_VOUT | -40C | P | -5e-007 | 5e-007 | AMPS | AMPS | AMPS | AMPS | 5.86 | 4.48 |
| | | | | | | 1.17377e-007 | 2.84575e-008 | 5.00235e-008 | 1.75335e-007 | | |
| 3000001 | Abs_VOUT | 25C | P | -5e-007 | 5e-007 | AMPS | AMPS | AMPS | AMPS | 7.87 | 7.81 |
| | | | | | | -4.0111e-009 | 2.11775e-008 | -5.2137e-008 | 5.03702e-008 | | |
| 3000001 | Abs_VOUT | 85C | P | -5e-007 | 5e-007 | AMPS | AMPS | AMPS | AMPS | 8.99 | 8.57 |
| | | | | | | -2.37844e-008 | 1.85291e-008 | -6.58833e-008 | 1.60049e-008 | | |
| | Test Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000002 | Abs_ON | -40C | P | 0.0 AMPS | 1.1e-006 | AMPS | AMPS | AMPS | AMPS | 23.40 | 7.08 |
| | | | | | | 9.33609e-007 | 7.83576e-009 | 9.16378e-007 | 9.5062e-007 | | |
| 3000002 | Abs_ON | 25C | P | 0.0 AMPS | 1.1e-006 | AMPS | AMPS | AMPS | AMPS | 24.23 | 4.38 |
| | | | | | | 1.00063e-006 | 7.56723e-009 | 9.88906e-007 | 1.01781e-006 | | |
| 3000002 | Abs_ON | 85C | P | 0.0 AMPS | 1.1e-006 | AMPS | AMPS | AMPS | AMPS | 23.13 | 2.31 |
| | | | | | | 1.04504e-006 | 7.92591e-009 | 1.02809e-006 | 1.06138e-006 | | |
| | Test Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000003 | Abs_POL | -40C | P | 0.0 AMPS | 1.5e-006 | AMPS | AMPS | AMPS | AMPS | 28.63 | 24.24 |
| | | | | | | 8.64988e-007 | 8.7322e-009 | 8.40679e-007 | 8.82815e-007 | | |
| 3000003 | Abs_POL | 25C | P | 0.0 AMPS | 1e-006 | AMPS | AMPS | AMPS | AMPS | 21.10 | 2.67 |
| | | | | | | 9.36756e-007 | 7.89744e-009 | 9.15364e-007 | 9.48582e-007 | | |
| 3000003 | Abs_POL | 85C | P | 0.0 AMPS | 1.5e-006 | AMPS | AMPS | AMPS | AMPS | 31.93 | 21.85 |
| | | | | | | 9.86649e-007 | 7.82985e-009 | 9.6576e-007 | 1.00255e-006 | | |
| | Test Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000004 | Abs_OCMODE | -40C | P | 0.0 AMPS | 1e-006 | AMPS | AMPS | AMPS | AMPS | 24.50 | 7.12 |
| | | | | | | 8.54718e-007 | 6.80311e-009 | 8.40899e-007 | 8.68107e-007 | | |
| 3000004 | Abs_OCMODE | 25C | P | 0.0 AMPS | 1e-006 | AMPS | AMPS | AMPS | AMPS | 22.10 | 3.32 |
| | | | | | | 9.2498e-007 | 7.54021e-009 | 9.12571e-007 | 9.39818e-007 | | |
| 3000004 | Abs_OCMODE | 85C | P | 0.0 AMPS | 1e-006 | AMPS | AMPS | AMPS | AMPS | 27.02 | 1.39 |
| | | | | | | 9.74233e-007 | 6.16805e-009 | 9.64194e-007 | 9.88567e-007 | | |
| | Test Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000005 | Abs_OV1 | -40C | P | 0.0 AMPS | 2e-006 | AMPS | AMPS | AMPS | AMPS | 42.67 | 37.04 |
| | | | | | | 8.67882e-007 | 7.81132e-009 | 8.54055e-007 | 8.8311e-007 | | |
| 3000005 | Abs_OV1 | 25C | P | 0.0 AMPS | 1e-006 | AMPS | AMPS | AMPS | AMPS | 23.17 | 2.83 |
| | | | | | | 9.38976e-007 | 7.19322e-009 | 9.26782e-007 | 9.5557e-007 | | |
| 3000005 | Abs_OV1 | 85C | P | 0.0 AMPS | 2e-006 | AMPS | AMPS | AMPS | AMPS | 44.96 | 44.52 |
| | | | | | | 9.90225e-007 | 7.41417e-009 | 9.7782e-007 | 1.00324e-006 | | |
| | Test Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000006 | Abs_OV2 | -40C | P | 0.0 AMPS | 2e-006 | AMPS | AMPS | AMPS | AMPS | 45.37 | 39.71 |
| | | | | | | 8.75275e-007 | 7.34741e-009 | 8.62453e-007 | 8.89375e-007 | | |

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|---------|--------------|-------|------|----------|-------------|---------------|--------------|---------------|---------------|-------|-------|
| 3000006 | Abs_OV2 | 25C | P | 0.0 AMPS | 1e-006 AMPS | 9.48276e-007 | 7.11945e-009 | 9.36007e-007 | 9.60911e-007 | 23.41 | 2.42 |
| 3000006 | Abs_OV2 | 85C | P | 0.0 AMPS | 2e-006 AMPS | 9.95311e-007 | 7.35201e-009 | 9.81731e-007 | 1.00665e-006 | 45.34 | 45.13 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000007 | Abs_FLAGB | -40C | P | -2e-007 | 1e-006 AMPS | -7.76362e-008 | 3.8966e-008 | -1.35943e-007 | -2.89609e-009 | 5.13 | 1.05 |
| 3000007 | Abs_FLAGB | 25C | P | -2e-007 | 1e-006 AMPS | -7.68335e-008 | 3.86217e-008 | -1.36848e-007 | -2.02389e-009 | 5.18 | 1.06 |
| 3000007 | Abs_FLAGB | 85C | P | -2e-007 | 1e-006 AMPS | -7.80479e-008 | 3.89366e-008 | -1.35943e-007 | -2.02389e-009 | 5.14 | 1.04 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000008 | Abs_VINDET | -40C | P | -2e-007 | 1e-006 AMPS | -7.4563e-008 | 3.65845e-008 | -1.48845e-007 | -1.0455e-008 | 5.47 | 1.14 |
| 3000008 | Abs_VINDET | 25C | P | -2e-007 | 1e-006 AMPS | -7.33879e-008 | 3.61645e-008 | -1.46225e-007 | -9.55121e-009 | 5.53 | 1.17 |
| 3000008 | Abs_VINDET | 85C | P | -2e-007 | 1e-006 AMPS | -7.37914e-008 | 3.60469e-008 | -1.46225e-007 | -1.13587e-008 | 5.55 | 1.17 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 3000009 | Abs_ISET | -40C | P | -2e-007 | 3e-005 AMPS | 1.75018e-006 | 6.39319e-006 | -1.07992e-007 | 2.76633e-005 | 0.79 | 0.10 |
| 3000009 | Abs_ISET | 25C | P | -2e-007 | 5e-006 AMPS | 8.01149e-008 | 7.07025e-007 | -1.07992e-007 | 3.39503e-006 | 1.23 | 0.13 |
| 3000009 | Abs_ISET | 85C | P | -2e-007 | 5e-006 AMPS | -2.95677e-008 | 1.7729e-007 | -1.11495e-007 | 7.84739e-007 | 4.89 | 0.32 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000000 | IQ_5V_Pre | -40C | P | 0.0 AMPS | 0.0007 AMPS | 0.000235023 | 7.1531e-006 | 0.000222356 | 0.000247722 | 16.31 | 10.95 |
| 4000000 | IQ_5V_Pre | 25C | P | 0.0 AMPS | 0.0007 AMPS | 0.000252715 | 8.47999e-006 | 0.000239417 | 0.000278465 | 13.76 | 9.93 |
| 4000000 | IQ_5V_Pre | 85C | P | 0.0 AMPS | 0.0007 AMPS | 0.000263448 | 1.17101e-005 | 0.000248485 | 0.000294908 | 9.96 | 7.50 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000001 | IISET_5V_Pre | -40C | P | -5e-005 | 2e-005 AMPS | -6.60426e-007 | 8.39781e-007 | -3.22031e-006 | -4.1711e-008 | 13.89 | 8.20 |
| 4000001 | IISET_5V_Pre | 25C | P | -5e-005 | 2e-005 AMPS | -7.05531e-007 | 8.09609e-007 | -3.06174e-006 | -4.39494e-008 | 14.41 | 8.52 |
| 4000001 | IISET_5V_Pre | 85C | P | -5e-005 | 2e-005 AMPS | -7.53866e-007 | 7.81567e-007 | -2.91177e-006 | -5.78699e-008 | 14.93 | 8.85 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000002 | IQ_12V_Pre | -40C | P | 0.0 AMPS | 0.0005 AMPS | 0.00026609 | 9.09189e-006 | 0.000239974 | 0.0002804 | 9.17 | 8.58 |
| 4000002 | IQ_12V_Pre | 25C | P | 0.0 AMPS | 0.0005 AMPS | 0.000288364 | 8.17098e-006 | 0.000274733 | 0.00031224 | 10.20 | 8.63 |

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|---------|------------|-------|------|----------|-------------|---------------|--------------|---------------|--------------|-------|-------|
| 4000002 | IQ_12V_Pre | 85C | P | 0.0 AMPS | 0.0005 AMPS | 0.000301354 | 1.17515e-005 | 0.000286128 | 0.00033233 | 7.09 | 5.63 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000003 | IQ_20V_Pre | -40C | P | 0.0 AMPS | 0.00055 | 0.000307959 | 7.54543e-006 | 0.000294577 | 0.000321609 | 12.15 | 10.69 |
| 4000003 | IQ_20V_Pre | 25C | P | 0.0 AMPS | 0.00055 | 0.000331473 | 8.05208e-006 | 0.000317931 | 0.000354041 | 11.38 | 9.05 |
| 4000003 | IQ_20V_Pre | 85C | P | 0.0 AMPS | 0.00055 | 0.000346427 | 1.12523e-005 | 0.000331415 | 0.000375563 | 8.15 | 6.03 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000004 | ISD_IN | -40C | P | 0.0 AMPS | 8e-005 AMPS | 6.04784e-005 | 3.13722e-006 | 5.49801e-005 | 6.68295e-005 | 4.25 | 2.07 |
| 4000004 | ISD_IN | 25C | P | 0.0 AMPS | 8e-005 AMPS | 6.64031e-005 | 2.88971e-006 | 6.13738e-005 | 7.21553e-005 | 4.61 | 1.57 |
| 4000004 | ISD_IN | 85C | P | 0.0 AMPS | 8e-005 AMPS | 6.97179e-005 | 2.71949e-006 | 6.49449e-005 | 7.51117e-005 | 4.90 | 1.26 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000005 | ISD_OUT | -40C | P | -1e-006 | 1.5e-006 | 1.11671e-006 | 1.42821e-007 | 7.77876e-007 | 1.32586e-006 | 2.92 | 0.89 |
| 4000005 | ISD_OUT | 25C | P | -5e-007 | 1.5e-006 | 3.1771e-007 | 7.4874e-008 | 1.66491e-007 | 4.48893e-007 | 4.45 | 3.64 |
| 4000005 | ISD_OUT | 85C | P | -1e-006 | 1.5e-006 | 1.42042e-007 | 7.12999e-008 | 6.97826e-008 | 2.60861e-007 | 5.84 | 5.34 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000006 | ION | -40C | P | -1e-007 | 1.8e-006 | 9.37207e-007 | 8.48469e-009 | 9.19156e-007 | 9.54118e-007 | 37.32 | 33.90 |
| 4000006 | ION | 25C | P | -1e-007 | 1.8e-006 | 1.00531e-006 | 9.44628e-009 | 9.81161e-007 | 1.02606e-006 | 33.52 | 28.04 |
| 4000006 | ION | 85C | P | -1e-007 | 1.8e-006 | 1.04843e-006 | 8.67695e-009 | 1.02988e-006 | 1.0654e-006 | 36.50 | 28.87 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000007 | IPOL | -40C | P | -1e-007 | 1e-006 AMPS | -1.54785e-009 | 8.74402e-009 | -2.61786e-008 | 1.69275e-008 | 20.97 | 3.75 |
| 4000007 | IPOL | 25C | P | -1e-007 | 1e-006 AMPS | -1.7593e-009 | 9.00358e-009 | -2.34052e-008 | 1.98401e-008 | 20.36 | 3.64 |
| 4000007 | IPOL | 85C | P | -1e-007 | 1e-006 AMPS | -1.23291e-009 | 8.63606e-009 | -2.498e-008 | 1.7187e-008 | 21.23 | 3.81 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000008 | IOCMODE | -40C | P | -1e-007 | 1e-006 AMPS | -1.22631e-009 | 7.0669e-009 | -1.42701e-008 | 1.32861e-008 | 25.94 | 4.66 |
| 4000008 | IOCMODE | 25C | P | -1e-007 | 1e-006 AMPS | -2.87841e-009 | 7.24223e-009 | -1.42235e-008 | 1.24221e-008 | 25.31 | 4.47 |

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|---------|--------------|-------|------|-----------------|-------------|-----------------------|----------------------|-----------------------|-----------------------|-------|-------|
| 4000008 | IOCMODE | 85C | P | -1e-007 AMPS | 1e-006 AMPS | -1.17175e-009 AMPS | 7.17499e-009 AMPS | -1.4229e-008 AMPS | 1.44001e-008 AMPS | 25.55 | 4.59 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000009 | IOV1 | -40C | P | -1e-007 AMPS | 1e-006 AMPS | 6.22245e-010 AMPS | 7.5518e-009 AMPS | -1.07826e-008 AMPS | 1.47039e-008 AMPS | 24.28 | 4.44 |
| 4000009 | IOV1 | 25C | P | -1e-007 AMPS | 1e-006 AMPS | 2.11815e-009 AMPS | 8.93995e-009 AMPS | -1.05638e-008 AMPS | 1.76891e-008 AMPS | 20.51 | 3.81 |
| 4000009 | IOV1 | 85C | P | -1e-007 AMPS | 1e-006 AMPS | 7.87576e-010 AMPS | 7.53931e-009 AMPS | -1.0982e-008 AMPS | 1.61137e-008 AMPS | 24.32 | 4.46 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000010 | IOV2 | -40C | P | -1e-007 AMPS | 1e-006 AMPS | 1.57023e-009 AMPS | 7.67657e-009 AMPS | -1.1241e-008 AMPS | 1.4274e-008 AMPS | 23.88 | 4.41 |
| 4000010 | IOV2 | 25C | P | -1e-007 AMPS | 1e-006 AMPS | 2.30168e-009 AMPS | 7.71256e-009 AMPS | -1.07603e-008 AMPS | 1.40649e-008 AMPS | 23.77 | 4.42 |
| 4000010 | IOV2 | 85C | P | -1e-007 AMPS | 1e-006 AMPS | 1.57057e-009 AMPS | 7.93282e-009 AMPS | -1.21129e-008 AMPS | 1.54529e-008 AMPS | 23.11 | 4.27 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000011 | IISSET | -40C | P | -1e-007 AMPS | 1e-006 AMPS | 3.06249e-008 AMPS | 2.4591e-008 AMPS | -1.02123e-008 AMPS | 7.9854e-008 AMPS | 7.46 | 1.77 |
| 4000011 | IISSET | 25C | P | -1e-007 AMPS | 1e-006 AMPS | 1.80037e-008 AMPS | 2.20218e-008 AMPS | -2.32421e-008 AMPS | 5.69593e-008 AMPS | 8.33 | 1.79 |
| 4000011 | IISSET | 85C | P | -1e-007 AMPS | 1e-006 AMPS | 2.7301e-008 AMPS | 2.24917e-008 AMPS | -2.32421e-008 AMPS | 6.32367e-008 AMPS | 8.15 | 1.89 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000012 | IVINDET | -40C | P | -2e-007 AMPS | 1e-007 AMPS | -7.18689e-008 AMPS | 3.71704e-008 AMPS | -1.47099e-007 AMPS | -7.74371e-009 AMPS | 1.35 | 1.15 |
| 4000012 | IVINDET | 25C | P | -2e-007 AMPS | 1e-007 AMPS | -7.01439e-008 AMPS | 3.6429e-008 AMPS | -1.45352e-007 AMPS | -6.83996e-009 AMPS | 1.37 | 1.19 |
| 4000012 | IVINDET | 85C | P | -2e-007 AMPS | 1e-007 AMPS | -7.13599e-008 AMPS | 3.65158e-008 AMPS | -1.46225e-007 AMPS | -8.64746e-009 AMPS | 1.37 | 1.17 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000013 | IFLAGB | -40C | P | -2e-007 AMPS | 9e-007 AMPS | -7.32796e-008 AMPS | 3.88589e-008 AMPS | -1.27791e-007 AMPS | 5.92714e-010 AMPS | 4.72 | 1.09 |
| 4000013 | IFLAGB | 25C | P | -2e-007 AMPS | 9e-007 AMPS | -7.38841e-008 AMPS | 3.8531e-008 AMPS | -1.3232e-007 AMPS | -2.79488e-010 AMPS | 4.76 | 1.09 |
| 4000013 | IFLAGB | 85C | P | -2e-007 AMPS | 9e-007 AMPS | -7.46177e-008 AMPS | 3.86091e-008 AMPS | -1.31414e-007 AMPS | -2.79488e-010 AMPS | 4.75 | 1.08 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 4000014 | FLAGB_VOL_5V | -40C | P | 0.0 VOLTS | 0.18 VOLTS | 0.121663 VOLTS | 0.000365076 VOLTS | 0.12097 VOLTS | 0.122486 VOLTS | 82.17 | 53.27 |
| 4000014 | FLAGB_VOL_5V | 25C | P | 0.0 VOLTS | 0.18 VOLTS | 0.124844 VOLTS | 0.000328615 VOLTS | 0.124133 VOLTS | 0.125469 VOLTS | 91.29 | 55.95 |
| 4000014 | FLAGB_VOL_5V | 85C | P | 0.0 VOLTS | 0.18 VOLTS | 0.127622 VOLTS | 0.000333355 VOLTS | 0.126785 VOLTS | 0.128138 VOLTS | 89.99 | 52.37 |

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| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
|---------|------------|-------|------|-----------|---------------|-------------------|-------------------|-------------------|-------------------|-------|------|
| 5000000 | EVS_Pre | -40C | P | 0.0 AMPS | 1e-006 AMPS | 3.96872e-007 AMPS | 6.43897e-008 AMPS | 2.88996e-007 AMPS | 5.2422e-007 AMPS | 2.59 | 2.05 |
| 5000000 | EVS_Pre | 25C | P | 0.0 AMPS | 1e-006 AMPS | 4.58898e-007 AMPS | 6.26738e-008 AMPS | 3.54592e-007 AMPS | 5.78563e-007 AMPS | 2.66 | 2.44 |
| 5000000 | EVS_Pre | 85C | P | 0.0 AMPS | 1e-006 AMPS | 4.91419e-007 AMPS | 6.08932e-008 AMPS | 3.91326e-007 AMPS | 6.08363e-007 AMPS | 2.74 | 2.69 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 5000001 | EVS_Stress | -40C | P | 0.0 AMPS | 1.5e-005 AMPS | 3.07169e-006 AMPS | 2.09038e-007 AMPS | 2.73139e-006 AMPS | 3.39693e-006 AMPS | 11.96 | 4.90 |
| 5000001 | EVS_Stress | 25C | P | 0.0 AMPS | 1.5e-005 AMPS | 1.72067e-006 AMPS | 8.37164e-008 AMPS | 1.57585e-006 AMPS | 1.88101e-006 AMPS | 29.86 | 6.85 |
| 5000001 | EVS_Stress | 85C | P | 0.0 AMPS | 1.5e-005 AMPS | 1.79296e-006 AMPS | 8.28431e-008 AMPS | 1.65283e-006 AMPS | 1.95856e-006 AMPS | 30.18 | 7.21 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 5000002 | EVS_Post | -40C | P | 0.0 AMPS | 1e-006 AMPS | 3.90903e-007 AMPS | 6.43216e-008 AMPS | 2.84623e-007 AMPS | 5.15455e-007 AMPS | 2.59 | 2.03 |
| 5000002 | EVS_Post | 25C | P | 0.0 AMPS | 1e-006 AMPS | 4.5211e-007 AMPS | 6.27191e-008 AMPS | 3.47596e-007 AMPS | 5.7418e-007 AMPS | 2.66 | 2.40 |
| 5000002 | EVS_Post | 85C | P | 0.0 AMPS | 1e-006 AMPS | 4.84742e-007 AMPS | 6.02983e-008 AMPS | 3.86079e-007 AMPS | 6.00475e-007 AMPS | 2.76 | 2.68 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000000 | ON_VIH | -40C | P | 0.8 VOLTS | 1.15 VOLTS | 0.93375 VOLTS | 0.00494535 VOLTS | 0.93 VOLTS | 0.94 VOLTS | 11.80 | 9.02 |
| 6000000 | ON_VIH | 25C | P | 0.8 VOLTS | 1.15 VOLTS | 0.905833 VOLTS | 0.00503613 VOLTS | 0.9 VOLTS | 0.91 VOLTS | 11.58 | 7.00 |
| 6000000 | ON_VIH | 85C | P | 0.8 VOLTS | 1.15 VOLTS | 0.885417 VOLTS | 0.00508977 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 11.46 | 5.59 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000001 | ON_VIL | -40C | P | 0.7 VOLTS | 1.0 VOLTS | 0.916667 VOLTS | 0.00564659 VOLTS | 0.91 VOLTS | 0.93 VOLTS | 8.85 | 4.92 |
| 6000001 | ON_VIL | 25C | P | 0.7 VOLTS | 1.0 VOLTS | 0.8875 VOLTS | 0.00531609 VOLTS | 0.88 VOLTS | 0.9 VOLTS | 9.41 | 7.05 |
| 6000001 | ON_VIL | 85C | P | 0.7 VOLTS | 1.0 VOLTS | 0.867083 VOLTS | 0.00464305 VOLTS | 0.86 VOLTS | 0.87 VOLTS | 10.77 | 9.54 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000002 | OV1_VIH | -40C | P | 0.8 VOLTS | 1.15 VOLTS | 0.933333 VOLTS | 0.00564659 VOLTS | 0.92 VOLTS | 0.94 VOLTS | 10.33 | 7.87 |
| 6000002 | OV1_VIH | 25C | P | 0.8 VOLTS | 1.15 VOLTS | 0.905833 VOLTS | 0.00503613 VOLTS | 0.9 VOLTS | 0.91 VOLTS | 11.58 | 7.00 |
| 6000002 | OV1_VIH | 85C | P | 0.8 VOLTS | 1.15 VOLTS | 0.8875 VOLTS | 0.00442325 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 13.19 | 6.59 |

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| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
|---------|------------|-------|------|-----------|------------|----------------|------------------|------------|------------|-------|-------|
| 6000003 | OV1_VIL | -40C | P | 0.7 VOLTS | 1.0 VOLTS | 0.91625 VOLTS | 0.00494535 VOLTS | 0.91 VOLTS | 0.92 VOLTS | 10.11 | 5.65 |
| 6000003 | OV1_VIL | 25C | P | 0.7 VOLTS | 1.0 VOLTS | 0.8875 VOLTS | 0.00442325 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 11.30 | 8.48 |
| 6000003 | OV1_VIL | 85C | P | 0.7 VOLTS | 1.0 VOLTS | 0.867917 VOLTS | 0.00508977 VOLTS | 0.86 VOLTS | 0.88 VOLTS | 9.82 | 8.65 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000004 | OV2_VIH | -40C | P | 0.8 VOLTS | 1.15 VOLTS | 0.932917 VOLTS | 0.00464305 VOLTS | 0.93 VOLTS | 0.94 VOLTS | 12.56 | 9.54 |
| 6000004 | OV2_VIH | 25C | P | 0.8 VOLTS | 1.15 VOLTS | 0.905 VOLTS | 0.00510756 VOLTS | 0.9 VOLTS | 0.91 VOLTS | 11.42 | 6.85 |
| 6000004 | OV2_VIH | 85C | P | 0.8 VOLTS | 1.15 VOLTS | 0.885417 VOLTS | 0.00508977 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 11.46 | 5.59 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000005 | OV2_VIL | -40C | P | 0.7 VOLTS | 1.0 VOLTS | 0.915417 VOLTS | 0.00508977 VOLTS | 0.91 VOLTS | 0.92 VOLTS | 9.82 | 5.54 |
| 6000005 | OV2_VIL | 25C | P | 0.7 VOLTS | 1.0 VOLTS | 0.88625 VOLTS | 0.00494535 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 10.11 | 7.67 |
| 6000005 | OV2_VIL | 85C | P | 0.7 VOLTS | 1.0 VOLTS | 0.86625 VOLTS | 0.00494535 VOLTS | 0.86 VOLTS | 0.87 VOLTS | 10.11 | 9.02 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000006 | OCMODE_VIH | -40C | P | 0.8 VOLTS | 1.15 VOLTS | 0.934583 VOLTS | 0.00508977 VOLTS | 0.93 VOLTS | 0.94 VOLTS | 11.46 | 8.81 |
| 6000006 | OCMODE_VIH | 25C | P | 0.8 VOLTS | 1.15 VOLTS | 0.905417 VOLTS | 0.0050898 VOLTS | 0.9 VOLTS | 0.91 VOLTS | 11.46 | 6.90 |
| 6000006 | OCMODE_VIH | 85C | P | 0.8 VOLTS | 1.15 VOLTS | 0.885833 VOLTS | 0.0050361 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 11.58 | 5.68 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000007 | OCMODE_VIL | -40C | P | 0.7 VOLTS | 1.0 VOLTS | 0.917083 VOLTS | 0.00464305 VOLTS | 0.91 VOLTS | 0.92 VOLTS | 10.77 | 5.95 |
| 6000007 | OCMODE_VIL | 25C | P | 0.7 VOLTS | 1.0 VOLTS | 0.88875 VOLTS | 0.00448427 VOLTS | 0.88 VOLTS | 0.9 VOLTS | 11.15 | 8.27 |
| 6000007 | OCMODE_VIL | 85C | P | 0.7 VOLTS | 1.0 VOLTS | 0.869167 VOLTS | 0.00408248 VOLTS | 0.86 VOLTS | 0.88 VOLTS | 12.25 | 10.68 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 6000008 | POL_VIH | -40C | P | 0.8 VOLTS | 1.4 VOLTS | 0.935 VOLTS | 0.00510753 VOLTS | 0.93 VOLTS | 0.94 VOLTS | 19.58 | 8.81 |
| 6000008 | POL_VIH | 25C | P | 0.8 VOLTS | 1.4 VOLTS | 0.90625 VOLTS | 0.00494538 VOLTS | 0.9 VOLTS | 0.91 VOLTS | 20.22 | 7.16 |
| 6000008 | POL_VIH | 85C | P | 0.8 VOLTS | 1.4 VOLTS | 0.8875 VOLTS | 0.00442325 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 22.61 | 6.59 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |

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|---------|----------------------|-------|------|------------|-------------|----------------|------------------|---------------|---------------|-------|-------|
| 6000009 | POL_VIL | -40C | P | 0.7 VOLTS | 1.0 VOLTS | 0.916667 VOLTS | 0.00481543 VOLTS | 0.91 VOLTS | 0.92 VOLTS | 10.38 | 5.77 |
| 6000009 | POL_VIL | 25C | P | 0.7 VOLTS | 1.0 VOLTS | 0.887917 VOLTS | 0.00414851 VOLTS | 0.88 VOLTS | 0.89 VOLTS | 12.05 | 9.01 |
| 6000009 | POL_VIL | 85C | P | 0.7 VOLTS | 1.0 VOLTS | 0.867917 VOLTS | 0.00414851 VOLTS | 0.86 VOLTS | 0.87 VOLTS | 12.05 | 10.61 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 7000000 | Read_BG_pre_norm | -40C | P | -15.0 Dbl | 16.0 Dbl | 0.375 Dbl | 0.875388 Dbl | -1 Dbl | 2 Dbl | 5.90 | 5.85 |
| 7000000 | Read_BG_pre_norm | 25C | P | -15.0 Dbl | 16.0 Dbl | 0.375 Dbl | 0.875388 Dbl | -1 Dbl | 2 Dbl | 5.90 | 5.85 |
| 7000000 | Read_BG_pre_norm | 85C | P | -15.0 Dbl | 16.0 Dbl | 0.375 Dbl | 0.875388 Dbl | -1 Dbl | 2 Dbl | 5.90 | 5.85 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 7000001 | Read_OV_pre_norm | -40C | P | -32.0 Dbl | 31.0 Dbl | -0.708333 Dbl | 3.08544 Dbl | -8 Dbl | 4 Dbl | 3.40 | 3.38 |
| 7000001 | Read_OV_pre_norm | 25C | P | -32.0 Dbl | 31.0 Dbl | -0.708333 Dbl | 3.08544 Dbl | -8 Dbl | 4 Dbl | 3.40 | 3.38 |
| 7000001 | Read_OV_pre_norm | 85C | P | -32.0 Dbl | 31.0 Dbl | -0.708333 Dbl | 3.08544 Dbl | -8 Dbl | 4 Dbl | 3.40 | 3.38 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 7000002 | Read_OCbias_pre_norm | -40C | P | -1.0 Dbl | 2.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a | n/a |
| 7000002 | Read_OCbias_pre_norm | 25C | P | -1.0 Dbl | 2.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a | n/a |
| 7000002 | Read_OCbias_pre_norm | 85C | P | -1.0 Dbl | 2.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 7000003 | Read_OCop_pre_norm | -40C | P | -15.0 Dbl | 15.0 Dbl | -0.0833333 Dbl | 1.97631 Dbl | -5 Dbl | 4 Dbl | 2.53 | 2.52 |
| 7000003 | Read_OCop_pre_norm | 25C | P | -15.0 Dbl | 15.0 Dbl | -0.0833333 Dbl | 1.97631 Dbl | -5 Dbl | 4 Dbl | 2.53 | 2.52 |
| 7000003 | Read_OCop_pre_norm | 85C | P | -15.0 Dbl | 15.0 Dbl | -0.0833333 Dbl | 1.97631 Dbl | -5 Dbl | 4 Dbl | 2.53 | 2.52 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 7000004 | Read_OCvref_pre_norm | -40C | P | -8.0 Dbl | 7.0 Dbl | -2.16667 Dbl | 0.56466 Dbl | -4 Dbl | -1 Dbl | 4.43 | 3.44 |
| 7000004 | Read_OCvref_pre_norm | 25C | P | -8.0 Dbl | 7.0 Dbl | -2.16667 Dbl | 0.56466 Dbl | -4 Dbl | -1 Dbl | 4.43 | 3.44 |
| 7000004 | Read_OCvref_pre_norm | 85C | P | -8.0 Dbl | 7.0 Dbl | -2.16667 Dbl | 0.56466 Dbl | -4 Dbl | -1 Dbl | 4.43 | 3.44 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 7000005 | AlreadyTrimmed? | -40C | P | 0.0 Dbl | 1.0 Dbl | 1 Dbl | 0 Dbl | 1 Dbl | 1 Dbl | n/a | n/a |
| 7000005 | AlreadyTrimmed? | 25C | P | 0.0 Dbl | 1.0 Dbl | 1 Dbl | 0 Dbl | 1 Dbl | 1 Dbl | n/a | n/a |
| 7000005 | AlreadyTrimmed? | 85C | P | 0.0 Dbl | 1.0 Dbl | 1 Dbl | 0 Dbl | 1 Dbl | 1 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 8000000 | BG_Sim_Pt1 | -40C | P | 1.14 VOLTS | 1.165 VOLTS | 1.15624 VOLTS | 0.00207917 VOLTS | 1.15135 VOLTS | 1.16058 VOLTS | 2.00 | 1.40 |
| 8000000 | BG_Sim_Pt1 | 25C | P | 1.14 VOLTS | 1.165 VOLTS | 1.15339 VOLTS | 0.00195533 VOLTS | 1.14936 VOLTS | 1.15733 VOLTS | 2.13 | 1.98 |
| 8000000 | BG_Sim_Pt1 | 85C | P | 1.14 VOLTS | 1.165 VOLTS | 1.15055 VOLTS | 0.00193545 VOLTS | 1.14689 VOLTS | 1.15432 VOLTS | 2.15 | 1.82 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 8000001 | BG_Sim_Pt2 | -40C | P | 1.19 VOLTS | 1.35 VOLTS | 1.22688 VOLTS | 0.00233183 VOLTS | 1.2214 VOLTS | 1.23167 VOLTS | 11.44 | 5.27 |
| 8000001 | BG_Sim_Pt2 | 25C | P | 1.19 VOLTS | 1.35 VOLTS | 1.23374 VOLTS | 0.00222464 VOLTS | 1.22925 VOLTS | 1.23831 VOLTS | 11.99 | 6.55 |
| 8000001 | BG_Sim_Pt2 | 85C | P | 1.19 VOLTS | 1.35 VOLTS | 1.23751 VOLTS | 0.00215368 VOLTS | 1.23352 VOLTS | 1.24179 VOLTS | 12.38 | 7.35 |

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| Test | Name | Group | Type | Low L. | High L. | Mean | VOLTS Sigma | Min | Max | Cp | Cpk |
|----------|----------------------|-------|------|----------------|----------------|--------------------|-------------------|--------------------|--------------------|------|------|
| 8000002 | BG_CalculateTrimCode | -40C | P | -15.0 Dbl | 16.0 Dbl | 1.13464 Dbl | 0.970399 Dbl | -0.864477 Dbl | 3.43104 Dbl | 5.32 | 5.11 |
| 8000002 | BG_CalculateTrimCode | 25C | P | -15.0 Dbl | 16.0 Dbl | 0.283872 Dbl | 0.804856 Dbl | -1.34494 Dbl | 1.93313 Dbl | 6.42 | 6.33 |
| 8000002 | BG_CalculateTrimCode | 85C | P | -15.0 Dbl | 16.0 Dbl | 0.135271 Dbl | 0.727076 Dbl | -1.2911 Dbl | 1.50133 Dbl | 7.11 | 6.94 |
| Test | Name | Group | Type | Low L. | High L. | Mean | VOLTS Sigma | Min | Max | Cp | Cpk |
| 9000000 | OV_Sim_Pt1 | -40C | P | 6.0 VOLTS | 6.2 VOLTS | 6.12048 VOLTS | 0.0240635 VOLTS | 6.07229 VOLTS | 6.18976 VOLTS | 1.39 | 1.10 |
| 9000000 | OV_Sim_Pt1 | 25C | P | 6.0 VOLTS | 6.2 VOLTS | 6.11948 VOLTS | 0.022726 VOLTS | 6.07229 VOLTS | 6.18072 VOLTS | 1.47 | 1.18 |
| 9000000 | OV_Sim_Pt1 | 85C | P | 6.0 VOLTS | 6.2 VOLTS | 6.11772 VOLTS | 0.0213153 VOLTS | 6.0753 VOLTS | 6.18072 VOLTS | 1.56 | 1.29 |
| Test | Name | Group | Type | Low L. | High L. | Mean | VOLTS Sigma | Min | Max | Cp | Cpk |
| 9000001 | OV_Sim_Pt2 | -40C | P | 5.6 VOLTS | 5.85 VOLTS | 5.76393 VOLTS | 0.0180026 VOLTS | 5.73494 VOLTS | 5.79819 VOLTS | 2.31 | 1.59 |
| 9000001 | OV_Sim_Pt2 | 25C | P | 5.6 VOLTS | 5.85 VOLTS | 5.76418 VOLTS | 0.0185139 VOLTS | 5.72892 VOLTS | 5.80121 VOLTS | 2.25 | 1.55 |
| 9000001 | OV_Sim_Pt2 | 85C | P | 5.6 VOLTS | 5.85 VOLTS | 5.76368 VOLTS | 0.0184177 VOLTS | 5.72892 VOLTS | 5.80422 VOLTS | 2.26 | 1.56 |
| Test | Name | Group | Type | Low L. | High L. | Mean | VOLTS Sigma | Min | Max | Cp | Cpk |
| 9000002 | OV_CalculateTrimCode | -40C | P | -32.0 Dbl | 31.0 Dbl | -0.63147 Dbl | 3.3412 Dbl | -8.18185 Dbl | 6.25 Dbl | 3.14 | 3.13 |
| 9000002 | OV_CalculateTrimCode | 25C | P | -32.0 Dbl | 31.0 Dbl | -0.579685 Dbl | 3.3328 Dbl | -8.47621 Dbl | 6.25 Dbl | 3.15 | 3.14 |
| 9000002 | OV_CalculateTrimCode | 85C | P | -32.0 Dbl | 31.0 Dbl | -0.396622 Dbl | 3.19097 Dbl | -8.76802 Dbl | 5.7143 Dbl | 3.29 | 3.28 |
| Test | Name | Group | Type | Low L. | High L. | Mean | VOLTS Sigma | Min | Max | Cp | Cpk |
| 10000000 | OCbias_Sim_00 | -40C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.9136e-006 AMPS | 2.42598e-008 AMPS | -1.96743e-006 AMPS | -1.87149e-006 AMPS | 4.81 | 4.31 |
| 10000000 | OCbias_Sim_00 | 25C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.92887e-006 AMPS | 2.27865e-008 AMPS | -1.97832e-006 AMPS | -1.88854e-006 AMPS | 5.12 | 4.81 |
| 10000000 | OCbias_Sim_00 | 85C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.93756e-006 AMPS | 2.18532e-008 AMPS | -1.98469e-006 AMPS | -1.89934e-006 AMPS | 5.34 | 5.15 |
| Test | Name | Group | Type | Low L. | High L. | Mean | VOLTS Sigma | Min | Max | Cp | Cpk |
| 10000001 | OCbias_Sim_01 | -40C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.89742e-006 AMPS | 4.6766e-008 AMPS | -1.96334e-006 AMPS | -1.75385e-006 AMPS | 2.49 | 2.12 |
| 10000001 | OCbias_Sim_01 | 25C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.91187e-006 AMPS | 4.59939e-008 AMPS | -1.97413e-006 AMPS | -1.76813e-006 AMPS | 2.54 | 2.26 |
| 10000001 | OCbias_Sim_01 | 85C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.92094e-006 AMPS | 4.57085e-008 AMPS | -1.98055e-006 AMPS | -1.77679e-006 AMPS | 2.55 | 2.34 |
| Test | Name | Group | Type | Low L. | High L. | Mean | VOLTS Sigma | Min | Max | Cp | Cpk |
| 10000002 | OCbias_Sim_10 | -40C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.92013e-006 AMPS | 4.39107e-008 AMPS | -2.05459e-006 AMPS | -1.86753e-006 AMPS | 2.66 | 2.43 |
| 10000002 | OCbias_Sim_10 | 25C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.93479e-006 AMPS | 4.37276e-008 AMPS | -2.07183e-006 AMPS | -1.88414e-006 AMPS | 2.67 | 2.55 |
| 10000002 | OCbias_Sim_10 | 85C | P | -2.3e-006 AMPS | -1.6e-006 AMPS | -1.94398e-006 AMPS | 4.33739e-008 AMPS | -2.08129e-006 AMPS | -1.89537e-006 AMPS | 2.69 | 2.64 |

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| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
|----------|--------------------------|-------|------|-----------|-----------|----------------|--------------|---------------|---------------|-------|-------|
| 10000003 | OCbias_Sim_11 | -40C | P | -2.3e-006 | -1.6e-006 | -1.93154e-006 | 7.91906e-008 | -2.19274e-006 | -1.86754e-006 | 1.47 | 1.40 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| 10000004 | OCbias_Sim_11 | 25C | P | -2.3e-006 | -1.6e-006 | -1.94629e-006 | 7.97318e-008 | -2.21131e-006 | -1.88397e-006 | 1.46 | 1.45 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| 10000005 | OCbias_Sim_11 | 85C | P | -2.3e-006 | -1.6e-006 | -1.95548e-006 | 7.9703e-008 | -2.22085e-006 | -1.89477e-006 | 1.46 | 1.44 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 10000004 | OCbias_SelectTrimCode | -40C | P | -1.0 Dbl | 2.0 Dbl | -0.0833333 Dbl | 0.28233 Dbl | -1 Dbl | 0 Dbl | 1.77 | 1.08 |
| 10000004 | OCbias_SelectTrimCode | 25C | P | -1.0 Dbl | 2.0 Dbl | -0.0416667 Dbl | 0.204124 Dbl | -1 Dbl | 0 Dbl | 2.45 | 1.56 |
| 10000004 | OCbias_SelectTrimCode | 85C | P | -1.0 Dbl | 2.0 Dbl | -0.0416667 Dbl | 0.204124 Dbl | -1 Dbl | 0 Dbl | 2.45 | 1.56 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000000 | OCop_Sim_Pt1_IISSET | -40C | P | -0.0001 | -2e-005 | -4.8395e-005 | 1.23582e-005 | -6.92276e-005 | -2.35122e-005 | 1.08 | 0.77 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| 11000000 | OCop_Sim_Pt1_IISSET | 25C | P | -0.0001 | -2e-005 | -4.62739e-005 | 1.15767e-005 | -6.55943e-005 | -2.29773e-005 | 1.15 | 0.76 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| 11000000 | OCop_Sim_Pt1_IISSET | 85C | P | -0.0001 | -2e-005 | -4.46826e-005 | 1.14128e-005 | -6.26818e-005 | -2.12751e-005 | 1.17 | 0.72 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000001 | OCop_Sim_Pt2_IISSET | -40C | P | -5e-005 | 0.0 AMPS | -8.18441e-006 | 8.89549e-006 | -2.77503e-005 | -5.63081e-008 | 0.94 | 0.31 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| 11000001 | OCop_Sim_Pt2_IISSET | 25C | P | -5e-005 | 0.0 AMPS | -1.12914e-005 | 9.62242e-006 | -3.00749e-005 | -5.45398e-008 | 0.87 | 0.39 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| 11000001 | OCop_Sim_Pt2_IISSET | 85C | P | -5e-005 | 0.0 AMPS | -1.29785e-005 | 9.68045e-006 | -3.05059e-005 | -4.36078e-008 | 0.86 | 0.45 |
| | | | | AMPS | AMPS | AMPS | AMPS | AMPS | AMPS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000002 | OCop_CalculateTrimCode | -40C | P | -16.0 Dbl | 24.0 Dbl | 2.5775 Dbl | 2.31595 Dbl | -2.1683 Dbl | 6.04496 Dbl | 2.88 | 2.67 |
| 11000002 | OCop_CalculateTrimCode | 25C | P | -16.0 Dbl | 24.0 Dbl | 2.35074 Dbl | 2.52882 Dbl | -2.68324 Dbl | 5.98341 Dbl | 2.64 | 2.42 |
| 11000002 | OCop_CalculateTrimCode | 85C | P | -16.0 Dbl | 24.0 Dbl | 2.18611 Dbl | 2.61341 Dbl | -2.78428 Dbl | 6.63238 Dbl | 2.55 | 2.32 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000003 | ISET_300mA | -40C | P | n/a . | n/a . | -8.97534e-005 | 4.8493e-006 | -9.33247e-005 | -7.03424e-005 | n/a . | n/a . |
| | | | | | | AMPS | AMPS | AMPS | AMPS | | |
| 11000003 | ISET_300mA | 25C | P | n/a . | n/a . | -8.98804e-005 | 5.40416e-006 | -9.33582e-005 | -6.8925e-005 | n/a . | n/a . |
| | | | | | | AMPS | AMPS | AMPS | AMPS | | |
| 11000003 | ISET_300mA | 85C | P | n/a . | n/a . | -8.91037e-005 | 7.09631e-006 | -9.28468e-005 | -6.43186e-005 | n/a . | n/a . |
| | | | | | | AMPS | AMPS | AMPS | AMPS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000004 | ISET_500mA Units is uA ! | -40C | P | n/a . | n/a . | -150.863 Dbl | 4.87686 Dbl | -154.251 Dbl | -131.2 Dbl | n/a . | n/a . |
| 11000004 | ISET_500mA Units is uA ! | 25C | P | n/a . | n/a . | -150.708 Dbl | 5.41229 Dbl | -154.541 Dbl | -129.694 Dbl | n/a . | n/a . |
| 11000004 | ISET_500mA Units is uA ! | 85C | P | n/a . | n/a . | -149.746 Dbl | 7.06156 Dbl | -153.771 Dbl | -124.999 Dbl | n/a . | n/a . |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000005 | ISET_1000mA | -40C | P | n/a . | n/a . | -0.000303186 | 5.07121e-006 | -0.000307065 | -0.000283036 | n/a . | n/a . |
| | | | | | | AMPS | AMPS | AMPS | AMPS | | |

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| 11000005 | 1SET_1000mA | 25C | P | n/a | n/a | -0.000302609 AMPS | 5.47058e-006 AMPS | -0.000307321 AMPS | -0.000281619 AMPS | n/a | n/a |
| 11000005 | 1SET_1000mA | 85C | P | n/a | n/a | -0.000301189 AMPS | 7.09729e-006 AMPS | -0.000305818 AMPS | -0.000276392 AMPS | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000006 | 1SET_1500mA Units is uA ! -40C | P | n/a | n/a | n/a | -455.351 Dbl | 5.31487 Dbl | -460.19 Dbl | -434.785 Dbl | n/a | n/a |
| 11000006 | 1SET_1500mA Units is uA ! 25C | P | n/a | n/a | n/a | -454.349 Dbl | 5.5371 Dbl | -459.835 Dbl | -433.368 Dbl | n/a | n/a |
| 11000006 | 1SET_1500mA Units is uA ! 85C | P | n/a | n/a | n/a | -452.447 Dbl | 7.19275 Dbl | -457.954 Dbl | -427.432 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000007 | Ratio_300mA Unit is uDbl ! -40C | P | n/a | n/a | n/a | 3.35368e-006 AMPS | 2.16985e-007 AMPS | 3.21458e-006 AMPS | 4.26485e-006 AMPS | n/a | n/a |
| 11000007 | Ratio_300mA Unit is uDbl ! 25C | P | n/a | n/a | n/a | 3.35191e-006 AMPS | 2.46094e-007 AMPS | 3.21343e-006 AMPS | 4.35256e-006 AMPS | n/a | n/a |
| 11000007 | Ratio_300mA Unit is uDbl ! 85C | P | n/a | n/a | n/a | 3.39333e-006 AMPS | 3.47686e-007 AMPS | 3.23113e-006 AMPS | 4.66428e-006 AMPS | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000008 | Ratio_500mA -40C | P | n/a | n/a | n/a | 3.31794 Dbl | 0.118981 Dbl | 3.24148 Dbl | 3.81096 Dbl | n/a | n/a |
| 11000008 | Ratio_500mA 25C | P | n/a | n/a | n/a | 3.32226 Dbl | 0.133408 Dbl | 3.23539 Dbl | 3.85522 Dbl | n/a | n/a |
| 11000008 | Ratio_500mA 85C | P | n/a | n/a | n/a | 3.34717 Dbl | 0.181422 Dbl | 3.2516 Dbl | 4.00002 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000009 | Ratio_1000mA Unit is uDbl -40C | P | n/a | n/a | n/a | 3.29923e-006 AMPS | 5.79342e-008 AMPS | 3.25664e-006 AMPS | 3.53311e-006 AMPS | n/a | n/a |
| 11000009 | Ratio_1000mA Unit is uDbl 25C | P | n/a | n/a | n/a | 3.30568e-006 AMPS | 6.29121e-008 AMPS | 3.25393e-006 AMPS | 3.5509e-006 AMPS | n/a | n/a |
| 11000009 | Ratio_1000mA Unit is uDbl 85C | P | n/a | n/a | n/a | 3.32206e-006 AMPS | 8.35303e-008 AMPS | 3.26991e-006 AMPS | 3.61804e-006 AMPS | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 11000010 | Ratio_1500mA -40C | P | n/a | n/a | n/a | 3.29461 Dbl | 0.0396524 Dbl | 3.25953 Dbl | 3.44998 Dbl | n/a | n/a |
| 11000010 | Ratio_1500mA 25C | P | n/a | n/a | n/a | 3.30191 Dbl | 0.0415593 Dbl | 3.26204 Dbl | 3.46126 Dbl | n/a | n/a |
| 11000010 | Ratio_1500mA 85C | P | n/a | n/a | n/a | 3.31614 Dbl | 0.0549418 Dbl | 3.27544 Dbl | 3.50933 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 12000000 | OCvref_Sim_Pt1_ILIM -40C | P | 0.8 AMPS | 1.5 AMPS | 1.158 AMPS | 0.0145305 AMPS | 1.12381 AMPS | 1.19207 AMPS | 8.03 7.85 | | |
| 12000000 | OCvref_Sim_Pt1_ILIM 25C | P | 0.8 AMPS | 1.5 AMPS | 1.14653 AMPS | 0.0143575 AMPS | 1.11073 AMPS | 1.18215 AMPS | 8.13 8.05 | | |
| 12000000 | OCvref_Sim_Pt1_ILIM 85C | P | 0.8 AMPS | 1.5 AMPS | 1.13857 AMPS | 0.0163583 AMPS | 1.10231 AMPS | 1.18141 AMPS | 7.13 6.90 | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 12000001 | OCvref_Sim_Pt2_ILIM -40C | P | -0.001 AMPS | 0.001 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | n/a | n/a |
| 12000001 | OCvref_Sim_Pt2_ILIM 25C | P | -0.001 AMPS | 0.001 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | n/a | n/a |
| 12000001 | OCvref_Sim_Pt2_ILIM 85C | P | -0.001 AMPS | 0.001 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | 0 AMPS | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 12000002 | OCvref_CalculateTrimCode -40C | P | -8.0 Dbl | 7.0 Dbl | -2.59987 Dbl | 0.484351 Dbl | -3.73572 Dbl | -1.46039 Dbl | 5.16 3.72 | | |

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|----------|--------------------------|-------|------|------------|------------|--------------------|------------------|-------------------|------------------|-------|-------|
| 12000002 | OCvref_CalculateTrimCode | 25C | P | -8.0 Dbl | 7.0 Dbl | -2.21755 Dbl | 0.478585 Dbl | -3.40503 Dbl | -1.02421 Dbl | 5.22 | 4.03 |
| 12000002 | OCvref_CalculateTrimCode | 85C | P | -8.0 Dbl | 7.0 Dbl | -1.95241 Dbl | 0.545275 Dbl | -3.38045 Dbl | -0.743804 Dbl | 4.58 | 3.70 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 13000000 | IShort | -40C | P | 0.45 AMPS | 0.75 AMPS | 0.646185 AMPS | 0.0181625 AMPS | 0.61022 AMPS | 0.677882 AMPS | 2.75 | 1.91 |
| 13000000 | IShort | 25C | P | 0.45 AMPS | 0.75 AMPS | 0.648056 AMPS | 0.0137574 AMPS | 0.623533 AMPS | 0.671932 AMPS | 3.63 | 2.47 |
| 13000000 | IShort | 85C | P | 0.45 AMPS | 0.75 AMPS | 0.647884 AMPS | 0.0144049 AMPS | 0.620916 AMPS | 0.67216 AMPS | 3.47 | 2.36 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 13000001 | VINDET_VRef | -40C | P | 0.7 VOLTS | 1.05 VOLTS | 0.832602 VOLTS | 0.0196106 VOLTS | 0.79658 VOLTS | 0.875234 VOLTS | 2.97 | 2.25 |
| 13000001 | VINDET_VRef | 25C | P | 0.7 VOLTS | 1.05 VOLTS | 0.842426 VOLTS | 0.014745 VOLTS | 0.804532 VOLTS | 0.873923 VOLTS | 3.96 | 3.22 |
| 13000001 | VINDET_VRef | 85C | P | 0.7 VOLTS | 1.05 VOLTS | 0.84806 VOLTS | 0.013942 VOLTS | 0.819058 VOLTS | 0.873765 VOLTS | 4.18 | 3.54 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 13000002 | ISET_VIH | -40C | P | 0.7 VOLTS | 1.1 VOLTS | 0.8325 VOLTS | 0.0196159 VOLTS | 0.79 VOLTS | 0.87 VOLTS | 3.40 | 2.25 |
| 13000002 | ISET_VIH | 25C | P | 0.7 VOLTS | 1.1 VOLTS | 0.842083 VOLTS | 0.0161459 VOLTS | 0.81 VOLTS | 0.87 VOLTS | 4.13 | 2.93 |
| 13000002 | ISET_VIH | 85C | P | 0.7 VOLTS | 1.1 VOLTS | 0.847083 VOLTS | 0.0148848 VOLTS | 0.81 VOLTS | 0.87 VOLTS | 4.48 | 3.29 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 13000003 | ISET_VIL | -40C | P | 0.65 VOLTS | 1.1 VOLTS | 0.811667 VOLTS | 0.0201444 VOLTS | 0.77 VOLTS | 0.85 VOLTS | 3.72 | 2.68 |
| 13000003 | ISET_VIL | 25C | P | 0.65 VOLTS | 1.1 VOLTS | 0.820417 VOLTS | 0.0157367 VOLTS | 0.79 VOLTS | 0.85 VOLTS | 4.77 | 3.61 |
| 13000003 | ISET_VIL | 85C | P | 0.65 VOLTS | 1.1 VOLTS | 0.826667 VOLTS | 0.0149395 VOLTS | 0.8 VOLTS | 0.86 VOLTS | 5.02 | 3.94 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 13000004 | Vos_EA | -40C | P | -0.4 VOLTS | 0.4 VOLTS | -0.00010206 VOLTS | 0.00561524 VOLTS | -0.0119647 VOLTS | 0.00981565 VOLTS | 23.74 | 23.74 |
| 13000004 | Vos_EA | 25C | P | -0.4 VOLTS | 0.4 VOLTS | -0.000342356 VOLTS | 0.00602453 VOLTS | -0.01159 VOLTS | 0.0143812 VOLTS | 22.13 | 22.11 |
| 13000004 | Vos_EA | 85C | P | -0.4 VOLTS | 0.4 VOLTS | -0.000976562 VOLTS | 0.00498007 VOLTS | -0.00990386 VOLTS | 0.00850612 VOLTS | 26.77 | 26.71 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 13000005 | IHard_LH | -40C | P | 1.5 VOLTS | 1.9 VOLTS | 1.80333 VOLTS | 0.0130773 VOLTS | 1.77 VOLTS | 1.83 VOLTS | 5.10 | 2.46 |
| 13000005 | IHard_LH | 25C | P | 1.5 VOLTS | 1.9 VOLTS | 1.80583 VOLTS | 0.0131601 VOLTS | 1.78 VOLTS | 1.83 VOLTS | 5.07 | 2.39 |
| 13000005 | IHard_LH | 85C | P | 1.5 VOLTS | 1.9 VOLTS | 1.80542 VOLTS | 0.0128467 VOLTS | 1.78 VOLTS | 1.83 VOLTS | 5.19 | 2.45 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 13000006 | IHard_HL | -40C | P | 1.5 VOLTS | 1.9 VOLTS | 1.7925 VOLTS | 0.0148177 VOLTS | 1.76 VOLTS | 1.82 VOLTS | 4.50 | 2.42 |
| 13000006 | IHard_HL | 25C | P | 1.5 VOLTS | 1.9 VOLTS | 1.79375 VOLTS | 0.0143898 VOLTS | 1.76 VOLTS | 1.82 VOLTS | 4.63 | 2.46 |

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| VOLTS | | | | | | | | | | |
|----------|-----------------------|-------|------|-----------|-----------|----------------|-----------------|---------------|---------------|-------------|
| VOLTS | | | | | | | | | | |
| 13000006 | IHard_HL | 85C | P | 1.5 VOLTS | 1.9 VOLTS | 1.79542 VOLTS | 0.0131807 VOLTS | 1.76 VOLTS | 1.82 VOLTS | 5.06 2.64 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 14000000 | NeedToTrim? | -40C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 14000000 | NeedToTrim? | 25C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 14000000 | NeedToTrim? | 85C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 14000001 | Write_Fuses | -40C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 14000001 | Write_Fuses | 25C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 14000001 | Write_Fuses | 85C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000000 | Read_BG_post_norm | -40C | P | -15.0 Dbl | 16.0 Dbl | 0.375 Dbl | 0.875388 Dbl | -1 Dbl | 2 Dbl | 5.90 5.85 |
| 15000000 | Read_BG_post_norm | 25C | P | -15.0 Dbl | 16.0 Dbl | 0.375 Dbl | 0.875388 Dbl | -1 Dbl | 2 Dbl | 5.90 5.85 |
| 15000000 | Read_BG_post_norm | 85C | P | -15.0 Dbl | 16.0 Dbl | 0.375 Dbl | 0.875388 Dbl | -1 Dbl | 2 Dbl | 5.90 5.85 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000001 | Read_OV_post_norm | -40C | P | -32.0 Dbl | 31.0 Dbl | -0.708333 Dbl | 3.08544 Dbl | -8 Dbl | 4 Dbl | 3.40 3.38 |
| 15000001 | Read_OV_post_norm | 25C | P | -32.0 Dbl | 31.0 Dbl | -0.708333 Dbl | 3.08544 Dbl | -8 Dbl | 4 Dbl | 3.40 3.38 |
| 15000001 | Read_OV_post_norm | 85C | P | -32.0 Dbl | 31.0 Dbl | -0.708333 Dbl | 3.08544 Dbl | -8 Dbl | 4 Dbl | 3.40 3.38 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000002 | Read_OCbias_post_norm | -40C | P | -1.0 Dbl | 2.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 15000002 | Read_OCbias_post_norm | 25C | P | -1.0 Dbl | 2.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 15000002 | Read_OCbias_post_norm | 85C | P | -1.0 Dbl | 2.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000003 | Read_OCop_post_norm | -40C | P | -32.0 Dbl | 31.0 Dbl | -0.083333 Dbl | 1.97631 Dbl | -5 Dbl | 4 Dbl | 5.31 5.24 |
| 15000003 | Read_OCop_post_norm | 25C | P | -32.0 Dbl | 31.0 Dbl | -0.083333 Dbl | 1.97631 Dbl | -5 Dbl | 4 Dbl | 5.31 5.24 |
| 15000003 | Read_OCop_post_norm | 85C | P | -32.0 Dbl | 31.0 Dbl | -0.083333 Dbl | 1.97631 Dbl | -5 Dbl | 4 Dbl | 5.31 5.24 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000004 | Read_OCvref_post_norm | -40C | P | -8.0 Dbl | 7.0 Dbl | -2.16667 Dbl | 0.56466 Dbl | -4 Dbl | -1 Dbl | 4.43 3.44 |
| 15000004 | Read_OCvref_post_norm | 25C | P | -8.0 Dbl | 7.0 Dbl | -2.16667 Dbl | 0.56466 Dbl | -4 Dbl | -1 Dbl | 4.43 3.44 |
| 15000004 | Read_OCvref_post_norm | 85C | P | -8.0 Dbl | 7.0 Dbl | -2.16667 Dbl | 0.56466 Dbl | -4 Dbl | -1 Dbl | 4.43 3.44 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000005 | DeviceJustTrimmed? | -40C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 15000005 | DeviceJustTrimmed? | 25C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| 15000005 | DeviceJustTrimmed? | 85C | P | 0.0 Dbl | 1.0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | 0 Dbl | n/a . n/a . |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000011 | BG_delta_notrim | -40C | P | -31.0 Dbl | 31.0 Dbl | -0.759638 Dbl | 0.362687 Dbl | -1.43104 Dbl | -0.135523 Dbl | 28.49 27.79 |
| 15000011 | BG_delta_notrim | 25C | P | -31.0 Dbl | 31.0 Dbl | 0.0911277 Dbl | 0.291673 Dbl | -0.443932 Dbl | 0.532794 Dbl | 35.43 35.32 |
| 15000011 | BG_delta_notrim | 85C | P | -31.0 Dbl | 31.0 Dbl | 0.239729 Dbl | 0.303807 Dbl | -0.292257 Dbl | 0.642918 Dbl | 34.01 33.75 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp Cpk |
| 15000012 | OV_delta_notrim | -40C | P | -36.0 Dbl | 36.0 Dbl | -0.0768636 Dbl | 1.07262 Dbl | -2.25 Dbl | 1.0744 Dbl | 11.19 11.16 |
| 15000012 | OV_delta_notrim | 25C | P | -36.0 Dbl | 36.0 Dbl | -0.128649 Dbl | 0.575638 Dbl | -2.25 Dbl | 0.52942 Dbl | 20.85 20.77 |
| 15000012 | OV_delta_notrim | 85C | P | -36.0 Dbl | 36.0 Dbl | -0.311711 Dbl | 1.14787 Dbl | -2.4779 Dbl | 1.49994 Dbl | 10.45 10.36 |

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| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
|----------|---------------------|-------|------|-------------|-------------|----------------|-------------------|----------------|----------------|--------|-------|
| 15000013 | Ocbias_delta_notrim | -40C | P | -3.0 Dbl | 3.0 Dbl | 0.0833333 Dbl | 0.28233 Dbl | 0 Dbl | 1 Dbl | 3.54 | 3.44 |
| 15000013 | Ocbias_delta_notrim | 25C | P | -3.0 Dbl | 3.0 Dbl | 0.0416667 Dbl | 0.204124 Dbl | 0 Dbl | 1 Dbl | 4.90 | 4.83 |
| 15000013 | Ocbias_delta_notrim | 85C | P | -3.0 Dbl | 3.0 Dbl | 0.0416667 Dbl | 0.204124 Dbl | 0 Dbl | 1 Dbl | 4.90 | 4.83 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 15000014 | OCop_delta_notrim | -40C | P | -31.0 Dbl | 31.0 Dbl | -2.66083 Dbl | 1.95729 Dbl | -6.77318 Dbl | -0.0298269 Dbl | 5.28 | 4.83 |
| 15000014 | OCop_delta_notrim | 25C | P | -31.0 Dbl | 31.0 Dbl | -2.43408 Dbl | 2.37741 Dbl | -7.948 Dbl | 0.509922 Dbl | 4.35 | 4.01 |
| 15000014 | OCop_delta_notrim | 85C | P | -31.0 Dbl | 31.0 Dbl | -2.26945 Dbl | 2.68359 Dbl | -9.03547 Dbl | 0.798733 Dbl | 3.85 | 3.57 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 15000015 | Ocvref_delta_notrim | -40C | P | -15.0 Dbl | 15.0 Dbl | 0.433202 Dbl | 0.490965 Dbl | -0.91414 Dbl | 1.73572 Dbl | 10.18 | 9.89 |
| 15000015 | Ocvref_delta_notrim | 25C | P | -15.0 Dbl | 15.0 Dbl | 0.0508866 Dbl | 0.523337 Dbl | -1.39932 Dbl | 1.40503 Dbl | 9.55 | 9.52 |
| 15000015 | Ocvref_delta_notrim | 85C | P | -15.0 Dbl | 15.0 Dbl | -0.214261 Dbl | 0.59267 Dbl | -1.67065 Dbl | 1.38045 Dbl | 8.44 | 8.32 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000000 | BG_Voltage | -40C | P | 1.183 VOLTS | 2.003 VOLTS | 1.19097 VOLTS | 0.000854007 VOLTS | 1.18941 VOLTS | 1.19242 VOLTS | 160.03 | 3.11 |
| 16000000 | BG_Voltage | 25C | P | 1.183 VOLTS | 2.003 VOLTS | 1.1929 VOLTS | 0.00087309 VOLTS | 1.19118 VOLTS | 1.19411 VOLTS | 156.53 | 3.78 |
| 16000000 | BG_Voltage | 85C | P | 1.183 VOLTS | 2.003 VOLTS | 1.19328 VOLTS | 0.00102256 VOLTS | 1.19152 VOLTS | 1.19472 VOLTS | 133.65 | 3.35 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000001 | PTAT_Voltage | -40C | P | 0.7 VOLTS | 1.0 VOLTS | 0.803214 VOLTS | 0.000716813 VOLTS | 0.801836 VOLTS | 0.804949 VOLTS | 69.75 | 48.00 |
| 16000001 | PTAT_Voltage | 25C | P | 0.7 VOLTS | 0.8 VOLTS | 0.750201 VOLTS | 0.000256287 VOLTS | 0.749294 VOLTS | 0.750565 VOLTS | 65.03 | 64.77 |
| 16000001 | PTAT_Voltage | 85C | P | 0.7 VOLTS | 0.8 VOLTS | 0.71322 VOLTS | 0.000637826 VOLTS | 0.712282 VOLTS | 0.714309 VOLTS | 26.13 | 6.91 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000002 | VRef_3V | -40C | P | 2.8 VOLTS | 3.2 VOLTS | 2.99503 VOLTS | 0.0252236 VOLTS | 2.94416 VOLTS | 3.04919 VOLTS | 2.64 | 2.58 |
| 16000002 | VRef_3V | 25C | P | 2.8 VOLTS | 3.2 VOLTS | 3.00282 VOLTS | 0.024047 VOLTS | 2.9535 VOLTS | 3.05256 VOLTS | 2.77 | 2.73 |
| 16000002 | VRef_3V | 85C | P | 2.8 VOLTS | 3.2 VOLTS | 3.00608 VOLTS | 0.0232584 VOLTS | 2.95739 VOLTS | 3.05295 VOLTS | 2.87 | 2.78 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000003 | LDO_5V_0mA | -40C | P | 3.35 VOLTS | 3.65 VOLTS | 3.52392 VOLTS | 0.0276177 VOLTS | 3.4686 VOLTS | 3.57053 VOLTS | 1.81 | 1.52 |
| 16000003 | LDO_5V_0mA | 25C | P | 3.35 VOLTS | 3.65 VOLTS | 3.52739 VOLTS | 0.02722 VOLTS | 3.47063 VOLTS | 3.57716 VOLTS | 1.84 | 1.50 |
| 16000003 | LDO_5V_0mA | 85C | P | 3.35 VOLTS | 3.65 VOLTS | 3.52287 VOLTS | 0.0257574 VOLTS | 3.46932 VOLTS | 3.56116 VOLTS | 1.94 | 1.65 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000004 | LDO_5V_50mA | -40C | P | 2.0 VOLTS | 3.65 VOLTS | 3.51031 VOLTS | 0.0301194 VOLTS | 3.43723 VOLTS | 3.55203 VOLTS | 9.13 | 1.55 |
| 16000004 | LDO_5V_50mA | 25C | P | 3.35 VOLTS | 3.65 VOLTS | 3.50528 VOLTS | 0.0392296 VOLTS | 3.3686 VOLTS | 3.55188 VOLTS | 1.27 | 1.23 |

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|----------|--------------|-------|------|------------|------------|---------------|------------------|---------------|---------------|------|-------|
| 16000004 | LDO_5V_50mA | 85C | P | 3.35 VOLTS | 3.65 VOLTS | 3.50476 VOLTS | 0.0332434 VOLTS | 3.40349 VOLTS | 3.55051 VOLTS | 1.50 | 1.46 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000005 | LDO_20V_0mA | -40C | P | 3.35 VOLTS | 3.65 VOLTS | 3.53934 VOLTS | 0.0276273 VOLTS | 3.48993 VOLTS | 3.58411 VOLTS | 1.81 | 1.34 |
| 16000005 | LDO_20V_0mA | 25C | P | 3.35 VOLTS | 3.65 VOLTS | 3.54347 VOLTS | 0.0277429 VOLTS | 3.49619 VOLTS | 3.58534 VOLTS | 1.80 | 1.28 |
| 16000005 | LDO_20V_0mA | 85C | P | 3.35 VOLTS | 3.65 VOLTS | 3.54246 VOLTS | 0.0277109 VOLTS | 3.49533 VOLTS | 3.58611 VOLTS | 1.80 | 1.29 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000006 | LDO_20V_50mA | -40C | P | 2.0 VOLTS | 3.65 VOLTS | 3.51016 VOLTS | 0.030434 VOLTS | 3.4355 VOLTS | 3.5516 VOLTS | 9.04 | 1.53 |
| 16000006 | LDO_20V_50mA | 25C | P | 3.35 VOLTS | 3.65 VOLTS | 3.50524 VOLTS | 0.0389935 VOLTS | 3.37004 VOLTS | 3.55167 VOLTS | 1.28 | 1.24 |
| 16000006 | LDO_20V_50mA | 85C | P | 3.35 VOLTS | 3.65 VOLTS | 3.50471 VOLTS | 0.0333686 VOLTS | 3.4028 VOLTS | 3.55045 VOLTS | 1.50 | 1.45 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000007 | ILIM_1A | -40C | P | 0.9 AMPS | 1.1 AMPS | 1.05625 AMPS | 0.0189171 AMPS | 1.01871 AMPS | 1.09344 AMPS | 1.76 | 0.77 |
| 16000007 | ILIM_1A | 25C | P | 0.9 AMPS | 1.1 AMPS | 1.04794 AMPS | 0.019974 AMPS | 1.00943 AMPS | 1.08652 AMPS | 1.67 | 0.87 |
| 16000007 | ILIM_1A | 85C | P | 0.9 AMPS | 1.1 AMPS | 1.04143 AMPS | 0.0212802 AMPS | 1.0039 AMPS | 1.08363 AMPS | 1.57 | 0.92 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 16000008 | ILIM_1P5A | -40C | P | 1.4 AMPS | 1.8 AMPS | 1.58163 AMPS | 0.0269614 AMPS | 1.51989 AMPS | 1.62742 AMPS | 2.47 | 2.25 |
| 16000008 | ILIM_1P5A | 25C | P | 1.4 AMPS | 1.8 AMPS | 1.57158 AMPS | 0.027886 AMPS | 1.50729 AMPS | 1.6182 AMPS | 2.39 | 2.05 |
| 16000008 | ILIM_1P5A | 85C | P | 1.4 AMPS | 1.8 AMPS | 1.56383 AMPS | 0.0290137 AMPS | 1.50009 AMPS | 1.61659 AMPS | 2.30 | 1.88 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000000 | OVLO_VIH | -40C | P | 5.85 VOLTS | 6.05 VOLTS | 5.93022 VOLTS | 0.00782748 VOLTS | 5.91867 VOLTS | 5.94879 VOLTS | 4.26 | 3.42 |
| 17000000 | OVLO_VIH | 25C | P | 5.85 VOLTS | 6.05 VOLTS | 5.93825 VOLTS | 0.00602396 VOLTS | 5.92771 VOLTS | 5.95181 VOLTS | 5.53 | 4.88 |
| 17000000 | OVLO_VIH | 85C | P | 5.85 VOLTS | 6.05 VOLTS | 5.93926 VOLTS | 0.00586921 VOLTS | 5.92771 VOLTS | 5.95181 VOLTS | 5.68 | 5.07 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000001 | OVLO_VIL | -40C | P | 5.4 VOLTS | n/a. | 5.88975 VOLTS | 0.00760586 VOLTS | 5.878 VOLTS | 5.908 VOLTS | n/a. | 21.46 |
| 17000001 | OVLO_VIL | 25C | P | 5.4 VOLTS | n/a. | 5.898 VOLTS | 0.00597824 VOLTS | 5.887 VOLTS | 5.911 VOLTS | n/a. | 27.77 |
| 17000001 | OVLO_VIL | 85C | P | 5.4 VOLTS | n/a. | 5.89875 VOLTS | 0.0054474 VOLTS | 5.89 VOLTS | 5.911 VOLTS | n/a. | 30.52 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000002 | UVLO_VIH | -40C | P | n/a. | 2.85 VOLTS | 2.68667 VOLTS | 0.0173623 VOLTS | 2.65 VOLTS | 2.72 VOLTS | n/a. | 3.14 |
| 17000002 | UVLO_VIH | 25C | P | n/a. | 2.85 VOLTS | 2.69125 VOLTS | 0.0159653 VOLTS | 2.66 VOLTS | 2.72 VOLTS | n/a. | 3.31 |
| 17000002 | UVLO_VIH | 85C | P | n/a. | 2.85 VOLTS | 2.69292 VOLTS | 0.0139811 VOLTS | 2.66 VOLTS | 2.72 VOLTS | n/a. | 3.75 |

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| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
|----------|-------------|-------|------|------------|------------|----------------|------------------|------------|------------|------|------|
| 17000003 | UVLO_VIL | -40C | P | 2.4 VOLTS | n/a. | 2.5025 VOLTS | 0.0156733 VOLTS | 2.47 VOLTS | 2.53 VOLTS | n/a. | 2.18 |
| 17000003 | UVLO_VIL | 25C | P | 2.4 VOLTS | n/a. | 2.50792 VOLTS | 0.0135066 VOLTS | 2.48 VOLTS | 2.53 VOLTS | n/a. | 2.66 |
| 17000003 | UVLO_VIL | 85C | P | 2.4 VOLTS | n/a. | 2.50958 VOLTS | 0.0142887 VOLTS | 2.48 VOLTS | 2.54 VOLTS | n/a. | 2.56 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000004 | UVLO_HYST | -40C | P | 0.1 VOLTS | 0.3 VOLTS | 0.184167 VOLTS | 0.0050361 VOLTS | 0.18 VOLTS | 0.19 VOLTS | 6.62 | 5.57 |
| 17000004 | UVLO_HYST | 25C | P | 0.1 VOLTS | 0.3 VOLTS | 0.183333 VOLTS | 0.00481543 VOLTS | 0.18 VOLTS | 0.19 VOLTS | 6.92 | 5.77 |
| 17000004 | UVLO_HYST | 85C | P | 0.1 VOLTS | 0.3 VOLTS | 0.183333 VOLTS | 0.00481543 VOLTS | 0.18 VOLTS | 0.19 VOLTS | 6.92 | 5.77 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000005 | OT_COMP_VIH | -40C | P | 0.55 VOLTS | 0.65 VOLTS | 0.61875 VOLTS | 0.00448427 VOLTS | 0.61 VOLTS | 0.63 VOLTS | 3.72 | 2.32 |
| 17000005 | OT_COMP_VIH | 25C | P | 0.55 VOLTS | 0.65 VOLTS | 0.619583 VOLTS | 0.0035864 VOLTS | 0.61 VOLTS | 0.63 VOLTS | 4.65 | 2.83 |
| 17000005 | OT_COMP_VIH | 85C | P | 0.55 VOLTS | 0.65 VOLTS | 0.619167 VOLTS | 0.0050361 VOLTS | 0.61 VOLTS | 0.63 VOLTS | 3.31 | 2.04 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000006 | OT_COMP_VIL | -40C | P | 0.53 VOLTS | 0.63 VOLTS | 0.578333 VOLTS | 0.00481543 VOLTS | 0.57 VOLTS | 0.59 VOLTS | 3.46 | 3.35 |
| 17000006 | OT_COMP_VIL | 25C | P | 0.53 VOLTS | 0.63 VOLTS | 0.579583 VOLTS | 0.0035864 VOLTS | 0.57 VOLTS | 0.59 VOLTS | 4.65 | 4.61 |
| 17000006 | OT_COMP_VIL | 85C | P | 0.53 VOLTS | 0.63 VOLTS | 0.580833 VOLTS | 0.0028233 VOLTS | 0.58 VOLTS | 0.59 VOLTS | 5.90 | 5.80 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000007 | 2V_COMP_VIH | -40C | P | 1.8 VOLTS | 2.2 VOLTS | 2.1075 VOLTS | 0.0111317 VOLTS | 2.1 VOLTS | 2.13 VOLTS | 5.99 | 2.77 |
| 17000007 | 2V_COMP_VIH | 25C | P | 1.8 VOLTS | 2.2 VOLTS | 2.115 VOLTS | 0.0110336 VOLTS | 2.1 VOLTS | 2.13 VOLTS | 6.04 | 2.57 |
| 17000007 | 2V_COMP_VIH | 85C | P | 1.8 VOLTS | 2.2 VOLTS | 2.11625 VOLTS | 0.00875397 VOLTS | 2.11 VOLTS | 2.13 VOLTS | 7.62 | 3.19 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000008 | 2V_COMP_VIL | -40C | P | 1.7 VOLTS | 2.1 VOLTS | 1.98333 VOLTS | 0.010495 VOLTS | 1.95 VOLTS | 1.99 VOLTS | 6.35 | 3.71 |
| 17000008 | 2V_COMP_VIL | 25C | P | 1.7 VOLTS | 2.1 VOLTS | 1.98958 VOLTS | 0.00750603 VOLTS | 1.97 VOLTS | 2 VOLTS | 8.88 | 4.90 |
| 17000008 | 2V_COMP_VIL | 85C | P | 1.7 VOLTS | 2.1 VOLTS | 1.99125 VOLTS | 0.00946962 VOLTS | 1.97 VOLTS | 2 VOLTS | 7.04 | 3.83 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |

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|----------|------------|-------|------|----------------|----------------|------------------|------------------|------------------|-------------------|------|------|
| 17000009 | TRCB_VIH | -40C | P | 0.0 VOLTS | 0.1001 VOLTS | 0.0160114 VOLTS | 0.00626008 VOLTS | 0.00102106 VOLTS | 0.0260647 VOLTS | 2.67 | 0.85 |
| 17000009 | TRCB_VIH | 25C | P | 0.0 VOLTS | 0.1001 VOLTS | 0.018657 VOLTS | 0.00570229 VOLTS | 0.00588742 VOLTS | 0.0261506 VOLTS | 2.93 | 1.09 |
| 17000009 | TRCB_VIH | 85C | P | 0.0 VOLTS | 0.1001 VOLTS | 0.020554 VOLTS | 0.00626805 VOLTS | 0.00586877 VOLTS | 0.0308397 VOLTS | 2.66 | 1.09 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 17000010 | TRCB_VIL | -40C | P | -0.1001 VOLTS | 0.03 VOLTS | -0.0252386 VOLTS | 0.00726831 VOLTS | -0.0439789 VOLTS | -0.0137282 VOLTS | 2.98 | 2.53 |
| 17000010 | TRCB_VIL | 25C | P | -0.1001 VOLTS | 0.03 VOLTS | -0.0223847 VOLTS | 0.00565554 VOLTS | -0.0391126 VOLTS | -0.0138494 VOLTS | 3.83 | 3.09 |
| 17000010 | TRCB_VIL | 85C | P | -0.1001 VOLTS | 0.03 VOLTS | -0.0202793 VOLTS | 0.00558277 VOLTS | -0.0341312 VOLTS | -0.00916035 VOLTS | 3.88 | 3.00 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000000 | Oscillator | -40C | P | 400000.0 HERTZ | 650000.0 HERTZ | 464114 HERTZ | 31840.6 HERTZ | 407848 HERTZ | 524136 HERTZ | 1.31 | 0.67 |
| 18000000 | Oscillator | 25C | P | 400000.0 HERTZ | 650000.0 HERTZ | 486573 HERTZ | 27108.6 HERTZ | 437729 HERTZ | 537102 HERTZ | 1.54 | 1.06 |
| 18000000 | Oscillator | 85C | P | 400000.0 HERTZ | 650000.0 HERTZ | 492879 HERTZ | 23674.9 HERTZ | 449808 HERTZ | 536770 HERTZ | 1.76 | 1.31 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000001 | Counter1 | -40C | P | 63.9 DbI | 64.1 DbI | 64 DbI | 0 DbI | 64 DbI | 64 DbI | n/a | n/a |
| 18000001 | Counter1 | 25C | P | 63.9 DbI | 64.1 DbI | 64 DbI | 0 DbI | 64 DbI | 64 DbI | n/a | n/a |
| 18000001 | Counter1 | 85C | P | 63.9 DbI | 64.1 DbI | 64 DbI | 0 DbI | 64 DbI | 64 DbI | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000002 | Counter2 | -40C | P | 20.9 DbI | 21.1 DbI | 21 DbI | 0 DbI | 21 DbI | 21 DbI | n/a | n/a |
| 18000002 | Counter2 | 25C | P | 20.9 DbI | 21.1 DbI | 21 DbI | 0 DbI | 21 DbI | 21 DbI | n/a | n/a |
| 18000002 | Counter2 | 85C | P | 20.9 DbI | 21.1 DbI | 21 DbI | 0 DbI | 21 DbI | 21 DbI | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000003 | Counter3 | -40C | P | 3.9 DbI | 4.1 DbI | 4 DbI | 0 DbI | 4 DbI | 4 DbI | n/a | n/a |
| 18000003 | Counter3 | 25C | P | 3.9 DbI | 4.1 DbI | 4 DbI | 0 DbI | 4 DbI | 4 DbI | n/a | n/a |
| 18000003 | Counter3 | 85C | P | 3.9 DbI | 4.1 DbI | 4 DbI | 0 DbI | 4 DbI | 4 DbI | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000004 | Counter4 | -40C | P | 40.9 DbI | 41.1 DbI | 41 DbI | 0 DbI | 41 DbI | 41 DbI | n/a | n/a |
| 18000004 | Counter4 | 25C | P | 40.9 DbI | 41.1 DbI | 41 DbI | 0 DbI | 41 DbI | 41 DbI | n/a | n/a |
| 18000004 | Counter4 | 85C | P | 40.9 DbI | 41.1 DbI | 41 DbI | 0 DbI | 41 DbI | 41 DbI | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000005 | Counter5 | -40C | P | 3.9 DbI | 4.1 DbI | 4 DbI | 0 DbI | 4 DbI | 4 DbI | n/a | n/a |
| 18000005 | Counter5 | 25C | P | 3.9 DbI | 4.1 DbI | 4 DbI | 0 DbI | 4 DbI | 4 DbI | n/a | n/a |
| 18000005 | Counter5 | 85C | P | 3.9 DbI | 4.1 DbI | 4 DbI | 0 DbI | 4 DbI | 4 DbI | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000006 | Counter6 | -40C | P | 31.9 DbI | 32.1 DbI | 32 DbI | 0 DbI | 32 DbI | 32 DbI | n/a | n/a |
| 18000006 | Counter6 | 25C | P | 31.9 DbI | 32.1 DbI | 32 DbI | 0 DbI | 32 DbI | 32 DbI | n/a | n/a |

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|----------|---------------|-------|------|-----------|------------|-----------------|------------------|-----------------|-----------------|-----|------|
| 18000006 | Counter6 | 85C | P | 31.9 Dbl | 32.1 Dbl | 32 Dbl | 0 Dbl | 32 Dbl | 32 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000007 | Counter7a | -40C | P | 10.9 Dbl | 11.1 Dbl | 11 Dbl | 0 Dbl | 11 Dbl | 11 Dbl | n/a | n/a |
| 18000007 | Counter7a | 25C | P | 10.9 Dbl | 11.1 Dbl | 11 Dbl | 0 Dbl | 11 Dbl | 11 Dbl | n/a | n/a |
| 18000007 | Counter7a | 85C | P | 10.9 Dbl | 11.1 Dbl | 11 Dbl | 0 Dbl | 11 Dbl | 11 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 18000008 | Counter7b | -40C | P | 103.9 Dbl | 104.1 Dbl | 104 Dbl | 0 Dbl | 104 Dbl | 104 Dbl | n/a | n/a |
| 18000008 | Counter7b | 25C | P | 103.9 Dbl | 104.1 Dbl | 104 Dbl | 0 Dbl | 104 Dbl | 104 Dbl | n/a | n/a |
| 18000008 | Counter7b | 85C | P | 103.9 Dbl | 104.1 Dbl | 104 Dbl | 0 Dbl | 104 Dbl | 104 Dbl | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 19000000 | RON_5V_VDIFF | -40C | P | n/a | n/a | 0.0176402 VOLTS | 0.00100066 VOLTS | 0.014449 VOLTS | 0.01845 VOLTS | n/a | n/a |
| 19000000 | RON_5V_VDIFF | 25C | P | n/a | n/a | 0.0205436 VOLTS | 0.00136584 VOLTS | 0.0170143 VOLTS | 0.0215539 VOLTS | n/a | n/a |
| 19000000 | RON_5V_VDIFF | 85C | P | n/a | n/a | 0.0229467 VOLTS | 0.00151102 VOLTS | 0.0190633 VOLTS | 0.0241834 VOLTS | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 19000001 | RON_5V_CALC | -40C | P | n/a | 0.039 Ohms | 0.0169426 Ohms | 0.00100433 Ohms | 0.0137293 Ohms | 0.0177316 Ohms | n/a | 7.32 |
| 19000001 | RON_5V_CALC | 25C | P | n/a | 0.039 Ohms | 0.0198354 Ohms | 0.00137229 Ohms | 0.0162784 Ohms | 0.0207985 Ohms | n/a | 4.66 |
| 19000001 | RON_5V_CALC | 85C | P | n/a | 0.039 Ohms | 0.0222361 Ohms | 0.0015126 Ohms | 0.0183085 Ohms | 0.023399 Ohms | n/a | 3.69 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 19000002 | RON_12V_VDIFF | -40C | P | n/a | n/a | 0.017629 VOLTS | 0.00102874 VOLTS | 0.0145659 VOLTS | 0.0185279 VOLTS | n/a | n/a |
| 19000002 | RON_12V_VDIFF | 25C | P | n/a | n/a | 0.0206248 VOLTS | 0.0013656 VOLTS | 0.017063 VOLTS | 0.0216319 VOLTS | n/a | n/a |
| 19000002 | RON_12V_VDIFF | 85C | P | n/a | n/a | 0.0230352 VOLTS | 0.00150927 VOLTS | 0.0191575 VOLTS | 0.0242809 VOLTS | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 19000003 | RON_12V_CALC | -40C | P | n/a | 0.039 Ohms | 0.0170097 Ohms | 0.000986262 Ohms | 0.0138462 Ohms | 0.0178095 Ohms | n/a | 7.43 |
| 19000003 | RON_12V_CALC | 25C | P | n/a | 0.039 Ohms | 0.0199166 Ohms | 0.0013721 Ohms | 0.0163271 Ohms | 0.0208764 Ohms | n/a | 4.64 |
| 19000003 | RON_12V_CALC | 85C | P | n/a | 0.039 Ohms | 0.0223245 Ohms | 0.00151049 Ohms | 0.0183962 Ohms | 0.0234672 Ohms | n/a | 3.68 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 19000004 | RON_20V_VDIFF | -40C | P | n/a | n/a | 0.0172771 VOLTS | 0.00111686 VOLTS | 0.0146633 VOLTS | 0.0186741 VOLTS | n/a | n/a |
| 19000004 | RON_20V_VDIFF | 25C | P | n/a | n/a | 0.0207973 VOLTS | 0.00136537 VOLTS | 0.0171962 VOLTS | 0.0218137 VOLTS | n/a | n/a |
| 19000004 | RON_20V_VDIFF | 85C | P | n/a | n/a | 0.0232417 VOLTS | 0.00151092 VOLTS | 0.0193296 VOLTS | 0.024466 VOLTS | n/a | n/a |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 19000005 | RON_20V_CALC | -40C | P | n/a | 0.039 Ohms | 0.0171459 Ohms | 0.000997963 Ohms | 0.0139436 Ohms | 0.0179557 Ohms | n/a | 7.30 |
| 19000005 | RON_20V_CALC | 25C | P | n/a | 0.039 Ohms | 0.0200891 Ohms | 0.00137209 Ohms | 0.0164602 Ohms | 0.0210583 Ohms | n/a | 4.59 |

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|----------|--------------|-------|------|--------|------------|---------------|-----------------|----------------|----------------|-----|-------|
| 19000005 | RON_20V_CALC | 85C | P | n/a | 0.039 Ohms | 0.022531 Ohms | 0.00151155 Ohms | 0.0185975 Ohms | 0.0236555 Ohms | n/a | 3.63 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 20000000 | Tdon | -40C | P | n/a | 0.005 | 0.00145844 | 0.000101924 | 0.00127131 | 0.00169472 | n/a | 11.58 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000000 | Tdon | 25C | P | n/a | 0.005 | 0.00139074 | 9.30331e-005 | 0.0011853 | 0.00154729 | n/a | 12.93 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000000 | Tdon | 85C | P | n/a | 0.005 | 0.00129069 | 9.11794e-005 | 0.0011662 | 0.00146057 | n/a | 13.56 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 20000001 | Tr | -40C | P | n/a | 0.0025 | 0.000437987 | 2.16952e-005 | 0.000392217 | 0.000477623 | n/a | 31.68 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000001 | Tr | 25C | P | n/a | 0.0025 | 0.000435981 | 1.98656e-005 | 0.000390892 | 0.00047056 | n/a | 34.63 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000001 | Tr | 85C | P | n/a | 0.0025 | 0.000436857 | 1.89517e-005 | 0.000390719 | 0.000469756 | n/a | 36.29 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 20000002 | Ton | -40C | P | n/a | 0.0075 | 0.00189643 | 0.000100504 | 0.00172807 | 0.00213869 | n/a | 18.58 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000002 | Ton | 25C | P | n/a | 0.0075 | 0.00182672 | 9.00451e-005 | 0.00160974 | 0.00199026 | n/a | 21.00 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000002 | Ton | 85C | P | n/a | 0.0075 | 0.00172755 | 9.01968e-005 | 0.00159893 | 0.00190955 | n/a | 21.33 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 20000003 | Tdoff | -40C | P | n/a | 0.0002 | 2.57614e-005 | 1.55254e-006 | 2.22799e-005 | 2.89609e-005 | n/a | 37.41 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000003 | Tdoff | 25C | P | n/a | 0.0002 | 3.60891e-005 | 1.98537e-006 | 3.08418e-005 | 3.84788e-005 | n/a | 27.52 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000003 | Tdoff | 85C | P | n/a | 0.0002 | 3.34469e-005 | 1.36857e-006 | 3.0064e-005 | 3.57096e-005 | n/a | 40.57 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 20000004 | Tf | -40C | P | n/a | 0.0006 | 0.000103933 | 5.75424e-006 | 8.81836e-005 | 0.000111796 | n/a | 28.74 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000004 | Tf | 25C | P | n/a | 0.0006 | 0.000103063 | 5.73435e-006 | 8.77087e-005 | 0.000109044 | n/a | 28.89 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000004 | Tf | 85C | P | n/a | 0.0006 | 8.33533e-005 | 3.0982e-006 | 7.61958e-005 | 8.86132e-005 | n/a | 55.59 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 20000005 | Toff | -40C | P | n/a | 0.0008 | 0.000129695 | 7.16543e-006 | 0.000110463 | 0.000140757 | n/a | 31.18 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000005 | Toff | 25C | P | n/a | 0.0008 | 0.000139152 | 7.70866e-006 | 0.000118787 | 0.000147353 | n/a | 28.58 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |
| 20000005 | Toff | 85C | P | n/a | 0.0008 | 0.0001168 | 4.44718e-006 | 0.00010626 | 0.000124136 | n/a | 51.21 |
| | | | | | SECONDS | SECONDS | SECONDS | SECONDS | SECONDS | | |

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| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
|----------|-------------|-------|------|--------------|--------------|--------------|--------------|--------------|--------------|-------|-------|
| 21000000 | IQ_5V_Post | -40C | P | 0.0 AMPS | 0.00045 AMPS | 0.000235677 | 7.29093e-006 | 0.000222614 | 0.000248388 | 10.29 | 9.80 |
| 21000000 | IQ_5V_Post | 25C | P | 0.0 AMPS | 0.00045 AMPS | 0.000253563 | 8.06035e-006 | 0.00024065 | 0.000277228 | 9.30 | 8.12 |
| 21000000 | IQ_5V_Post | 85C | P | 0.0 AMPS | 0.00045 AMPS | 0.000264801 | 1.15499e-005 | 0.000250027 | 0.000295243 | 6.49 | 5.34 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 21000001 | IQ_12V_Post | -40C | P | 0.0 AMPS | 0.0005 AMPS | 0.000260658 | 1.37325e-005 | 0.000237534 | 0.000282635 | 6.07 | 5.81 |
| 21000001 | IQ_12V_Post | 25C | P | 0.0 AMPS | 0.0005 AMPS | 0.000284233 | 1.19721e-005 | 0.00026207 | 0.000306582 | 6.96 | 6.01 |
| 21000001 | IQ_12V_Post | 85C | P | 0.0 AMPS | 0.0005 AMPS | 0.00029796 | 1.21022e-005 | 0.000276338 | 0.00032426 | 6.89 | 5.56 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 21000002 | IQ_20V_Post | -40C | P | 0.0 AMPS | 0.00055 AMPS | 0.000309188 | 7.71338e-006 | 0.000295385 | 0.00032349 | 11.88 | 10.41 |
| 21000002 | IQ_20V_Post | 25C | P | 0.0 AMPS | 0.00055 AMPS | 0.000333004 | 8.01118e-006 | 0.000320272 | 0.000354659 | 11.44 | 9.03 |
| 21000002 | IQ_20V_Post | 85C | P | 0.0 AMPS | 0.00055 AMPS | 0.00034812 | 1.06707e-005 | 0.000334179 | 0.000375927 | 8.59 | 6.31 |
| Test | Name | Group | Type | Low L. | High L. | Mean | Sigma | Min | Max | Cp | Cpk |
| 21000003 | EVS_Post | -40C | P | -1e-006 AMPS | 1e-006 AMPS | 3.94698e-007 | 6.4343e-008 | 2.88996e-007 | 5.18961e-007 | 5.18 | 3.14 |
| 21000003 | EVS_Post | 25C | P | -1e-006 AMPS | 1e-006 AMPS | 4.57093e-007 | 6.33137e-008 | 3.50219e-007 | 5.83822e-007 | 5.26 | 2.86 |
| 21000003 | EVS_Post | 85C | P | -1e-006 AMPS | 1e-006 AMPS | 4.88303e-007 | 6.21563e-008 | 3.86953e-007 | 6.07633e-007 | 5.36 | 2.74 |

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| Summary of Test Data used in this Report from previous Test Data in Report to legacy Standard | | | | | | |
|---|---------------------|---|---|--|--|---|
| 62368 - 1 | | Test Data Origin | | | | |
| Sub-clause | Test | CB Cert No. | Report Reference No. | Standard | Sub - clause | Rationale |
| ANNEX G.9 | IC CURRENT LIMITERS | DK-59397-UL, DK-59397-M1-UL, DK-59397-A1-UL, DK-59397-A2-UL | E482061-A3-CB-2 Reissue, E482061-A3-CB-2 correction 1, E482061-A3-CB-2 correction 2, E482061-A3-CB-2 Amendment 1, E482061-A3-CB-2 Amendment 2 | IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013 | Annex CC, Evaluation of integrated circuit (IC) current limiters | The result complied with requirement of IEC 62368-1 |

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Marking Plate ID 13-01

