Test Report issued under the responsibility of:

TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

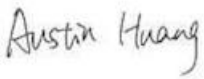
Report Number .....:	E467988-A6005-CB-1
Date of issue.....:	2020-09-30 ; Amendment 1 : 2023-05-16
Total number of pages .....:	9
Name of Testing Laboratory preparing the Report .....:	UL-CCIC Company Limited No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China
Applicant's name.....:	**FAIRCHILD SEMICONDUCTOR TECHNOLOGY (SHANGHAI) CO LTD**
Address .....:	**UNIT 01-07, 7F, LONGEMONT YES TOWER** **NO.399 KAIXUAN RD, CHANGNING DISTRICT** **SHANGHAI** **200050 CHINA**
Test specification:	
Standard.....:	IEC 62368-1:2014
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
TRF template used .....:	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No.....:	IEC62368_1D
Test Report Form(s) Originator .....:	UL(US)
Master TRF.....:	Dated 2022-04-14

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.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test Item description .....:	Component IC Current Limiter
Trade Mark(s) .....:	onsemi onsemi
Manufacturer .....:	FAIRCHILD SEMICONDUCTOR TECHNOLOGY (SHANGHAI) CO LTD UNIT 01-07, 7F, LONGEMONT YES TOWER NO.399 KAIXUAN RD, CHANGNING DISTRICT SHANGHAI 200050 CHINA
Model/Type reference .....:	Models NCP380 followed by H or L; followed by MU or SN; followed by 05, 10, 15, 20, 21 or AJ. Additional suffixes after the model number designate the type of integrated circuit package, integrated circuit lead types or other features that are considered not to affect the functionality of the device.
Ratings .....:	(Optional) Input Voltage: - 2.5 Vdc to 5.5 Vdc Output Continuous Rating (unit: A): NCP380xSN05AAT1G 0.5 NCP380xSN10AAT1G 1.0 NCP380xSNAJAAT1G 0.5 - 1.0 NCP380xMU05AATBG 0.5 NCP380xMU10AATBG 1.0 NCP380xMU15AATBG 1.5 NCP380xMU20AATBG 2.0 NCP380xMU21AATBG 2.1 NCP380xMUAJAATBG 0.5 - 2.1 Output Current Limit: NCP380xSN05AAT1G 0.7 NCP380xSN10AAT1G 1.4 NCP380xSNAJAAT1G 0.7 - 1.8 NCP380xMU05AATBG 0.7 NCP380xMU10AATBG 1.4 NCP380xMU15AATBG 2.0 NCP380xMU20AATBG 2.1 NCP380xMU21AATBG 2.5 NCP380xMUAJAATBG 0.7 - 2.5 Where x = L or H Ambient: -40 to 85°C

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ CB Testing Laboratory:		
Testing location/ address .....:	UL-CCIC Company Limited, No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China	
Tested by (name, function, signature).....:	Austin Huang / Project Handler	
Approved by (name, function, signature).....:	Jie Qian / Reviewer	
☐ Testing procedure: CTF Stage 1:		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Approved by (name, function, signature).....:		
☐ Testing procedure: CTF Stage 2:		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Witnessed by (name, function, signature) ...:		
Approved by (name, function, signature).....:		
☐ Testing procedure: CTF Stage 3:		
☐ Testing procedure: CTF Stage 4:		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Witnessed by (name, function, signature) ...:		
Approved by (name, function, signature).....:		
Supervised by (name, function, signature) ..:		

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

National Differences (0 pages)
Enclosures (0 pages)

Summary of testing:

Tests performed (name of test and test clause): **None**	**Testing Location: None**

Summary of compliance with National Differences:

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

☒ **The product fulfils the requirements of:** AS/NZS 62368.1:2018;
EN 62368-1:2014+A11:2017;
J62368-1 (2020);
CSA/UL 62368-1:2014

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

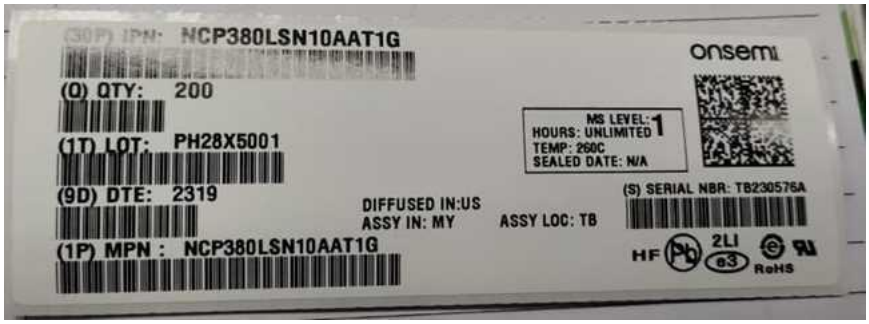
Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

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



Note: The above markings are the minimum requirements required by the safety lab. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

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)	less than 2000 m
Mass of equipment (kg)	Maximum 0.1 kg - component device for building in
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..... :	N/A
Date (s) of performance of tests..... :	N/A
GENERAL REMARKS:	
"(See Enclosure #)" refers to additional information appended to the report. **"(See appended table)" refers to a table appended to the report.** **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
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 ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	ON SEMICONDUCTOR SENAWANG INDUSTRIAL ESTATE, LOT 122 SEREMBAN, NEGERI SEMBILAN, 70450, MALAYSIA ON SEMICONDUCTOR SCI SINGAPORE PTE LTD PENJURU LOGISTICS HUB UNIT 05-01 34 PENJURU LANE SINGAPORE 609201, SINGAPORE

GENERAL PRODUCT INFORMATION:

Report Summary

The original report was modified on 2023-05-16 to include the following changes/additions:
This test Report should be read in conjunction with the original Report, No.:
1. E467988-A6005-CB-1-Original, issued on 2020-09-30, with CB Certificate No. (DK-103788-UL), issued on 2020-10-05.
- This Report was deemed to administrative amendment due to:
1. Update the trademark.
2. Update the national differences administratively.
3. Update the factories.
- Based on previously conducted testing and the review of product construction, no tests were deemed necessary.

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.

Enclosure Id. 3-01 (Overall View) shows the IC Current Limiter (U1) on the Evaluation Board. The test circuit of the Evaluation Board is shown in Enclosure Id. 7-03 (IC Current Limiter Testing Results).

Model Differences

Models NCP380 followed by H or L; followed by MU or SN; followed by 05, 10, 15 or AJ.

Where:
H - Enable High
L - Enable Low

MU - UDFN6 Package
SN - TSOP-5 or TSOP-6 Package

05 - 500 mA Over Current Limit
10 - 1 A Over Current Limit
15 - 1.5 A Over Current Limit
20 - 2.0 A Over Current Limit
21 - 2.1 A Over Current Limit
AJ - Adjustable, 0.1 A to 1.5 A Over Current Limit

Additional suffixes after the model number designate features that are considered not to affect the functionality of the device.

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

Manufacturer's specification sheet is available by request.

The manufacturer’s name, catalog number, and Recognized Component Mark (due to the small size of the device, the catalog number and Recognized Component Mark may appear on the smallest package or reel). Additional suffixes after the model number designate the type of integrated circuit package, integrated circuit lead types or other features that are considered not to affect the functionality of the device. Electrical ratings are optional. The marking plate is representative of all models.

This report is based on previously conducted testing (as listed below) and the review of product construction of original: CBTR Ref. No. E343275-A1-CB-2 Reissue, dated 2015-06-03, CBTC Ref. No. US-25357-UL issued date 2015-06-08 issued by UL (US); Refer to Section "Test performed (name of test and test clause)" covering all applicable performance tests and rationale for waived tests.

-- Due to employing below changes:

1. Update TRADEMARK;

2. Change Applicant and Manufacturer name and address from ON SEMICONDUCTOR FRANCE SAS (132 CHEMIN DE BASSO CAMBO BP 53512 TOULOUSE CEDEX 1, 31035 FRANCE) to FAIRCHILD SEMICONDUCTOR TECHNOLOGY (SHANGHAI) CO LTD (UNIT 01-07, 7F, LONGEMONT YES TOWER NO.399 KAIXUAN RD, CHANGNING DISTRICT SHANGHAI 200050 CHINA).

3. Update Critical Components List.

-- No tests were considered necessary.

Engineering Conditions of Acceptability

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

- 1. These devices are integrated circuit (packages) and the spacings within the device meet functional insulation. The ICs are intended for installation in SELV circuits only.

  2. These devices are entirely electronic in nature and have no means for manual operation or reset.

  3. The terminals of these devices are for factory wiring only and intended to be mounted on a printed wiring board.

  4. These devices have only been evaluated for supplementary overcurrent protection of secondary circuits supplied by the load side of a transformer or battery, and have not been evaluated for branch-circuit protection.

  5. These devices have been investigated as electronic overcurrent protective devices in accordance with the requirements contained in UL Subject 2367 - Outline of Investigation for Solid State Overcurrent Protectors. As a result, use is permitted only on the load-side of an isolating transformer, power supply or battery with maximum levels.

  6. Use on secondary supply circuits with a higher power capability requires additional evaluation for reliability, such as are contained in the Standard for Safety-Related Controls Employing Solid-State Controls, UL 991.

  7. These devices have not been subjected tests for telecom applications and their suitability for connection to telecommunication networks with outside plant connections should be determined in the end product.

  8. These devices were evaluated with respect to continuous current operation at the current levels shown in the electrical ratings section of this Test Report.

  9. These devices have been subjected to environmental conditionings with respect to the following conditions (per UL Subject 2367):
  Shipping and Storage: -30°C to 70°C
  Temperature Range: -40°C to 85°C
  Thermal Cycling
  Endurance
  Abnormal

  10. These devices were evaluated for indoor and outdoor use.