

# Power Transistors

## NPN Silicon DPAK For Surface Mount Applications

### NJD2873

Designed for high-gain audio amplifier applications.

#### Features

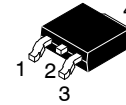
- High DC Current Gain
- Low Collector-Emitter Saturation Voltage
- High Current-Gain - Bandwidth Product
- Epoxy Meets UL 94 V-0 @ 0.125 in
- NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### MAXIMUM RATINGS

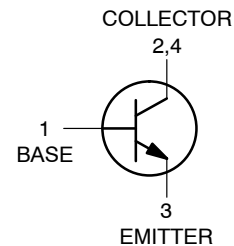
| Symbol         | Rating                                                                                      | Value         | Unit                     |
|----------------|---------------------------------------------------------------------------------------------|---------------|--------------------------|
| $V_{CB}$       | Collector-Base Voltage                                                                      | 50            | Vdc                      |
| $V_{CEO}$      | Collector-Emitter Voltage                                                                   | 50            | Vdc                      |
| $V_{EB}$       | Emitter-Base Voltage                                                                        | 5             | Vdc                      |
| $I_C$          | Collector Current – Continuous                                                              | 2             | Adc                      |
| $I_{CM}$       | Collector Current – Peak                                                                    | 3             | Adc                      |
| $I_B$          | Base Current                                                                                | 0.4           | Adc                      |
| $P_D$          | Total Device Dissipation<br>@ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$   | 15<br>0.1     | W<br>W/ $^\circ\text{C}$ |
| $P_D$          | Total Device Dissipation<br>@ $T_A = 25^\circ\text{C}^*$<br>Derate above $25^\circ\text{C}$ | 1.68<br>0.011 | W<br>W/ $^\circ\text{C}$ |
| $T_J, T_{stg}$ | Operating and Storage Junction Temperature Range                                            | -65 to +175   | $^\circ\text{C}$         |
| HBM            | ESD – Human Body Model                                                                      | 3B            | V                        |
| MM             | ESD – Machine Model                                                                         | C             | V                        |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

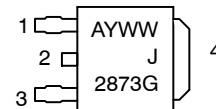
## SILICON POWER TRANSISTORS 2 AMPERES 50 VOLTS 15 WATTS



DPAK  
CASE 369C  
STYLE 1



#### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
G = Pb-Free Device

#### ORDERING INFORMATION

| Device        | Package           | Shipping†             |
|---------------|-------------------|-----------------------|
| NJD2873T4G    | DPAK<br>(Pb-Free) | 2,500<br>Units / Reel |
| NJVNJD2873T4G | DPAK<br>(Pb-Free) | 2,500<br>Units / Reel |

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

# THERMAL CHARACTERISTICS

| Symbol                             | Characteristic                                                         | Max        | Unit                 |
|------------------------------------|------------------------------------------------------------------------|------------|----------------------|
| $R_{\theta JC}$<br>$R_{\theta JA}$ | Thermal Resistance<br>Junction-to-Case<br>Junction-to-Ambient (Note 1) | 10<br>89.3 | $^{\circ}\text{C/W}$ |

1. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

# ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}\text{C}$ unless otherwise noted)

| Symbol | Characteristic | Min | Max | Unit |
|--------|----------------|-----|-----|------|
|--------|----------------|-----|-----|------|

## OFF CHARACTERISTICS

|               |                                                                                         |    |     |      |
|---------------|-----------------------------------------------------------------------------------------|----|-----|------|
| $V_{CE(sus)}$ | Collector-Emitter Sustaining Voltage (Note 2)<br>( $I_C = 10\text{ mAdc}$ , $I_B = 0$ ) | 50 | –   | Vdc  |
| $I_{CBO}$     | Collector Cutoff Current<br>( $V_{CB} = 50\text{ Vdc}$ , $I_E = 0$ )                    | –  | 100 | nAdc |
| $I_{EBO}$     | Emitter Cutoff Current ( $V_{BE} = 5\text{ Vdc}$ , $I_C = 0$ )                          | –  | 100 | nAdc |

## ON CHARACTERISTICS

|               |                                                                                                                                                                                                                                                         |                 |                 |     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|-----|
| $h_{FE}$      | DC Current Gain (Note 2)<br>( $I_C = 0.5\text{ A}$ , $V_{CE} = 2\text{ V}$ )<br>( $I_C = 2\text{ Adc}$ , $V_{CE} = 2\text{ Vdc}$ )<br>( $I_C = 0.75\text{ Adc}$ , $V_{CE} = 1.6\text{ Vdc}$ , $-40^{\circ}\text{C} \leq T_J \leq 150^{\circ}\text{C}$ ) | 120<br>40<br>80 | 360<br>–<br>360 | –   |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage (Note 2)<br>( $I_C = 1\text{ A}$ , $I_B = 0.05\text{ A}$ )                                                                                                                                                         | –               | 0.3             | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage (Note 2) ( $I_C = 1\text{ A}$ , $I_B = 0.05\text{ Adc}$ )                                                                                                                                                               | –               | 1.2             | Vdc |
| $V_{BE(on)}$  | Base-Emitter On Voltage (Note 2)<br>( $I_C = 1\text{ Adc}$ , $V_{CE} = 2\text{ Vdc}$ )<br>( $I_C = 0.75\text{ Adc}$ , $V_{CE} = 1.6\text{ Vdc}$ , $-40^{\circ}\text{C} \leq T_J \leq 150^{\circ}\text{C}$ )                                             | –<br>–          | 1.2<br>0.95     | Vdc |

## DYNAMIC CHARACTERISTICS

|          |                                                                                                                                  |    |    |     |
|----------|----------------------------------------------------------------------------------------------------------------------------------|----|----|-----|
| $f_T$    | Current-Gain – Bandwidth Product (Note 3)<br>( $I_C = 100\text{ mAdc}$ , $V_{CE} = 10\text{ Vdc}$ , $f_{test} = 10\text{ MHz}$ ) | 65 | –  | MHz |
| $C_{ob}$ | Output Capacitance<br>( $V_{CB} = 10\text{ Vdc}$ , $I_E = 0$ , $f = 0.1\text{ MHz}$ )                                            | –  | 80 | pF  |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\approx 2\%$ .

3.  $f_T = |h_{fe}| \cdot f_{test}$ .

TYPICAL CHARACTERISTICS

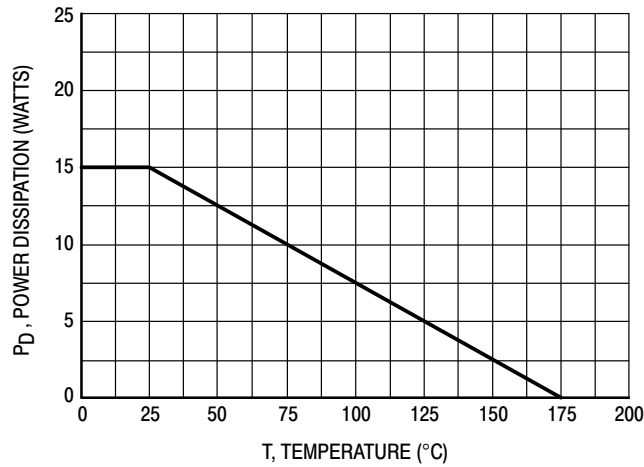


Figure 1. Power Derating

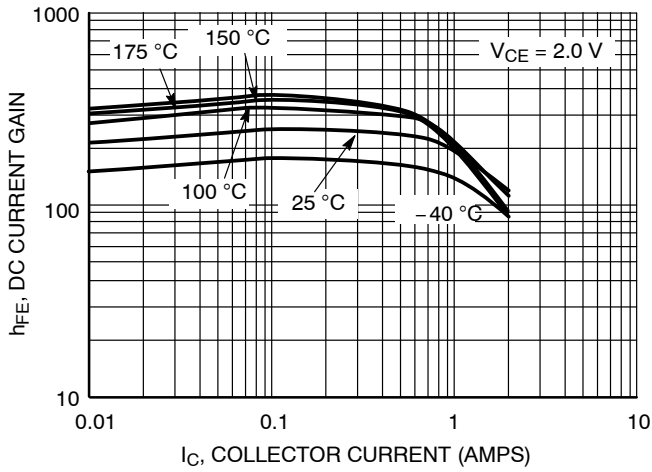


Figure 2. DC Current Gain

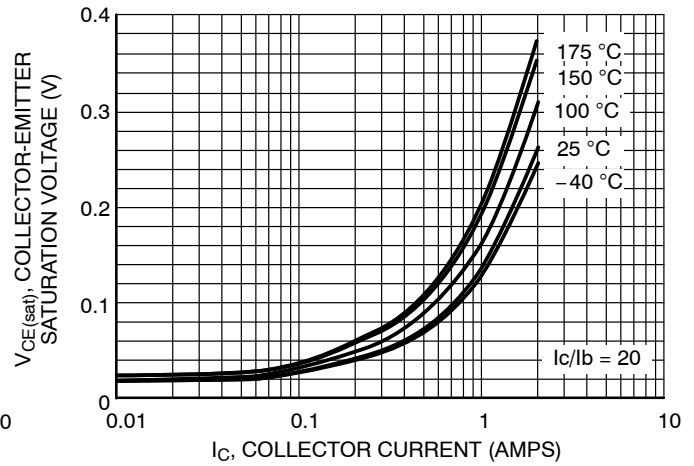


Figure 3. Collector-Emitter Saturation Voltage

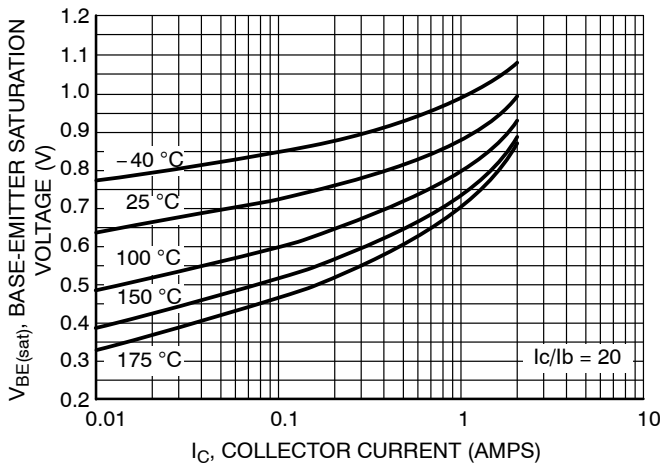


Figure 4. Base-Emitter Saturation Voltage

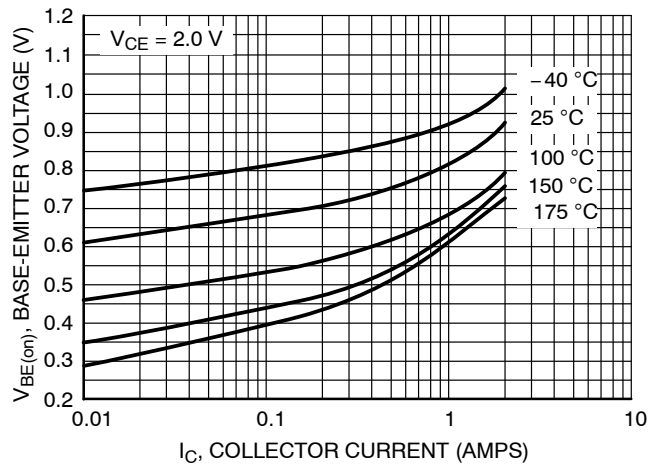


Figure 5. Base-Emitter Voltage

TYPICAL CHARACTERISTICS (continued)

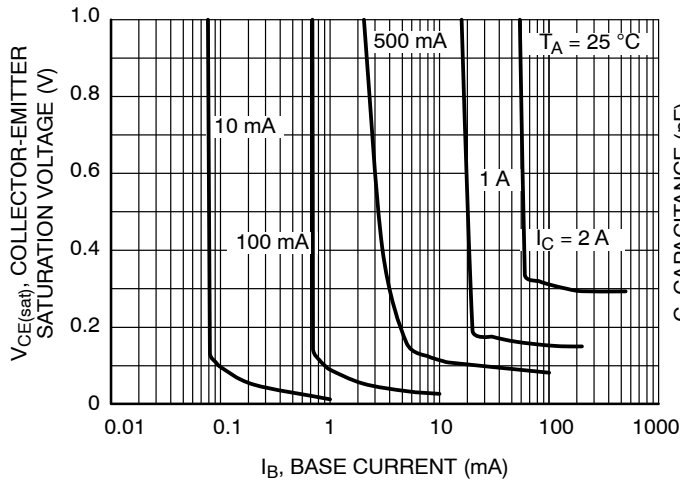


Figure 6. Saturation Region

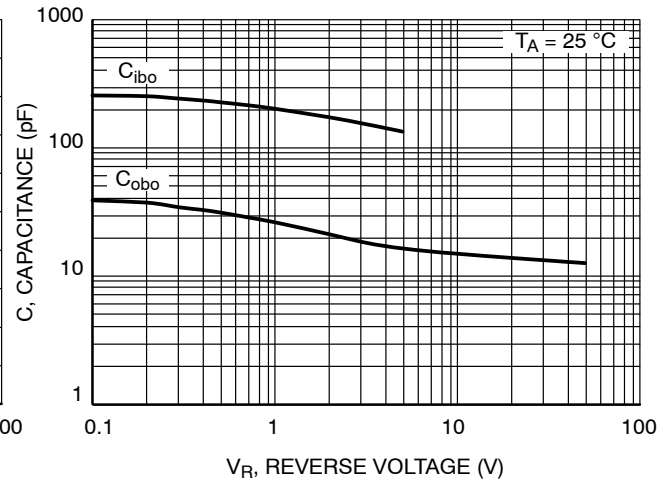


Figure 7. Capacitance

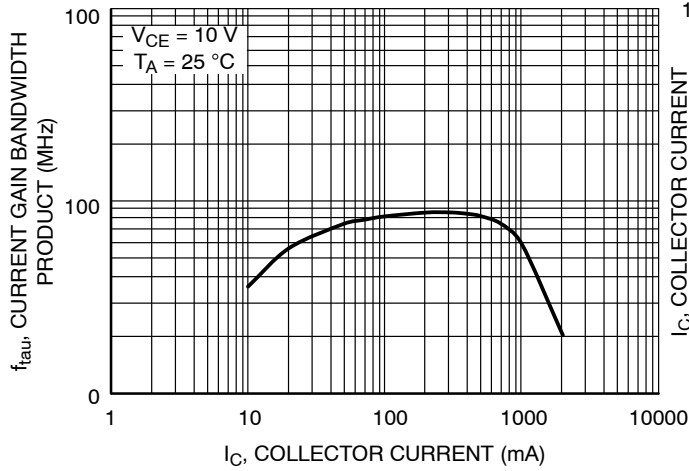


Figure 8. Saturation Region

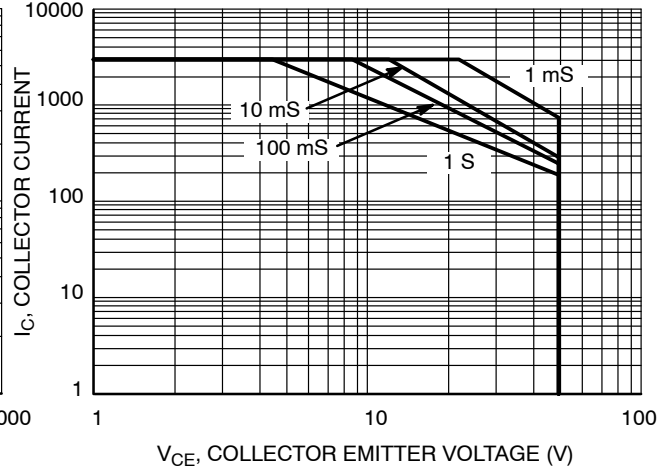


Figure 9. Capacitance

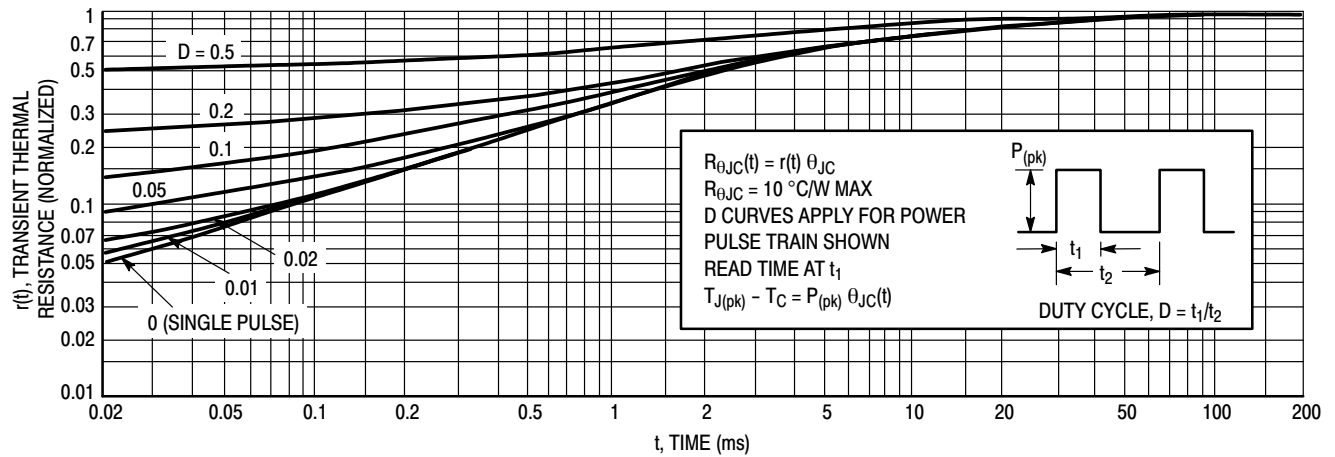
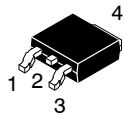


Figure 10. Thermal Response

REVISION HISTORY

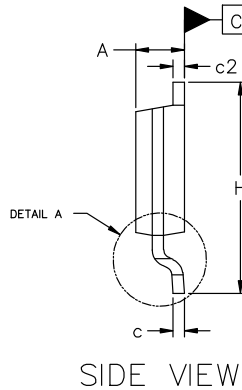
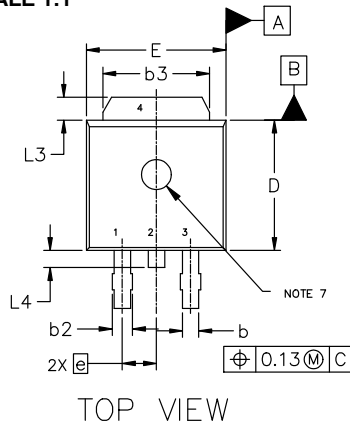
| Revision | Description of Changes                            | Date      |
|----------|---------------------------------------------------|-----------|
| 19       | Rebranded the Data Sheet to <b>onsemi</b> format. | 6/26/2025 |



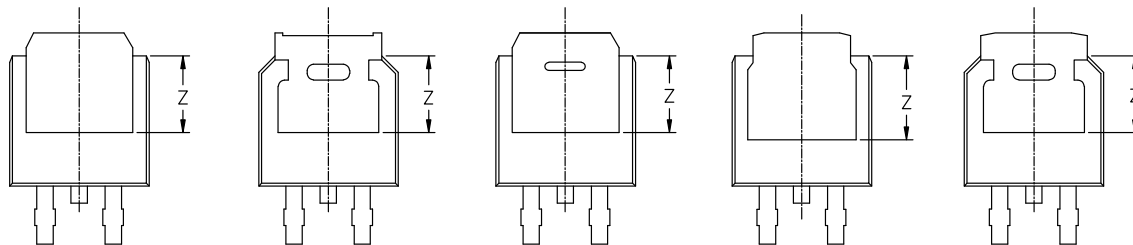
**DPAK3 6.10x6.54x2.28, 2.29P**  
**CASE 369C**  
**ISSUE J**

DATE 12 AUG 2025

SCALE 1:1

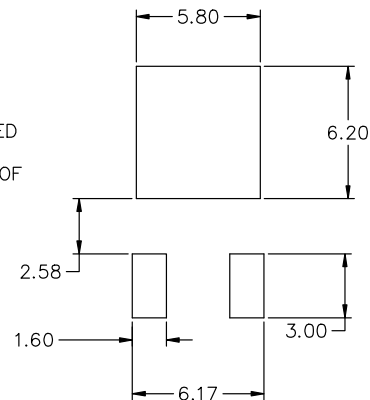
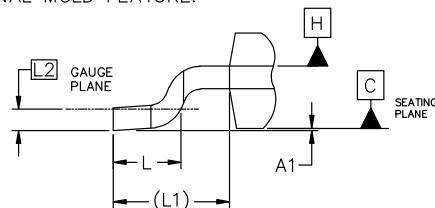


| MILLIMETERS |          |      |       |
|-------------|----------|------|-------|
| DIM         | MIN      | NOM  | MAX   |
| A           | 2.18     | 2.28 | 2.38  |
| A1          | 0.00     | ---  | 0.13  |
| b           | 0.63     | 0.76 | 0.89  |
| b2          | 0.72     | 0.93 | 1.14  |
| b3          | 4.57     | 5.02 | 5.46  |
| c           | 0.46     | 0.54 | 0.61  |
| c2          | 0.46     | 0.54 | 0.61  |
| D           | 5.97     | 6.10 | 6.22  |
| E           | 6.35     | 6.54 | 6.73  |
| e           | 2.29 BSC |      |       |
| H           | 9.40     | 9.91 | 10.41 |
| L           | 1.40     | 1.59 | 1.78  |
| L1          | 2.90 REF |      |       |
| L2          | 0.51 BSC |      |       |
| L3          | 0.89     | ---  | 1.27  |
| L4          | ---      | ---  | 1.01  |
| Z           | 3.93     | ---  | ---   |



NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.15mm PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.



RECOMMENDED MOUNTING FOOTPRINT\*

\*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ONSEMI SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

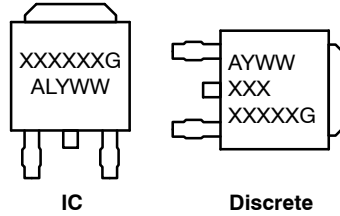
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| <b>DESCRIPTION:</b>     | <b>DPAK3 6.10x6.54x2.28, 2.29P</b> | <b>PAGE 1 OF 2</b>                                                                                                                                                               |

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**DPAK3 6.10x6.54x2.28, 2.29P**  
CASE 369C  
ISSUE J

DATE 12 AUG 2025

**GENERIC  
MARKING DIAGRAM\***



XXXXXX = Device Code  
A = Assembly Location  
L = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                                                                       |                                                                       |                                                                  |                                                                            |                                                                   |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------|
| STYLE 1:<br>PIN 1. BASE<br>2. COLLECTOR<br>3. EMITTER<br>4. COLLECTOR | STYLE 2:<br>PIN 1. GATE<br>2. DRAIN<br>3. SOURCE<br>4. DRAIN          | STYLE 3:<br>PIN 1. ANODE<br>2. CATHODE<br>3. ANODE<br>4. CATHODE | STYLE 4:<br>PIN 1. CATHODE<br>2. ANODE<br>3. GATE<br>4. ANODE              | STYLE 5:<br>PIN 1. GATE<br>2. ANODE<br>3. CATHODE<br>4. ANODE     |
| STYLE 6:<br>PIN 1. MT1<br>2. MT2<br>3. GATE<br>4. MT2                 | STYLE 7:<br>PIN 1. GATE<br>2. COLLECTOR<br>3. EMITTER<br>4. COLLECTOR | STYLE 8:<br>PIN 1. N/C<br>2. CATHODE<br>3. ANODE<br>4. CATHODE   | STYLE 9:<br>PIN 1. ANODE<br>2. CATHODE<br>3. RESISTOR ADJUST<br>4. CATHODE | STYLE 10:<br>PIN 1. CATHODE<br>2. ANODE<br>3. CATHODE<br>4. ANODE |

|                         |                                    |                                                                                                                                                                                     |
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| <b>DESCRIPTION:</b>     | <b>DPAK3 6.10x6.54x2.28, 2.29P</b> | <b>PAGE 2 OF 2</b>                                                                                                                                                                  |

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