

# 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

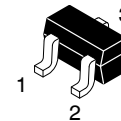
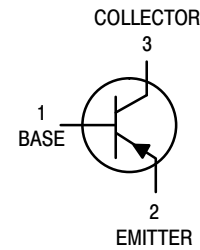
| Rating                         | Symbol    | Value | Unit             |
|--------------------------------|-----------|-------|------------------|
| Collector – Emitter Voltage    | $V_{CEO}$ | -45   | V                |
| Collector – Base Voltage       | $V_{CBO}$ | -50   | V                |
| Emitter – 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 | $^\circ\text{C}$   |

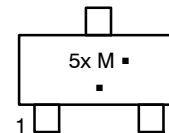
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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>     | -    | - | -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 | 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

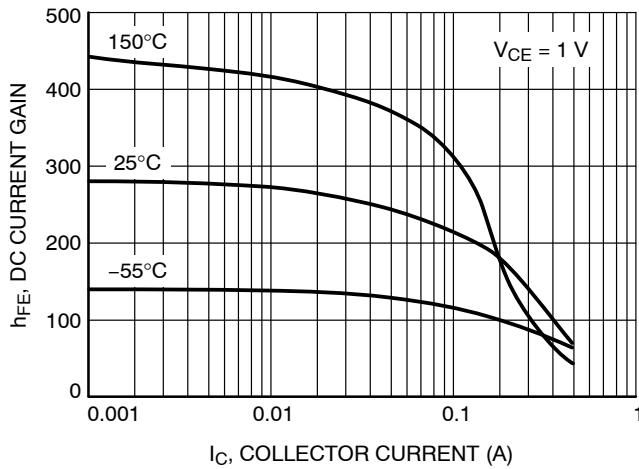
| Device         | Specific Marking | Package            | Shipping <sup>†</sup> |
|----------------|------------------|--------------------|-----------------------|
| BC807-25WT1G   | 5B               | SC-70<br>(Pb-Free) | 3000 / Tape & Reel    |
| SBC807-25WT1G* |                  |              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

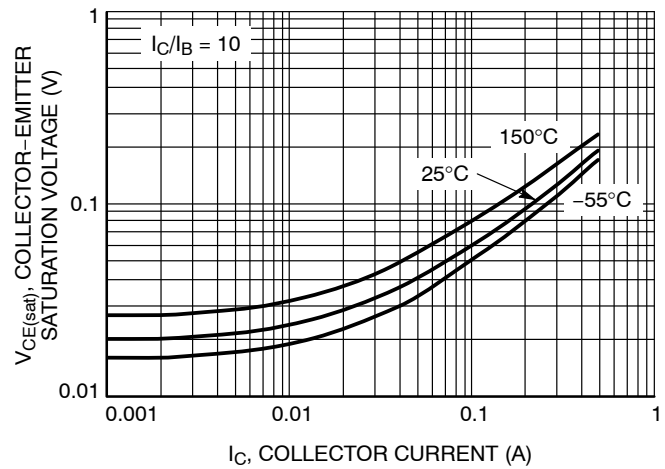
\*S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

# BC807-25W, BC807-40W

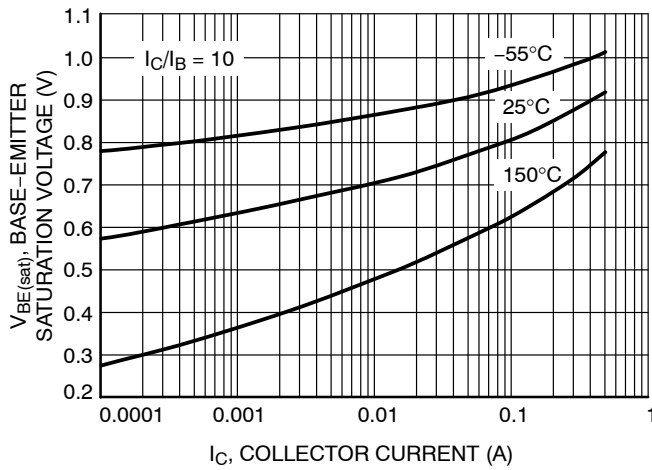
## TYPICAL CHARACTERISTICS – BC807-25W, SBC807-25W



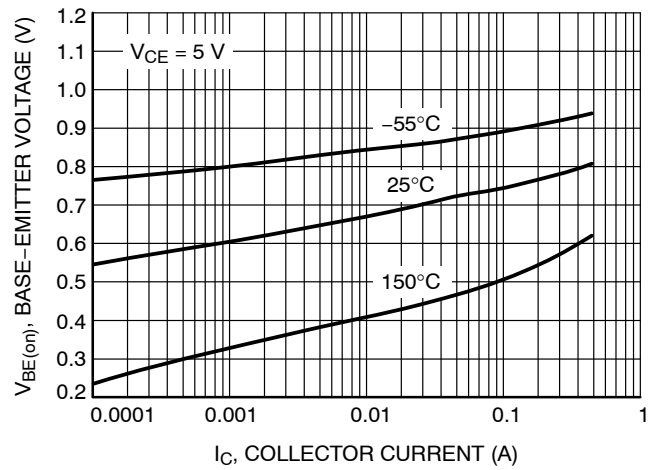
**Figure 1. DC Current Gain vs. Collector Current**



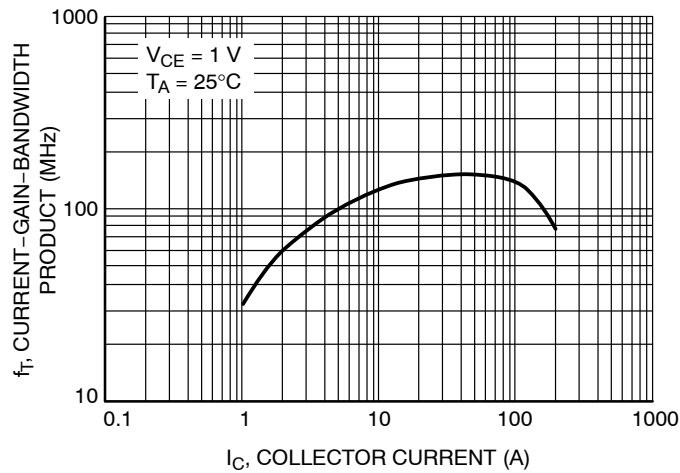
**Figure 2. Collector Emitter Saturation Voltage vs. Collector Current**



**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

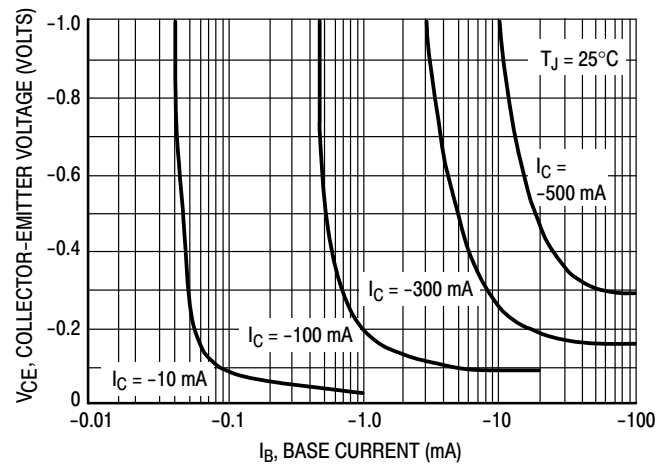


Figure 6. Saturation Region

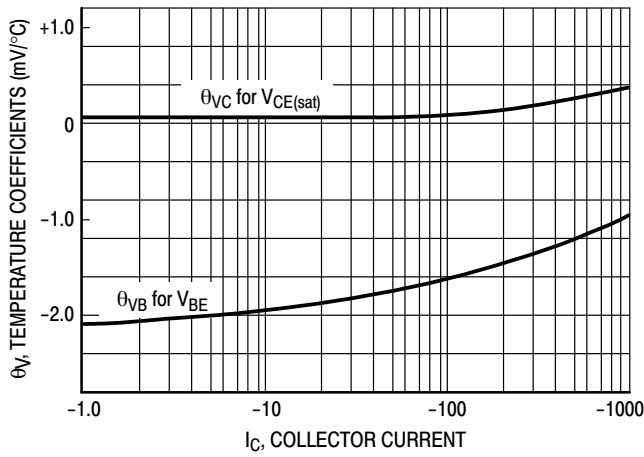


Figure 7. Temperature Coefficients

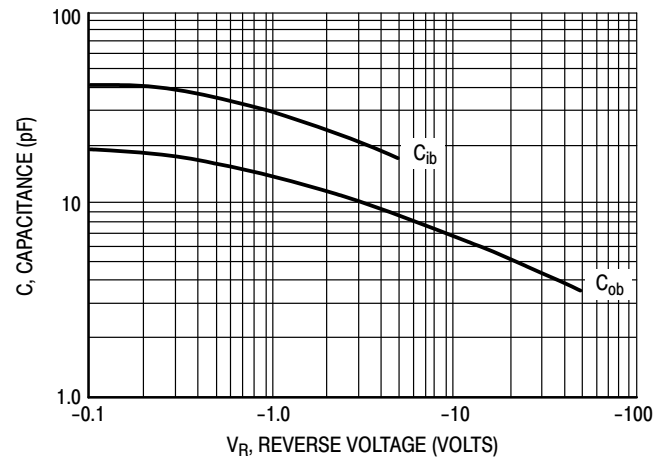
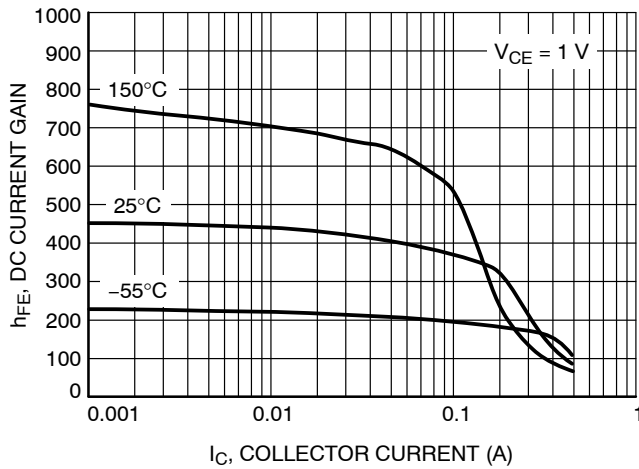


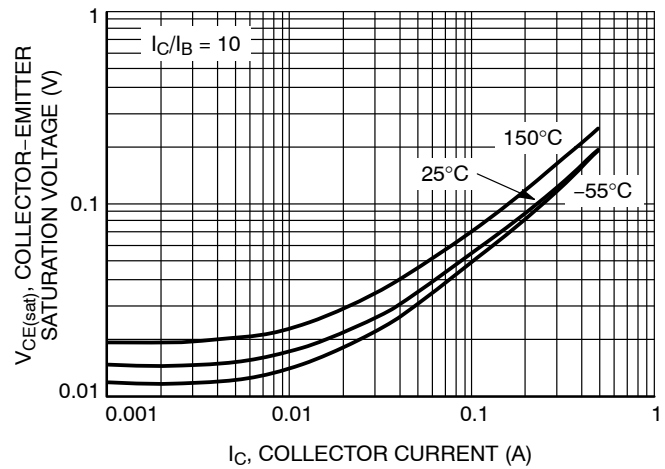
Figure 8. Capacitances

# BC807-25W, BC807-40W

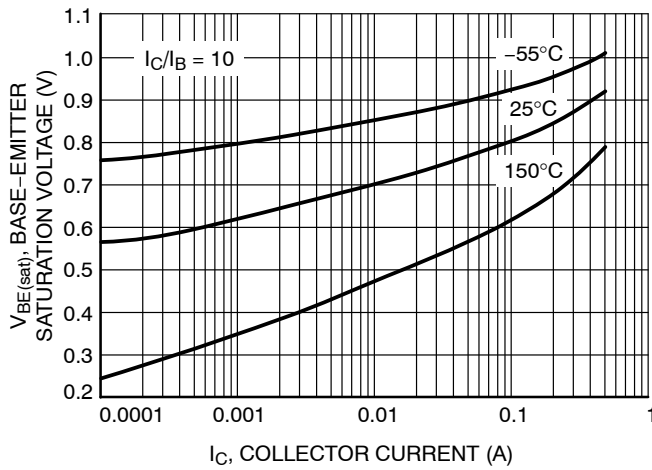
## TYPICAL CHARACTERISTICS – BC807-40W, SBC807-40W



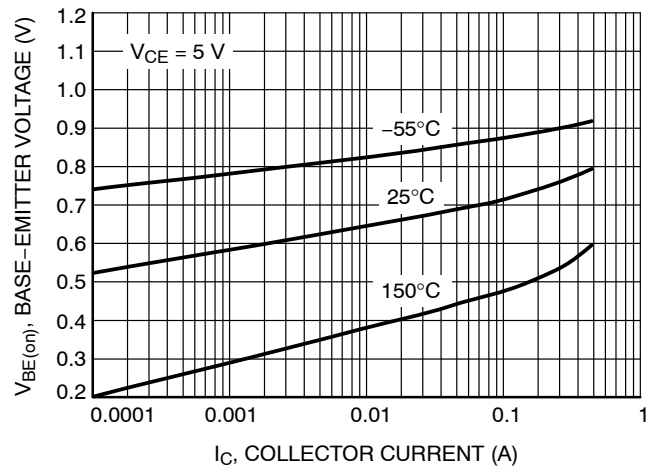
**Figure 9. DC Current Gain vs. Collector Current**



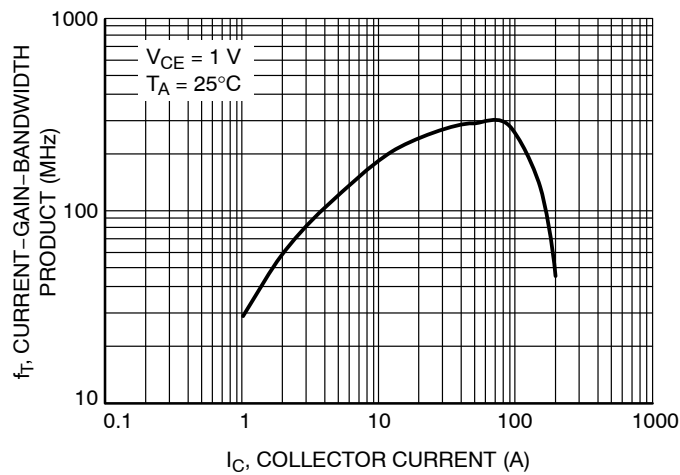
**Figure 10. Collector Emitter Saturation Voltage vs. Collector Current**



**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

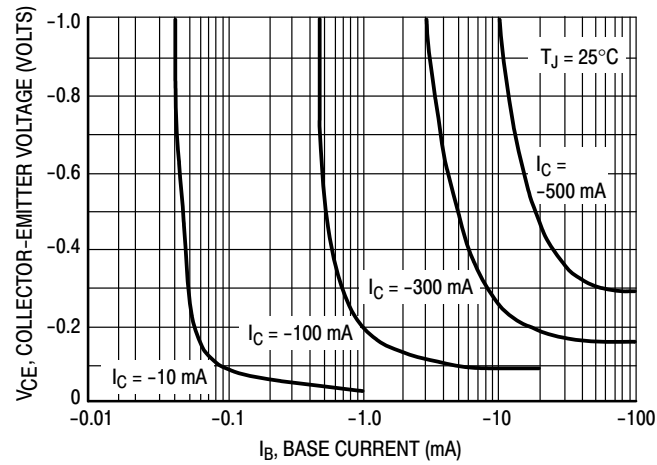


Figure 14. Saturation Region

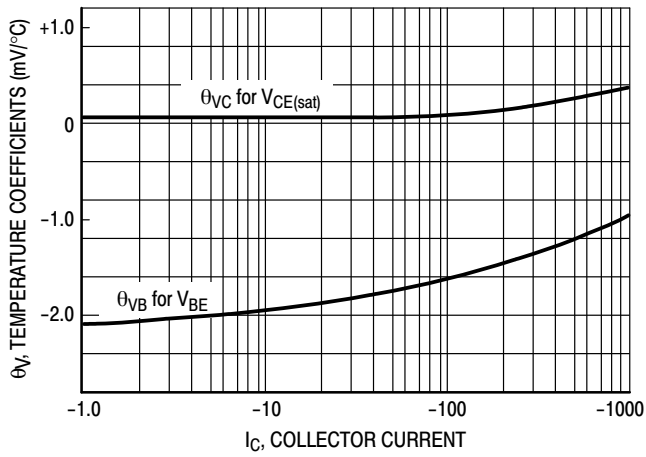


Figure 15. Temperature Coefficients

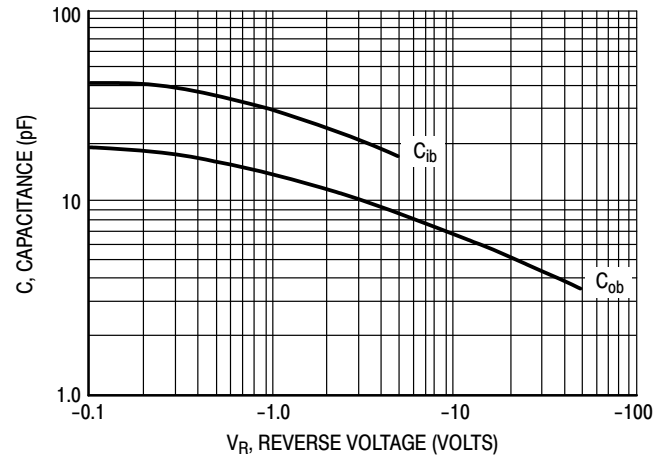


Figure 16. Capacitances

## BC807-25W, BC807-40W

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

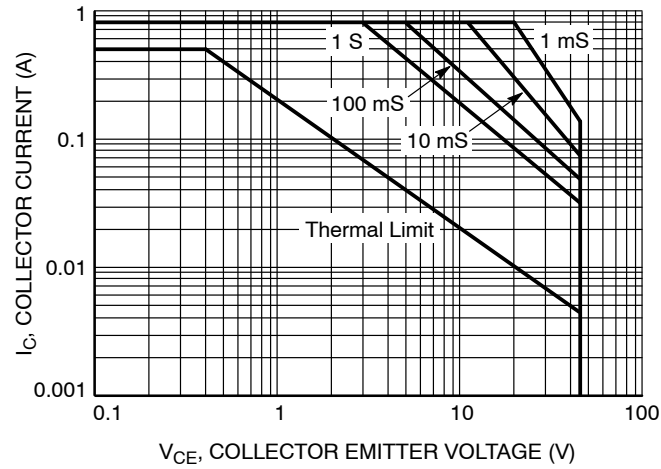


Figure 17. Safe Operating Area

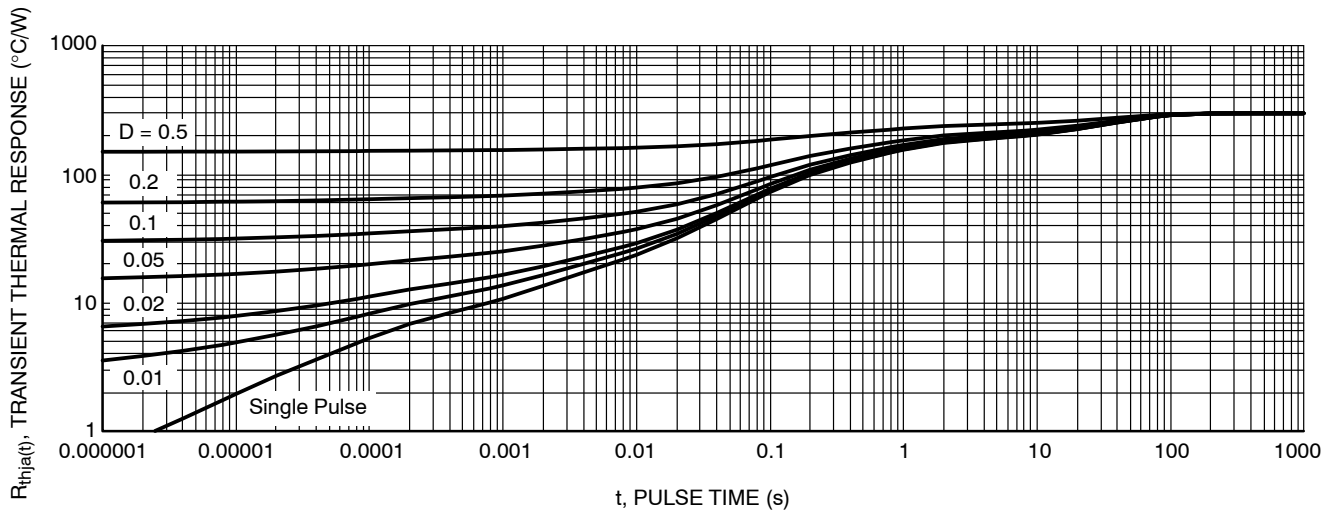
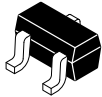


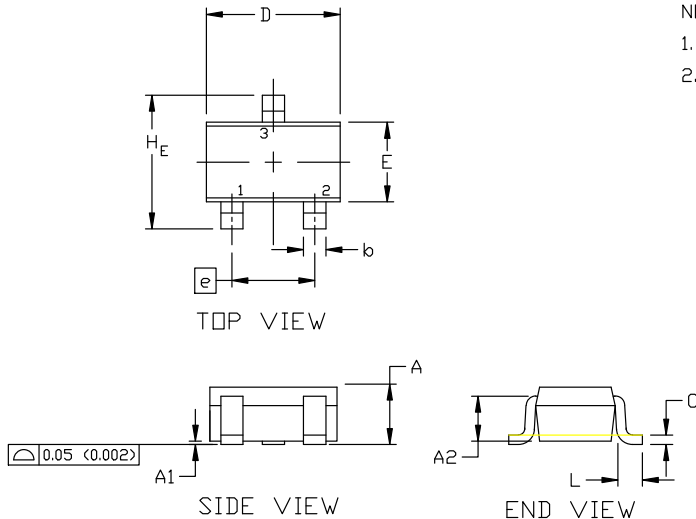
Figure 18. Thermal Response



SCALE 4:1

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

DATE 11 OCT 2022

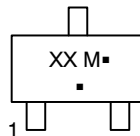


NOTES:

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

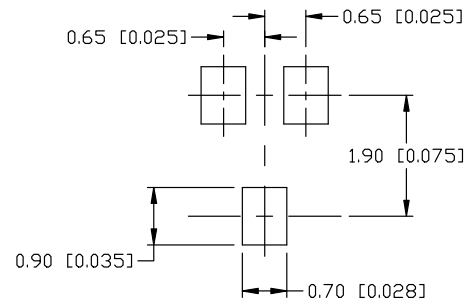
| DIM            | MILLIMETERS |      |      | INCHES    |       |       |
|----------------|-------------|------|------|-----------|-------|-------|
|                | MIN.        | NOM. | MAX. | MIN.      | NOM.  | MAX.  |
| A              | 0.80        | 0.90 | 1.00 | 0.032     | 0.035 | 0.040 |
| 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 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

|                  |                 |                                                                                                                                                                                  |
|------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DOCUMENT NUMBER: | 98ASB42819B     | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION:     | SC-70 (SOT-323) | PAGE 1 OF 1                                                                                                                                                                      |

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.



**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at  
[www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)