

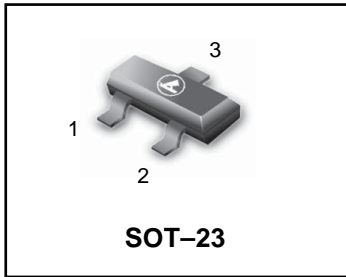
# General Purpose Transistors

## PNP Silicon

### FEATURE

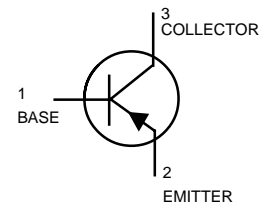
- Collector current capability  $I_C = -500$  mA.
- Collector-emitter voltage  $V_{CEO(max)} = -45$  V.
- General purpose switching and amplification.
- PNP complement: LBC807 Series.
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

**LBC807-16LT1G**  
**LBC807-25LT1G**  
**LBC807-40LT1G**



### DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LBC807-16LT1G S-LBC807-16LT1G	5A1	3000/Tape&Reel
LBC807-16LT3G S-LBC807-16LT3G	5A1	10000/Tape&Reel
LBC807-25LT1G S-LBC807-25LT1G	5B1	3000/Tape&Reel
LBC807-25LT3G S-LBC807-25LT3G	5B1	10000/Tape&Reel
LBC807-40LT1G S-LBC807-40LT1G	5C1	3000/Tape&Reel
LBC807-40LT3G S-LBC807-40LT3G	5C1	10000/Tape&Reel



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

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.

**LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G**

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

Characteristic	Symbol	Min	Typ	Max	Unit
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**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 ( $V_{CB} = -20\text{ V}$ )	$I_{CBO}$	—	—	-100	nA
( $V_{CB} = -20\text{ V}, T_J = 150^\circ\text{C}$ )		—	—	-5.0	$\mu\text{A}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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**ON CHARACTERISTICS**

DC Current Gain ( $I_C = -100\text{ mA}, V_{CE} = -1.0\text{ V}$ )	$h_{FE}$				—
LBC807-16		100	—	250	
LBC807-25		160	—	400	
LBC807-40		250	—	600	
( $I_C = -500\text{ mA}, V_{CE} = -1.0\text{ V}$ )		40	—	—	
Collector–Emitter Saturation Voltage ( $I_C = -500\text{ mA}, I_B = -50\text{ mA}$ )	$V_{CE(sat)}$	—	—	-0.7	V
Base–Emitter On Voltage ( $I_C = -500\text{ mA}, V_{CE} = -1.0\text{ V}$ )	$V_{BE(on)}$	—	—	-1.2	V

**SMALL-SIGNAL CHARACTERISTICS**

Current–Gain — Bandwidth Product ( $I_C = -10\text{ mA}, V_{CE} = -5.0\text{ V}_{dc}, f = 100\text{ MHz}$ )	$f_T$	100	—	—	MHz
Output Capacitance ( $V_{CB} = -10\text{ V}, f = 1.0\text{ MHz}$ )	$C_{obo}$	—	10	—	pF

TYPICAL CHARACTERISTICS – LBC807-16LT1G

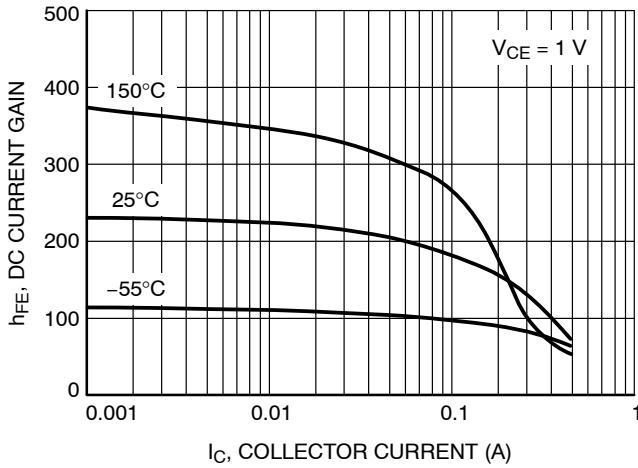


Figure 1. DC Current Gain vs. Collector Current

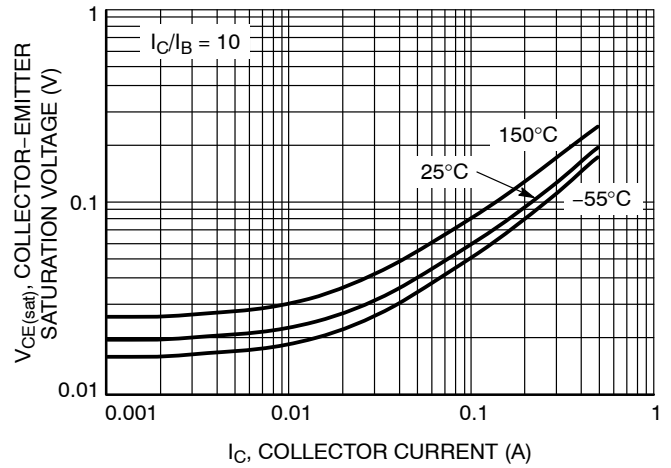


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

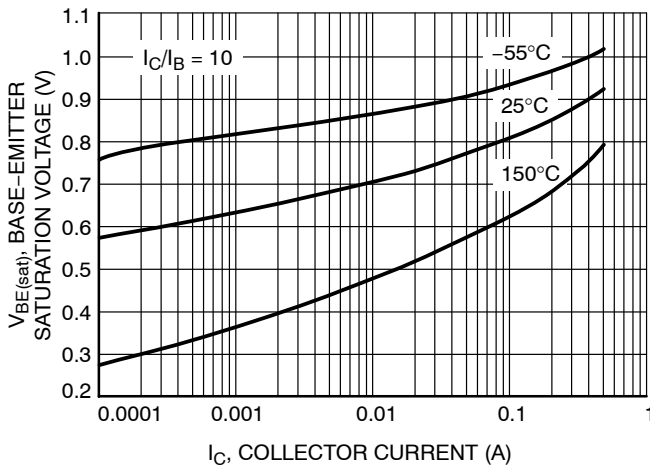


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

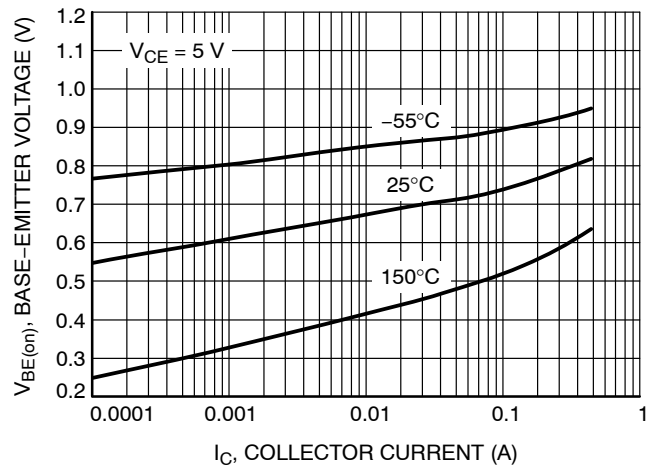


Figure 4. Base Emitter Voltage vs. Collector Current

LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G

TYPICAL CHARACTERISTICS - LBC807-16LT1G

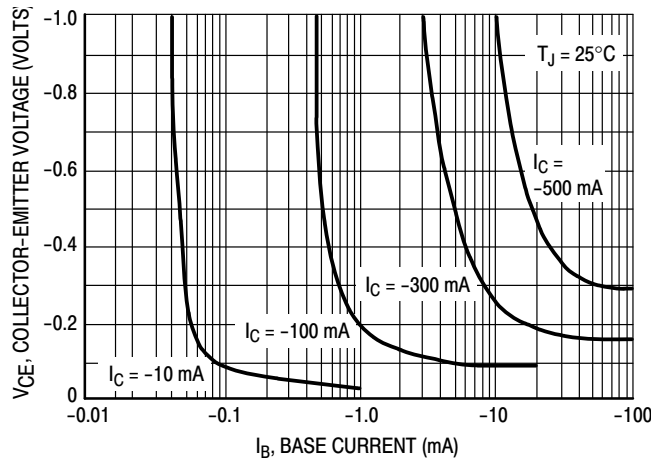


Figure 5. Saturation Region

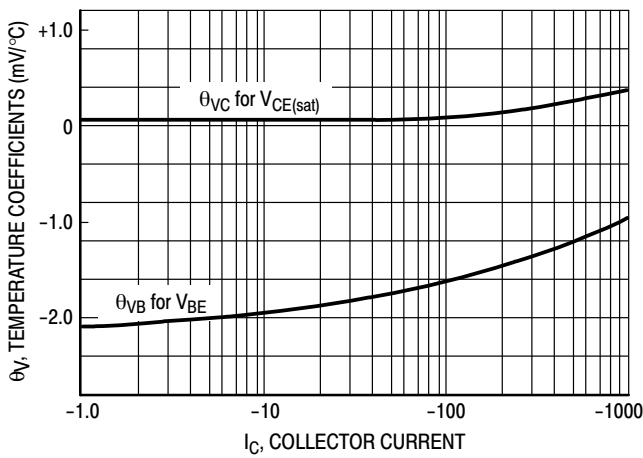


Figure 6. Temperature Coefficients

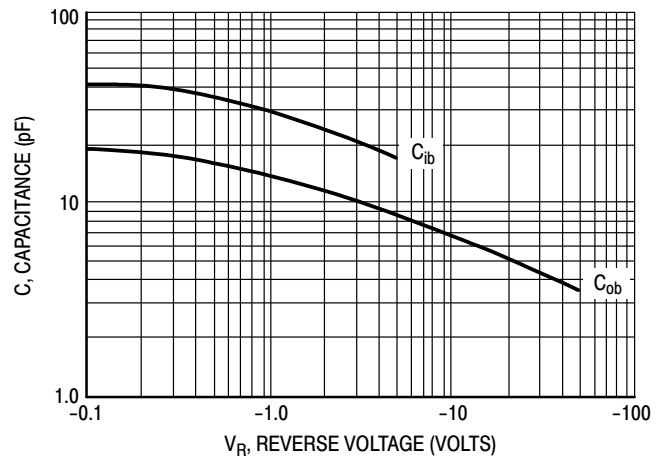


Figure 7. Capacitances

LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G

TYPICAL CHARACTERISTICS - LBC807-25LT1G

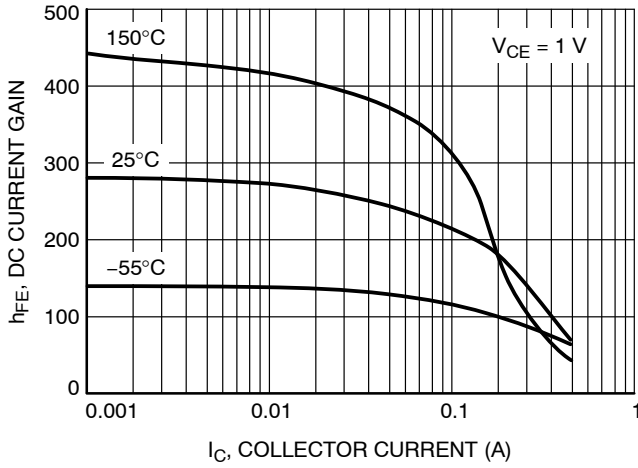


Figure 8. DC Current Gain vs. Collector Current

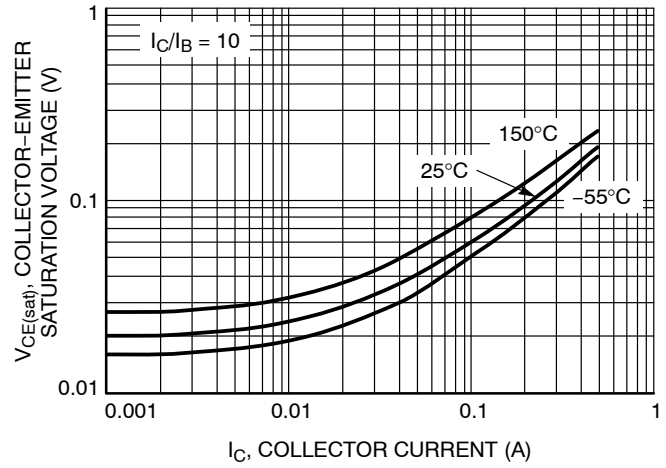


Figure 9. Collector Emitter Saturation Voltage vs. Collector Current

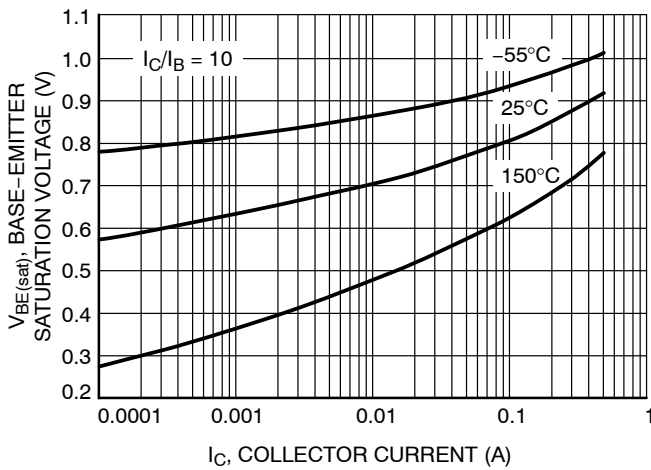


Figure 10. Base Emitter Saturation Voltage vs. Collector Current

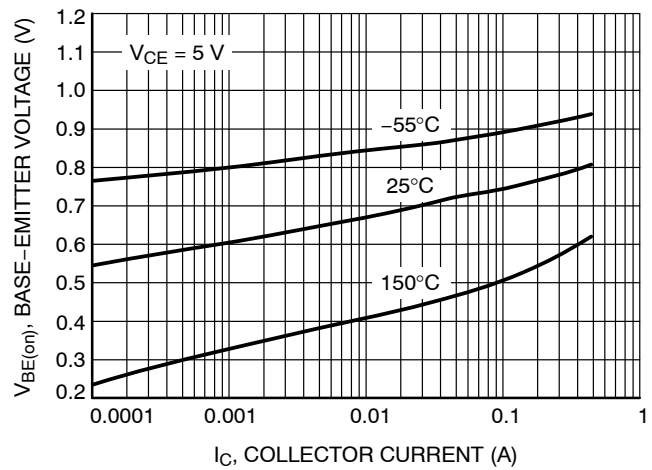


Figure 11. Base Emitter Voltage vs. Collector Current

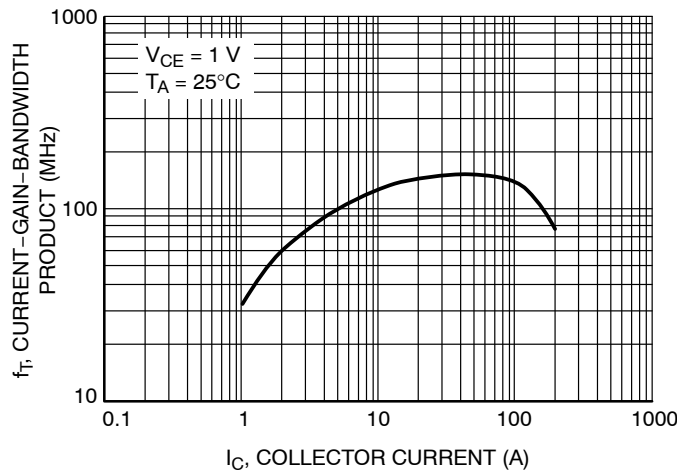


Figure 12. Current Gain Bandwidth Product vs. Collector Current

LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
 S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G

TYPICAL CHARACTERISTICS - LBC807-25LT1G

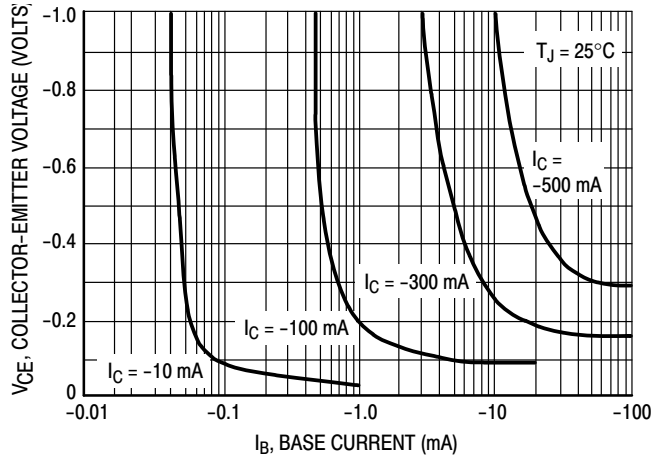


Figure 13. Saturation Region

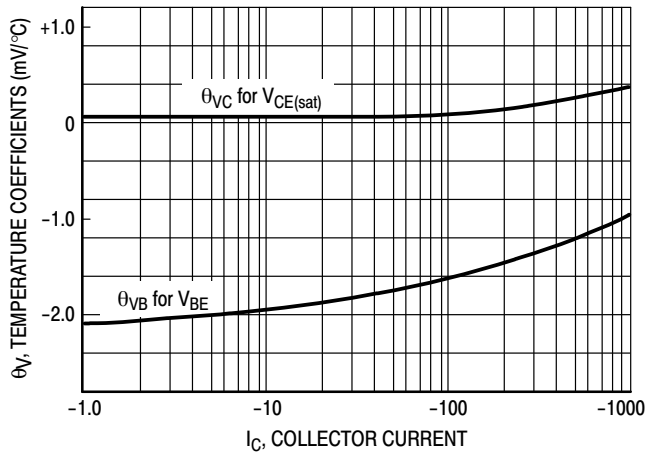


Figure 14. Temperature Coefficients

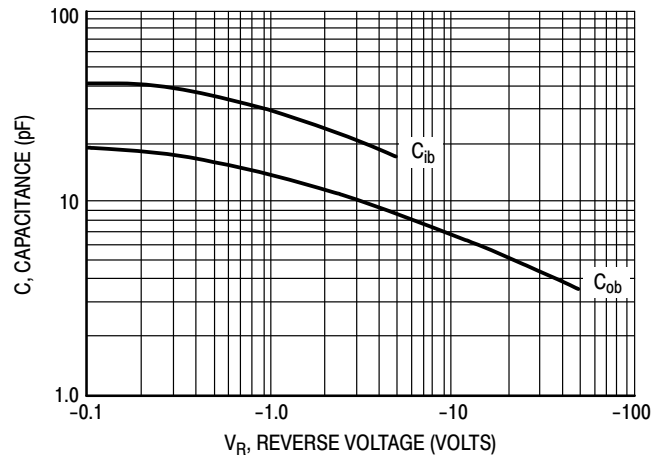


Figure 15. Capacitances

LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G

TYPICAL CHARACTERISTICS - LBC807-40LT1G

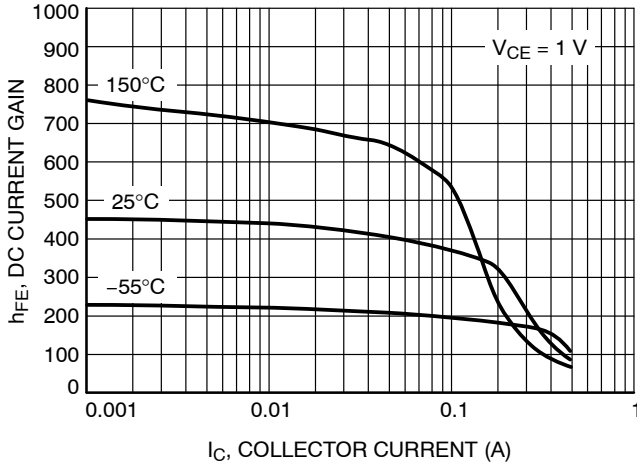


Figure 16. DC Current Gain vs. Collector Current

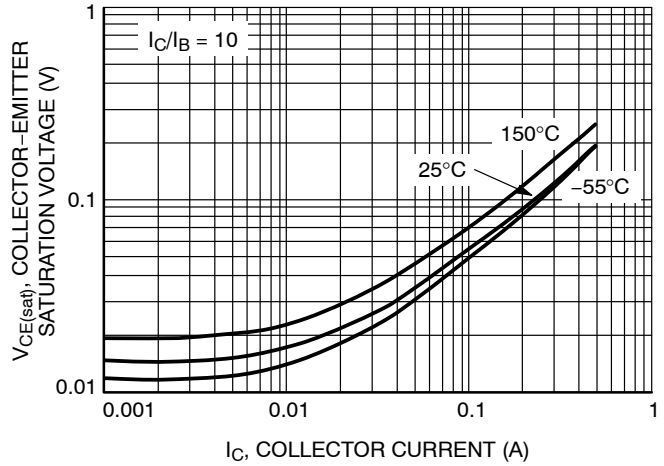


Figure 17. Collector Emitter Saturation Voltage vs. Collector Current

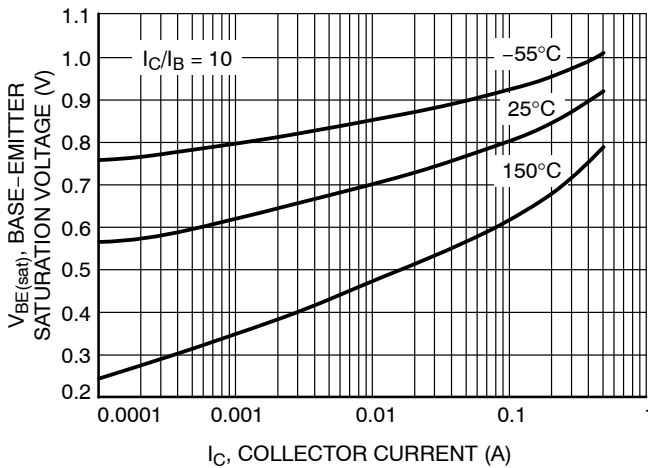


Figure 18. Base Emitter Saturation Voltage vs. Collector Current

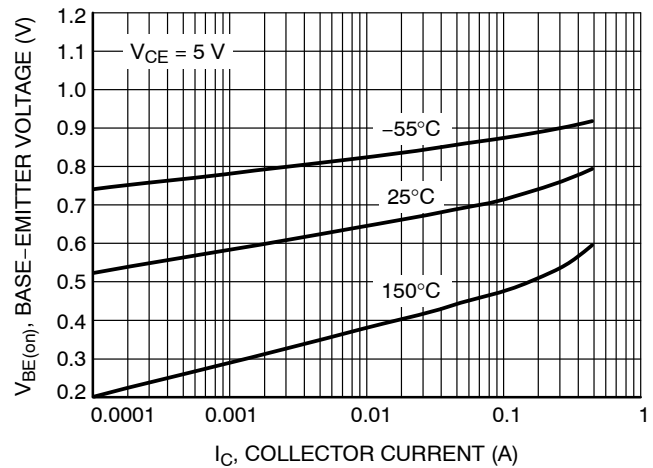


Figure 19. Base Emitter Voltage vs. Collector Current

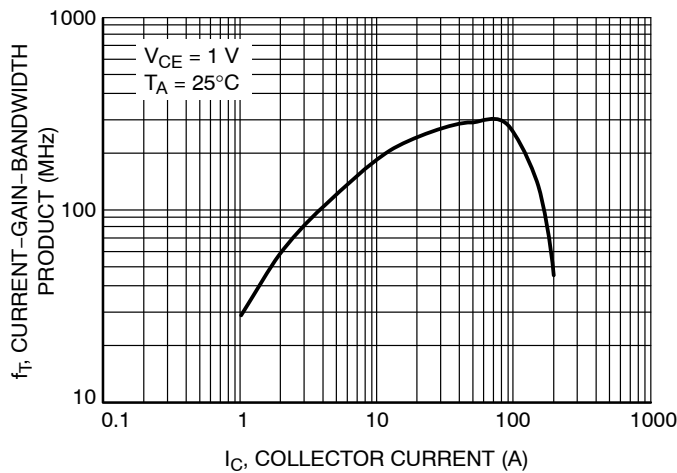


Figure 20. Current Gain Bandwidth Product vs. Collector Current

LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G

TYPICAL CHARACTERISTICS – LBC807-40LT1G

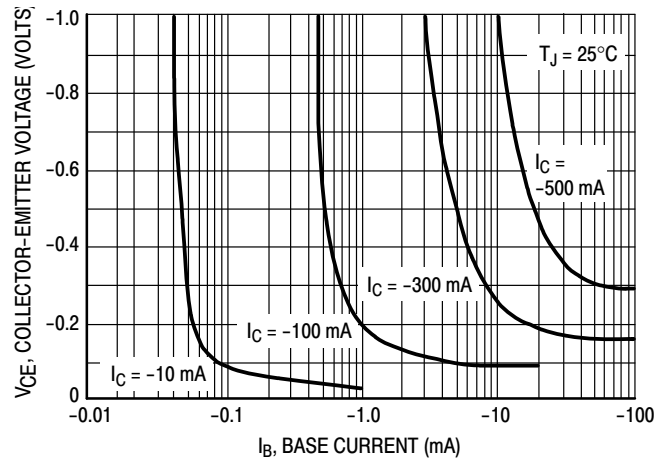


Figure 21. Saturation Region

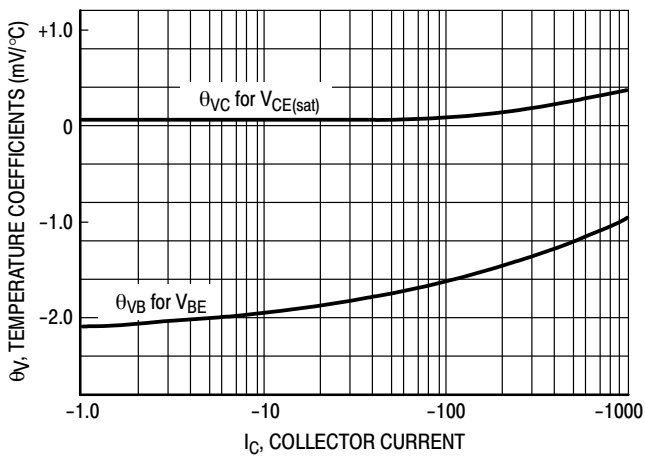


Figure 22. Temperature Coefficients

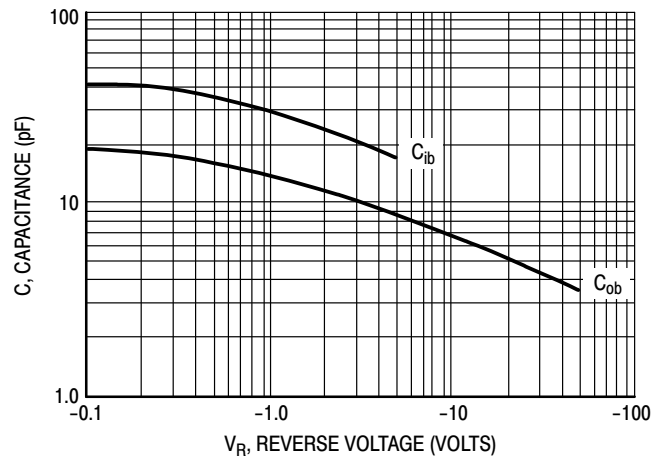
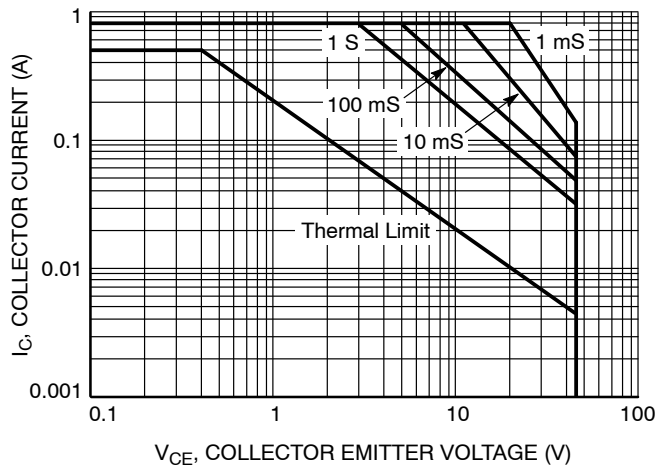


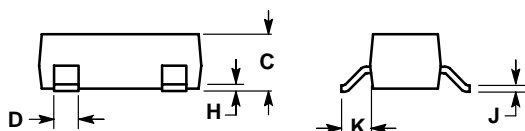
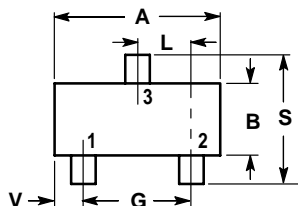
Figure 23. Capacitances



**LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G****TYPICAL CHARACTERISTICS – LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G****Figure 24. Safe Operating Area**

LBC807-16LT1G, LBC807-25LT1G, LBC807-40LT1G  
S-LBC807-16LT1G, S-LBC807-25LT1G, S-LBC807-40LT1G

SOT-23



NOTES:

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

