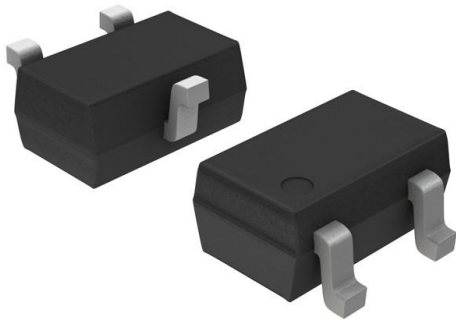


# MUN5135T1G Datasheet

[www.digi-electronics.com](http://www.digi-electronics.com)



<https://www.DiGi-Electronics.com>

|                              |  |
|------------------------------|--|
| DiGi Electronics Part Number | MUN5135T1G-DG  |
| Manufacturer                 | <a href="#">onsemi</a>   |
| Manufacturer Product Number  | MUN5135T1G   |
| Description                  | TRANS PREBIAS PNP 50V SC70-3   |
| Detailed Description         | Pre-Biased Bipolar Transistor (BJT) PNP - Pre-Biased 50 V 100 mA 202 mW Surface Mount SC-70-3 (SOT323) |



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.

## Purchase and inquiry

Manufacturer Product Number:

MUN5135T1G

Series:

-

Transistor Type:

PNP - Pre-Biased

Voltage - Collector Emitter Breakdown (Max):

50 V

Resistor - Emitter Base (R2):

47 kOhms

Vce Saturation (Max) @ Ib, Ic:

250mV @ 300μA, 10mA

Power - Max:

202 mW

Package / Case:

SC-70, SOT-323

Base Product Number:

MUN5135

Manufacturer:

onsemi

Product Status:

Active

Current - Collector (Ic) (Max):

100 mA

Resistor - Base (R1):

2.2 kOhms

DC Current Gain (hFE) (Min) @ Ic, Vce:

80 @ 5mA, 10V

Current - Collector Cutoff (Max):

500nA

Mounting Type:

Surface Mount

Supplier Device Package:

SC-70-3 (SOT323)

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

# Digital Transistors (BRT)

## R1 = 2.2 kΩ, R2 = 47 kΩ

### PNP Transistors with Monolithic Bias Resistor Network

## MUN2135, MMUN2135L, MUN5135, DTA123JE, DTA123JM3, NSBA123JF3

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

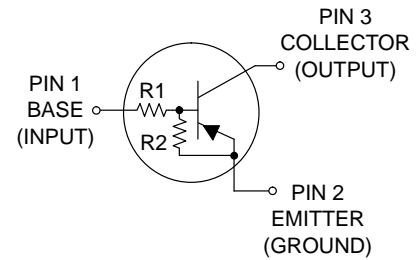
- Simplifies Circuit Design
- Reduces Board Space
- Reduces Component Count
- S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

#### MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

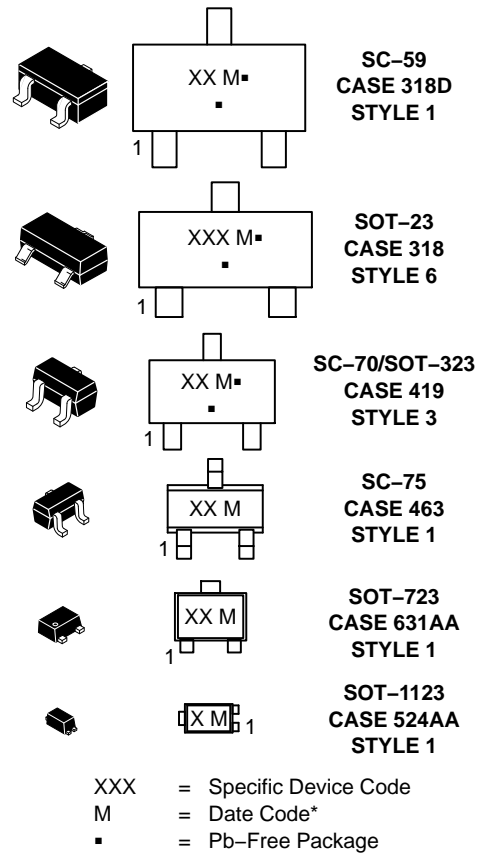
| Rating                         | Symbol               | Max | Unit |
|--------------------------------|----------------------|-----|------|
| Collector-Base Voltage         | V <sub>CBO</sub>     | 50  | Vdc  |
| Collector-Emitter Voltage      | V <sub>CEO</sub>     | 50  | Vdc  |
| Collector Current - Continuous | I <sub>C</sub>       | 100 | mAdc |
| Input Forward Voltage          | V <sub>IN(fwd)</sub> | 12  | Vdc  |
| Input Reverse Voltage          | V <sub>IN(rev)</sub> | 5   | 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.

#### PIN CONNECTIONS



#### MARKING DIAGRAMS



(Note: Microdot may be in either location)

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

#### ORDERING INFORMATION

See detailed ordering, marking, and shipping information in the package dimensions section on page 2 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 2.

**MUN2135, MMUN2135L, MUN5135, DTA123JE, DTA123JM3, NSBA123JF3****Table 1. ORDERING INFORMATION**

| Device                            | Part Marking | Package                    | Shipping†          |
|-----------------------------------|--------------|----------------------------|--------------------|
| MMUN2135LT1G,<br>NSVMMUN2135LT1G* | ACA          | SOT-23<br>(Pb-Free)        | 3000 / Tape & Reel |
| MUN5135T1G                        | 6M           | SC-70/SOT-323<br>(Pb-Free) | 3000 / Tape & Reel |
| DTA123JET1G                       | 6M           | SC-75<br>(Pb-Free)         | 3000 / Tape & Reel |
| NSVDTA123JM3T5G*                  | 6M           | SOT-723<br>(Pb-Free)       | 8000 / Tape & Reel |

**DISCONTINUED** (Note 1)

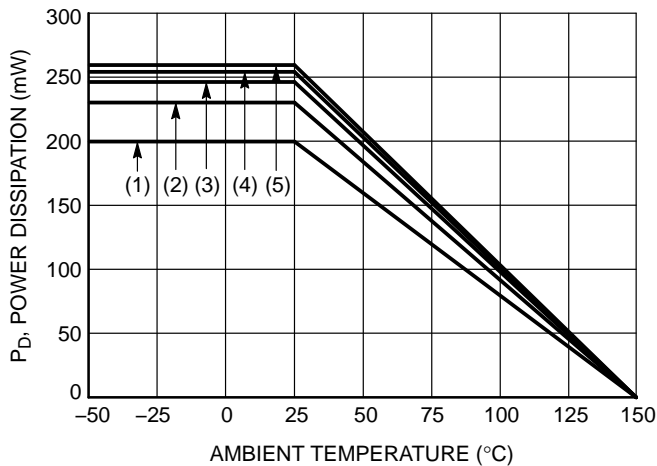
|               |           |                       |                    |
|---------------|-----------|-----------------------|--------------------|
| MUN2135T1G    | 6R        | SC-59<br>(Pb-Free)    | 3000 / Tape & Reel |
| DTA123JM3T5G  | 6M        | SOT-723<br>(Pb-Free)  | 8000 / Tape & Reel |
| NSBA123JF3T5G | J (90°)** | SOT-1123<br>(Pb-Free) | 8000 / Tape & Reel |

†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.

\*S and NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

\*\* $(XX^\circ)$  = Degree rotation in the clockwise direction.

1. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on [www.onsemi.com](http://www.onsemi.com).



- (1) SC-75 and SC-70/SOT323; Minimum Pad
- (2) SC-59; Minimum Pad
- (3) SOT-23; Minimum Pad
- (4) SOT-1123; 100 mm<sup>2</sup>, 1 oz. copper trace
- (5) SOT-723; Minimum Pad

**Figure 1. Derating Curve**

**MUN2135, MMUN2135L, MUN5135, DTA123JE, DTA123JM3, NSBA123JF3****Table 2. THERMAL CHARACTERISTICS**

| Characteristic  | Symbol                                       | Max                               | Unit                       |
|---|--|-----------------------------------|----------------------------|
| <b>THERMAL CHARACTERISTICS (SC-59) (MUN2135)</b>  |  |                                   |                            |
| Total Device Dissipation<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | (Note 2)<br>(Note 3)<br>(Note 2)<br>(Note 3) | $P_D$<br>230<br>338<br>1.8<br>2.7 | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction to Ambient  | (Note 2)<br>(Note 3)                         | $R_{\theta JA}$<br>540<br>370     | $^\circ\text{C}/\text{W}$  |
| Thermal Resistance,<br>Junction to Lead   | (Note 2)<br>(Note 3)                         | $R_{\theta JL}$<br>264<br>287     | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature Range  | $T_J, T_{stg}$                               | -55 to +150                       | $^\circ\text{C}$           |
| <b>THERMAL CHARACTERISTICS (SOT-23) (MMUN2135L)</b>                                     |  |                                   |                            |
| Total Device Dissipation<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | (Note 2)<br>(Note 3)<br>(Note 2)<br>(Note 3) | $P_D$<br>246<br>400<br>2.0<br>3.2 | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction to Ambient  | (Note 1)<br>(Note 3)                         | $R_{\theta JA}$<br>508<br>311     | $^\circ\text{C}/\text{W}$  |
| Thermal Resistance,<br>Junction to Lead   | (Note 2)<br>(Note 3)                         | $R_{\theta JL}$<br>174<br>208     | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature Range  | $T_J, T_{stg}$                               | -55 to +150                       | $^\circ\text{C}$           |
| <b>THERMAL CHARACTERISTICS (SC-70/SOT-323) (MUN5135)</b>                                |  |                                   |                            |
| Total Device Dissipation<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | (Note 2)<br>(Note 3)<br>(Note 2)<br>(Note 3) | $P_D$<br>202<br>310<br>1.6<br>2.5 | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction to Ambient  | (Note 2)<br>(Note 3)                         | $R_{\theta JA}$<br>618<br>403     | $^\circ\text{C}/\text{W}$  |
| Thermal Resistance,<br>Junction to Lead   | (Note 2)<br>(Note 3)                         | $R_{\theta JL}$<br>280<br>332     | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature Range  | $T_J, T_{stg}$                               | -55 to +150                       | $^\circ\text{C}$           |
| <b>THERMAL CHARACTERISTICS (SC-75) (DTA123JE)</b>                                       |  |                                   |                            |
| Total Device Dissipation<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | (Note 2)<br>(Note 3)<br>(Note 2)<br>(Note 3) | $P_D$<br>200<br>300<br>1.6<br>2.4 | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction to Ambient  | (Note 2)<br>(Note 3)                         | $R_{\theta JA}$<br>600<br>400     | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature Range  | $T_J, T_{stg}$                               | -55 to +150                       | $^\circ\text{C}$           |
| <b>THERMAL CHARACTERISTICS (SOT-723) (DTA123JM3)</b>                                    |  |                                   |                            |
| Total Device Dissipation<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | (Note 2)<br>(Note 3)<br>(Note 2)<br>(Note 3) | $P_D$<br>260<br>600<br>2.0<br>4.8 | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction to Ambient  | (Note 2)<br>(Note 3)                         | $R_{\theta JA}$<br>480<br>205     | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature Range  | $T_J, T_{stg}$                               | -55 to +150                       | $^\circ\text{C}$           |

2. FR-4 @ Minimum Pad.

3. FR-4 @ 1.0 x 1.0 Inch Pad.

4. FR-4 @ 100 mm<sup>2</sup>, 1 oz. copper traces, still air.5. FR-4 @ 500 mm<sup>2</sup>, 1 oz. copper traces, still air.

**MUN2135, MMUN2135L, MUN5135, DTA123JE, DTA123JM3, NSBA123JF3****Table 2. THERMAL CHARACTERISTICS**

| Characteristic   | Symbol          | Max         | Unit                      |
|--|-----------------|-------------|---------------------------|
| <b>THERMAL CHARACTERISTICS (SOT-1123) (NSBA123JF3)</b> |                 |             |                           |
| Total Device Dissipation<br>$T_A = 25^\circ\text{C}$   | $P_D$           | 254<br>297  | mW                        |
| Derate above $25^\circ\text{C}$                        |                 | 2.0<br>2.4  | mW/ $^\circ\text{C}$      |
| Thermal Resistance,<br>Junction to Ambient             | $R_{\theta JA}$ | 493<br>421  | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction to Lead                   | $R_{\theta JL}$ | 193         | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature Range                 | $T_J, T_{stg}$  | -55 to +150 | $^\circ\text{C}$          |

2. FR-4 @ Minimum Pad.
3. FR-4 @ 1.0 x 1.0 Inch Pad.
4. FR-4 @ 100 mm<sup>2</sup>, 1 oz. copper traces, still air.
5. FR-4 @ 500 mm<sup>2</sup>, 1 oz. copper traces, still air.

**Table 3. ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)

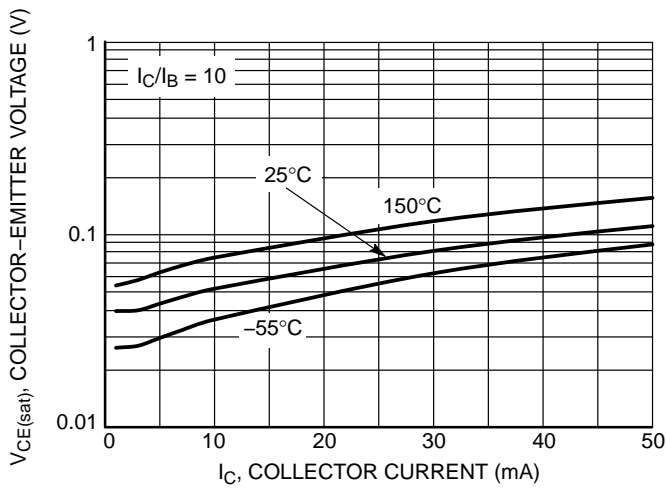
| Characteristic  | Symbol        | Min   | Typ   | Max   | Unit       |
|---|---------------|-------|-------|-------|------------|
| <b>OFF CHARACTERISTICS</b>  |               |       |       |       |            |
| Collector-Base Cutoff Current<br>( $V_{CB} = 50\text{ V}, I_E = 0$ )                              | $I_{CBO}$     | -     | -     | 100   | nAdc       |
| Collector-Emitter Cutoff Current<br>( $V_{CE} = 50\text{ V}, I_B = 0$ )                           | $I_{CEO}$     | -     | -     | 500   | nAdc       |
| Emitter-Base Cutoff Current<br>( $V_{EB} = 6.0\text{ V}, I_C = 0$ )                               | $I_{EBO}$     | -     | -     | 0.2   | mAdc       |
| Collector-Base Breakdown Voltage<br>( $I_C = 10\ \mu\text{A}, I_E = 0$ )                          | $V_{(BR)CBO}$ | 50    | -     | -     | Vdc        |
| Collector-Emitter Breakdown Voltage (Note 6)<br>( $I_C = 2.0\text{ mA}, I_B = 0$ )                | $V_{(BR)CEO}$ | 50    | -     | -     | Vdc        |
| <b>ON CHARACTERISTICS</b>   |               |       |       |       |            |
| DC Current Gain (Note 5)<br>( $I_C = 5.0\text{ mA}, V_{CE} = 10\text{ V}$ )                       | $h_{FE}$      | 80    | 140   | -     |            |
| Collector - Emitter Saturation Voltage (Note 6)<br>( $I_C = 10\text{ mA}, I_B = 0.3\text{ mA}$ )  | $V_{CE(sat)}$ | -     | -     | 0.25  | Vdc        |
| Input Voltage (off)<br>( $V_{CE} = 5.0\text{ V}, I_C = 100\ \mu\text{A}$ )                        | $V_{i(off)}$  | -     | 0.6   | 0.5   | Vdc        |
| Input Voltage (on)<br>( $V_{CE} = 0.3\text{ V}, I_C = 5.0\text{ mA}$ )                            | $V_{i(on)}$   | 1.1   | 0.8   | -     | Vdc        |
| Output Voltage (on)<br>( $V_{CC} = 5.0\text{ V}, V_B = 2.5\text{ V}, R_L = 1.0\text{ k}\Omega$ )  | $V_{OL}$      | -     | -     | 0.2   | Vdc        |
| Output Voltage (off)<br>( $V_{CC} = 5.0\text{ V}, V_B = 0.5\text{ V}, R_L = 1.0\text{ k}\Omega$ ) | $V_{OH}$      | 4.9   | -     | -     | Vdc        |
| Input Resistor  | R1            | 1.5   | 2.2   | 2.9   | k $\Omega$ |
| Resistor Ratio  | $R_1/R_2$     | 0.038 | 0.047 | 0.056 |            |

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

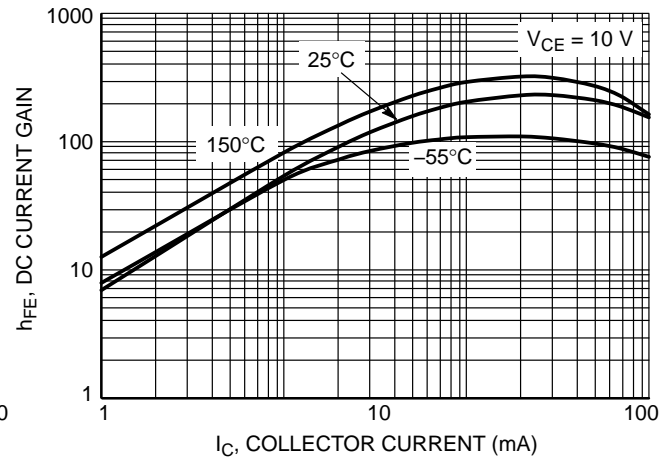
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

**MUN2135, MMUN2135L, MUN5135, DTA123JE, DTA123JM3, NSBA123JF3**

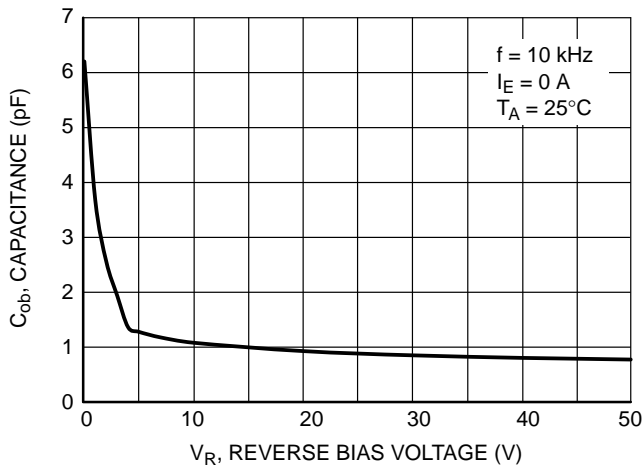
**TYPICAL CHARACTERISTICS**  
**MUN2135, MMUN2135L, MUN5135, DTA123JE, DTA123JM3**



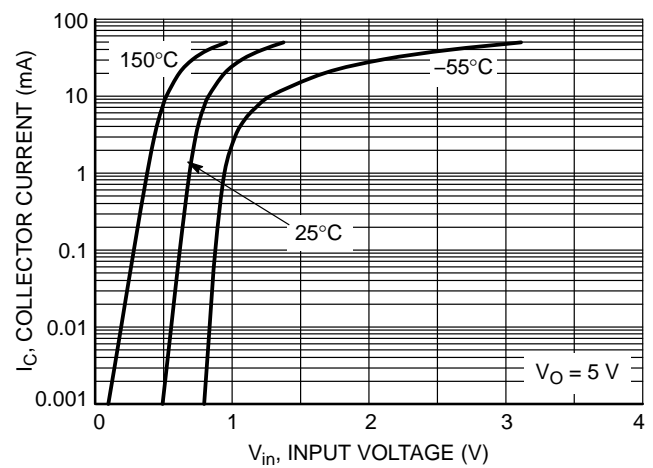
**Figure 2.  $V_{CE(sat)}$  vs.  $I_C$**



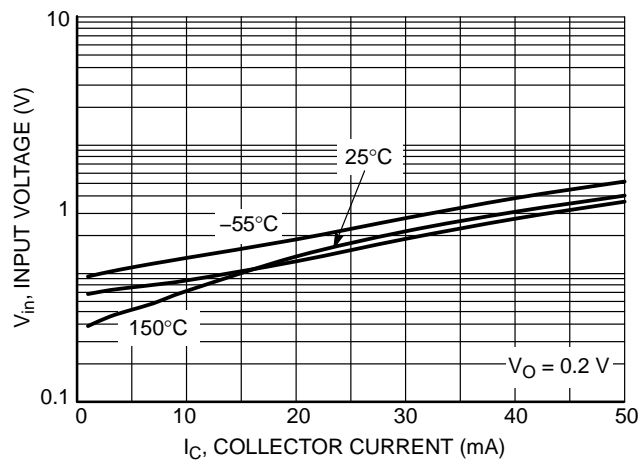
**Figure 3. DC Current Gain**



**Figure 4. Output Capacitance**



**Figure 5. Output Current vs. Input Voltage**



**Figure 6. Input Voltage vs. Output Current**

MUN2135, MMUN2135L, MUN5135, DTA123JE, DTA123JM3, NSBA123JF3

TYPICAL CHARACTERISTICS  
NSBA123JF3

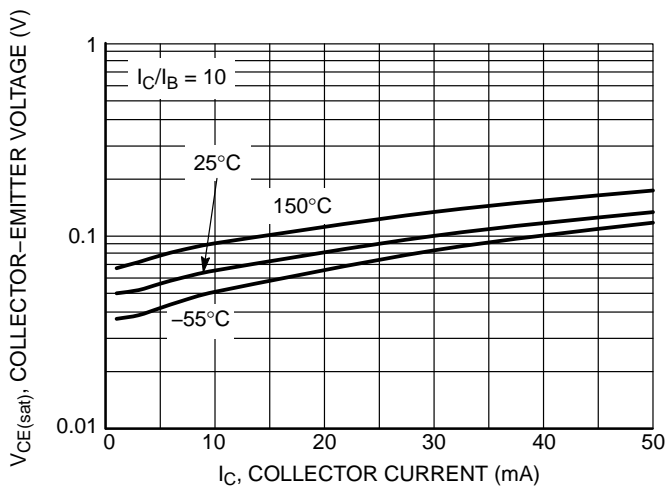


Figure 7.  $V_{CE(sat)}$  vs.  $I_C$

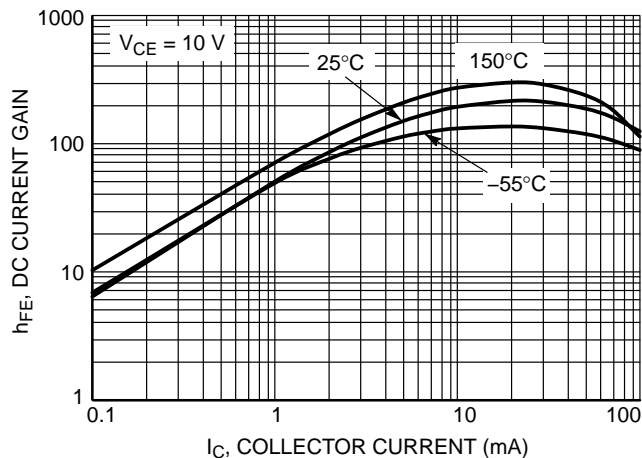


Figure 8. DC Current Gain

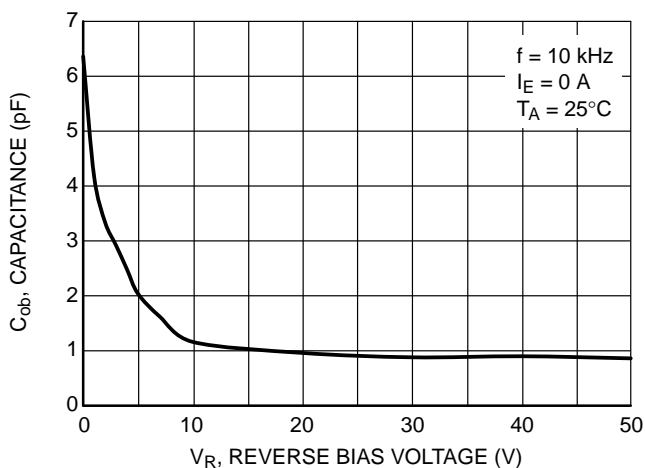


Figure 9. Output Capacitance

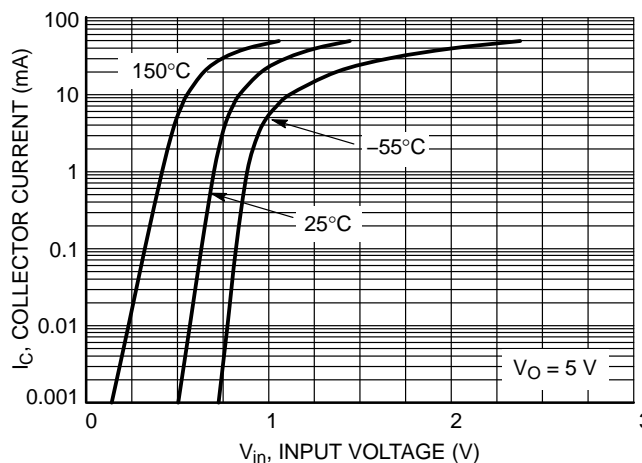


Figure 10. Output Current vs. Input Voltage

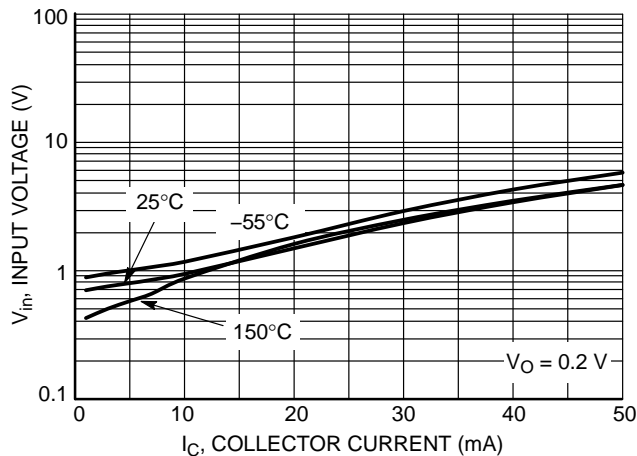
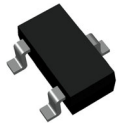


Figure 11. Input Voltage vs. Output Current



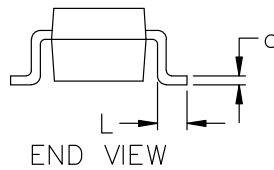
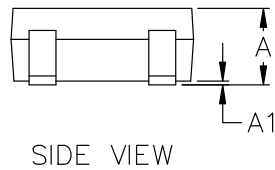
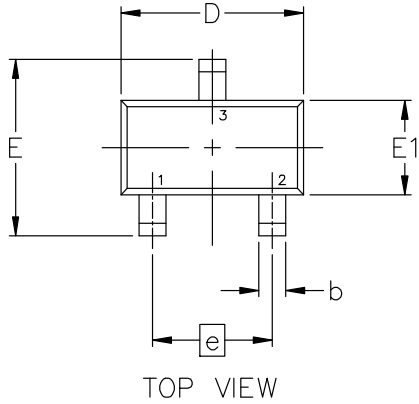


**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**



**SC-59-3 2.90x1.50x1.15, 1.90P**  
**CASE 318D**  
**ISSUE J**

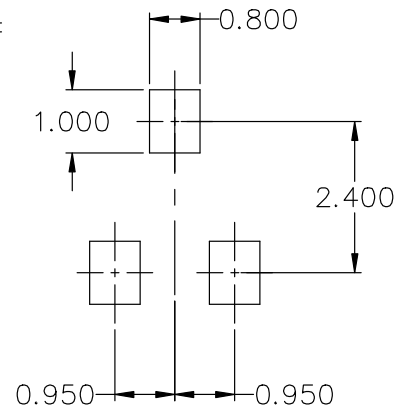
**DATE 15 FEB 2024**



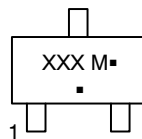
NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.

| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 1.00        | 1.15 | 1.30 |
| A1  | 0.01        | 0.06 | 0.10 |
| b   | 0.35        | 0.43 | 0.50 |
| c   | 0.09        | 0.14 | 0.18 |
| D   | 2.70        | 2.90 | 3.10 |
| E   | 2.50        | 2.80 | 3.00 |
| E1  | 1.30        | 1.50 | 1.70 |
| e   | 1.90 BSC    |      |      |
| L   | 0.20        | 0.40 | 0.60 |



**GENERIC MARKING DIAGRAM\***



- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package\*

(\*Note: Microdot may be in either 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.

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

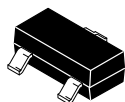
- STYLE 1:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR
- STYLE 2:  
PIN 1. ANODE  
2. N.C.  
3. CATHODE
- STYLE 3:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE
- STYLE 4:  
PIN 1. CATHODE  
2. N.C.  
3. ANODE
- STYLE 5:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE
- STYLE 6:  
PIN 1. ANODE  
2. CATHODE  
3. ANODE/CATHODE

|                         |                                      |  |
|-------------------------|--------------------------------------|--|
| <b>DOCUMENT NUMBER:</b> | <b>98ASB42664B</b>                   | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| <b>DESCRIPTION:</b>     | <b>SC-59-3 2.90x1.50x1.15, 1.90P</b> | <b>PAGE 1 OF 1</b>   |

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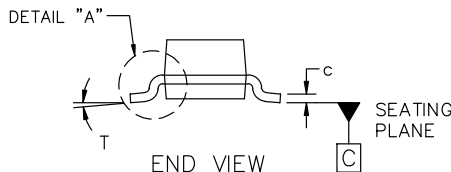
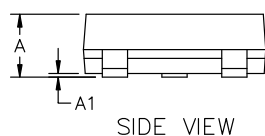
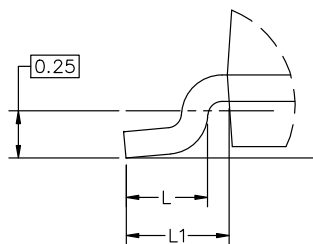
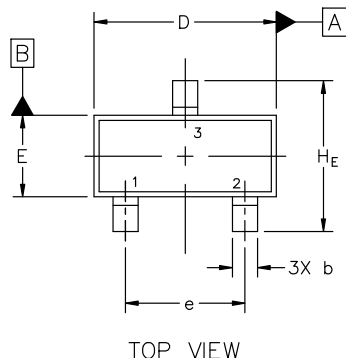
**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**



SCALE 4:1

**SOT-23 (TO-236) 2.90x1.30x1.00 1.90P**  
CASE 318  
ISSUE AU

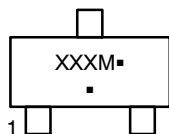
DATE 14 AUG 2024



| MILLIMETERS |      |      |      |
|-------------|------|------|------|
| DIM         | MIN  | NOM  | MAX  |
| A           | 0.89 | 1.00 | 1.11 |
| A1          | 0.01 | 0.06 | 0.10 |
| b           | 0.37 | 0.44 | 0.50 |
| c           | 0.08 | 0.14 | 0.20 |
| D           | 2.80 | 2.90 | 3.04 |
| E           | 1.20 | 1.30 | 1.40 |
| e           | 1.78 | 1.90 | 2.04 |
| L           | 0.30 | 0.43 | 0.55 |
| L1          | 0.35 | 0.54 | 0.69 |
| HE          | 2.10 | 2.40 | 2.64 |
| T           | 0°   | ---  | 10°  |

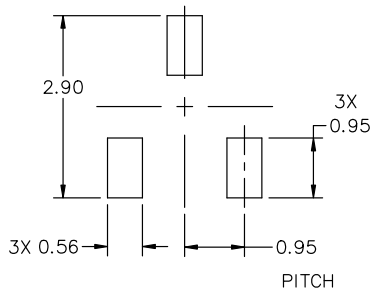
- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
  2. CONTROLLING DIMENSIONS: MILLIMETERS.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
  4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

**GENERIC MARKING DIAGRAM\***



XXX = Specific Device Code  
M = Date Code  
▪ = 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.



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

**STYLES ON PAGE 2**

|                         |   |  |
|-------------------------|---|--|
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| <b>DESCRIPTION:</b>     | <b>SOT-23 (TO-236) 2.90x1.30x1.00 1.90P</b> | <b>PAGE 1 OF 2</b>   |

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**SOT-23 (TO-236) 2.90x1.30x1.00 1.90P**  
**CASE 318**  
**ISSUE AU**

DATE 14 AUG 2024

STYLE 1 THRU 5:  
CANCELLED

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

STYLE 7:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

STYLE 8:  
PIN 1. ANODE  
2. NO CONNECTION  
3. CATHODE

STYLE 9:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 10:  
PIN 1. DRAIN  
2. SOURCE  
3. GATE

STYLE 11:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE-ANODE

STYLE 12:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

STYLE 13:  
PIN 1. SOURCE  
2. DRAIN  
3. GATE

STYLE 14:  
PIN 1. CATHODE  
2. GATE  
3. ANODE

STYLE 15:  
PIN 1. GATE  
2. CATHODE  
3. ANODE

STYLE 16:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE

STYLE 17:  
PIN 1. NO CONNECTION  
2. ANODE  
3. CATHODE

STYLE 18:  
PIN 1. NO CONNECTION  
2. CATHODE  
3. ANODE

STYLE 19:  
PIN 1. CATHODE  
2. ANODE  
3. CATHODE-ANODE

STYLE 20:  
PIN 1. CATHODE  
2. ANODE  
3. GATE

STYLE 21:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN

STYLE 22:  
PIN 1. RETURN  
2. OUTPUT  
3. INPUT

STYLE 23:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 24:  
PIN 1. GATE  
2. DRAIN  
3. SOURCE

STYLE 25:  
PIN 1. ANODE  
2. CATHODE  
3. GATE

STYLE 26:  
PIN 1. CATHODE  
2. ANODE  
3. NO CONNECTION

STYLE 27:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE

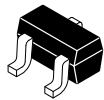
STYLE 28:  
PIN 1. ANODE  
2. ANODE  
3. ANODE

|                         |   |   |
|-------------------------|---|---|
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| <b>DESCRIPTION:</b>     | <b>SOT-23 (TO-236) 2.90x1.30x1.00 1.90P</b> | <b>PAGE 2 OF 2</b>  |

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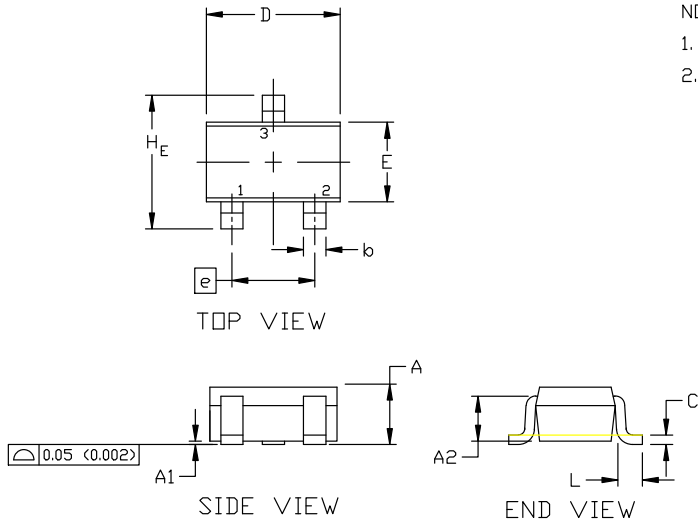
**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**



SCALE 4:1

**SC-70 (SOT-323)  
CASE 419  
ISSUE R**

DATE 11 OCT 2022

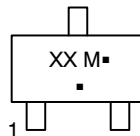


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH

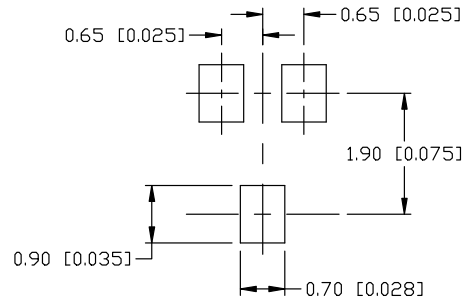
| DIM            | MILLIMETERS |      |      | INCHES    |       |       |
|----------------|-------------|------|------|-----------|-------|-------|
|                | MIN.        | NOM. | MAX. | MIN.      | NOM.  | MAX.  |
| A              | 0.80        | 0.90 | 1.00 | 0.032     | 0.035 | 0.040 |
| A1             | 0.00        | 0.05 | 0.10 | 0.000     | 0.002 | 0.004 |
| A2             | 0.70 REF    |      |      | 0.028 BSC |       |       |
| b              | 0.30        | 0.35 | 0.40 | 0.012     | 0.014 | 0.016 |
| c              | 0.10        | 0.18 | 0.25 | 0.004     | 0.007 | 0.010 |
| D              | 1.80        | 2.00 | 2.20 | 0.071     | 0.080 | 0.087 |
| E              | 1.15        | 1.24 | 1.35 | 0.045     | 0.049 | 0.053 |
| e              | 1.20        | 1.30 | 1.40 | 0.047     | 0.051 | 0.055 |
| e1             | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| L              | 0.20        | 0.38 | 0.56 | 0.008     | 0.015 | 0.022 |
| H <sub>E</sub> | 2.00        | 2.10 | 2.40 | 0.079     | 0.083 | 0.095 |

**GENERIC  
MARKING DIAGRAM**



- XX = Specific Device Code
- M = Date Code
- = 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.



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

**SOLDERING FOOTPRINT**

- |   |   |   |  |   |   |
|---|---|---|--|---|---|
| STYLE 1:<br>CANCELLED                                 | STYLE 2:<br>PIN 1. ANODE<br>2. N.C.<br>3. CATHODE     | STYLE 3:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 4:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. ANODE       | STYLE 5:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE          |   |
| STYLE 6:<br>PIN 1. EMITTER<br>2. BASE<br>3. COLLECTOR | STYLE 7:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 8:<br>PIN 1. GATE<br>2. SOURCE<br>3. DRAIN      | STYLE 9:<br>PIN 1. ANODE<br>2. CATHODE<br>3. CATHODE-ANODE | STYLE 10:<br>PIN 1. CATHODE<br>2. ANODE<br>3. ANODE-CATHODE | STYLE 11:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. CATHODE |

|                         |                        |   |
|-------------------------|------------------------|---|
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| <b>DESCRIPTION:</b>     | <b>SC-70 (SOT-323)</b> | <b>PAGE 1 OF 1</b>  |

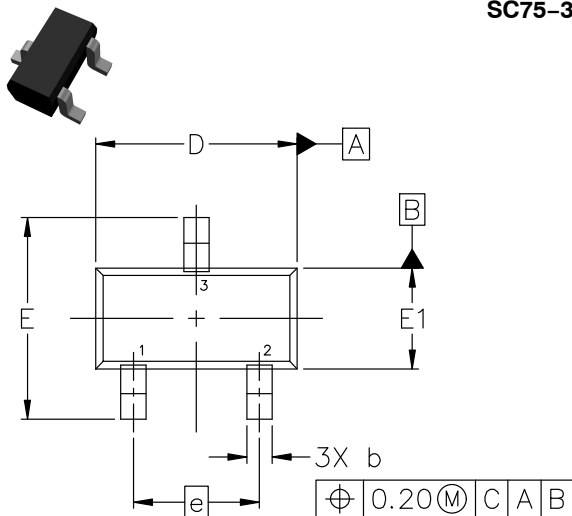
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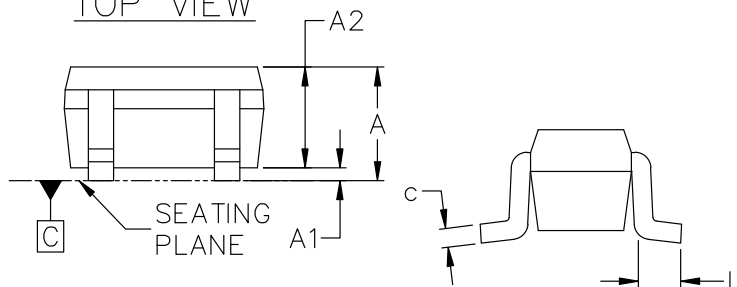
**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**

**SC75-3 1.60x0.80x0.80, 1.00P**  
CASE 463  
ISSUE H

DATE 01 FEB 2024



TOP VIEW

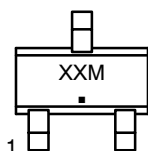


SIDE VIEW

END VIEW

| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 0.70        | 0.80 | 0.90 |
| A1  | 0.00        | 0.05 | 0.10 |
| A2  | 0.80 REF.   |      |      |
| b   | 0.15        | 0.20 | 0.30 |
| c   | 0.10        | 0.15 | 0.25 |
| D   | 1.55        | 1.60 | 1.65 |
| E   | 1.50        | 1.60 | 1.70 |
| E1  | 0.70        | 0.80 | 0.90 |
| e   | 1.00 BSC    |      |      |
| L   | 0.10        | 0.15 | 0.20 |

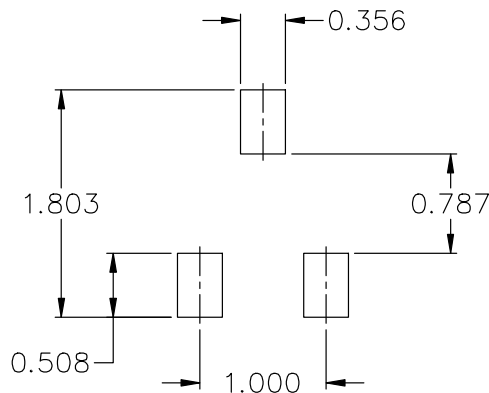
**GENERIC MARKING DIAGRAM\***



- XX = Specific Device Code
- M = Date Code
- = 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:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR
- STYLE 2:  
PIN 1. ANODE  
2. N/C  
3. CATHODE
- STYLE 3:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE
- STYLE 4:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE
- STYLE 5:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN



RECOMMENDED MOUNTING FOOTPRINT\*

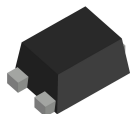
\* FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

|                         |                                     |  |
|-------------------------|-------------------------------------|--|
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| <b>DESCRIPTION:</b>     | <b>SC75-3 1.60x0.80x0.80, 1.00P</b> | <b>PAGE 1 OF 1</b>   |

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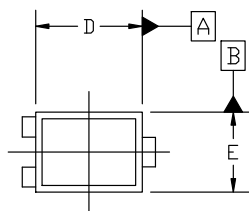


**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**

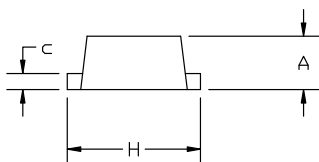


**SOT-1123 0.80x0.60x0.37, 0.35P**  
CASE 524AA  
ISSUE D

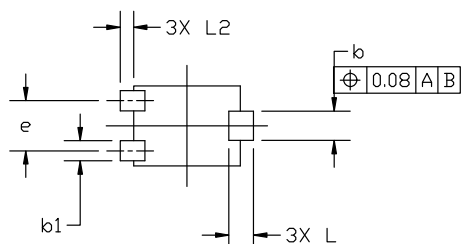
DATE 18 JAN 2024



TOP VIEW

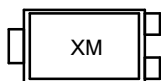


SIDE VIEW



BOTTOM VIEW

**GENERIC MARKING DIAGRAM\***



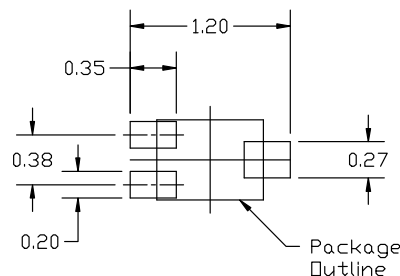
X = Specific Device Code  
M = Date Code

\*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.

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| MILLIMETERS |           |       |       |
|-------------|-----------|-------|-------|
| DIM         | MIN       | NOM   | MAX   |
| A           | 0.34      | 0.37  | 0.40  |
| b           | 0.15      | 0.22  | 0.28  |
| b1          | 0.10      | 0.15  | 0.20  |
| c           | 0.07      | 0.12  | 0.17  |
| D           | 0.75      | 0.80  | 0.85  |
| E           | 0.55      | 0.60  | 0.65  |
| e           | 0.35      | 0.38  | 0.40  |
| H           | 0.950     | 1.000 | 1.050 |
| L           | 0.185 REF |       |       |
| L2          | 0.05      | 0.10  | 0.15  |



**RECOMMENDED MOUNTING FOOTPRINT**

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

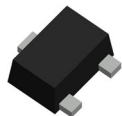
|   |  |  |  |  |
|---|--|--|--|--|
| STYLE 1:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 2:<br>PIN 1. ANODE<br>2. N/C<br>3. CATHODE | STYLE 3:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE | STYLE 4:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. ANODE | STYLE 5:<br>PIN 1. GATE<br>2. SOURCE<br>3. DRAIN |
|---|--|--|--|--|

|                         |                                       |  |
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| <b>DESCRIPTION:</b>     | <b>SOT-1123 0.80x0.60x0.37, 0.35P</b> | <b>PAGE 1 OF 1</b>   |

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**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**



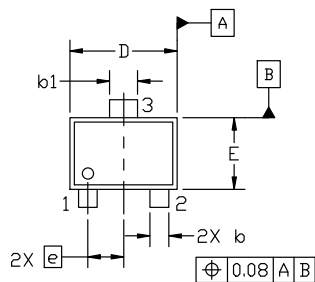
**SOT-723 1.20x0.80x0.50, 0.40P  
CASE 631AA  
ISSUE E**

DATE 24 JAN 2024

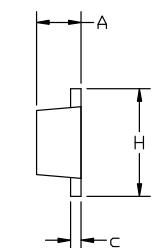
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

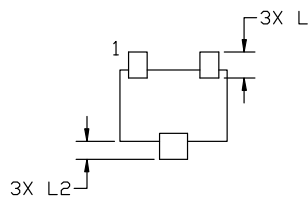
| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 0.45        | 0.50 | 0.55 |
| b   | 0.15        | 0.21 | 0.27 |
| b1  | 0.25        | 0.31 | 0.37 |
| c   | 0.07        | 0.12 | 0.17 |
| D   | 1.15        | 1.20 | 1.25 |
| E   | 0.75        | 0.80 | 0.85 |
| e   | 0.40 BSC    |      |      |
| H   | 1.15        | 1.20 | 1.25 |
| L   | 0.29 REF    |      |      |
| L2  | 0.15        | 0.20 | 0.25 |



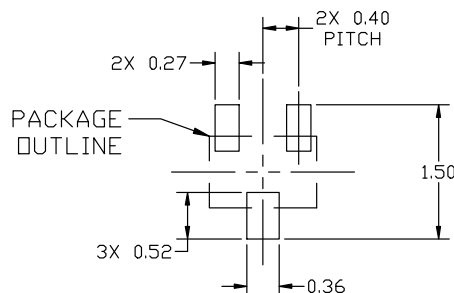
TOP VIEW



SIDE VIEW

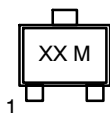


BOTTOM VIEW



RECOMMENDED MOUNTING FOOTPRINT

**GENERIC MARKING DIAGRAM\***



XX = Specific Device Code  
M = Date Code

\*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.

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

|   |  |  |  |  |
|---|--|--|--|--|
| STYLE 1:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 2:<br>PIN 1. ANODE<br>2. N/C<br>3. CATHODE | STYLE 3:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE | STYLE 4:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. ANODE | STYLE 5:<br>PIN 1. GATE<br>2. SOURCE<br>3. DRAIN |
|---|--|--|--|--|

|                         |                                      |  |
|-------------------------|--------------------------------------|--|
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| <b>DESCRIPTION:</b>     | <b>SOT-723 1.20x0.80x0.50, 0.40P</b> | <b>PAGE 1 OF 1</b>   |

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