

BC807-16L, SBC807-16L BC807-25L, SBC807-25L, BC807-40L, SBC807-40L

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) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

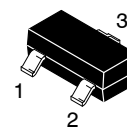
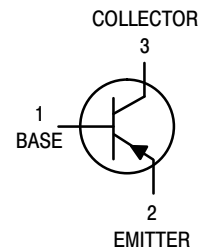
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 1.0 x 0.75 x 0.062 in.
2. Alumina = 0.4 x 0.3 x 0.024 in 99.5% alumina.



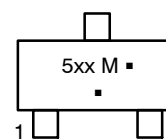
ON Semiconductor®

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SOT-23
CASE 318
STYLE 6

MARKING DIAGRAM



5xx = Device Code
xx = A1, B1, 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.

BC807-16L, SBC807-16L BC807-25L, SBC807-25L, BC807-40L, SBC807-40L

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = -10\text{ mA}$)	$V_{(BR)CEO}$	-45	-	-	V
Collector-Emitter Breakdown Voltage ($V_{EB} = 0, I_C = -10\ \mu\text{A}$)	$V_{(BR)CES}$	-50	-	-	V
Emitter-Base Breakdown Voltage ($I_E = -1.0\ \mu\text{A}$)	$V_{(BR)EBO}$	-5.0	-	-	V
Collector Cutoff Current ($V_{CB} = -20\text{ V}$) ($V_{CB} = -20\text{ V}, T_J = 150^\circ\text{C}$)	I_{CBO}	-	-	-100 -5.0	nA μA
ON CHARACTERISTICS					
DC Current Gain ($I_C = -100\text{ mA}, V_{CE} = -1.0\text{ V}$) ($I_C = -500\text{ mA}, V_{CE} = -1.0\text{ V}$)	h_{FE}	100 160 250 40	- - - -	250 400 600 -	-
Collector-Emitter Saturation Voltage ($I_C = -500\text{ mA}, I_B = -50\text{ mA}$)	$V_{CE(sat)}$	-	-	-0.7	V
Base-Emitter On Voltage ($I_C = -500\text{ mA}, I_B = -1.0\text{ V}$)	$V_{BE(on)}$	-	-	-1.2	V
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain - Bandwidth Product ($I_C = -10\text{ mA}, V_{CE} = -5.0\text{ Vdc}, f = 100\text{ MHz}$)	f_T	100	-	-	MHz
Output Capacitance ($V_{CB} = -10\text{ V}, f = 1.0\text{ MHz}$)	C_{obo}	-	10	-	pF

ORDERING INFORMATION

Device	Specific Marking	Package	Shipping [†]
BC807-16LT1G	5A1	SOT-23 (Pb-Free)	3000/Tape & Reel
SBC807-16LT1G			
BC807-16LT3G	5A1	SOT-23 (Pb-Free)	10,000/Tape & Reel
SBC807-25LT1G			
BC807-25LT1G	5B1	SOT-23 (Pb-Free)	3000/Tape & Reel
SBC807-25LT1G			
BC807-25LT3G	5B1	SOT-23 (Pb-Free)	10,000/Tape & Reel
SBC807-25LT3G			
BC807-40LT1G	5C	SOT-23 (Pb-Free)	3000/Tape & Reel
SBC807-40LT1G			
BC807-40LT3G	5C	SOT-23 (Pb-Free)	10,000/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.

TYPICAL CHARACTERISTICS – BC807-16LT1

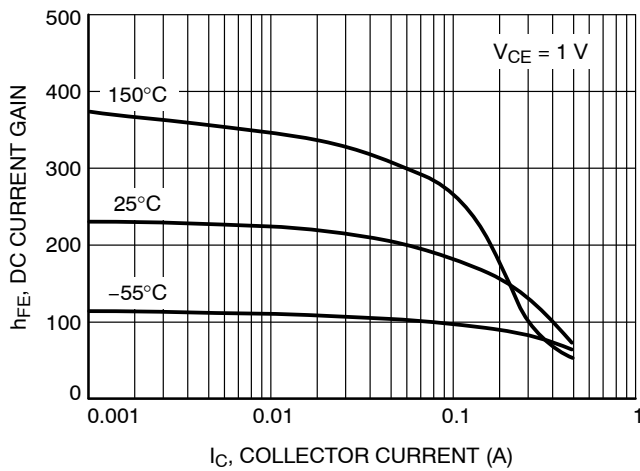


Figure 1. DC Current Gain vs. Collector Current

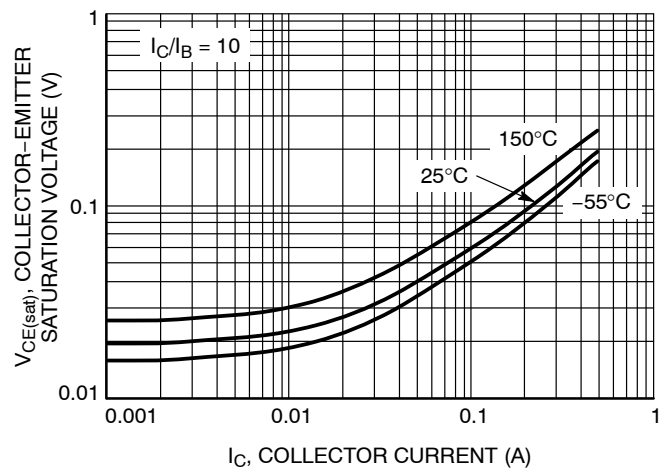


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

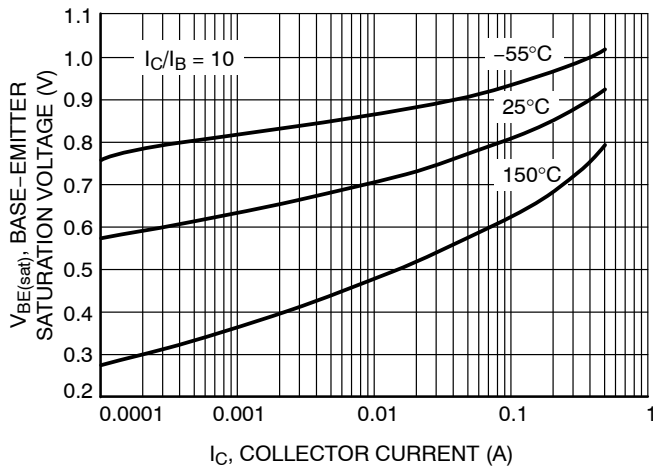


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

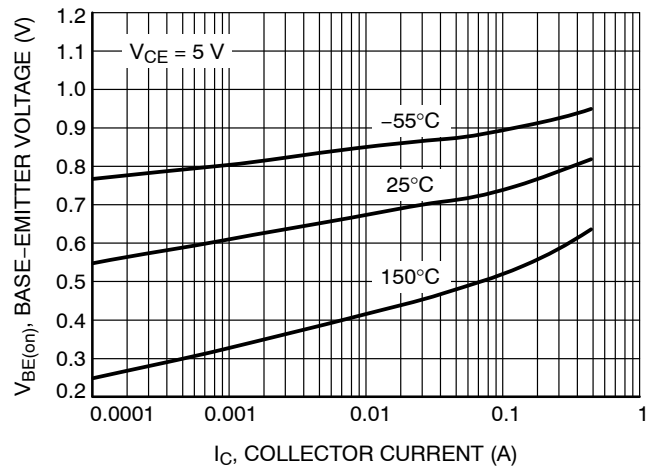


Figure 4. Base Emitter Voltage vs. Collector Current

TYPICAL CHARACTERISTICS - BC807-16LT1

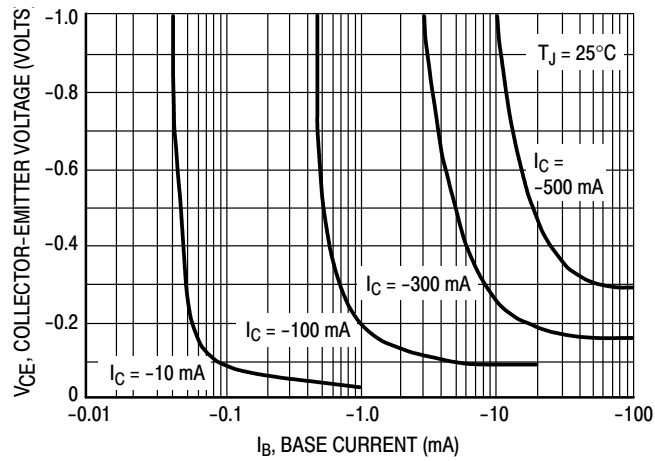


Figure 5. Saturation Region

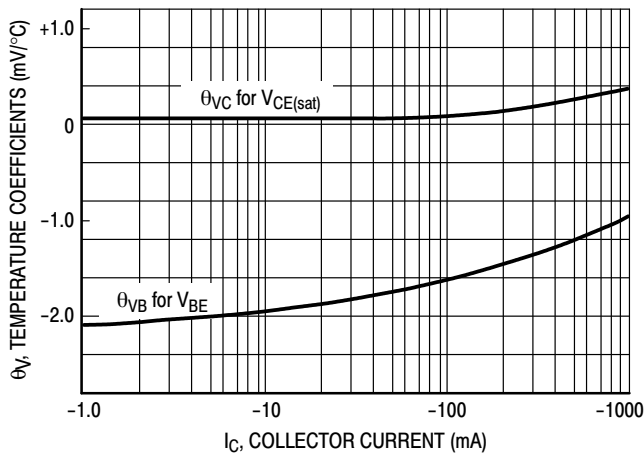


Figure 6. Temperature Coefficients

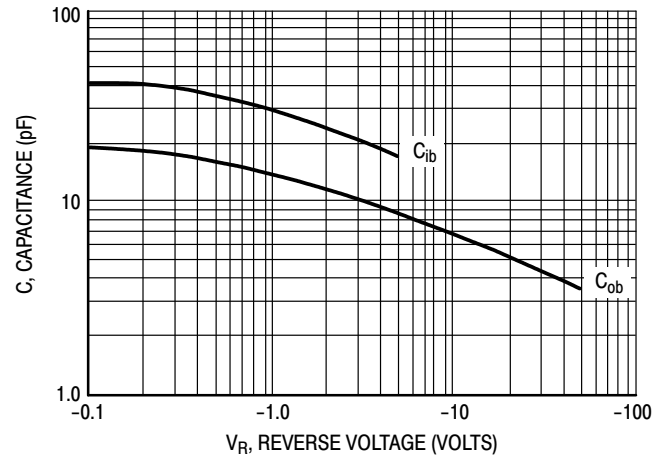


Figure 7. Capacitances

TYPICAL CHARACTERISTICS – BC807-25LT1

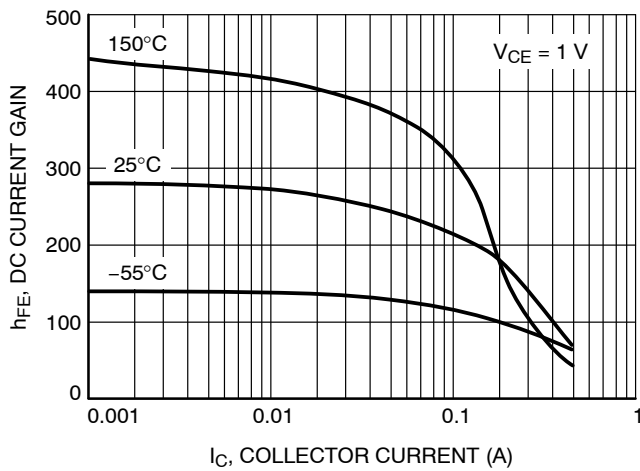


Figure 8. DC Current Gain vs. Collector Current

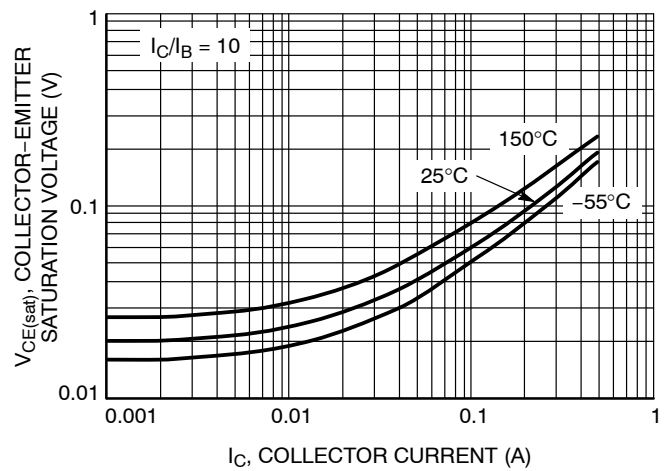


Figure 9. Collector Emitter Saturation Voltage vs. Collector Current

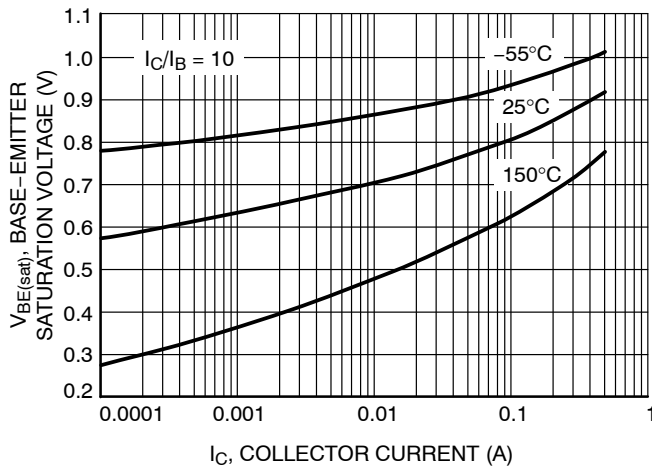


Figure 10. Base Emitter Saturation Voltage vs. Collector Current

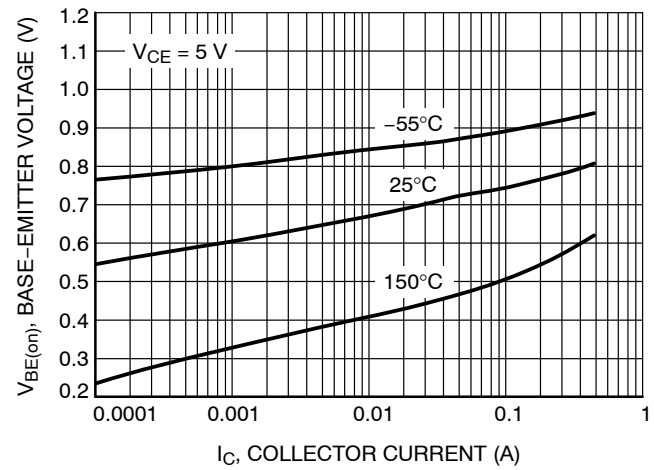


Figure 11. Base Emitter Voltage vs. Collector Current

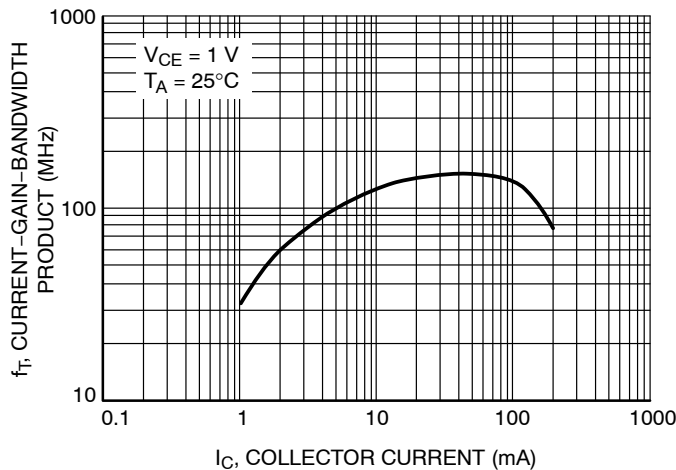


Figure 12. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS - BC807-25LT1

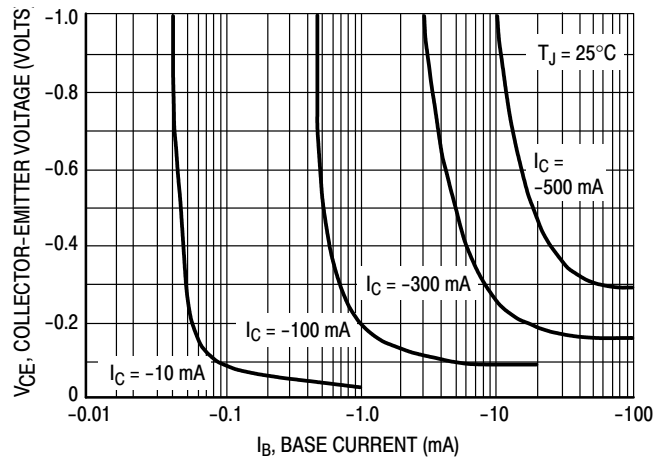


Figure 13. Saturation Region

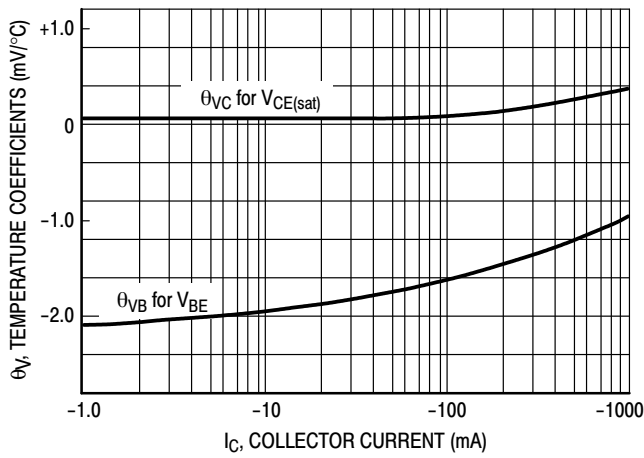


Figure 14. Temperature Coefficients

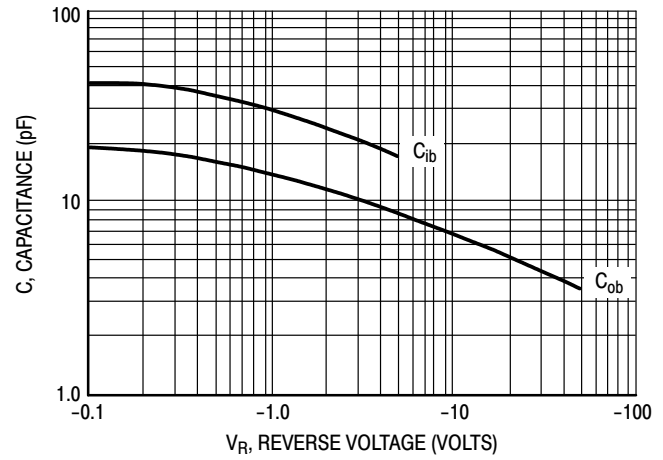


Figure 15. Capacitances

TYPICAL CHARACTERISTICS – BC807-40LT1

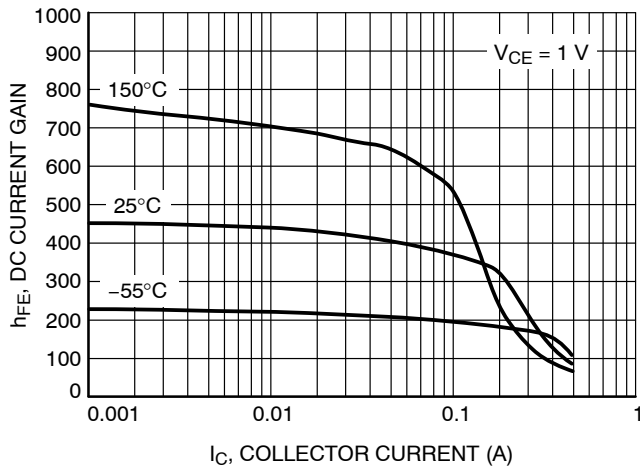


Figure 16. DC Current Gain vs. Collector Current

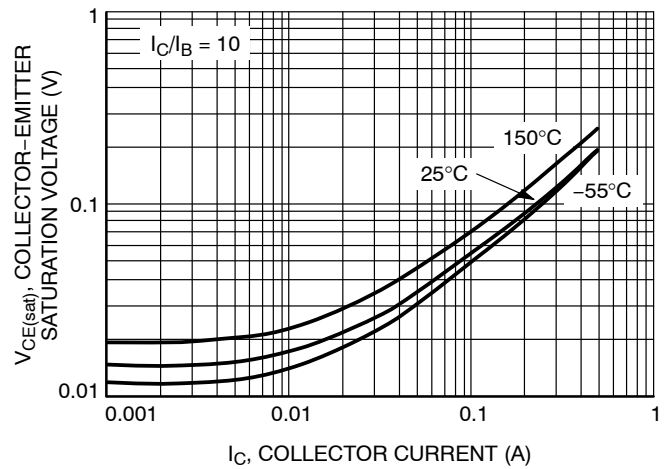


Figure 17. Collector Emitter Saturation Voltage vs. Collector Current

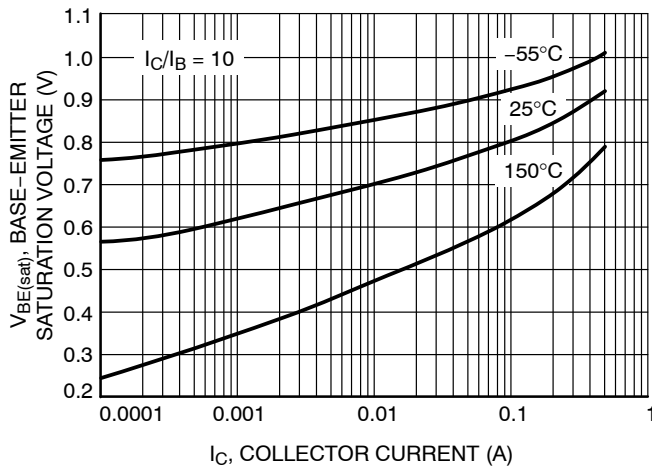


Figure 18. Base Emitter Saturation Voltage vs. Collector Current

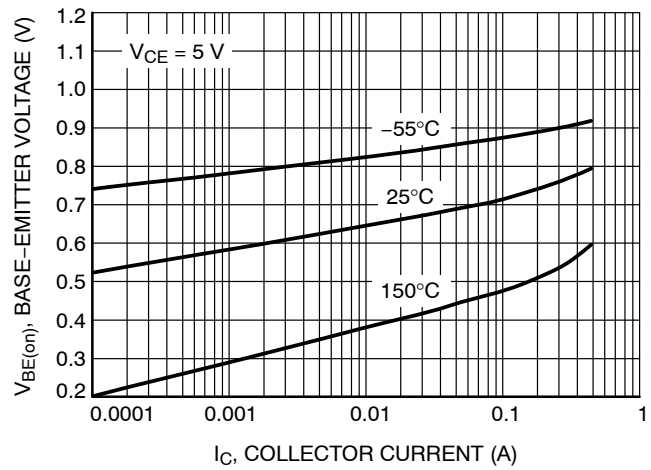


Figure 19. Base Emitter Voltage vs. Collector Current

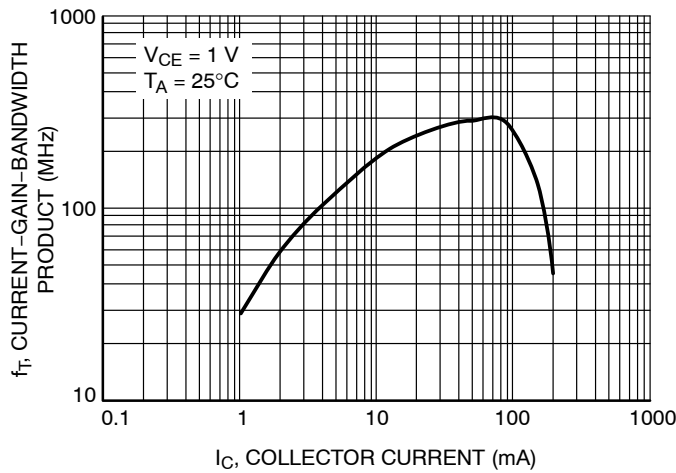


Figure 20. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS - BC807-40LT1

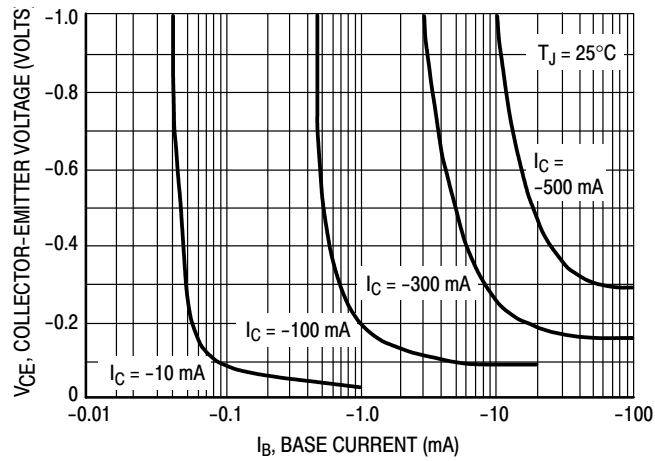


Figure 21. Saturation Region

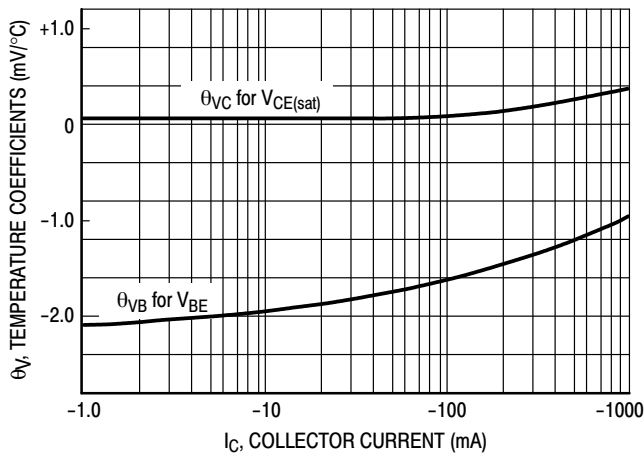


Figure 22. Temperature Coefficients

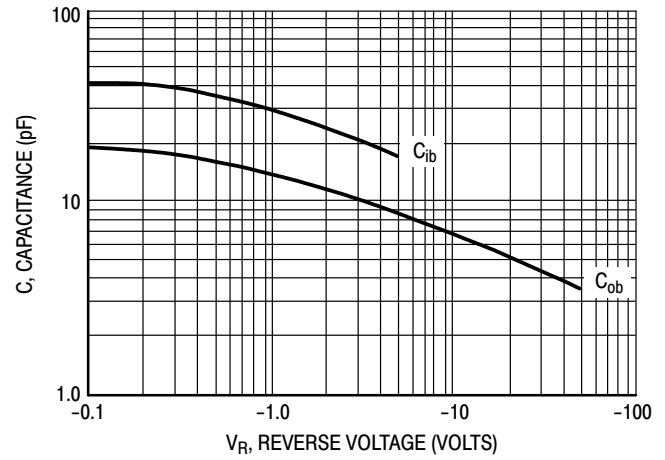


Figure 23. Capacitances

TYPICAL CHARACTERISTICS – BC807-16LT1, BC807-25LT1, BC807-40LT1

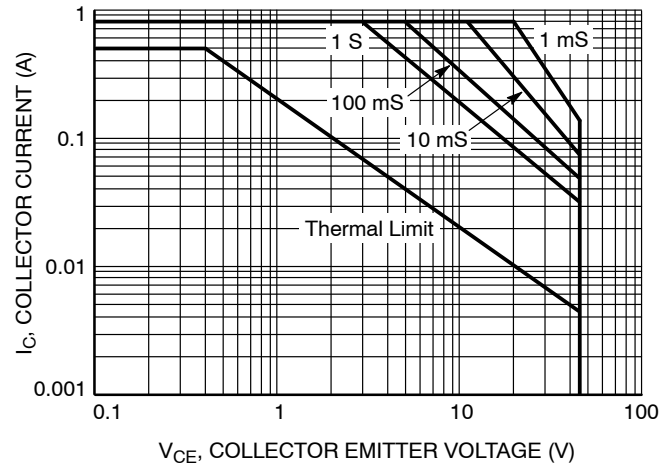
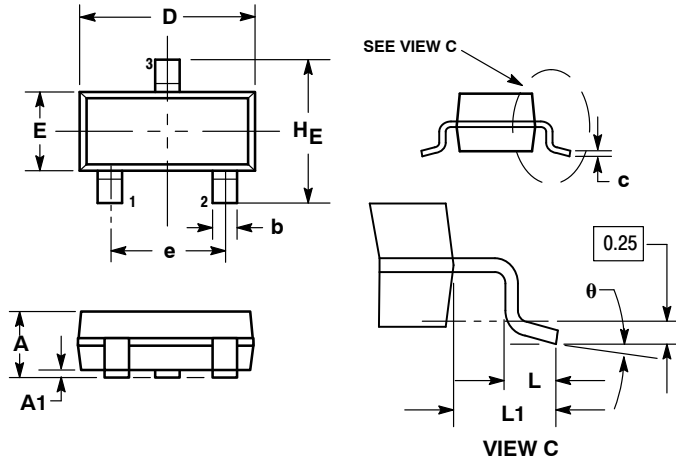


Figure 24. Safe Operating Area

PACKAGE DIMENSIONS

SOT-23 (TO-236)
CASE 318-08
ISSUE AP

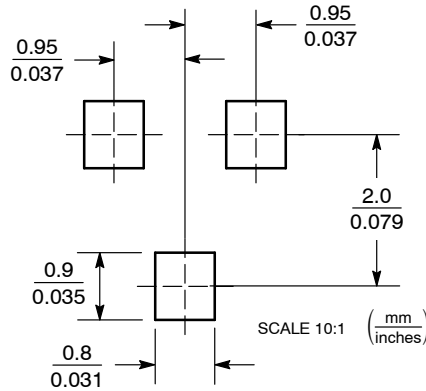


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
 4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104
theta	0°	---	10°	0°	---	10°

- STYLE 6:
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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