## MUN5332DW1, NSBC143EPDXV6, NSBC143EPDP6

## Complementary Bias Resistor Transistors $R 1=4.7 \mathrm{k} \Omega$, $\mathrm{R} 2=4.7 \mathrm{k} \Omega$ NPN and PNP 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
$\left(T_{A}=25^{\circ} \mathrm{C}\right.$ both polarities $Q_{1}(P N P) \& Q_{2}(N P N)$, unless otherwise noted)

| Rating | Symbol | Max | Unit |
| :--- | :---: | :---: | :---: |
| Collector-Base Voltage | $\mathrm{V}_{\text {CBO }}$ | 50 | Vdc |
| Collector-Emitter Voltage | $\mathrm{V}_{\mathrm{CEO}}$ | 50 | Vdc |
| Collector Current - Continuous | $\mathrm{I}_{\mathrm{C}}$ | 100 | mAdc |
| Input Forward Voltage | $\mathrm{V}_{\mathrm{IN}(\mathrm{fwd})}$ | 30 | Vdc |
| Input Reverse Voltage | $\mathrm{V}_{\mathrm{IN}(\mathrm{rev})}$ | 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 $^{\dagger}$ |
| :--- | :---: | :---: |
| MUN5332DW1T1G, SOT-363 <br> NSVMUN5332DW1T1G* 3,000/Tape \& Reel <br> NSVMUN5332DW1T3G* SOT-363 <br> NSBC143EPDXV6T1G SOT-563 | 4,000/Tape \& Reel |  |
| NSBC143EPDP6T5G | SOT-963 | 8,000/Tape \& Reel |

$\dagger$ 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.

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## PIN CONNECTIONS


(4)
(5)
(6)

MARKING DIAGRAMS


SOT-363 CASE 419B


SOT-563 CASE 463A


$$
\begin{array}{ll}
\text { 32/V } & =\text { Specific Device Code } \\
\mathrm{M} & =\text { Date Code* } \\
& =\text { Pb-Free Package }
\end{array}
$$

(Note: Microdot may be in either location)
*Date Code orientation may vary depending upon manufacturing location.

## MUN5332DW1, NSBC143EPDXV6, NSBC143EPDP6

THERMAL CHARACTERISTICS


MUN5332DW1 (SOT-363) BOTH JUNCTION HEATED (Note 3)

| Total Device Dissipation $\begin{array}{ll} \mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C} & \text { (Note 1) } \\ \text { (Note 2) } \\ \text { Derate above 25 } \\ \\ \text { (Note 2) } & \text { (Note 1) } \end{array}$ | $\mathrm{P}_{\mathrm{D}}$ | $\begin{aligned} & 250 \\ & 385 \\ & 2.0 \\ & 3.0 \end{aligned}$ | $\begin{gathered} \mathrm{mW} \\ \mathrm{~mW} /{ }^{\circ} \mathrm{C} \end{gathered}$ |
| :---: | :---: | :---: | :---: |
| Thermal Resistance, Junction to Ambient <br> (Note 1) (Note 2) | $\mathrm{R}_{\theta \mathrm{JA}}$ | $\begin{aligned} & 493 \\ & 325 \end{aligned}$ | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
| Thermal Resistance, Junction to Lead (Note 1) (Note 2) | $\mathrm{R}_{\text {өJL }}$ | $\begin{aligned} & 188 \\ & 208 \end{aligned}$ | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
| Junction and Storage Temperature Range | $\mathrm{T}_{\mathrm{J}}, \mathrm{T}_{\text {stg }}$ | -55 to +150 | ${ }^{\circ} \mathrm{C}$ |

NSBC143EPDXV6 (SOT-563) ONE JUNCTION HEATED

| Total Device Dissipation $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C} \quad \text { (Note 1) }$ <br> Derate above $25^{\circ} \mathrm{C}$ <br> (Note 1) | $\mathrm{P}_{\mathrm{D}}$ | $\begin{array}{r} 357 \\ 2.9 \end{array}$ | $\underset{\mathrm{mW} /{ }^{\circ} \mathrm{C}}{\mathrm{~mW}}$ |
| :---: | :---: | :---: | :---: |
| Thermal Resistance, Junction to Ambient <br> (Note 1) | $\mathrm{R}_{\text {өJA }}$ | 350 | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |

NSBC143EPDXV6 (SOT-563) BOTH JUNCTION HEATED (Note 3)

| Total Device Dissipation <br> $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ (Note 1) <br> Derate above $25^{\circ} \mathrm{C}$ <br> (Note 1) | $\mathrm{P}_{\mathrm{D}}$ |  |  |
| :--- | :--- | :---: | :---: | :---: |
| Thermal Resistance, <br> Junction to Ambient$\quad$ (Note 1) |  | 500 |  |
| 4.0 |  |  |  |

NSBC143EPDP6 (SOT-963) ONE JUNCTION HEATED

| Total Device Dissipation $\begin{aligned} & \mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C} \quad(\text { Note } 4) \\ & \text { (Note 5) } \\ & \text { Derate above 25 } \\ & \text { (Note 5) } \end{aligned}$ | PD | $\begin{aligned} & 231 \\ & 269 \\ & 1.9 \\ & 2.2 \end{aligned}$ | $\begin{gathered} \mathrm{MW} \\ \mathrm{~mW} /{ }^{\circ} \mathrm{C} \end{gathered}$ |
| :---: | :---: | :---: | :---: |
| Thermal Resistance, Junction to Ambient (Note 5) | $\mathrm{R}_{\text {өJA }}$ | $\begin{aligned} & 540 \\ & 464 \end{aligned}$ | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |

NSBC143EPDP6 (SOT-963) BOTH JUNCTION HEATED (Note 3)

| Total Device Dissipation $\begin{array}{ll} \mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C} \quad(\text { Note 4) } \\ (\text { Note 5) } \\ \text { Derate above } 25^{\circ} \mathrm{C} & \text { (Note 4) } \\ (\text { Note 5) } \end{array}$ | $\mathrm{P}_{\mathrm{D}}$ | $\begin{aligned} & 339 \\ & 408 \\ & 2.7 \\ & 3.3 \\ & \hline \end{aligned}$ | $\begin{gathered} \mathrm{MW} \\ \mathrm{~mW} /{ }^{\circ} \mathrm{C} \end{gathered}$ |
| :---: | :---: | :---: | :---: |
| Thermal Resistance, Junction to Ambient (Note 4) (Note 5) | $\mathrm{R}_{\theta \mathrm{JJA}}$ | $\begin{aligned} & 369 \\ & 306 \end{aligned}$ | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
| Junction and Storage Temperature Range | $\mathrm{T}_{\mathrm{J}}, \mathrm{T}_{\text {stg }}$ | -55 to +150 | ${ }^{\circ} \mathrm{C}$ |

1. FR-4 @ Minimum Pad.
2. FR-4@1.0×1.0 Inch Pad.
3. Both junction heated values assume total power is sum of two equally powered channels.
4. FR-4@ $100 \mathrm{~mm}^{2}, 1 \mathrm{oz}$. copper traces, still air.
5. FR-4@ $500 \mathrm{~mm}^{2}, 1 \mathrm{oz}$. copper traces, still air.

ELECTRICAL CHARACTERISTICS $\left(T_{A}=25^{\circ} \mathrm{C}\right.$ both polarities $\mathrm{Q}_{1}$ (PNP) \& $\mathrm{Q}_{2}$ (NPN), unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OFF CHARACTERISTICS |  |  |  |  |  |
| $\begin{aligned} & \text { Collector-Base Cutoff Current } \\ & \left(\mathrm{V}_{\mathrm{CB}}=50 \mathrm{~V}, \mathrm{I}_{\mathrm{E}}=0\right) \end{aligned}$ | $\mathrm{I}_{\text {CBO }}$ | - | - | 100 | nAdc |
| $\begin{aligned} & \text { Collector-Emitter Cutoff Current } \\ & \quad\left(V_{C E}=50 \mathrm{~V}, \mathrm{I}_{\mathrm{B}}=0\right) \end{aligned}$ | $I_{\text {cee }}$ | - | - | 500 | nAdc |
| Emitter-Base Cutoff Current $\left(\mathrm{V}_{\mathrm{EB}}=6.0 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=0\right)$ | Iebo | - | - | 1.5 | mAdc |
| Collector-Base Breakdown Voltage $\left(\mathrm{I}_{\mathrm{C}}=10 \mu \mathrm{~A}, \mathrm{I}_{\mathrm{E}}=0\right)$ | $\mathrm{V}_{\text {(BR) }}$ CBO | 50 | - | - | Vdc |
| Collector-Emitter Breakdown Voltage (Note 6) $\left(\mathrm{I}_{\mathrm{C}}=2.0 \mathrm{~mA}, \mathrm{I}_{\mathrm{B}}=0\right)$ | $\mathrm{V}_{\text {(BR)CEO }}$ | 50 | - | - | Vdc |

## ON CHARACTERISTICS

| DC Current Gain (Note 6) $\left(\mathrm{I}_{\mathrm{C}}=5.0 \mathrm{~mA}, \mathrm{~V}_{\mathrm{CE}}=10 \mathrm{~V}\right)$ | $h_{\text {FE }}$ | 15 | 30 | - |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Collector-Emitter Saturation Voltage (Note 6) $\left(I_{C}=10 \mathrm{~mA}, \mathrm{I}_{\mathrm{B}}=1.0 \mathrm{~mA}\right)$ | $\mathrm{V}_{\mathrm{CE} \text { (sat) }}$ | - | - | 0.25 | V |
| Input Voltage (Off) <br> $\left(\mathrm{V}_{\mathrm{CE}}=5.0 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=100 \mu \mathrm{~A}\right)(\mathrm{NPN})$ <br> $\left(\mathrm{V}_{\mathrm{CE}}=5.0 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=100 \mu \mathrm{~A}\right)(\mathrm{PNP})$ | $\mathrm{V}_{\mathrm{i} \text { (off) }}$ | - | $\begin{aligned} & 1.2 \\ & 1.2 \end{aligned}$ | - | Vdc |
| $\begin{aligned} & \text { Input Voltage (On) } \\ & \left(\mathrm{V}_{\mathrm{CE}}=0.2 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=20 \mathrm{~mA}\right)(\mathrm{NPN}) \\ & \left(\mathrm{V}_{\mathrm{CE}}=0.2 \mathrm{~V}, \mathrm{I}_{\mathrm{C}}=20 \mathrm{~mA}\right)(\mathrm{PNP}) \end{aligned}$ | $\mathrm{V}_{\mathrm{i}}$ (on) | - | $\begin{aligned} & 2.4 \\ & 2.8 \end{aligned}$ | - | Vdc |
| Output Voltage (On) $\left(\mathrm{V}_{\mathrm{CC}}=5.0 \mathrm{~V}, \mathrm{~V}_{\mathrm{B}}=2.5 \mathrm{~V}, \mathrm{R}_{\mathrm{L}}=1.0 \mathrm{k} \Omega\right)$ | $\mathrm{V}_{\text {OL }}$ | - | - | 0.2 | Vdc |
| $\begin{aligned} & \text { Output Voltage (Off) } \\ & \quad\left(\mathrm{V}_{\mathrm{CC}}=5.0 \mathrm{~V}, \mathrm{~V}_{\mathrm{B}}=0.25 \mathrm{~V}, R_{\mathrm{L}}=1.0 \mathrm{k} \Omega\right) \end{aligned}$ | $\mathrm{V}_{\mathrm{OH}}$ | 4.9 | - | - | Vdc |
| Input Resistor | R1 | 3.3 | 4.7 | 6.1 | k $\Omega$ |
| Resistor Ratio | $\mathrm{R}_{1} / \mathrm{R}_{2}$ | 0.8 | 1.0 | 1.2 |  |

6. Pulsed Condition: Pulse Width $=300 \mathrm{~ms}$, Duty Cycle $\leq 2 \%$.

(1) SOT-363; $1.0 \times 1.0$ Inch Pad
(2) SOT-563; Minimum Pad
(3) SOT-963; $100 \mathrm{~mm}^{2}, 1 \mathrm{oz}$. Copper Trace

Figure 1. Derating Curve

## MUN5332DW1, NSBC143EPDXV6, NSBC143EPDP6

## TYPICAL CHARACTERISTICS - NPN TRANSISTOR MUN5332DW1, NSBC143EPDXV6



Figure 2. $\mathrm{V}_{\mathrm{CE}(\text { sat })}$, vs. $\mathrm{I}_{\mathrm{C}}$


Figure 4. Output Capacitance


Figure 3. DC Current Gain


Figure 5. Output Current vs. Input Voltage


Figure 6. Input Voltage vs. Output Current

## MUN5332DW1, NSBC143EPDXV6, NSBC143EPDP6

## TYPICAL CHARACTERISTICS - PNP TRANSISTOR MUN5332DW1, NSBC143EPDXV6



Figure 7. $\mathrm{V}_{\mathrm{CE}(\text { sat })}$ vs. $\mathrm{I}_{\mathrm{C}}$


Figure 9. Output Capacitance


Figure 8. DC Current Gain


Figure 10. Output Current vs. Input Voltage


Figure 11. Input Voltage vs. Output Current

## MUN5332DW1, NSBC143EPDXV6, NSBC143EPDP6

TYPICAL CHARACTERISTICS - NPN TRANSISTOR
NSBC143EPDP6


Figure 12. $\mathrm{V}_{\mathrm{CE}(\text { sat })}$, vs. $\mathrm{I}_{\mathrm{C}}$


Figure 14. Output Capacitance


Figure 13. DC Current Gain


Figure 15. Output Current vs. Input Voltage


Figure 16. Input Voltage vs. Output Current

## MUN5332DW1, NSBC143EPDXV6, NSBC143EPDP6

## TYPICAL CHARACTERISTICS - PNP TRANSISTOR <br> NSBC143EPDP6



Figure 17. $\mathrm{V}_{\mathrm{CE}(\text { sat) }}$ vs. $\mathrm{I}_{\mathrm{C}}$


Figure 19. Output Capacitance


Figure 18. DC Current Gain


Figure 20. Output Current vs. Input Voltage


Figure 21. Input Voltage vs. Output Current


RECOMMENDED SOLDERING FOOTPRINT*

*For additional information on our Pb -Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994 2. CONTROLLING DIMENSION: MILLIMETERS.
2. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 PER END.
3. DIMENSIONS D AND E1 AT THE OUTERMOST EXTREMES OF DIMENSIONS D AND E1 AT THE OUT
THE PLASTIC BODY AND DATUM H.
THE PLAST AND B ARE DETERMINED AT DATUM H.
4. DATUMS A AND B ARE DETERMINED AT DATUM H.
5. DIMENSIONS b AND c APPLY TO THE FLAT SECTION OF THE DIMENSIONS b AND c APPLY TO THE FLAT SEC
LEAD BETWEEN 0.08 AND 0.15 FROM THE TIP.
6. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 TOTAL IN EXCESS OF DIMENSION b AT MAXIMUM MATERIAL CONDITION. THE DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT.

| DIM | MILLIMETERS |  |  | INCHES |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | MIN | NOM | MAX | MIN | NOM | MAX |
| A | --- | --- | 1.10 | --- | --- | 0.043 |
| A1 | 0.00 | -- | 0.10 | 0.000 | --- | 0.004 |
| A2 | 0.70 | 0.90 | 1.00 | 0.027 | 0.035 | 0.039 |
| b | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |
| C | 0.08 | 0.15 | 0.22 | 0.003 | 0.006 | 0.009 |
| D | 1.80 | 2.00 | 2.20 | 0.070 | 0.078 | 0.086 |
| E | 2.00 | 2.10 | 2.20 | 0.078 | 0.082 | 0.086 |
| E1 | 1.15 | 1.25 | 1.35 | 0.045 | 0.049 | 0.053 |
| e | 0.65 BSC |  |  | 0.026 BSC |  |  |
| L | 0.26 | 0.36 | 0.46 | 0.010 | 0.014 | 0.018 |
| L2 | 0.15 BSC |  |  | 0.006 BSC |  |  |
| aaa | 0.15 |  |  | 0.006 |  |  |
| bbb | 0.30 |  |  | 0.012 |  |  |
| ccc | 0.10 |  |  | 0.004 |  |  |
| ddd | 0.10 |  |  | 0.004 |  |  |
|  | GENERIC |  |  |  |  |  |
|  | MARKING DIAGRAM* |  |  |  |  |  |



XXX = Specific Device Code
M = Date Code*

- = 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. $\mathrm{Pb}-F r e e$ indicator, " G " or microdot " r ", may or may not be present. Some products may not follow the Generic Marking.


## STYLES ON PAGE 2

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| DESCRIPTION: | SC-88/SC70-6/SOT-363 | PAGE 1 OF 2 |

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## SC-88/SC70-6/SOT-363

CASE 419B-02
ISSUE Y
STYLE 1:
PIN 1. EMITTER 2
2. BASE 2
3. COLLECTOR 1
4. EMITTER 1
5. BASE 1
6. COLLECTOR 2

STYLE 7:
PIN 1. SOURCE 2
2. DRAIN 2
3. GATE 1
4. SOURCE 1
5. DRAIN 1
6. GATE 2

STYLE 13:
PIN 1. ANODE
2. N/C
3. COLLECTOR
4. EMITTER
5. BASE
6. CATHODE

STYLE 19:
PIN 1. IOUT
2. GND
3. GND
4. V CC
5. V EN
6. V REF
STYLE 25:
PIN 1. BASE 1
2. CATHODE
3. COLECTOR 2
4. BASE 2
5. EMITTER
6. COLLECTOR 1
STYLE 2:

CANCELLED
STYLE 8:
CANCELLED

STYLE 14:
PIN 1. VREF
2. GND
3. GND
4. IOUT
5. VEN
6. VCC

STYLE 20:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. EMITTER
5. COLLECTOR
6. COLLECTOR
STYLE 26:
PIN 1. SOURCE 1
2. GATE 1
3. DRAAN 2
4. SOURCE 2
5. GATE 2
6. DRAIN 1

| STYLE 3 : 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. $\mathrm{N} / \mathrm{C}$ <br> 3. CATHODE 1 <br> 4. ANODE 1 <br> 5. N/C <br> 6. CATHODE 2 |
| :---: | :---: | :---: | :---: |
| STYLE 9: | STYLE 10: | STYLE 11: | STYLE 12: |
| PIN 1. EMITTER 2 | PIN 1. SOURCE 2 | PIN 1. CATHODE 2 | PIN 1. ANODE 2 |
| 2. EMITTER 1 | 2. SOURCE 1 | 2. CATHODE 2 | 2. ANODE 2 |
| 3. COLLECTOR 1 | 3. GATE 1 | 3. ANODE 1 | 3. CATHODE 1 |
| 4. BASE 1 | 4. DRAIN 1 | 4. CATHODE 1 | 4. ANODE 1 |
| 5. BASE 2 | 5. DRAIN 2 | 5. CATHODE 1 | 5. ANODE 1 |
| 6. COLLECTOR 2 | 6. GATE 2 | 6. ANODE 2 | 6. CATHODE 2 |
| STYLE 15: | STYLE 16: | STYLE 17: | STYLE 18: |
| PIN 1. ANODE 1 | PIN 1. BASE 1 | PIN 1. BASE 1 | PIN 1. VIN1 |
| 2. ANODE 2 | 2. EMITTER 2 | 2. EMITTER 1 | 2. VCC |
| 3. ANODE 3 | 3. COLLECTOR 2 | 3. COLLECTOR 2 | 3. VOUT2 |
| 4. CATHODE 3 | 4. BASE 2 | 4. BASE 2 | 4. VIN2 |
| 5. CATHODE 2 | 5. EMITTER 1 | 5. EMITTER 2 | 5. GND |
| 6. CATHODE 1 | 6. COLLECTOR 1 | 6. COLLECTOR 1 | 6. VOUT1 |
| STYLE 21: | STYLE 22: | STYLE 23: | STYLE 24: |
| PIN 1. ANODE 1 | PIN 1. D1 (i) | PIN 1. Vn | PIN 1. CATHODE |
| 2. $\mathrm{N} / \mathrm{C}$ | 2. GND | 2. CH 1 | 2. ANODE |
| 3. ANODE 2 | 3. D2 (i) | 3. Vp | 3. CATHODE |
| 4. CATHODE 2 | 4. D2 (c) | 4. N/C | 4. CATHODE |
| 5. N/C | 5. VBUS | 5. CH 2 | 5. CATHODE |
| 6. CATHODE 1 | 6. D1 (c) | 6. N/C | 6. CATHODE |
| STYLE 27: | STYLE 28: | STYLE 29: | STYLE 30: |
| PIN 1. BASE 2 | PIN 1. DRAIN | PIN 1. ANODE | PIN 1. SOURCE 1 |
| 2. BASE 1 | 2. DRAIN | 2. ANODE | 2. DRAIN 2 |
| 3. COLLECTOR 1 | 3. GATE | 3. COLLECTOR | 3. DRAIN 2 |
| 4. EMITTER 1 | 4. SOURCE | 4. EMITTER | 4. SOURCE 2 |
| 5. EMITTER 2 | 5. DRAIN | 5. BASE/ANODE | 5. GATE 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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```
SOT-563, }6\mathrm{ LEAD
    CASE 463A
    ISSUE H
```

DATE 26 JAN 2021
SCALE 4:1
NDTES:

1. DIMENSIDNING AND TQLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSIDN: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS DF BASE MATERIAL.


RECDMMENDED MIUNTING FEDTPRINT*

* For additional information on our Pb-Free strategy and soldering details, please download the ZN Semiconductor Soldering and Mounting Techniques Reference Manual, SGLDERRM/D.

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| DESCRIPTION: | SOT-563, 6 LEAD |  | PAGE 1 OF 2 |

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rights of others.
STYLE 1:
PIN 1 1. EMITTER 1
2. BASE 1
3. CDLLECTRR 2
4. EMITTER 2
5. BASE 2
6. CDLLECTAR 1
STYLE 4:
PIN 1. CDLLECTIR
2. CDLLECTIR
3. BASE
4. EMITTER
5. CILLECTIR
6. CDLLECTOR
STYLE 7:
PIN 1. CATHODE
2. ANDDE
3. CATHODE
4. CATHIDE
5. ANDDE
6. CATHIDE
STYLE 10:
PIN 1. CATHODE 1
2. N/C
3. CATHODE 2
4. ANDDE 2
5. N/C
6. ANDDE 1
STYLE
PIN 1.
1.
EMITTER 1
2. BASE 1
3. CDLLECTDR 2
4. EMITTER
6. CDLLECTOR 1
STYLE 2: STYLE 3:

STYLE 2
STYLE S: STYLE 3:
PIN 1. EMITTER 1
2. EMITTER 2
3. BASE 2
4. CDLLECTDR 2
5. BASE 1
6. CDLLECTIR 1

STYLE 5:
PIN 1. CATHODE
2. CATHIDE
3. ANDDE
4. ANDDE
5. CATHODE
6. CATHIDE

STYLE 8:
PIN 1. DRAIN
2. DRAIN
3. GATE
4. SDURCE
5. DRAIN
6. DRAIN

PIN 1. CATHODE 1
2. CATHIDE 1
3. ANDDE/ANDDE 2
4. CATHODE 2
5. CATHODE 2
6. ANDDE/ANDDE 1

STYLE 6:
PIN 1. CATHODE
2. ANDDE
3. CATHODE
4. CATHIDE
5. CATHODE
6. CATHEDE

STYLE 9
PIN 1. SIURCE 1
2. GATE 1
3. DRAIN 2
4. SIURCE 2
5. GATE ?
6. DRAIN 1

```
GENERIC MARKING DIAGRAM*
```



```
XX = Specific Device Code
M = Month Code
- = Pb-Free Package
```

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

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| :---: | :---: | :---: |
| DESCRIPTION: | SOT-563, 6 LEAD | PAGE 20 F |

[^1]SOT-963
CASE 527AD-01 ISSUE E
SCALE 4:1


TOP VIEW


SIDE VIEW

$$
\text { BOTTOM VIEW } \begin{array}{|l|l|l|l|}
\hline & 0.08 & \mathrm{X} & \mathrm{Y} \\
\hline
\end{array}
$$

STYLE 1:
PIN 1. EMITTER 1 2. BASE 1
3. COLLECTOR 2
4. EMITTER 2
5. BASE 2
6. COLLECTOR 1

STYLE 4:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. EMITTER
5. COLLECTOR
6. COLLECTOR

STYLE 7 :
PIN 1. CAThode
2. ANODE
3. CATHODE
4. CATHODE
5. ANODE
6. CATHODE

STYLE 10:
PIN 1. CATHODE 1
2. $\mathrm{N} / \mathrm{C}$
3. CATHODE 2
4. ANODE 2
5. $\mathrm{N} / \mathrm{C}$
6. ANODE 1

STYLE 2:
PIN 1. EMITTER 1
2. EMITTER2
3. BASE 2
4. COLLECTOR 2
5. BASE 1
6. COLLECTOR 1

STYLE 5:
PIN 1. CATHODE
2. CATHODE
3. ANODE
4. ANODE
5. CATHODE

STYLE 8:
PIN 1. DRAIN
2. DRAIN
3. GATE
4. SOURCE
5. DRAIN
6. DRAIN

STYLE 3:
PIN 1. CATHODE 1
2. CATHODE 1
3. ANODE/ANODE 2
4. CATHODE 2
6. ANODE/ANODE 1

STYLE 6:
PIN 1. CATHODE
2. ANODE
2. ANTHEDE
3. CATHODE
4. CATHODE
6. CATHODE

STYLE 9:
PIN 1. SOURCE 1
2. GATE 1
3. DRAIN 2
4. SOURCE 2
5. GATE 2
6. DRAIN 1

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| DESCRIPTION: | SOT-963, 1X1, 0.35P | PAGE 1 OF 1 |

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