

# BC807-25W, SBC807-25W, BC807-40W, SBC807-40W

## General Purpose Transistors

### PNP Silicon

#### Features

- AEC-Q101 Qualified and PPAP Capable
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- 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	mAdc

#### THERMAL CHARACTERISTICS

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

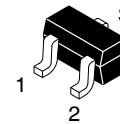
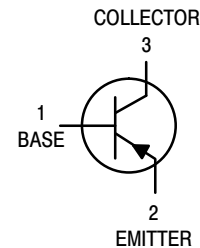
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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



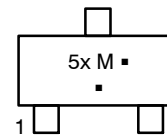
ON Semiconductor®

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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, SBC807-25W, BC807-40W, SBC807-40W

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

Characteristic	Symbol	Min	Typ	Max	Unit
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#### OFF CHARACTERISTICS

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

#### ON CHARACTERISTICS

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

#### SMALL-SIGNAL CHARACTERISTICS

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

#### ORDERING INFORMATION

Device	Specific Marking	Package	Shipping <sup>†</sup>
BC807-25WT1G	5B	SC-70 (Pb-Free)	3000 / Tape & Reel
SBC807-25T1G			10,000 / Tape & Reel
BC807-25WT3G			10,000 / Tape & Reel
BC807-40WT1G	5C	SC-70 (Pb-Free)	3000 / Tape & Reel
SBC807-40WT1G			10,000 / Tape & Reel
BC807-40WT3G			10,000 / Tape & Reel

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

BC807-25W, SBC807-25W, BC807-40W, SBC807-40W

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

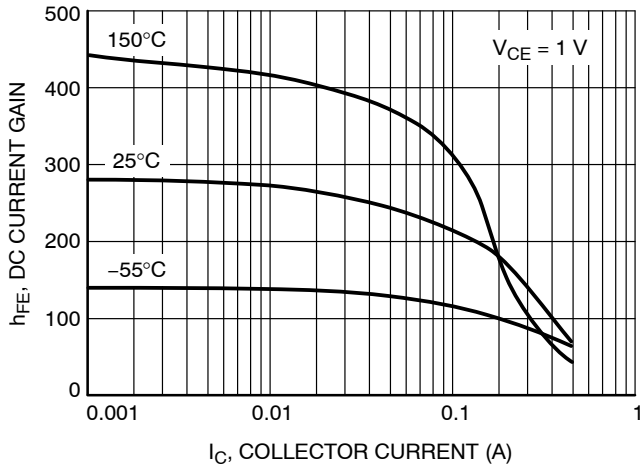


Figure 1. DC Current Gain vs. Collector Current

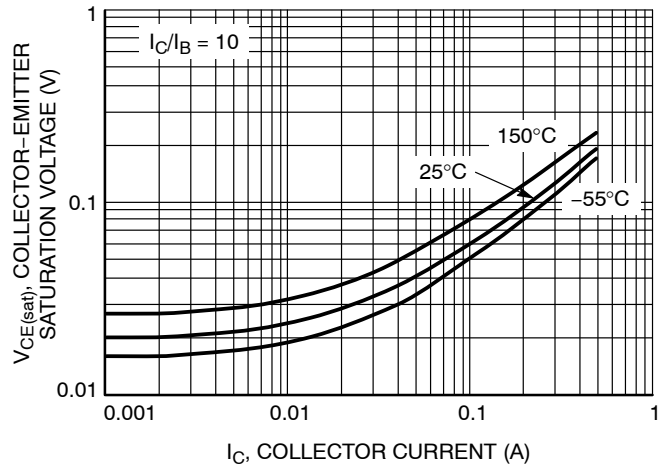


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

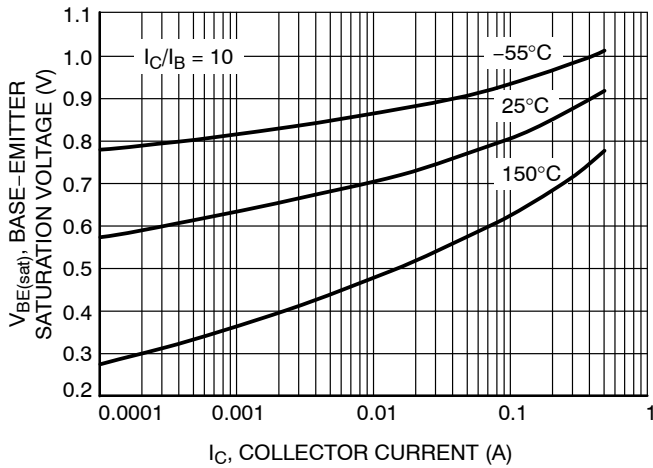


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

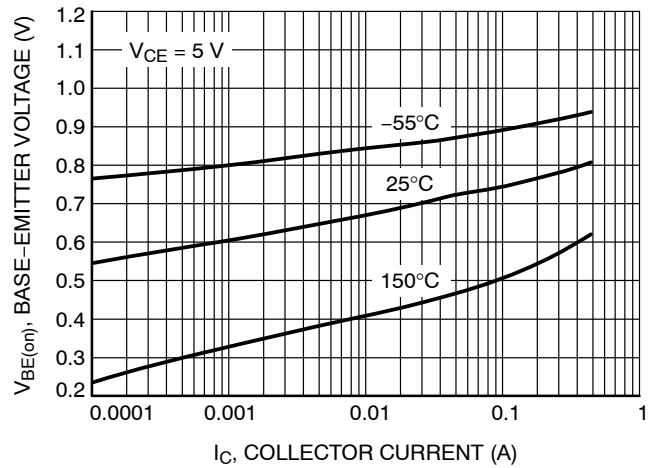


Figure 4. Base Emitter Voltage vs. Collector Current

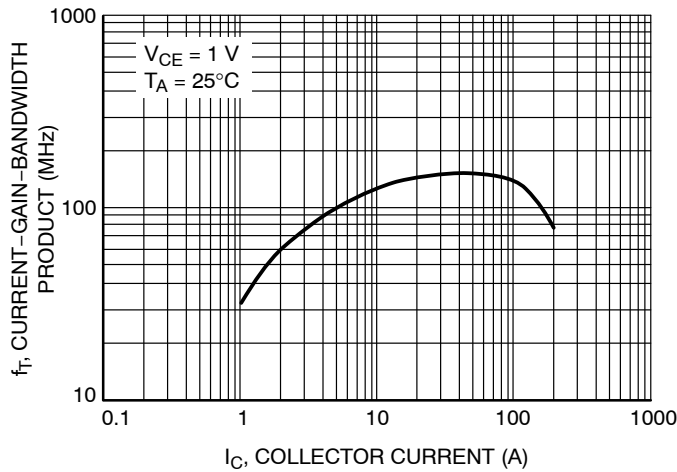
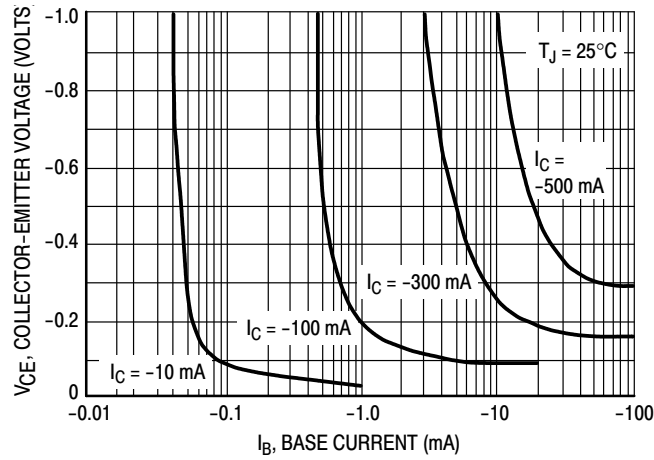


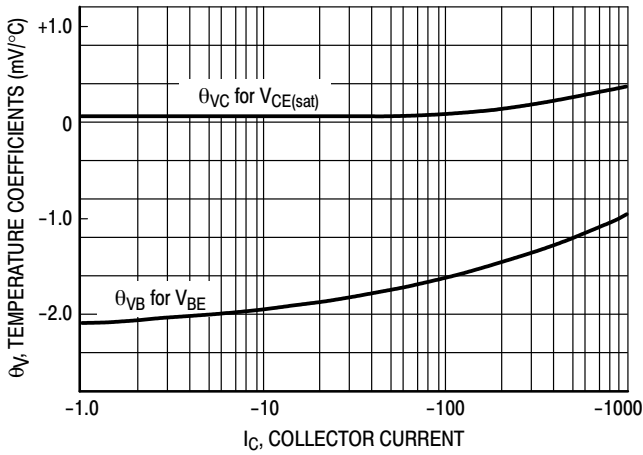
Figure 5. Current Gain Bandwidth Product vs. Collector Current

**BC807-25W, SBC807-25W, BC807-40W, SBC807-40W**

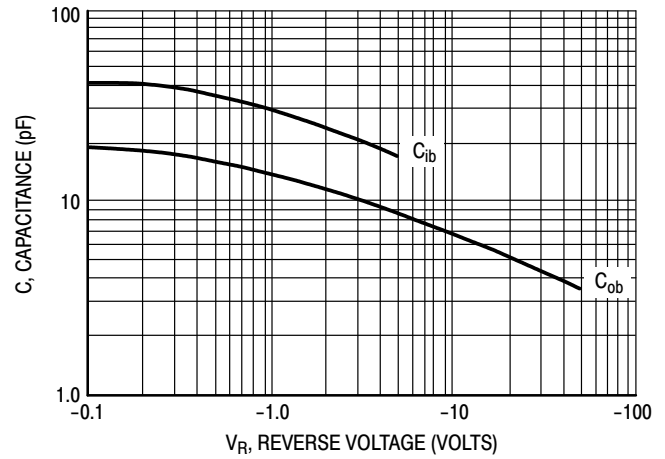
**TYPICAL CHARACTERISTICS - BC807-25W, SBC807-25W**



**Figure 6. Saturation Region**



**Figure 7. Temperature Coefficients**



**Figure 8. Capacitances**

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

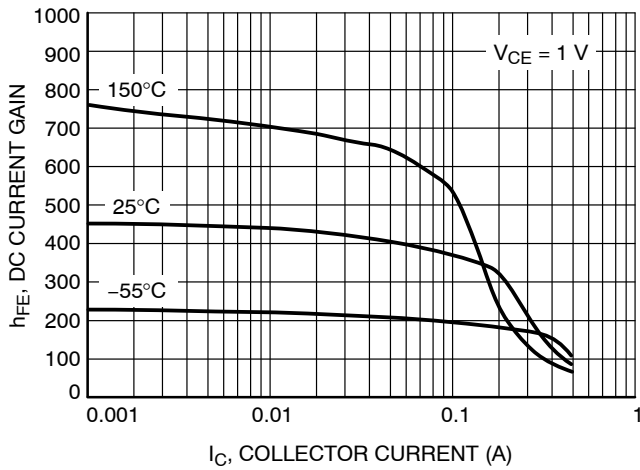


Figure 9. DC Current Gain vs. Collector Current

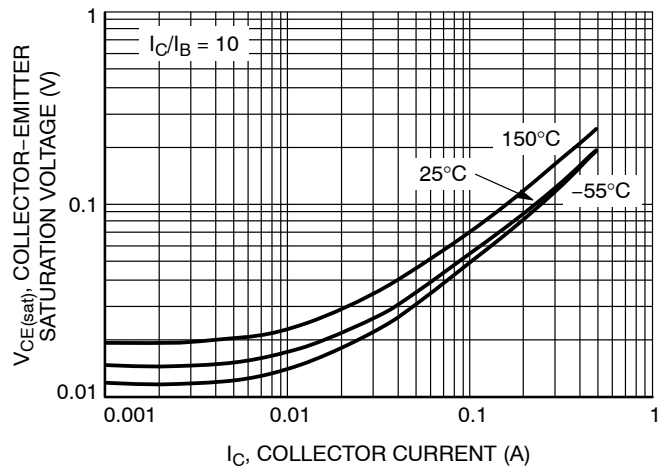


Figure 10. Collector Emitter Saturation Voltage vs. Collector Current

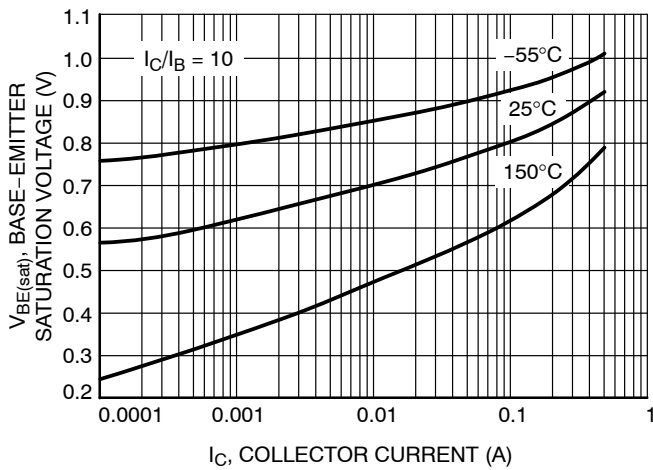


Figure 11. Base Emitter Saturation Voltage vs. Collector Current

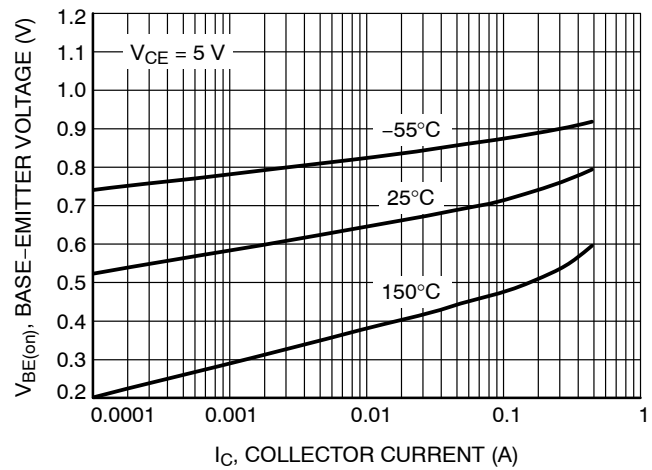


Figure 12. Base Emitter Voltage vs. Collector Current

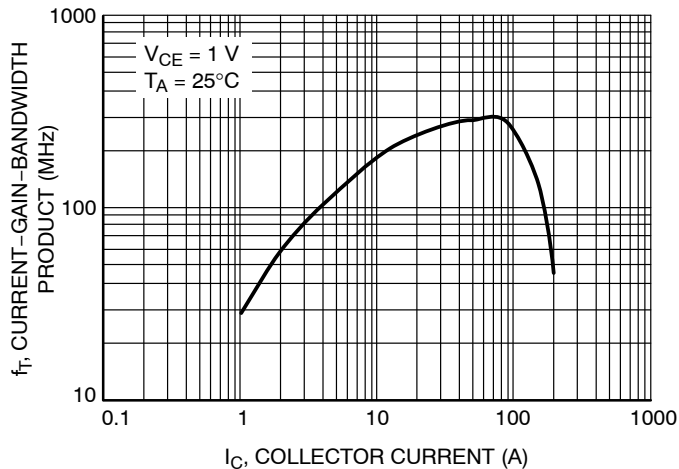


Figure 13. Current Gain Bandwidth Product vs. Collector Current

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

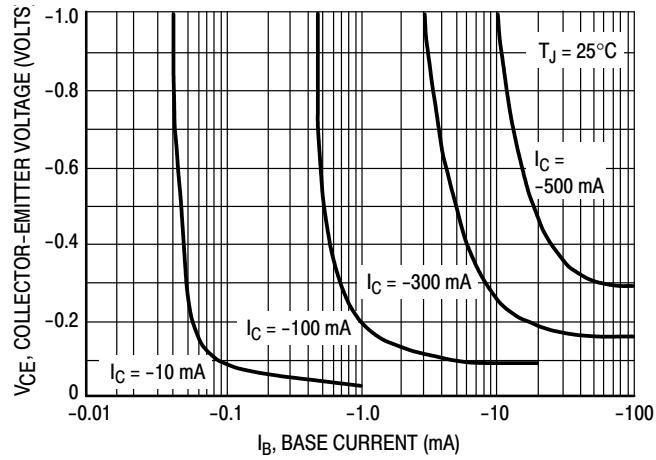


Figure 14. Saturation Region

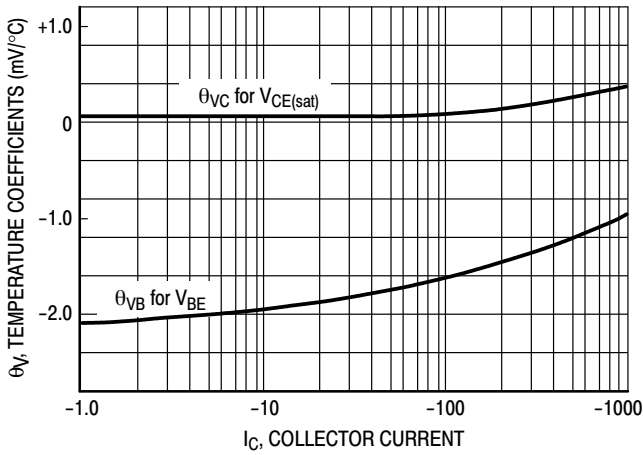


Figure 15. Temperature Coefficients

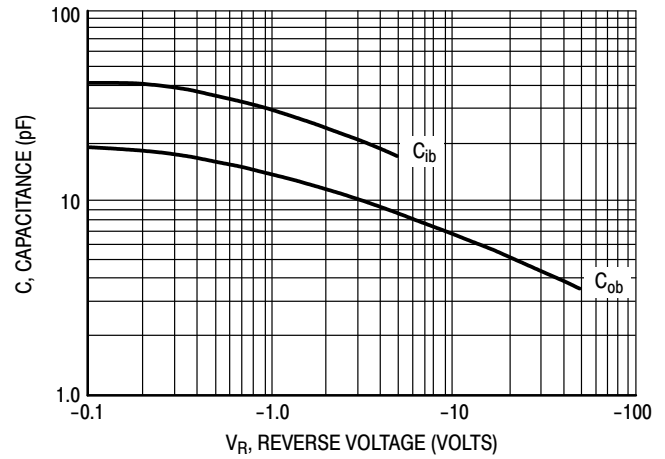


Figure 16. Capacitances

# BC807-25W, SBC807-25W, BC807-40W, SBC807-40W

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

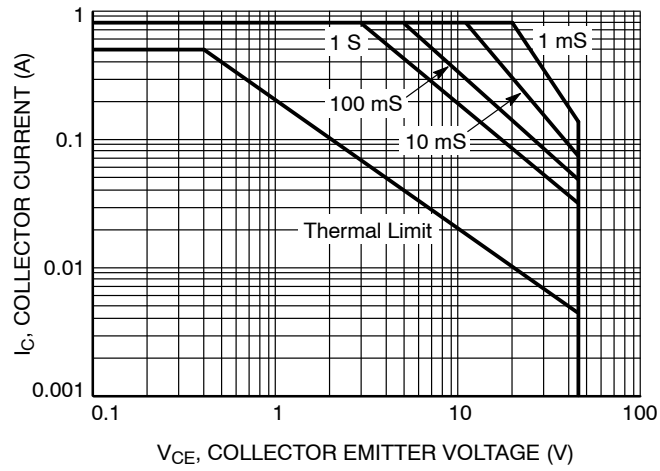


Figure 17. Safe Operating Area

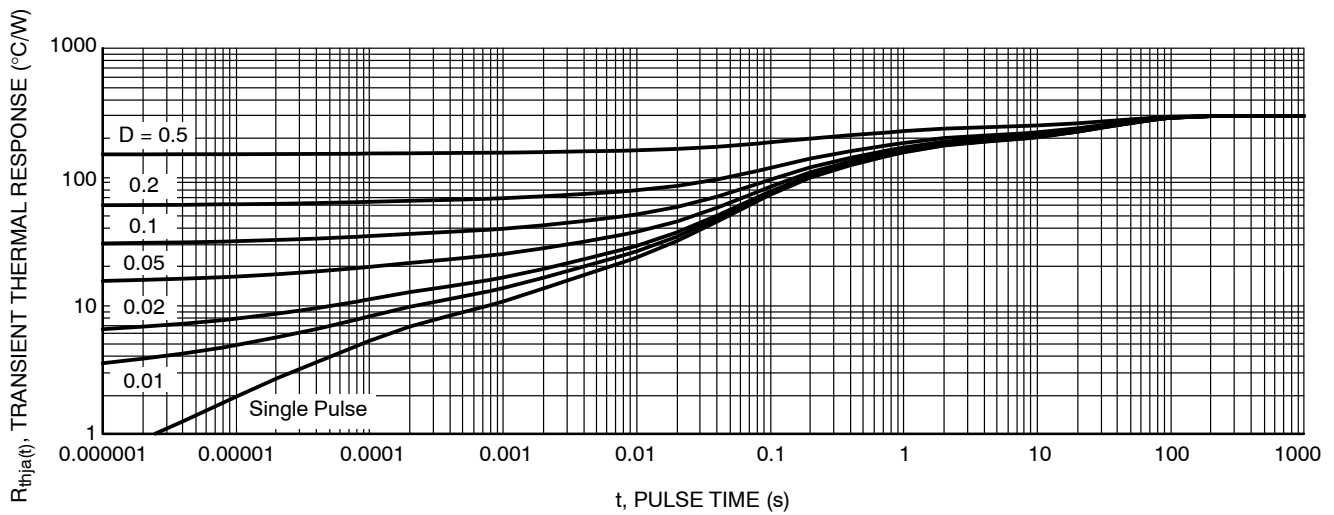
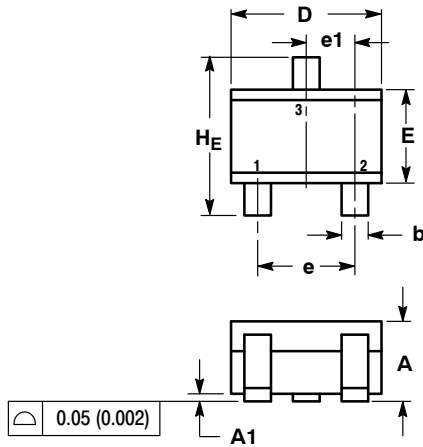


Figure 18. Thermal Response

# BC807-25W, SBC807-25W, BC807-40W, SBC807-40W

## PACKAGE DIMENSIONS

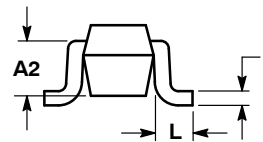
### SC-70 (SOT-323) CASE 419-04 ISSUE N



NOTES:

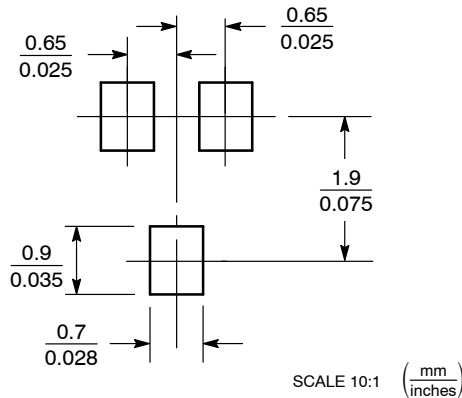
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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 REF		
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
HE	2.00	2.10	2.40	0.079	0.083	0.095



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

### 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.

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**Адрес:** 198099, Санкт-Петербург,  
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