### **Dual NPN Bias Resistor Transistors** R1 = 4.7 k $\Omega$ , R2 = 4.7 k $\Omega$

## NPN Transistors with Monolithic Bias Resistor Network

This series of digital transistors is designed to replace a single device and its external resistor bias network. The Bias Resistor Transistor (BRT) contains a single transistor with a monolithic bias network consisting of two resistors; a series base resistor and a base-emitter resistor. The BRT eliminates these individual components by integrating them into a single device. The use of a BRT can reduce both system cost and board space.

#### Features

- Simplifies Circuit Design
- Reduces Board Space
- Reduces Component Count
- S and NSV 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

(T\_A = 25°C, common for  $Q_1$  and  $Q_2,$  unless otherwise noted)

| Rating                         | Symbol               | Max | Unit |
|--------------------------------|----------------------|-----|------|
| Collector-Base Voltage         | V <sub>CBO</sub>     | 50  | Vdc  |
| Collector-Emitter Voltage      | V <sub>CEO</sub>     | 50  | Vdc  |
| Collector Current – Continuous | Ι <sub>C</sub>       | 100 | mAdc |
| Input Forward Voltage          | V <sub>IN(fwd)</sub> | 30  | Vdc  |
| Input Reverse Voltage          | V <sub>IN(rev)</sub> | 10  | Vdc  |

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.

#### **ORDERING INFORMATION**

| Device                           | Package | Shipping <sup>†</sup> |
|----------------------------------|---------|-----------------------|
| MUN5232DW1T1G,<br>SMUN5232DW1T1G | SOT-363 | 3,000/Tape & Reel     |
| NSBC143EDXV6T1G                  | SOT-563 | 4,000/Tape & Reel     |
| NSBC143EDP6T5G                   | SOT-963 | 8,000/Tape & Reel     |

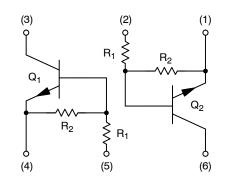
<sup>+</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.



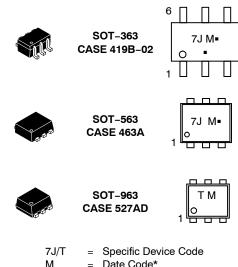
#### **ON Semiconductor®**

www.onsemi.com

#### **PIN CONNECTIONS**



#### MARKING DIAGRAMS



M = Date Code\* = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

#### THERMAL CHARACTERISTICS

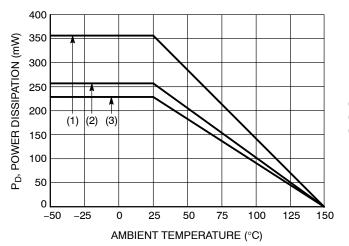
| Characteristic  | Symbol                            | Max                      | Unit        |
|---|-----------------------------------|--------------------------|-------------|
| MUN5232DW1 (SOT-363) ONE JUNCTION HEATED  |                                   |                          |             |
| Total Device Dissipation<br>T <sub>A</sub> = 25°C (Note 37)<br>(Note 38)<br>Derate above 25°C (Note 37)<br>(Note 38)      | PD                                | 187<br>256<br>1.5<br>2.0 | mW<br>mW/°C |
| Thermal Resistance,(Note 37)Junction to Ambient(Note 38)  | R <sub>θJA</sub>                  | 670<br>490               | °C/W        |
| MUN5232DW1 (SOT-363) BOTH JUNCTION HEATED (Note 39)   |                                   | · · · ·                  |             |
| Total Device Dissipation<br>T <sub>A</sub> = 25°C (Note 37)<br>(Note 38)<br>Derate above 25°C (Note 37)<br>(Note 38)      | PD                                | 250<br>385<br>2.0<br>3.0 | mW<br>mW/°C |
| Thermal Resistance,<br>Junction to Ambient (Note 37)<br>(Note 38)   | R <sub>θJA</sub>                  | 493<br>325               | °C/W        |
| Thermal Resistance,<br>Junction to Lead (Note 37)<br>(Note 38)  | R <sub>θJL</sub>                  | 188<br>208               | °C/W        |
| Junction and Storage Temperature Range  | T <sub>J</sub> , T <sub>stg</sub> | -55 to +150              | °C          |
| NSBC143EDXV6 (SOT-563) ONE JUNCTION HEATED  |                                   |                          |             |
| Total Device Dissipation $T_A = 25^{\circ}C$ (Note 37)Derate above $25^{\circ}C$ (Note 37)                                | PD                                | 357<br>2.9               | mW<br>mW/°C |
| Thermal Resistance,<br>Junction to Ambient (Note 37)  | $R_{	hetaJA}$                     | 350                      | °C/W        |
| NSBC143EDXV6 (SOT-563) BOTH JUNCTION HEATED (Note 3   | 39)                               |                          |             |
| Total Device Dissipation<br>T <sub>A</sub> = 25°C (Note 37)<br>Derate above 25°C (Note 37)                                | PD                                | 500<br>4.0               | mW<br>mW/°C |
| Thermal Resistance,<br>Junction to Ambient (Note 37)  | $R_{	hetaJA}$                     | 250                      | °C/W        |
| Junction and Storage Temperature Range  | T <sub>J</sub> , T <sub>stg</sub> | -55 to +150              | °C          |
| NSBC143EDP6 (SOT-963) ONE JUNCTION HEATED   |                                   |                          |             |
| Total Device Dissipation<br>T <sub>A</sub> = 25°C (Note 40)<br>(Note 41)<br>Derate above 25°C (Note 40)<br>(Note 41)      | PD                                | 231<br>269<br>1.9<br>2.2 | MW<br>mW/°C |
| Thermal Resistance,<br>Junction to Ambient (Note 40)<br>(Note 41)   | R <sub>θJA</sub>                  | 540<br>464               | °C/W        |
| NSBC143EDP6 (SOT-963) BOTH JUNCTION HEATED (Note 39   | ))                                | 1 1                      |             |
| Total Device Dissipation<br>$T_A = 25^{\circ}C$ (Note 40)<br>(Note 41)<br>Derate above 25^{\circ}C (Note 40)<br>(Note 41) | PD                                | 339<br>408<br>2.7<br>3.3 | MW<br>mW/°C |
| Thermal Resistance,<br>Junction to Ambient (Note 40)<br>(Note 41)   | R <sub>0JA</sub>                  | 369<br>306               | °C/W        |
| Junction and Storage Temperature Range  | T <sub>J</sub> , T <sub>stg</sub> | -55 to +150              | °C          |

38. FR-4 @ 1.0 × 1.0 Inch Pad.
39. Both junction heated values assume total power is sum of two equally powered channels.
40. FR-4 @ 100 mm<sup>2</sup>, 1 oz. copper traces, still air.
41. FR-4 @ 500 mm<sup>2</sup>, 1 oz. copper traces, still air.

| Characteristic   | Symbol                         | Min | Тур | Max  | Unit |
|--|--------------------------------|-----|-----|------|------|
| OFF CHARACTERISTICS  |                                |     |     |      |      |
| Collector-Base Cutoff Current $(V_{CB} = 50 \text{ V}, I_E = 0)$   | I <sub>CBO</sub>               | -   | -   | 100  | nAdc |
| Collector-Emitter Cutoff Current $(V_{CE} = 50 \text{ V}, I_B = 0)$  | I <sub>CEO</sub>               | _   | -   | 500  | nAdc |
| Emitter-Base Cutoff Current $(V_{EB} = 6.0 \text{ V}, I_C = 0)$  | I <sub>EBO</sub>               | -   | -   | 1.5  | mAdc |
| Collector-Base Breakdown Voltage $(I_C = 10 \ \mu A, I_E = 0)$   | V <sub>(BR)</sub> CBO          | 50  | -   | -    | Vdc  |
| Collector-Emitter Breakdown Voltage (Note 42) $(I_C = 2.0 \text{ mA}, I_B = 0)$                                      | V <sub>(BR)CEO</sub>           | 50  | -   | _    | Vdc  |
| ON CHARACTERISTICS   |                                |     |     |      |      |
| DC Current Gain (Note 42)<br>(I <sub>C</sub> = 5.0 mA, V <sub>CE</sub> = 10 V)                                       | h <sub>FE</sub>                | 15  | 30  | _    |      |
| Collector-Emitter Saturation Voltage (Note 42) $(I_{C} = 10 \text{ mA}, I_{B} = 1.0 \text{ mA})$                     | V <sub>CE(sat)</sub>           | -   | -   | 0.25 | V    |
| Input Voltage (Off) $(V_{CE} = 5.0 \text{ V}, I_C = 100 \ \mu\text{A})$  | V <sub>i(off)</sub>            | -   | 1.2 | -    | Vdc  |
| Input Voltage (On) $(V_{CE} = 0.2 \text{ V}, I_C = 20 \text{ mA})$   | V <sub>i(on)</sub>             | _   | 2.4 | -    | Vdc  |
| Output Voltage (On)<br>(V <sub>CC</sub> = 5.0 V, V <sub>B</sub> = 2.5 V, R <sub>L</sub> = 1.0 k $\Omega$ )           | V <sub>OL</sub>                | -   | -   | 0.2  | Vdc  |
| Output Voltage (Off) $(V_{CC} = 5.0 \text{ V}, \text{ V}_{B} = 0.25 \text{ V}, \text{ R}_{L} = 1.0 \text{ k}\Omega)$ | V <sub>OH</sub>                | 4.9 | -   | _    | Vdc  |
| Input Resistor   | R1                             | 3.3 | 4.7 | 6.1  | kΩ   |
| Resistor Ratio   | R <sub>1</sub> /R <sub>2</sub> | 0.8 | 1.0 | 1.2  |      |

#### **ELECTRICAL CHARACTERISTICS** ( $T_A = 25^{\circ}C$ , common for $Q_1$ and $Q_2$ , unless otherwise noted)

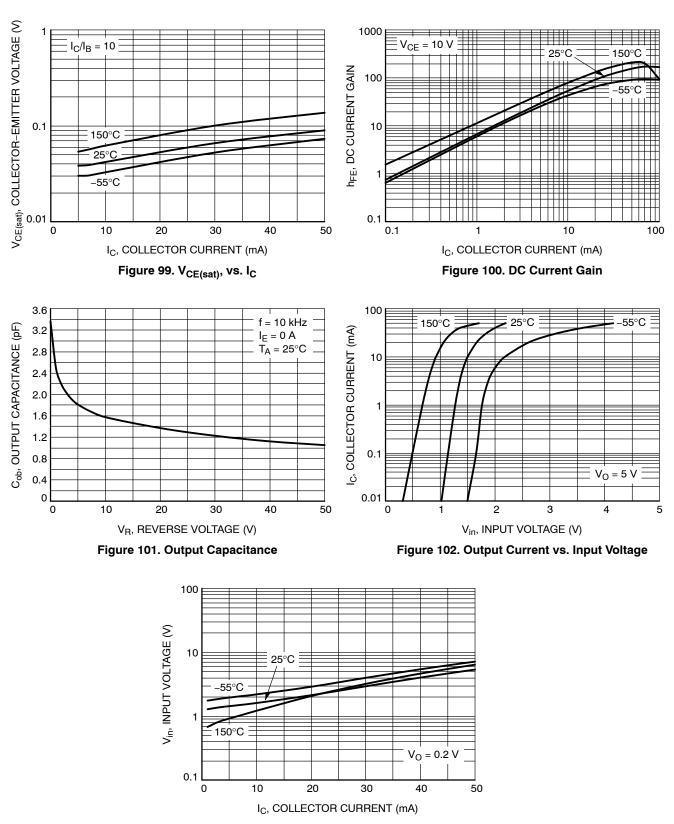
42. Pulsed Condition: Pulse Width = 300 ms, Duty Cycle  $\leq$  2%.



(1) SOT–363; 1.0 × 1.0 Inch Pad (2) SOT–563; Minimum Pad

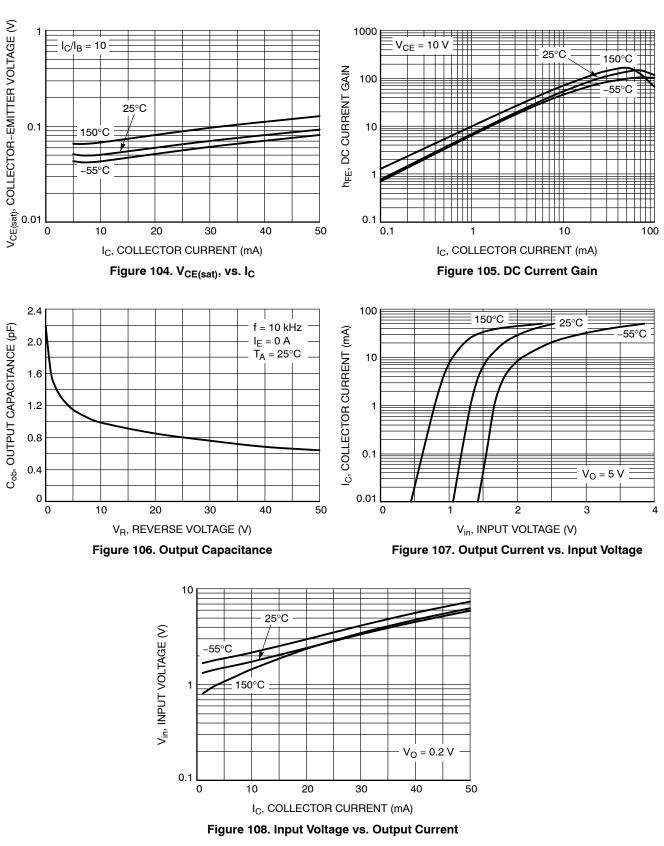
(3) SOT-963; 100 mm<sup>2</sup>, 1 oz. Copper Trace

Figure 98. Derating Curve



TYPICAL CHARACTERISTICS MUN5232DW1, NSBC143EDXV6

Figure 103. Input Voltage vs. Output Current

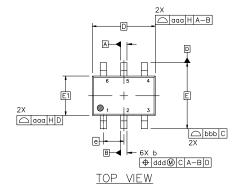


#### TYPICAL CHARACTERISTICS NSBC143EDP6

#### SC-88 2.00x1.25x0.90, 0.65P CASE 419B-02 **ISSUE Z**

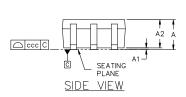
#### DATE 18 APR 2024

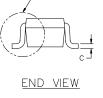
DUSEM



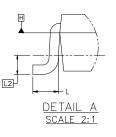
#### NOTES:

- DIMENSIONING AND TOLERANCING CONFORM TO ASME 1. Y14.5-2018.
- 2.
- ALL DIMENSION ARE IN MILLIMETERS. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 3. PER END.
- 4. DIMENSIONS D AND E1 AT THE OUTERMOST EXTREMES OF DATUMS A AND B ARE DETERMINED AT DATUM H.
- 5.
- DIMENSIONS & AND C APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.08 AND 0.15 FROM THE TIP. 6.
- DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. 7 ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN EXCESS OF DIMENSION & AT MAXIMUM MATERIAL CONDITION. THE DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT.

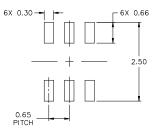




DETAIL A



|     | MI             | LLIMETER | S    |  |  |
|-----|----------------|----------|------|--|--|
| DIM | MIN. NOM. MAX. |          |      |  |  |
| A   |                |          | 1.10 |  |  |
| A1  | 0.00           |          | 0.10 |  |  |
| A2  | 0.70           | 0.90     | 1.00 |  |  |
| b   | 0.15           | 0.20     | 0.25 |  |  |
| с   | 0.08           | 0.15     | 0.22 |  |  |
| D   | 2.00 BSC       |          |      |  |  |
| E   | 2.10 BSC       |          |      |  |  |
| E1  | 1.25 BSC       |          |      |  |  |
| е   |                | 0.65 BSC | )    |  |  |
| L   | 0.26           | 0.36     | 0.46 |  |  |
| L2  |                | 0.15 BSC |      |  |  |
| aaa | 0.15           |          |      |  |  |
| bbb | 0.30           |          |      |  |  |
| ccc | 0.10           |          |      |  |  |
| ddd |                | 0.10     |      |  |  |



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.

XXX = Specific Device Code = Date Code\* Μ

GENERIC **MARKING DIAGRAM\*** 

XXXM-

0

6

= Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation and/or position may vary depending upon manufacturing location.

\*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.

#### **STYLES ON PAGE 2**

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#### SC-88 2.00x1.25x0.90, 0.65P CASE 419B-02 ISSUE Z

#### DATE 18 APR 2024

| STYLE 1:<br>PIN 1. EMITTER 2<br>2. BASE 2<br>3. COLLECTOR 1<br>4. EMITTER 1<br>5. BASE 1<br>6. COLLECTOR 2 | STYLE 2:<br>CANCELLED | STYLE 3:<br>CANCELLED  | STYLE 4:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. COLLECTOR<br>4. EMITTER<br>5. BASE<br>6. ANODE     | STYLE 5:<br>PIN 1. ANODE<br>2. ANODE<br>3. COLLECTOR<br>4. EMITTER<br>5. BASE<br>6. CATHODE               | STYLE 6:<br>PIN 1. ANODE 2<br>2. N/C<br>3. CATHODE 1<br>4. ANODE 1<br>5. N/C<br>6. CATHODE 2          |
|--|-----------------------|--|---|---|---|
| STYLE 7:<br>PIN 1. SOURCE 2<br>2. DRAIN 2<br>3. GATE 1<br>4. SOURCE 1<br>5. DRAIN 1<br>6. GATE 2           | STYLE 8:<br>CANCELLED | STYLE 9:<br>PIN 1. EMITTER 2<br>2. EMITTER 1<br>3. COLLECTOR 1<br>4. BASE 1<br>5. BASE 2<br>6. COLLECTOR 2 | STYLE 10:<br>PIN 1. SOURCE 2<br>2. SOURCE 1<br>3. GATE 1<br>4. DRAIN 1<br>5. DRAIN 2<br>6. GATE 2 | STYLE 11:<br>PIN 1. CATHODE 2<br>2. CATHODE 2<br>3. ANODE 1<br>4. CATHODE 1<br>5. CATHODE 1<br>6. ANODE 2 | STYLE 12:<br>PIN 1. ANODE 2<br>2. ANODE 2<br>3. CATHODE 1<br>4. ANODE 1<br>5. ANODE 1<br>6. CATHODE 2 |
| STYLE 13:  | STYLE 14:             | STYLE 15:  | STYLE 16:   | STYLE 17:   | STYLE 18:   |
| PIN 1. ANODE   | PIN 1. VREF           | PIN 1. ANODE 1   | PIN 1. BASE 1   | PIN 1. BASE 1   | PIN 1. VIN1   |
| 2. N/C   | 2. GND                | 2. ANODE 2   | 2. EMITTER 2  | 2. EMITTER 1  | 2. VCC  |
| 3. COLLECTOR   | 3. GND                | 3. ANODE 3   | 3. COLLECTOR 2  | 3. COLLECTOR 2  | 3. VOUT2  |
| 4. EMITTER   | 4. IOUT               | 4. CATHODE 3   | 4. BASE 2   | 4. BASE 2   | 4. VIN2   |
| 5. BASE  | 5. VEN                | 5. CATHODE 2   | 5. EMITTER 1  | 5. EMITTER 2  | 5. GND  |
| 6. CATHODE   | 6. VCC                | 6. CATHODE 1   | 6. COLLECTOR 1  | 6. COLLECTOR 1  | 6. VOUT1  |
| STYLE 19:  | STYLE 20:             | STYLE 21:  | STYLE 22:   | STYLE 23:   | STYLE 24:   |
| PIN 1. I OUT   | PIN 1. COLLECTOR      | PIN 1. ANODE 1   | PIN 1. D1 (i)   | PIN 1. Vn   | PIN 1. CATHODE  |
| 2. GND   | 2. COLLECTOR          | 2. N/C   | 2. GND  | 2. CH1  | 2. ANODE  |
| 3. GND   | 3. BASE               | 3. ANODE 2   | 3. D2 (i)   | 3. Vp   | 3. CATHODE  |
| 4. V CC  | 4. EMITTER            | 4. CATHODE 2   | 4. D2 (c)   | 4. N/C  | 4. CATHODE  |
| 5. V EN  | 5. COLLECTOR          | 5. N/C   | 5. VBUS   | 5. CH2  | 5. CATHODE  |
| 6. V REF   | 6. COLLECTOR          | 6. CATHODE 1   | 6. D1 (c)   | 6. N/C  | 6. CATHODE  |
| STYLE 25:  | STYLE 26:             | STYLE 27:  | STYLE 28:   | STYLE 29:   | STYLE 30:   |
| PIN 1. BASE 1  | PIN 1. SOURCE 1       | PIN 1. BASE 2  | PIN 1. DRAIN  | PIN 1. ANODE  | PIN 1. SOURCE 1   |
| 2. CATHODE   | 2. GATE 1             | 2. BASE 1  | 2. DRAIN  | 2. ANODE  | 2. DRAIN 2  |
| 3. COLLECTOR 2   | 3. DRAIN 2            | 3. COLLECTOR 1   | 3. GATE   | 3. COLLECTOR  | 3. DRAIN 2  |
| 4. BASE 2  | 4. SOURCE 2           | 4. EMITTER 1   | 4. SOURCE   | 4. EMITTER  | 4. SOURCE 2   |
| 5. EMITTER   | 5. GATE 2             | 5. EMITTER 2   | 5. DRAIN  | 5. BASE/ANODE   | 5. GATE 1   |
| 6. COLLECTOR 1   | 6. DRAIN 1            | 6. COLLECTOR 2   | 6. DRAIN  | 6. CATHODE  | 6. DRAIN 1  |

Note: Please refer to datasheet for style callout. If style type is not called out in the datasheet refer to the device datasheet pinout or pin assignment.

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#### MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



# ONSEMI

| DATE 15 FEB 2024         NTES         1.1 ENDESCONG AND TOLERANCING CONFORM TO ASME<br>1.2 ENDESCONG AND TOLERANCING CONFORMATION TOLERANCING<br>2. ENDESCONG AND TOLERANCING CONFORMATION TOLERANCING<br>2. ENDESCONG AND TOLERANCING CONFORMATION TOLERANCING<br>2. ENDESCONG AND TOLERANCING TOLERANCING TOLERANCING TOLERANCING<br>2. ENDESCONG AND TOLERANCING TOLERANCING TOLERANCING<br>2. ENDESCONG AND TOLERANCING TOLERANCING TOLERANCING TOLERANCING TOLERANCING TOLERANCING TOLERANCING<br>2. ENDESCONG AND TOLERANCING TOLERANCING<br>2. ENDESCONG AND TOLERANCING TOLERANCING TOLERANCING TOLERANCI   |                  |                   |                | ISSUE J                 |                 |            |            |                         |
|--|------------------|-------------------|----------------|-------------------------|-----------------|------------|------------|-------------------------|
| <ul> <li>1. DIMENSIONING AND TOLERANDING CONFORM TO ASME<br/>14.5-2018.</li> <li>ALL DIMENSION ARE IN MULLIMETERS.</li> <li>ANAXIMUM LEAD THICKNESS IS INCLUDES LEAD FINISH<br/>HICKNESS MINIKUM LEAD THICKNESS IS THE MINIMUM<br/>HICKNESS MINIMUM LEAD THICKNESS IS THE MINIMUM THE MINIMUM THE MINIMUM THE MINIMUM THE MINIMUM THE MINIMUM<br/>HICKNESS MINIMUM LEAD THICKNESS IS THE MINIMUM THE MINI</li></ul>  |                  |                   |                | 100020                  |                 |            | DA         | TE 15 FEB 2024          |
| <ul> <li>Y14.5-2018.</li> <li>ALL DIKINSION ARE IN MILLIMETERS.</li> <li>MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br/>THICKNESS OF BASE MATERIAL.</li> <li>THICKNESS OF BASE MATERIAL.</li> <li>THIC</li></ul>  |                  |                   |                | NOTES:                  |                 |            |            |                         |
| <ul> <li>2. ALL DIMÉNSION ARE. IN MILLIMETERS.</li> <li>3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br/>THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br/>THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br/>THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br/>THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br/>THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br/>THICKNESS OF BASE MATERIAL.</li> <li>3. MAXIMUM LEAD THICKNESS OF BASE MATERIAL.</li> <li>4. MAXIMUM LEAD THICKNESS OF BASE MATERIAL.</li> <li>4. MAXIMUM LEAD THICKNESS OF BASE MATERIAL.</li> <li>4. MAXIMUM LEAD THICKNESS OF BASE MATERIAL.</li> <li>5. MAXIMUM LEAD THICKNESS OF BASE MATERIAL.</li> <li>5.</li></ul>   |                  |                   |                |                         |                 | RANCING    | CONFORM    | M TO ASME               |
| THICKNESS MINIMUM LEAD THICKNESS IS THE MINIMUM<br>HICKNESS OF BASE MATERIAL.<br>THICKNESS OF BASE AND THE  |                  |                   |                |                         |                 | MILLIMET   | ERS.       |                         |
| PIN 1       PIN 1 <td< th=""><th></th><th></th><th></th><th>THICKNESS</th><th>. MINIMUM LEA</th><th>AD THICK</th><th></th><th></th></td<>  |                  |                   |                | THICKNESS               | . MINIMUM LEA   | AD THICK   |            |                         |
| PIN 1       FIN 1 <th< th=""><th>-</th><th>D</th><th>A -</th><th><b> - −</b> 6X  </th><th>DIM</th><th>М</th><th>ILLIMETE</th><th>RS</th></th<>   | -                | D                 | A -            | <b> - −</b> 6X          | DIM             | М          | ILLIMETE   | RS                      |
| PIN 1       0 <th></th> <th>B</th> <th></th> <th></th> <th></th> <th>MIN.</th> <th>NDM.</th> <th>MAX.</th>   |                  | B                 |                |                         |                 | MIN.       | NDM.       | MAX.                    |
| PIN 1       Image: Construction of the second schedule schedule of the second schedule of the sec   |                  |                   |                |                         | A               | 0.50       | 0.55       | 0.60                    |
| C       0.08       0.13       0.18         D       D       0.10       1.20       1.30         D       D       0.10       0.20       0.30         PIN 1       EMTTRE 1       STYLE 3       FIVE 4       0.10       0.20       0.30         STYLE 1       PIN 1       EMTTRE 1       STYLE 3       AMDE 4       0.30       0.30       0.30       0.30         J       AMDE 5       SASE 1       SAME 7       SAME 7 <th></th> <th>•</th> <th></th> <th></th> <th>b</th> <th>0.17</th> <th>0.22</th> <th>0.27</th>   |                  | •                 |                |                         | b               | 0.17       | 0.22       | 0.27                    |
| STYLE I:<br>TOP VIEW       STYLE 3:<br>TOP VIEW       STYLE 3:<br>SIDE VIEW       D       1.50       1.60       1.70         STYLE I:<br>TOP VIEW       SIDE VIEW       SIDE VIEW       D       1.50       1.60       1.70         STYLE I:<br>TOP VIEW       SIDE VIEW       SIDE VIEW       D       1.50       1.60       1.70         STYLE I:<br>TOP VIEW       STYLE 3:<br>SIDE VIEW       SIDE VIEW       D       1.50       1.60       1.70         STYLE I:<br>TOP VIEW       STYLE 3:<br>SIDE VIEW       SIDE VIEW       D       1.50       1.60       1.70         STYLE 1:<br>SIDE VIEW       SIDE VIEW       SIDE VIEW       D       0.30  | REFERENCE        |                   |                |                         | C               | 80.0       | 0.13       | 0.18                    |
| STYLE 1:<br>TOP_WEW       SIDE_VIEW       Image: Construct of the second se   | الک<br>ب         |                   |                |                         | D               | 1.50       | 1.60       | 1.70                    |
| Image: Style is top: WEW       SIDE VIEW       Image: Side VIEW         STYLE is top: WEW       SIDE VIEW       Image: Side VIEW         STYLE is top: WEW       SIDE VIEW       Image: Side VIEW         STYLE is top: WEW       SIDE VIEW       Image: Side VIEW         STYLE is top: WEW       SIDE VIEW       Image: Side VIEW         STYLE is top: WEW       SIDE VIEW       Image: Side VIEW         STYLE is top: Side VIEW       SIDE VIEW       Image: Side VIEW         STYLE is top: Side VIEW       SIDE VIEW       Image: Side VIEW         STYLE is top: Side VIEW       SIDE VIEW       Image: Side VIEW         STYLE is top: Side VIEW       SIDE VIEW       Image: Side VIEW         STYLE is top: Side VIEW       Side VIEW       Side VIEW         STYLE 4: STYLE 5: STYLE 5: STYLE 6: SIDE VIEW       STYLE 6: Side VIEW         STYLE 4: SIDE VIEW       SIDE VIEW       Side VIEW         SIDE VIEW       SIDE Cathodic 2: Contribute       Side VIEW         SIDE Cathodic 2: Contribute       Side VIEW       Side VIEW         STYLE 4: STYLE 5: STYLE 6: SIDE VIEW       Side VIEW       Side VIEW         SIDE VIEW       Side VIEW       Side VIEW       Side VIEW         Side Cathodic 2: Contribute       Side VIEW       Side VIEW  | L                |                   |                |                         | E               | 1.10       | 1.20       | 1.30                    |
| TOP VIEW     SIDE VIEW       TOP VIEW     SIDE VIEW       TOP VIEW     SIDE VIEW       TOP VIEW     SIDE VIEW       STATUSE 1     STYLE 2:       PIN 1 EMITTER 1     PIN 1 EMITTER 1       2 BASE 2     STATUSE 1:       3 BASE 2     S BASE 1:       3 BASE 2     S BASE 1:       4 MUTTER 2     STYLE 5:       5 COLLECTOR 1:     CATHODE 2:       4 COLLECTOR 1:     CATHODE 2:       4 COLLECTOR 1:     CATHODE 2:       3 BASE 2:     S BASE 1:       5 COLLECTOR 1:     CATHODE 2:       4 COLLECTOR 1:     CATHODE 2:       4 COLLECTOR 1:     CATHODE 2:       4 COLLECTOR 2:     CATHODE 2:       5 COLLECTOR 1:     CATHODE 2:       6 COLLECTOR 2:     CATHODE 3:       7 COLLECTOR 2:     CATHODE 3:       8 COLLECTOR 2:     CATHODE 3:       9 COLLECTOR 4:     STYLE 5:       9 COLLECTOR 5:     STYLE 6:       1:     CATHODE 3:       2:     CATHODE 3:       3:     CATHODE 3:       4:     ANDE       4:     CATHODE 3:       5:     COLLECTOR 6:       6:     CATHODE 3:       6:     CATHODE 3:       6:     CATHODE 4:   |                  |                   |                | ℃ ─►  ┝━─               | e               |            | 0.50 BSC   |                         |
| STYLE 1:       STYLE 2:       STYLE 3:         PIN 1: EMITTER 1       PIN 1: EMITTER 1       PIN 1: CATHODE 1         2: BASE 1       2: CATHODE 1       2: CATHODE 2         3: COLLECTOR 2       4: CATHODE 2       4: CATHODE 2         4: EMITTER 2       4: CATHODE 2       4: CATHODE 2         5: BASE 2       5: BASE 1       5: CATHODE 2         6: COLLECTOR 1       6: COLLECTOR 1       6: ANDE/ANDDE 2         7: STYLE 4:       STYLE 5:       STYLE 6:         9: N 1: CATHODE 2:       CATHODE 2:         2: COLLECTOR 1       6: COLLECTOR 2         3: BASE 2:       3: ANDE         3: COLLECTOR 1       6: COLLECTOR 1         4: EMITTER 3:       STYLE 5:         5: COLLECTOR 1       6: CATHODE 2:         6: COLLECTOR 3:       CATHODE 2:         7: COLLECTOR 3:       CATHODE 4:         8: COLLECTOR 3:       CATHODE 4:         9: N 1: CATHODE 4:       STYLE 9:         9: N 1: CATHODE 4:       STYLE 9:         10: 1       CATHODE 4:         10: 1       CATHODE 5:         2: ANDDE       CATHODE 4:         3: CATHODE 4:       CATHODE 5:         3: CATHODE 5:       CATHODE 5:         3: CATHODE 6:<  |                  |                   |                |                         | н               | 1.50       | 1.60       | 1.70                    |
| STYLE i       STYLE 2:       STYLE 3:         PIN 1. EMITTER 1       PIN 1. EMITTER 2       STYLE 3:         3. COLLECTOR 2       3. BASE 2       3. ANDE/ANDE 2         4. EMITTER 2       3. BASE 2       3. ANDE/ANDE 2         5. BASE 2       5. BASE 1       5. CATHODE 2         5. BASE 2       5. BASE 1       5. CATHODE 2         6. COLLECTOR 2       3. BASE 1       5. CATHODE 2         7. COLLECTOR 2       3. BASE 1       5. CATHODE 2         8. STYLE 5:       STYLE 5:       STYLE 6:         PIN 1. CATHODE 2       2. CATHODE 2       2. CATHODE 2         3. COLLECTOR 2       3. ANDDE 3. CATHODE 2       3. CATHODE 2         4. EMITTER 4       STYLE 5:       STYLE 6:         PIN 1. CATHODE 3. CATHODE 4. CATHODE 2       3. CATHODE 3. CATHODE 5. CATHODE 4. CATHODE 4. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 5. GATE 2       3. DRAIN 2         3. CATHODE 3. CATHODE 3. CATHODE 5. DRAIN 5. GATE 2       3. DRAIN 2       GATE 1         3. ANDDE 4. SDURCE 4. SDURCE 1       3. DRAIN 2       CATHODE 5. DRAIN 5. GATE 2         5. ANDDE 5. DRAIN 5. GATE 2       3. CATHODE 5. DRAIN 5. GATE 2       CATHODE 5. DRAIN 5. GATE 2         6. ANDDE 1       PIN 1. EMITTER 1       DRAIN 1. SDURCE 1         7. NC 2       S DRASE 1   |                  |                   |                |                         | L               | 0.10       | 0.20       | 0.30                    |
| STYLE i       STYLE 2:       STYLE 3:         PIN 1. EMITTER 1       PIN 1. EMITTER 2       STYLE 3:         3. COLLECTOR 2       3. BASE 2       3. ANDE/ANDE 2         4. EMITTER 2       3. BASE 2       3. ANDE/ANDE 2         5. BASE 2       5. BASE 1       5. CATHODE 2         5. BASE 2       5. BASE 1       5. CATHODE 2         6. COLLECTOR 2       3. BASE 1       5. CATHODE 2         7. COLLECTOR 2       3. BASE 1       5. CATHODE 2         8. STYLE 5:       STYLE 5:       STYLE 6:         PIN 1. CATHODE 2       2. CATHODE 2       2. CATHODE 2         3. COLLECTOR 2       3. ANDDE 3. CATHODE 2       3. CATHODE 2         4. EMITTER 4       STYLE 5:       STYLE 6:         PIN 1. CATHODE 3. CATHODE 4. CATHODE 2       3. CATHODE 3. CATHODE 5. CATHODE 4. CATHODE 4. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 5. GATE 2       3. DRAIN 2         3. CATHODE 3. CATHODE 3. CATHODE 5. DRAIN 5. GATE 2       3. DRAIN 2       GATE 1         3. ANDDE 4. SDURCE 4. SDURCE 1       3. DRAIN 2       CATHODE 5. DRAIN 5. GATE 2         5. ANDDE 5. DRAIN 5. GATE 2       3. CATHODE 5. DRAIN 5. GATE 2       CATHODE 5. DRAIN 5. GATE 2         6. ANDDE 1       PIN 1. EMITTER 1       DRAIN 1. SDURCE 1         7. NC 2       S DRASE 1   |                  |                   |                |                         |                 | - 170      | - 1        |                         |
| STYLE 1:       STYLE 2:       STYLE 3:         PIN 1: ENITTER 1       2: EMITTER 1       2: EMITTER 1         2: BASE 1       3: BASE 2       3: ANDE/ANDDE 2         4: EMITTER 2       4: COLLECTOR 2       4: CATHODE 1         3: COLLECTOR 1       6: COLLECTOR 1       6: ANDE/ANDDE 2         6: COLLECTOR 1       6: COLLECTOR 1       6: ANDDE/ANDDE 1         8: SASE 2:       5: SASE 1:       5: CATHODE 2         6: COLLECTOR 1       6: COLLECTOR 1       6: ANDDE/ANDDE 1         8: CATHODE 2:       CATHODE 2:         2: COLLECTOR 2:       CATHODE 2:         3: CATHODE 2:       CATHODE 2:         4: EMITTER 4:       STYLE 5:         PIN 1: CATHODE 2:       CATHODE 2:         4: EMITTER 4:       CATHODE 2:         5: COLLECTOR 2:       CATHODE 3:         6: COLLECTOR 6:       CATHODE 4:         7: TYLE 7:       STYLE 8:         9: TYLE 7:       STYLE 8:         9: TYLE 7:       STYLE 8:         9: CALLECTOR 6:       CATHODE 2:         3: ANDE 6:       SURAIN 2:         4: CATHODE 1:       SURAIN 2:         5: ANDE 2:       SURAIN 2:         6: CATHODE 1:       SURAIN 2:         6: CATHODE 2  |                  |                   |                |                         | 0.30            |            |            | < 0.45                  |
| STYLE 1:       STYLE 2:       STYLE 3:         PIN 1: ENITTER 1       2: EMITTER 1       2: EMITTER 1         2: BASE 1       3: BASE 2       3: ANDE/ANDDE 2         4: EMITTER 2       4: COLLECTOR 2       4: CATHODE 1         3: COLLECTOR 1       6: COLLECTOR 1       6: ANDE/ANDDE 2         6: COLLECTOR 1       6: COLLECTOR 1       6: ANDDE/ANDDE 1         8: SASE 2:       5: SASE 1:       5: CATHODE 2         6: COLLECTOR 1       6: COLLECTOR 1       6: ANDDE/ANDDE 1         8: CATHODE 2:       CATHODE 2:         2: COLLECTOR 2:       CATHODE 2:         3: CATHODE 2:       CATHODE 2:         4: EMITTER 4:       STYLE 5:         PIN 1: CATHODE 2:       CATHODE 2:         4: EMITTER 4:       CATHODE 2:         5: COLLECTOR 2:       CATHODE 3:         6: COLLECTOR 6:       CATHODE 4:         7: TYLE 7:       STYLE 8:         9: TYLE 7:       STYLE 8:         9: TYLE 7:       STYLE 8:         9: CALLECTOR 6:       CATHODE 2:         3: ANDE 6:       SURAIN 2:         4: CATHODE 1:       SURAIN 2:         5: ANDE 2:       SURAIN 2:         6: CATHODE 1:       SURAIN 2:         6: CATHODE 2  |                  |                   |                |                         | T T             | ti dh i    | ┼┤──┸      |                         |
| STYLE 1:       STYLE 2:       STYLE 3:         PIN 1: ENITTER 1       2: EMITTER 1       2: EMITTER 1         2: BASE 1       3: BASE 2       3: ANDE/ANDDE 2         4: EMITTER 2       4: COLLECTOR 2       4: CATHODE 1         3: COLLECTOR 1       6: COLLECTOR 1       6: ANDE/ANDDE 2         6: COLLECTOR 1       6: COLLECTOR 1       6: ANDDE/ANDDE 1         8: SASE 2:       5: SASE 1:       5: CATHODE 2         6: COLLECTOR 1       6: COLLECTOR 1       6: ANDDE/ANDDE 1         8: CATHODE 2:       CATHODE 2:         2: COLLECTOR 2:       CATHODE 2:         3: CATHODE 2:       CATHODE 2:         4: EMITTER 4:       STYLE 5:         PIN 1: CATHODE 2:       CATHODE 2:         4: EMITTER 4:       CATHODE 2:         5: COLLECTOR 2:       CATHODE 3:         6: COLLECTOR 6:       CATHODE 4:         7: TYLE 7:       STYLE 8:         9: TYLE 7:       STYLE 8:         9: TYLE 7:       STYLE 8:         9: CALLECTOR 6:       CATHODE 2:         3: ANDE 6:       SURAIN 2:         4: CATHODE 1:       SURAIN 2:         5: ANDE 2:       SURAIN 2:         6: CATHODE 1:       SURAIN 2:         6: CATHODE 2  |                  |                   |                |                         |                 | τμτ        |            |                         |
| PIN I. EMITTER 1<br>2. BASE 1<br>2. CATHODE 1<br>2. CATHODE 1<br>2. CATHODE 2<br>3. COLLECTOR 2<br>4. CATHOLECTOR 2<br>5. BASE 2<br>5. BASE 2<br>5. BASE 1<br>6. COLLECTOR 1<br>6. COLLECTOR 1<br>6. COLLECTOR 1<br>7. CALLECTOR 2<br>5. BASE 2<br>5. BASE 2<br>5. BASE 1<br>6. COLLECTOR 1<br>6. COLLECTOR 1<br>7. CALLECTOR 2<br>7. CALLECTOR 3<br>7. CALLECTOR 3<br>7. CALLECTOR 3<br>7. CALLECTOR 4<br>7. CALLECTOR 4<br>7. CALLECTOR 5<br>7. CALLECTOR 7<br>7. CALLECTOR 5<br>7. CALLECTOR 7<br>7.  |                  |                   |                |                         | 1.80            |            | I          |                         |
| 3. CULLECTOR 2       3. BASE 2       3. ANDDE/ANDDE 2         4. EMITTER 2       4. CATHODE 2       4. CATHODE 2         5. BASE 2       5. BASE 1       5. CATHODE 2         6. COLLECTOR 1       6. COLLECTOR 1       6. ANDDE/ANDDE 1         RECOMMENDED MOUNTING FOOTPRINT*         STYLE 4:         PIN 1. CATHODE       2. CATHODE         2. COLLECTOR 2       3. ANDDE         3. BASE 2       3. ANDDE         3. BASE 2       5. CATHODE         2. COLLECTOR 2       2. CATHODE         3. BASE 3       ANDDE         3. BASE 4       4. ANDDE         4. EMITTER 4       STYLE 6:         9. COLLECTOR 5. CATHODE       3. CATHODE 2         3. BASE 4       4. ANDDE 4         4. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 6. CATHODE 6. CATHODE 6. CATHODE 7. COLDERING TECHNIQUES REFERENCE MANUAL, SOLDERING TOR SOLDERING TOR SOLDERING AND MOUNTING TECHNICE REVIEW MANUAL, SOLDERING MANUAL, SOLDERING POLYDALL, SOLDERING MANUAL, SOLDERING MANUAL, SOLDERING MANUAL, SOLDERING MANUAL, SOLDERING DIAGRAM*         YILE 7:       STYLE 8:       STYLE 9:         9. NAIDE 2       3. GATE 2       SOLRCE 2         3. CATHODE 3. CATHODE 4. SDURCE 4. SDURCE 2       SOLARIN 6. DRAIN 1         3. CATHODE 5. DRAIN 6. DRAIN 1       SOLECTOR 1 <td< th=""><th></th><th></th><th></th><th>E 1</th><th></th><th></th><th><u>+</u>-</th><th></th></td<>   |                  |                   |                | E 1                     |                 |            | <u>+</u> - |                         |
| 5. BASE 2       5. BASE 1       5. CATHIDE 2       0.30         6. COLLECTOR 1       6. COLLECTOR 1       6. ANDE/ANDDE 1       RECOMMENDED MOUNTING FOOTPRINT*         STYLE 4:       STYLE 5:       STYLE 6:       PIN 1. CATHIDDE       PIN 1. CATHIDDE         2. COLLECTOR       2. CATHIDDE       2. CATHIDDE       3. BASE       3. ANDDE         3. BASE       3. ANDDE       3. CATHIDDE       3. CATHIDDE       5. CATHIDDE         4. EMITTER       4. ANDDE       4. CATHIDDE       5. CATHIDDE       5. CATHIDDE         5. COLLECTOR       5. CATHIDDE       5. CATHIDDE       5. CATHIDDE       5. CATHIDDE         5. COLLECTOR       6. CATHIDDE       5. CATHIDDE       5. CATHIDDE       5. CATHIDDE         5. COLLECTOR       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE         2. ANDDE       2. DRAIN       2. GATE 1       2. MANDA       MARKING DIAGRAM*         STYLE 7:       STYLE 8:       STYLE 9:       MARKING DIAGRAM*       MARKING DIAGRAM*         2. ANDDE       2. DRAIN       3. DRAIN 1       2. GATE 2       MARKING DIAGRAM*         3. CATHIDDE       3. DRAIN       5. DIRCE 1       XX = Specific Device Code       M = Month Code         4. CATHIDDE 1       FIN 1. EMITTER 2  |                  |                   |                |                         |                 | ╧╋╴        |            |                         |
| STYLE 4:       STYLE 5:       STYLE 6:       *       FOR ADDITIONAL INFORMATION ON OUR Pb-FREE         PIN 1. CATHIDDE       PIN 1. CATHIDDE       2. CATHIDDE       2. CATHIDDE       3. CATHIDDE         3. BASE       3. ANDDE       3. CATHIDDE       3. CATHIDDE       4. CATHIDDE       4. CATHIDDE         5. COLLECTOR       5. CATHIDDE       4. CATHIDDE       4. CATHIDDE       5. CATHIDDE       5. CATHIDDE         6. COLLECTOR       6. CATHIDDE       5. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE         7. CATHIDDE       8. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE         8. ANDDE       9. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE         8. ANDDE       2. DRAIN       2. GATE 1       3. DRAIN 2       6. CATHIDDE       6. CATHIDDE         2. ANDDE       3. DRAIN       5. GATE 2       3. CATHIDE       XX = Specific Device Code         M       M = Month Code       •       = D-Free Package         STYLE 10:       STYLE 11:       FTHIS INFORMATION IS generic. Please refer to         9. N/C       2. BASE 2       3. CATHIDDE       9. COLLECTUR 1         4. ANDDE 1       9. ASEE 1       0. CATHIDE       PD-Free indicat   |                  |                   |                |                         |                 | ′ /<br>    |            |                         |
| STYLE 4:       STYLE 5:       STYLE 6:       *       FOR ADDITIONAL INFORMATION ON OUR Pb-FREE         PIN 1. CATHIDDE       2. CATHIDDE       2. ANIDDE       3. BASE       3. ANDDE       3. CATHIDDE         3. BASE       3. ANDDE       3. CATHIDDE       3. CATHIDDE       3. CATHIDDE       3. CATHIDDE         4. EMITTER       4. ANDDE       4. CATHIDDE       5. CATHIDDE       5. CATHIDDE       5. CATHIDDE         5. COLLECTOR       6. CATHIDDE       5. CATHIDDE       5. CATHIDDE       6. CATHIDDE       6. CATHIDDE         6. COLLECTOR       6. CATHIDDE       5. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE         3. CATHIDDE       3. CATHIDDE       3. CATHIDDE       6. CATHIDDE       6. CATHIDDE       6. CATHIDDE         3. CATHIDDE       3. GATE       3. DRAIN       2. GATE 1       3. DRAIN 2       4. CATHIDDE       4. SDURCE       2. ANDICE         3. CATHIDDE       4. CATHIDDE       5. GATE 2       3. DRAIN 1       XX = Specific Device Code       M = Month Code       -       = Pb-Free Package         STYLE 10'       STYLE 11'       FIN 1. CATHIDE       2. BASE 2       3. CATHIDDE       *This information is generic. Plase refer to device data sheet for actual part marking.         2. N/C       3. CATHIDDE 2       3. CATH   | 6. COLLECTOR 1   | 6. COLLECTOR 1    | 6. ANDDE/      | ANDDE 1                 |                 |            |            |                         |
| PIN 1. COLLECTOR       PIN 1. CATHODE       PIN 1. CATHODE       2. ANDDE       3. ANDDE       3. CATHODE       3. ANDDE       3. CATHODE       4. CATHODE       4. CATHODE       4. CATHODE       4. CATHODE       4. CATHODE       4. CATHODE       6. CATHODE       6. CATHODE       6. CATHODE       6. CATHODE       4. CATHODE       6. CA   |                  |                   |                |                         | RECOMMENDE      | ED MOUN    | TING FOO   | TPRINT*                 |
| 2. CULLECTUR 2. CAIHUDE 2. ANUDE 3. CATHODE 4. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 5. CATHODE 6. CATHODE 6. CATHODE 6. CATHODE 6. CATHODE 6. CATHODE 7. CATHODE  | PIN 1. COLLECTOR | PIN 1. CATHODE    | PIN 1. CATHODE | * F(                    |                 |            |            |                         |
| 4. EMITTER       4. ANDDE       4. CATHEDE       MANUAL, SOLDERRM/D.         5. COLLECTOR       6. CATHEDE       5. CATHEDE       GENERIC         6. COLLECTOR       6. CATHEDE       6. CATHEDE       MARKING DIAGRAM*         STYLE 7:       STYLE 8:       STYLE 9:       MARKING DIAGRAM*         PIN 1. CATHEDE       2. DRAIN       2. GATE       3. DRAIN 2         3. CATHEDE       3. GATE       3. DRAIN 2       1         4. CATHEDE       4. SDURCE       4. SDURCE 2       1         5. ANDDE       5. DRAIN       5. GATE 2       XX = Specific Device Code         M = Month Code       •       = Pb-Free Package         STYLE 10:       STYLE 11:       XX = Specific Device Code         PIN 1. CATHEDE       1. DEMITTER 2       *This information is generic. Please refer to         2. N/C       2. BASE 2       device data sheet for actual part marking.         3. CATHEDE 1       PIN 1. EMITTER 1       or may not be present. Some products may         3. CATHEDE 2       4. EMITTER 1       or may not be present. Some products may         3. N/C       5. BASE 1       or may not be present. Some products may         4. ANDDE 2       4. EMITTER 1       or may not be present. Some products may         5. N/C       5. BASE 1  | 3. BASE          | 3. ANDDE          | 3. CATHOD      | Ł                       | OWNLOAD THE     | ON SEMIC   | ONDUCTOR   | SOLDERING               |
| GENERIC<br>MARKING DIAGRAM*         STYLE 7:       STYLE 8:       STYLE 9:         PIN 1. CATHODE       PIN 1. DRAIN       PIN 1. SDURCE 1         2. ANDDE       2. DRAIN       2. GATE 1         3. CATHODE       3. GATE       3. DRAIN 2         4. CATHODE       4. SDURCE       4. SDURCE 4. SDURCE 2         5. ANDDE       5. DRAIN       5. GATE 2         6. CATHODE       6. DRAIN       6. DRAIN 1         7       File       * Style 10:         8. STYLE 10:       STYLE 11:       * = Pb-Free Package         STYLE 10:       STYLE 11:         PIN 1. CATHODE 1       PIN 1. EMITTER 2         2. N/C       2. BASE 2         3. CATHODE 2       3. COLLECTOR 1         9. N/C       3. CALLECTOR 1         4. ANDDE 2       4. EMITTER 1         5. N/C       SASE 1         6. ANDDE 1       6. COLLECTOR 2         9. N/C       SASE 1         6. ANDDE 1       6. COLLECTOR 2         9. N/C       SASE 1         6. ANDDE 1       6. COLLECTOR 2         9. N/C       SASE 1         6. ANDDE 1       6. COLLECTOR 2         9. ONTROLECTOR 2       NOT 5. SASE 1         6. A  | 5. COLLECTOR     | 5. CATHODE        | 5. CATHOD      | E                       |                 |            |            |                         |
| STYLE 7:       STYLE 8:       STYLE 9:         PIN 1. CATHIDDE       PIN 1. DRAIN       PIN 1. SDURCE 1         2. ANDDE       2. DRAIN       2. GATE 1         3. CATHIDDE       3. GATE       3. DRAIN 2         4. CATHIDDE       4. SDURCE       4. SDURCE         5. ANDDE       5. DRAIN       5. GATE 2         6. CATHIDDE       6. DRAIN       6. DRAIN 1         XXX       = Specific Device Code         M       = Month Code         •       = Pb-Free Package         STYLE 10:       STYLE 11:         PIN 1. CATHIDDE 1       PIN 1. EMITTER 2         3. CATHIDDE 2       3. COLLECTOR 1         9. N/C       2. BASE 2         3. CATHIDDE 2       3. COLLECTOR 1         9. N/C       5. BASE 1         6. ANIDDE 1       6. COLLECTOR 2         9. N/C       5. BASE 1         6. ANIDDE 1       6. COLLECTOR 2         DOCUMENT NUMBER:       98AON11126D  | 6. COLLECTOR     | 6. CATHODE        | 6. CATHOD      | E                       |                 | GENER      | C          |                         |
| PIN 1. CATHIDE       PIN 1. DRAIN       PIN 1. SDURCE 1         2. ANDDE       2. DRAIN       2. GATE 1         3. CATHIDDE       3. GATE       3. DRAIN 2         4. CATHIDDE       4. SDURCE       4. SDURCE 2         5. ANDDE       5. DRAIN       5. GATE 2         6. CATHIDDE       6. DRAIN       6. DRAIN         7       6. DRAIN       6. DRAIN         8. CATHIDDE       6. DRAIN       6. DRAIN         9. OLATHIDE       6. DRAIN       6. DRAIN         9. CATHIDDE       6. DRAIN       6. DRAIN         9. CATHIDDE       1. EMITTER 2       XX = Specific Device Code         M       = Month Code       =         9. N/C       2. BASE 2       device data sheet for actual part marking.         3. CATHIDDE 2       3. COLLECTOR 1       Pb-Free indicator, "G" or microdot "•", may         4. ANDDE 2       4. EMITTER 1       or may not be present. Some products may         5. N/C       5. BASE 1       or may not be present. Some products may         6. ANDDE 1       6. COLLECTOR 2       Electronic versions are uncontrolled except when accessed directly from the Document Repository.         Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>-</th> <th></th>   |                  |                   |                |                         |                 |            | -          |                         |
| 3. CATHIDE<br>4. CATHIDE<br>5. ANDDE<br>5. ANDDE<br>6. DRAIN<br>5. GATE 2<br>5. ANDDE<br>6. DRAIN<br>6. DRAIN<br>5. GATE 2<br>5. ANDDE<br>6. DRAIN<br>6. DRAIN<br>7. STYLE<br>10:<br>7. N/C<br>7. SASE 2<br>7. CATHIDE<br>7. N/C<br>7. SASE 2<br>7. CATHIDE<br>7. N/C<br>7. SASE 2<br>7. CATHIDE<br>7. N/C<br>7. SASE 2<br>7. CATHIDE<br>7. N/C<br>7. SASE 1<br>7. COLLECTOR<br>7. | PIN 1. CATHODE   | PIN 1. DRAIN      | PIN 1. SOURCE  | 1                       |                 |            | 1          |                         |
| 5. ANDDE       5. DRAIN       5. GATE 2         6. CATHEDDE       6. DRAIN       6. DRAIN 1         XX       = Specific Device Code         M       = Month Code         •       = Pb-Free Package         STYLE 10:       STYLE 11:         PIN 1. CATHEDDE 1       PIN 1. EMITTER 2         2. N/C       2. BASE 2         3. CATHEDDE 2       3. COLLECTER 1         4. ANEDDE 2       4. EMITTER 1         5. N/C       5. BASE 1         6. ANEDE 1       6. COLLECTER 2         Electronic versions are uncontrolled except when accessed directly from the Document Repository.         Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.   | 3. CATHODE       | 3. GATE           | 3. DRAIN â     |                         |                 | XXM•       |            |                         |
| STYLE 10:       STYLE 11: <ul> <li>PD-Free Package</li> <li>*This information is generic. Please refer to</li> <li>ACTHDDE 1</li> <li>PIN 1. EMITTER 2</li> <li>CATHDDE 2</li> <li>CDLLECTOR 1</li> <li>PD-Free indicator, "G" or microdot "=", may</li> <li>or may not be present. Some products may</li> <li>N/C</li> <li>SBASE 1</li> <li>COLLECTOR 2</li> </ul> <li>DOCUMENT NUMBER:</li> <li>98AON11126D</li> <li>Electronic versions are uncontrolled except when accessed directly from the Document Repository.</li> <li>Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.</li>  |                  |                   |                |                         |                 |            | ]          |                         |
| STYLE 10:       STYLE 11:       - = Pb-Free Package         PIN 1. CATHIDE 1       PIN 1. EMITTER 2       *This information is generic. Please refer to         2. N/C       2. BASE 2       device data sheet for actual part marking.         3. CATHIDE 2       3. COLLECTOR 1       Pb-Free indicator, "G" or microdot "=", may         4. ANDDE 2       4. EMITTER 1       or may not be present. Some products may         5. N/C       5. BASE 1       ort follow the Generic Marking.         6. ANDDE 1       6. COLLECTOR 2       Electronic versions are uncontrolled except when accessed directly from the Document Repository.         Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.   | 6. CATHODE       | 6. DRAIN          | 6. DRAIN 1     | L                       |                 | •          |            |                         |
| PIN 1. CATHIDE 1       PIN 1. EMITTER 2       *This information is generic. Please refer to device data sheet for actual part marking.         2. N/C       2. BASE 2       device data sheet for actual part marking.         3. CATHIDE 2       3. CDLLECTOR 1       Pb-Free indicator, "G" or microdot "•", may         4. ANDDE 2       4. EMITTER 1       or may not be present. Some products may         5. N/C       5. BASE 1       not follow the Generic Marking.         6. ANDDE 1       6. CDLLECTOR 2       Electronic versions are uncontrolled except when accessed directly from the Document Repository.         Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.       Image: Control of the co   |                  |                   |                |                         |                 |            |            |                         |
| 3. CATHEDE 2       3. CELLECTER 1       Pb-Free indicator, "G" or microdot "•", may         4. ANDDE 2       4. EMITTER 1       or may not be present. Some products may         5. N/C       5. BASE 1       not follow the Generic Marking.         6. ANDDE 1       6. CELLECTER 2       not follow the Generic Marking.         DOCUMENT NUMBER:       98AON11126D       Electronic versions are uncontrolled except when accessed directly from the Document Repository.  | PIN 1. CATHODE 1 | PIN 1. EMITTER 2  |                |                         |                 | , e        |            |                         |
| 4. ANDDE 2       4. EMITTER 1       or may not be present. Some products may not follow the Generic Marking.         5. N/C       5. BASE 1       not follow the Generic Marking.         6. ANDDE 1       6. CDLLECTOR 2       Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.   | 3. CATHODE 2     | 3. COLLECTOR 1    |                |                         |                 |            |            |                         |
| 6. ANDDE 1       6. CDLLECTOR 2       not follow the Generic Marking.         DOCUMENT NUMBER:       98AON11126D       Electronic versions are uncontrolled except when accessed directly from the Document Repository.<br>Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.   |                  |                   |                |                         | or may not be p | resent. So | me product |                         |
| Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.  | 6. ANDDE 1       | 6. COLLECTOR 2    |                |                         |                 |            |            | he Document Repository. |
| DESCRIPTION: SOT-563-6 1.60x1.20x0.55, 0.50P PAGE 1 OF 1   |                  |                   |                | Printed versions are un |                 |            |            | COPY" in red.           |
|  | DESCRIPTI        | ON:   SOT-563-6 1 | .60x1.20x0.55  | , 0.50P                 |                 |            |            | PAGE 1 OF 1             |

SOT-563-6 1.60x1.20x0.55, 0.50P CASE 463A

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#### MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



| SOT-963 1.00x1.00x0.37,<br>CASE 527AD   | 0.35P   |  |   |             |
|---|---|--|---|-------------|
| ISSUE F   |   |  | DATE  | 20 FEB 2024 |
| NDTES:  |   | м  | LLIMETE                                       | RS          |
| 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,<br>2. CONTROLLING DIMENSION: MILLIMETERS.  | 2018.  <br>DIM  | MIN.                                       | NDM.  | MAX.        |
| 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH<br>THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIM  |   | 0,34                                       | 0.37  | 0,40        |
| THICKNESS OF BASE MATERIAL.   | h   | 0.10                                       | 0.15  | 0.20        |
| 4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH.<br>PROTRUSIONS, OR GATE BURRS.   | с   | 0.07                                       | 0.12  | 0.17        |
|   | D   | 0.95                                       | 1.00  | 1.05        |
|   | E   | 0.75                                       | 0.80  | 0.85        |
|   | e   |  | 0.35 BSC                                      | 2           |
| +-+-+ Ė   ⊢ Ĥ   | Н   | 0.95                                       | 1.00  | 1.05        |
|   | L   |  | 0.19 REF                                      | -           |
| $T \Pi P V I F W$   | L2  | 0.05                                       | 0.10  | 0.15        |
|   | 6X 0.20-  | ┥   <b></b> ┛─                             | <b>–</b> 6)                                   | K 0.35      |
|   |   |  | <b></b> ′                                     |             |
|   | ,   | ı⊟ ∰ Ŀ                                     | ⇒   | •           |
|   |   | _ + −                                      | _+ ↑  | 1.20        |
|   |   | ффF  | Ч   |             |
|   | INE   |  | 0.25  |             |
|   | _   |  | 0.35<br>PITCH                                 |             |
| L2→ → ← 6X b<br>(\$\$\0,08 A B]   | RECOMME   | INDED                                      | MOUNT   | ING         |
|   |   |  |   |             |
|   | *For addition<br>Free strateg   |  |   |             |
| STYLE 1: STYLE 2: STYLE 3: PL   | ease download   | i the 🛛                                    | I Semicor                                     | nductor     |
| 2. BASE 1 2. EMITTER2 2. CATHODE 1<br>3. COLLECTOR 2 3. BASE 2 3. ANODE/ANODE 2<br>4. EMITTER 2 4. COLLECTOR 2 4. CATHODE 2   | Soldering and<br>Reference  |  |   |             |
| 4. COLLECTOR 2     4. COLLECTOR 2     4. CATHODE 2     5. BASE 2     5. CATHODE 2     6. COLLECTOR 1     6. ANODE/ANODE 1   |   |  |   |             |
| STYLE 4: STYLE 5: STYLE 6:  |   |  |   |             |
| PIN 1. COLLECTOR         PIN 1. CATHODE         PIN 1. CATHODE           2. COLLECTOR         2. CATHODE         2. ANODE           3. BASE         3. ANODE         3. CATHODE | G   | ENERIC                                     |   |             |
| 4. EMITTER4. ANODE4. CATHODE5. COLLECTOR5. CATHODE5. CATHODE  |   | NG DIAGF                                   | RAM*  |             |
| 6. COLLECTOR 6. CATHODE 6. CATHODE  | ]   |  |   |             |
| STYLE 7:         STYLE 8:         STYLE 9:           PIN 1. CATHODE         PIN 1. DRAIN         PIN 1. SOURCE 1           2. ANODE         2. DRAIN         2. GATE 1          | 1   | °XXW                                       |   |             |
| 3. CATHODE         3. GATE         3. DRAIN 2           4. CATHODE         4. SOURCE         4. SOURCE 2  | ا<br>XX – ۹۳  | с с с<br>ecific Devic                      | - Code  |             |
| 5. ANODE5. DRAIN5. GATE 26. CATHODE6. DRAIN6. DRAIN 1   |   | nth Code                                   |   |             |
| STYLE 10:<br>PIN 1. CATHODE 1<br>2. N/C<br>3. CATHODE 2<br>4. ANODE 2<br>5. N/C<br>6. ANODE 1   | *This information<br>device data she<br>Pb-Free indicate<br>or may not be pr<br>not follow the Ge | et for actua<br>or, "G" or m<br>esent. Som | l part marki<br>crodot "∎", n<br>e products n | ing.<br>nay |
|   | re uncontrolled except when a   |  |   |             |
| DESCRIPTION: SOT-963 1.00x1.00x0.37, 0.35P  |   |  | PA  | GE 1 OF 1   |
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