

# General Purpose Transistors

## PNP Silicon

### BC807-25W, BC807-40W

#### Features

- S 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

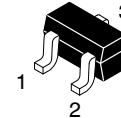
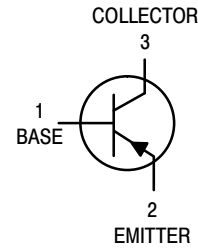
| Rating                         | Symbol    | Value | Unit             |
|--------------------------------|-----------|-------|------------------|
| Collector – Emitter Voltage    | $V_{CEO}$ | -45   | V                |
| Collector – Base Voltage       | $V_{CBO}$ | -50   | V                |
| Emitter – Base Voltage         | $V_{EBO}$ | -5.0  | V                |
| Collector Current – Continuous | $I_C$     | -500  | mA <sub>dc</sub> |

#### THERMAL CHARACTERISTICS

| Characteristic                                                            | Symbol          | Max         | Unit               |
|---------------------------------------------------------------------------|-----------------|-------------|--------------------|
| Total Device Dissipation FR-5 Board,<br>(Note 1) $T_A = 25^\circ\text{C}$ | $P_D$           | 460         | mW                 |
| Thermal Resistance,<br>Junction-to-Ambient                                | $R_{\theta JA}$ | 272         | $^\circ\text{C/W}$ |
| Junction and Storage Temperature                                          | $T_J, T_{stg}$  | -55 to +150 | $^\circ\text{C}$   |

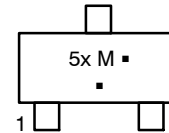
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-4 Board, 1 oz. Cu, 100 mm<sup>2</sup>.



SC-70  
CASE 419  
STYLE 3

#### MARKING DIAGRAM



5x = Device Code  
x = B or C  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

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

#### ORDERING INFORMATION

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

# BC807-25W, BC807-40W

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted.)

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

### OFF CHARACTERISTICS

|                                                                                                            |                      |        |        |              |          |
|------------------------------------------------------------------------------------------------------------|----------------------|--------|--------|--------------|----------|
| Collector – Emitter Breakdown Voltage<br>(I <sub>C</sub> = -10 mA)                                         | V <sub>(BR)CEO</sub> | -45    | –      | –            | V        |
| Collector – Emitter Breakdown Voltage<br>(V <sub>EB</sub> = 0, I <sub>C</sub> = -10 μA)                    | V <sub>(BR)CES</sub> | -50    | –      | –            | V        |
| Emitter – Base Breakdown Voltage<br>(I <sub>E</sub> = -1.0 μA)                                             | V <sub>(BR)EBO</sub> | -5.0   | –      | –            | V        |
| Collector Cutoff Current<br>(V <sub>CB</sub> = -20 V)<br>(V <sub>CB</sub> = -20 V, T <sub>J</sub> = 150°C) | I <sub>CBO</sub>     | –<br>– | –<br>– | -100<br>-5.0 | nA<br>μA |

### ON CHARACTERISTICS

|                                                                                                                                     |                                                                   |                  |             |                 |   |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------|-------------|-----------------|---|
| DC Current Gain<br>(I <sub>C</sub> = -100 mA, V <sub>CE</sub> = -1.0 V)<br><br>(I <sub>C</sub> = -500 mA, V <sub>CE</sub> = -1.0 V) | BC807-25, SBC807-25<br>BC807-40, SBC807-40<br><br>h <sub>FE</sub> | 160<br>250<br>40 | –<br>–<br>– | 400<br>600<br>– | – |
| Collector – Emitter Saturation Voltage<br>(I <sub>C</sub> = -500 mA, I <sub>B</sub> = -50 mA)                                       | V <sub>CE(sat)</sub>                                              | –                | –           | -0.7            | V |
| Base – Emitter On Voltage<br>(I <sub>C</sub> = -500 mA, V <sub>CE</sub> = -1.0 V)                                                   | V <sub>BE(on)</sub>                                               | –                | –           | -1.2            | V |

### SMALL-SIGNAL CHARACTERISTICS

|                                                                                                          |                  |     |    |   |     |
|----------------------------------------------------------------------------------------------------------|------------------|-----|----|---|-----|
| Current – Gain – Bandwidth Product<br>(I <sub>C</sub> = -10 mA, V <sub>CE</sub> = -5.0 Vdc, f = 100 MHz) | f <sub>T</sub>   | 100 | –  | – | MHz |
| Output Capacitance<br>(V <sub>CB</sub> = -10 V, f = 1.0 MHz)                                             | C <sub>obo</sub> | –   | 10 | – | pF  |

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

## ORDERING INFORMATION

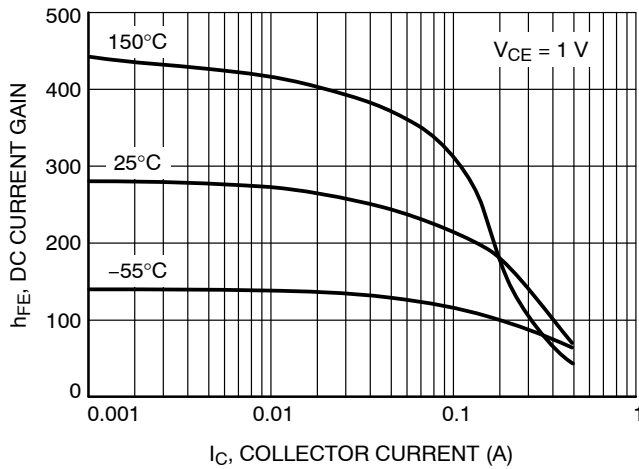
| Device         | Specific Marking | Package            | Shipping <sup>†</sup> |
|----------------|------------------|--------------------|-----------------------|
| BC807-25WT1G   | 5B               | SC-70<br>(Pb-Free) | 3000 / Tape & Reel    |
| SBC807-25WT1G* |                  |                    | 10,000 / Tape & Reel  |
| BC807-25WT3G   |                  |                    |                       |
| BC807-40WT1G   | 5C               | SC-70<br>(Pb-Free) | 3000 / Tape & Reel    |
| SBC807-40WT1G* |                  |                    | 10,000 / Tape & Reel  |
| BC807-40WT3G   |                  |                    |                       |

<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.

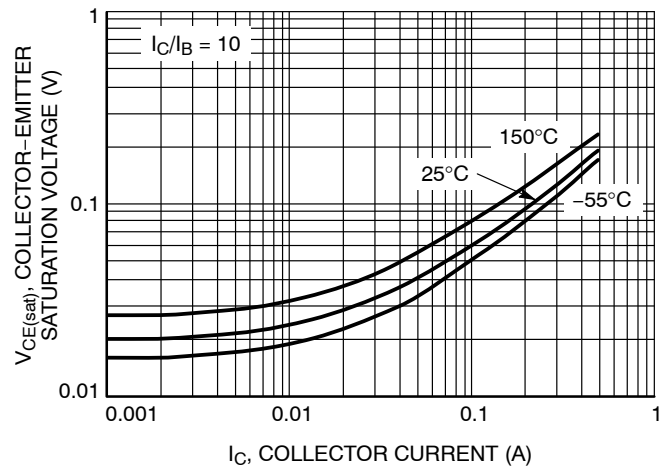
\*S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

# BC807-25W, BC807-40W

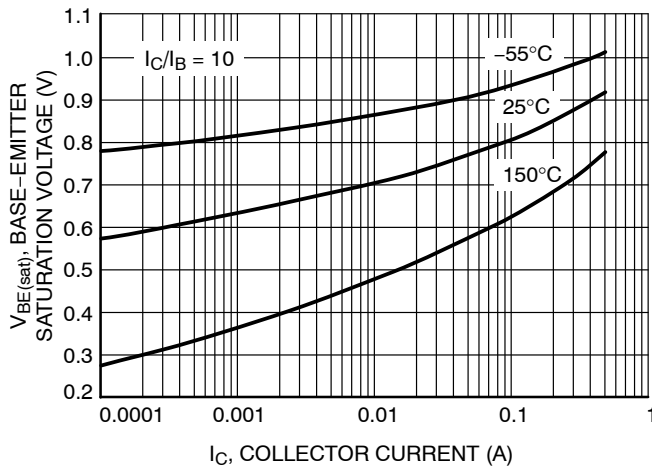
## TYPICAL CHARACTERISTICS – BC807-25W, SBC807-25W



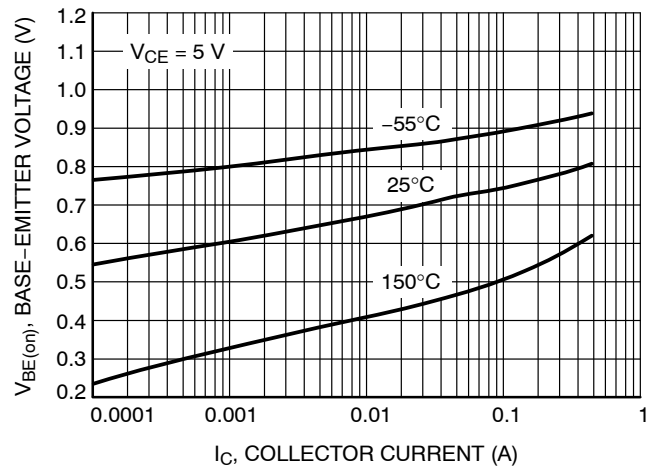
**Figure 1. DC Current Gain vs. Collector Current**



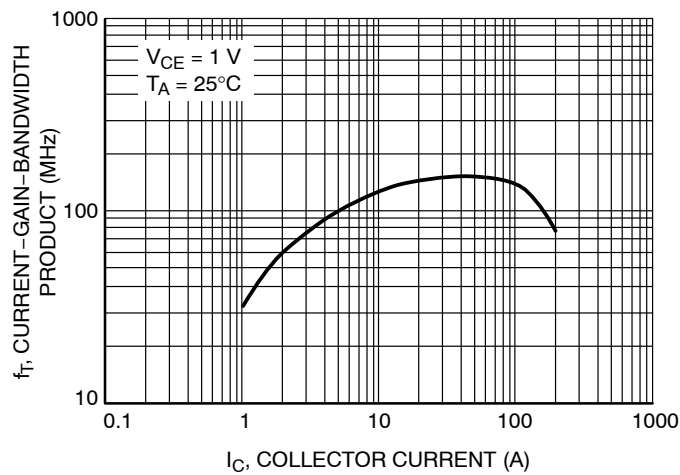
**Figure 2. Collector Emitter Saturation Voltage vs. Collector Current**



**Figure 3. Base Emitter Saturation Voltage vs. Collector Current**



**Figure 4. Base Emitter Voltage vs. Collector Current**



**Figure 5. Current Gain Bandwidth Product vs. Collector Current**

# BC807-25W, BC807-40W

## TYPICAL CHARACTERISTICS – BC807-25W, SBC807-25W

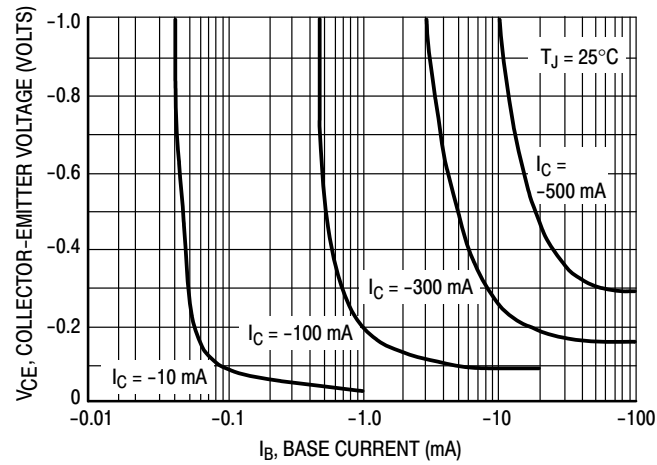


Figure 6. Saturation Region

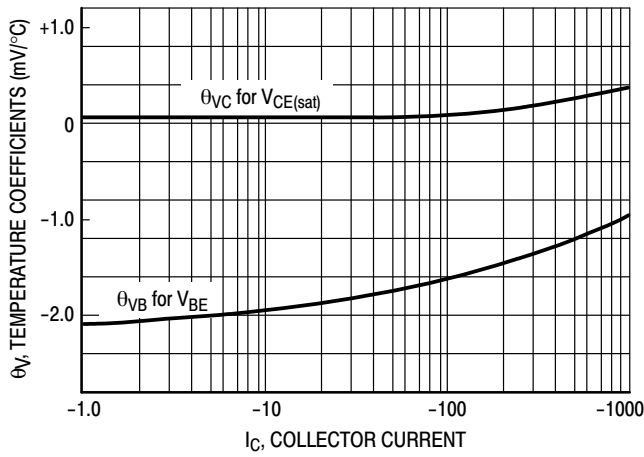


Figure 7. Temperature Coefficients

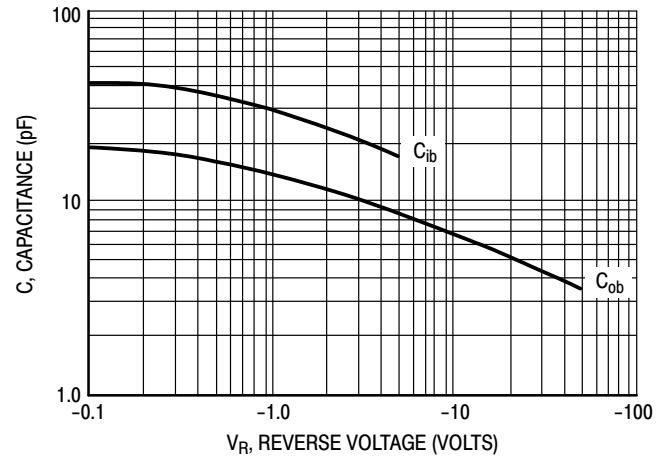
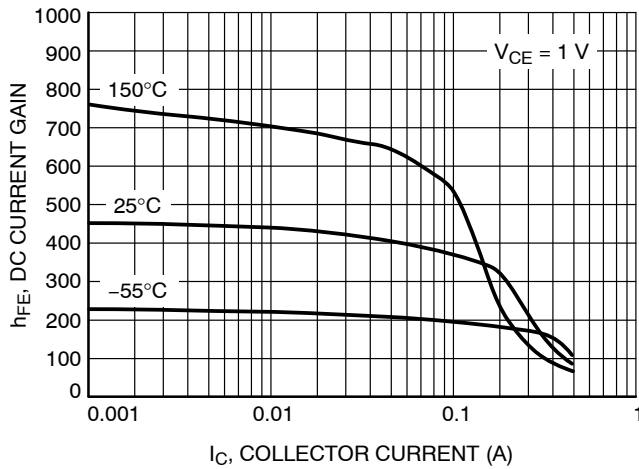


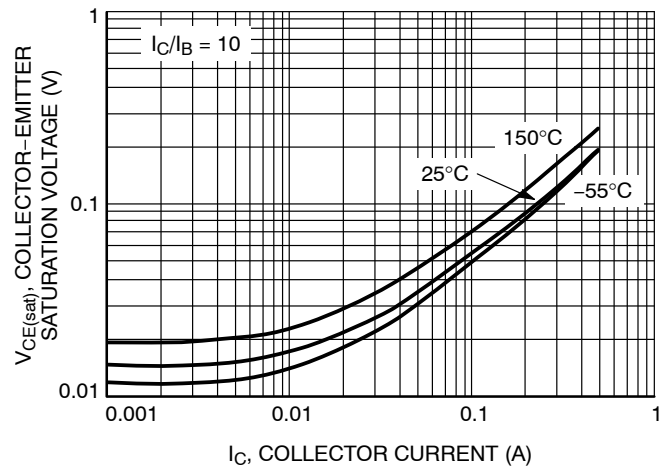
Figure 8. Capacitances

# BC807-25W, BC807-40W

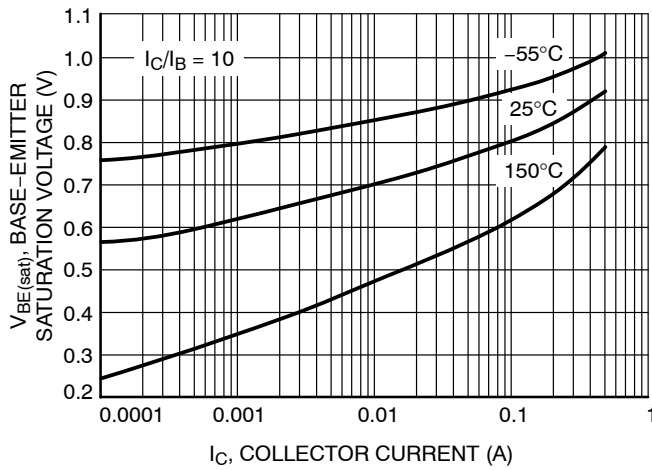
## TYPICAL CHARACTERISTICS – BC807-40W, SBC807-40W



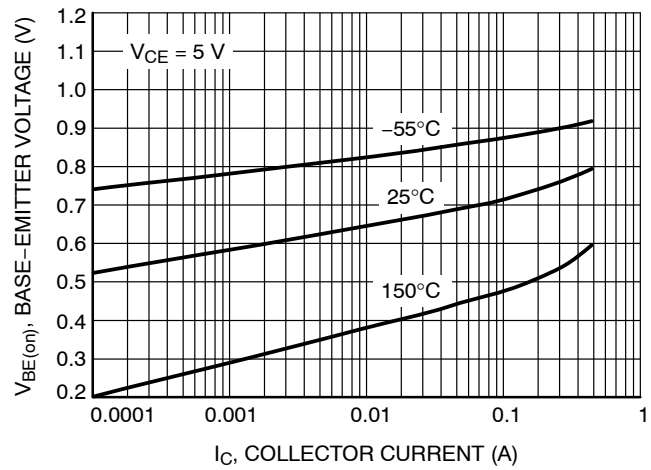
**Figure 9. DC Current Gain vs. Collector Current**



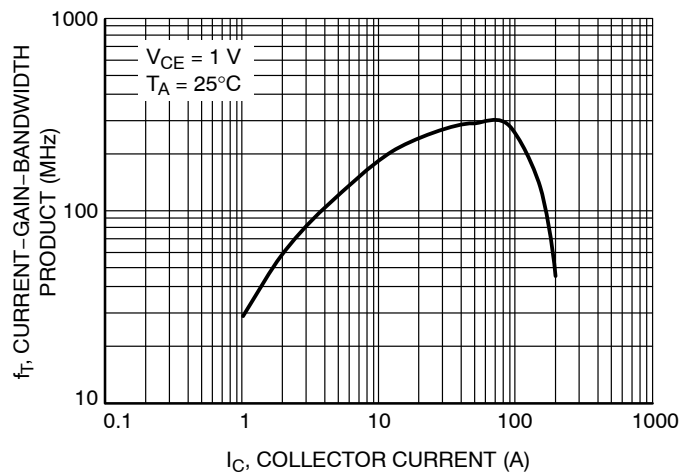
**Figure 10. Collector Emitter Saturation Voltage vs. Collector Current**



**Figure 11. Base Emitter Saturation Voltage vs. Collector Current**



**Figure 12. Base Emitter Voltage vs. Collector Current**



**Figure 13. Current Gain Bandwidth Product vs. Collector Current**

# BC807-25W, BC807-40W

## TYPICAL CHARACTERISTICS – BC807-40W, SBC807-40W

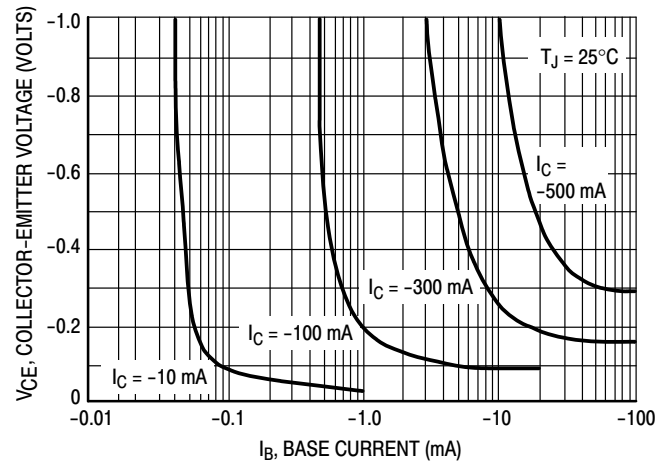


Figure 14. Saturation Region

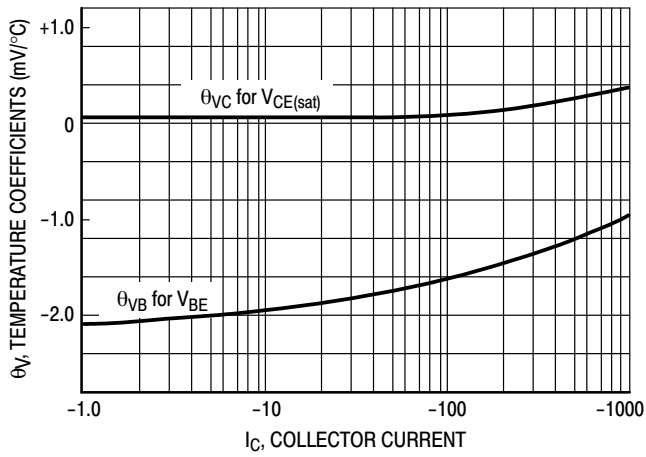


Figure 15. Temperature Coefficients

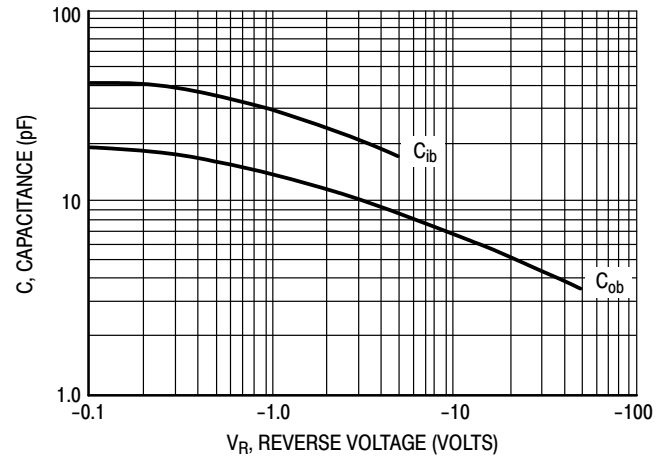


Figure 16. Capacitances

## BC807-25W, BC807-40W

### TYPICAL CHARACTERISTICS – BC807-25W, SBC807-25W, BC807-40W, SBC807-40W

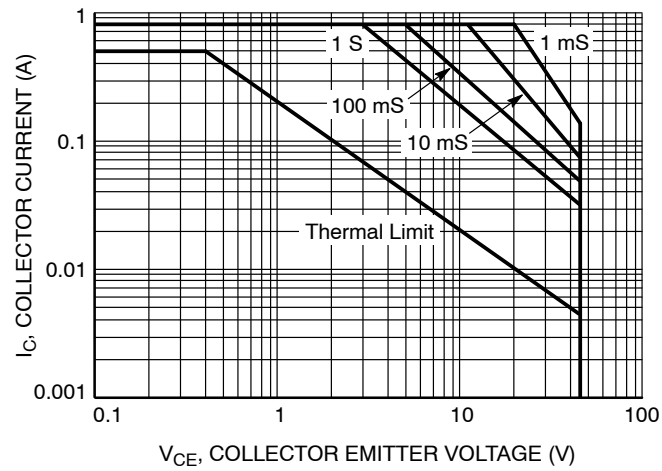


Figure 17. Safe Operating Area

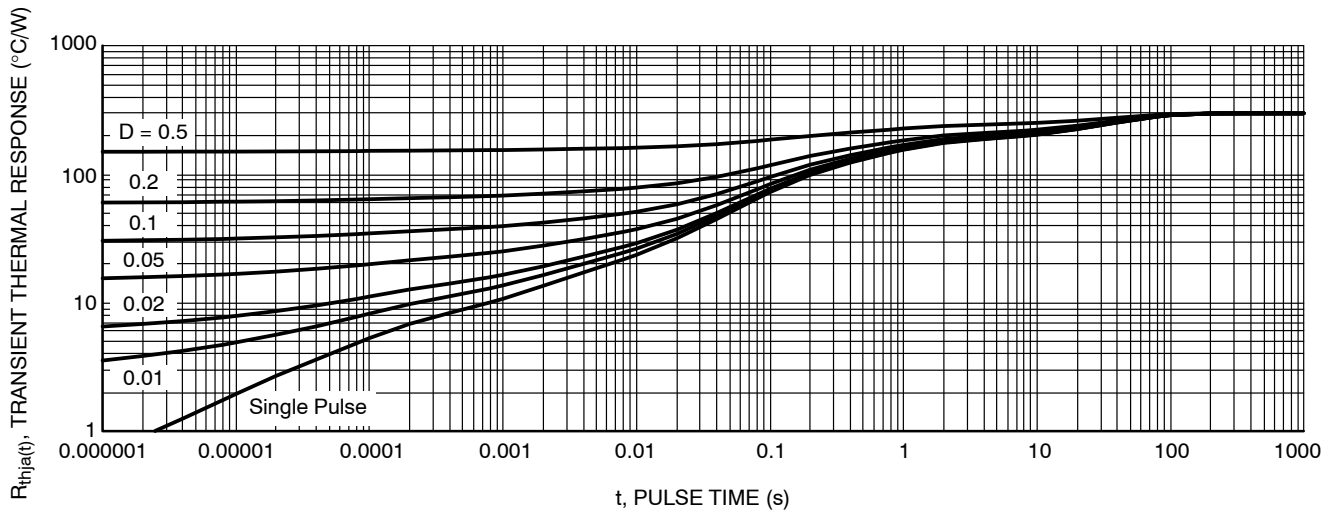
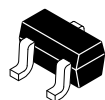


Figure 18. Thermal Response



SCALE 4:1

### SC-70 (SOT-323)

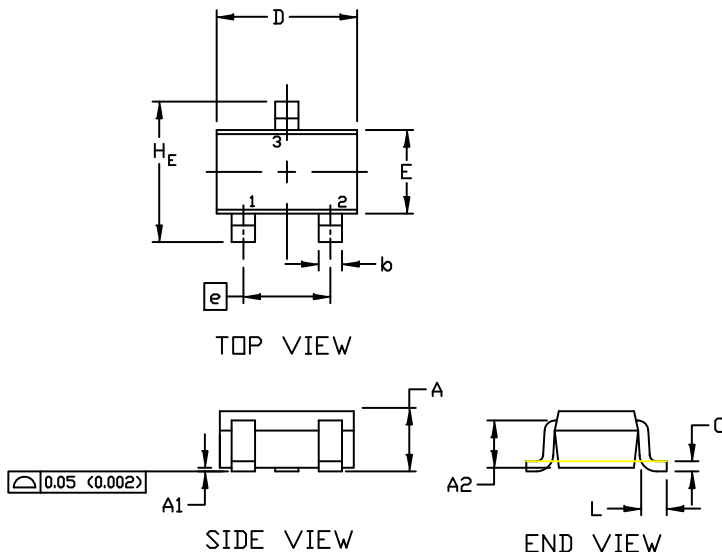
#### CASE 419

#### ISSUE P

DATE 07 OCT 2021

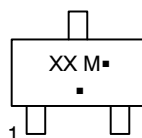
#### NOTES:

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



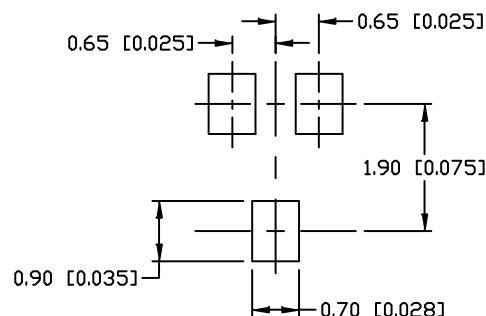
| DIM            | MILLIMETERS |      |      | INCHES    |       |       |
|----------------|-------------|------|------|-----------|-------|-------|
|                | MIN.        | NOM. | MAX. | MIN.      | NOM.  | MAX.  |
| A              | 0.80        | 0.90 | 1.00 | 0.032     | 0.035 | 0.040 |
| 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        | 2.10 | 2.20 | 0.071     | 0.083 | 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 ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

#### SOLDERING FOOTPRINT

STYLE 1:  
CANCELLED

STYLE 2:  
PIN 1. ANODE  
2. N.C.  
3. CATHODE

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

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

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

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

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

STYLE 8:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN

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

STYLE 10:  
PIN 1. CATHODE  
2. ANODE  
3. ANODE-CATHODE

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

|                  |                 |                                                                                                                                                                                  |
|------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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