

General Purpose Transistors

NPN Silicon

BC817-16L, SBC817-16L, BC817-25L, SBC817-25L, BC817-40L, SBC817-40L

COLLECTOR 3 BASE 2 EMITTER



SOT-23 CASE 318 STYLE 6

Features

- S and NSV Prefixes 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	Ic	500	mAdc

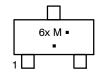
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (Note 1) T _A = 25°C Derate above 25°C	P _D	225 1.8	mW mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (Note 2) T _A = 25°C Derate above 25°C	P _D	300 2.4	mW mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T _J , T _{stg}	-65 to +150	°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. $FR-5 = 1.0 \times 0.75 \times 0.062$ in.
- 2. Alumina = $0.4 \times 0.3 \times 0.024$ in 99.5% alumina.

MARKING DIAGRAM



6x = Device Code x = A, 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.

BC817-16L, SBC817-16L, BC817-25L, SBC817-25L, BC817-40L, SBC817-40L

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS					
Collector – Emitter Breakdown Voltage (I _C = 10 mA)	V _{(BR)CEO}	45	_	-	V
Collector – Emitter Breakdown Voltage (V _{EB} = 0, I _C = 10 μA)	V _{(BR)CES}	50	-	-	V
Emitter – Base Breakdown Voltage (I _E = 1.0 μA)	V _{(BR)EBO}	5.0	-	-	V
Collector Cutoff Current $(V_{CB} = 20 \text{ V})$ $(V_{CB} = 20 \text{ V}, T_A = 150^{\circ}\text{C})$	Ісво	_ _	- -	100 5.0	nA μA
ON CHARACTERISTICS					
DC Current Gain	h _{FE}	100 160 250 40	- - -	250 400 600	_
	.,	40	_		.,
Collector – Emitter Saturation Voltage (I _C = 500 mA, I _B = 50 mA)	V _{CE(sat)}	_	_	0.7	V
Base – Emitter On Voltage (I _C = 500 mA, V _{CE} = 1.0 V)	V _{BE(on)}	_	_	1.2	V
SMALL-SIGNAL CHARACTERISTICS					
Current – Gain – Bandwidth Product (I _C = 10 mA, V _{CE} = 5.0 Vdc, f = 100 MHz)	f _T	100	-	-	MHz
Output Capacitance (V _{CB} = 10 V, f = 1.0 MHz)	C _{obo}	-	10	-	pF
SWITCHING CHARACTERISTICS					
Delay Time (V_{CC} = 3.0 Vdc, V_{BE} = 0.5 V, I_{C} = 10 mA)	t _d	-	85	-	ns
Rise Time (V_{CC} = 3.0 Vdc, V_{BE} = 0.5 V, I_{C} = 10 mA)	t _r	-	30	-	ns
Storage Time (V_{CC} = 3.0 Vdc, I_C = 10 mA, I_{B1} = 1 mA, I_{B2} = 1 mA)	t _s	-	1000	-	ns
Fall Time (V_{CC} = 3.0 Vdc, I_C = 10 mA, , I_{B1} = 1 mA, I_{B2} = 1 mA)	t _f	-	300	-	ns
Product parametric performance is indicated in the Electrical Characteristics	s for the listed test	conditions	unless of	herwise n	oted Produc

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 [†]	
BC817-16LT1G		SOT-23 (Pb-Free)	0000 / Tara % Dani	
NSVBC817-16LT1G			3000 / Tape & Reel	
BC817-16LT3G	6A		10,000 / Tape & Reel	
SBC817-16LT3G				
BC817-25LT1G				
SBC817-25LT1G	0.0	SOT-23	3000 / Tape & Reel	
BC817-25LT3G	6B	(Pb-Free)	40 000 / Tara 9 Dani	
SBC817-25LT3G			10,000 / Tape & Reel	
BC817-40LT1G		SOT-23	3000 / Tape & Reel	
SBC817-40LT1G	00			
BC817-40LT3G	6C	(Pb-Free)	10 000 / Tara % Dayl	
SBC817-40LT3G			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 - BC817-16L, SBC817-16L

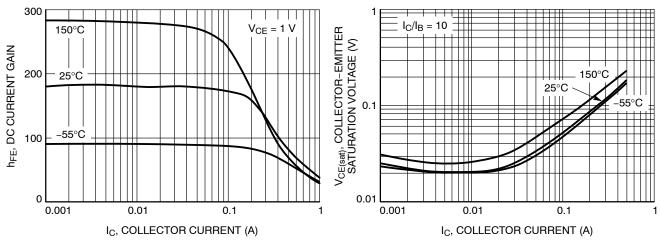


Figure 1. DC Current Gain vs. Collector Current

Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

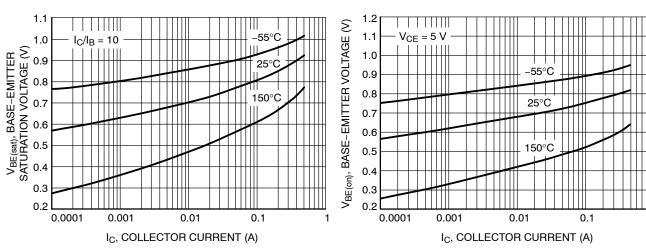


Figure 3. Base Emitter Saturation Voltage vs.
Collector Current

Figure 4. Base Emitter Voltage vs. Collector Current

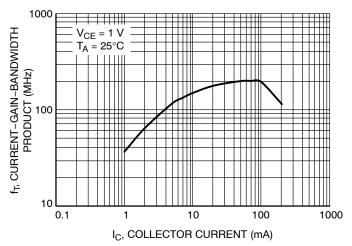
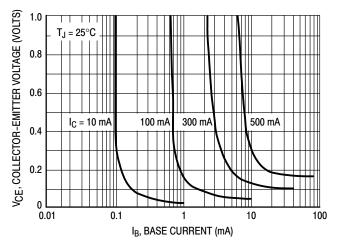


Figure 5. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS - BC817-16L, SBC817-16L



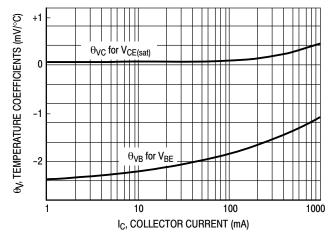


Figure 6. Saturation Region

Figure 7. Temperature Coefficients

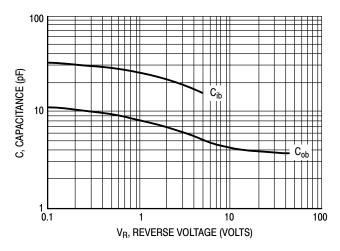


Figure 8. Capacitances

TYPICAL CHARACTERISTICS - BC817-25L, SBC817-25L

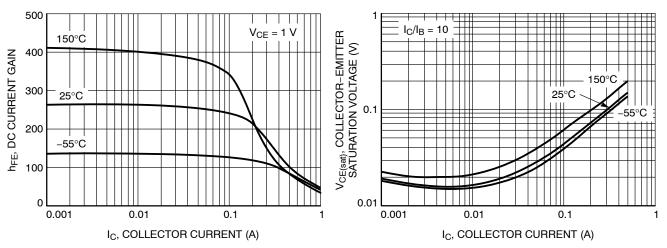


Figure 9. DC Current Gain vs. Collector Current

Figure 10. Collector Emitter Saturation Voltage vs. Collector Current

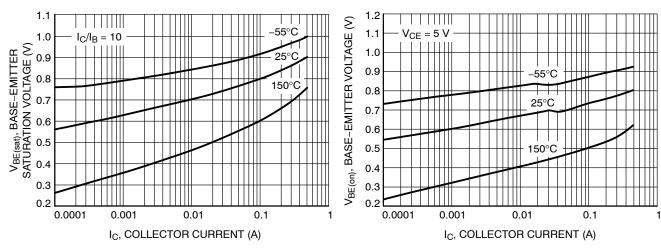


Figure 11. Base Emitter Saturation Voltage vs. Collector Current

Figure 12. Base Emitter Voltage vs. Collector Current

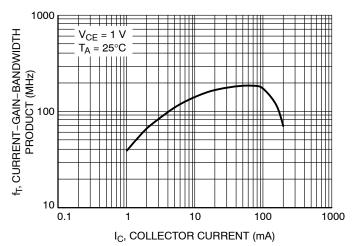
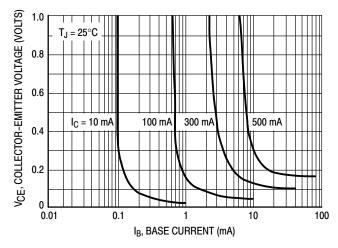


Figure 13. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS - BC817-25L, SBC81725L



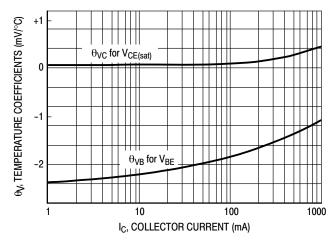


Figure 14. Saturation Region

Figure 15. Temperature Coefficients

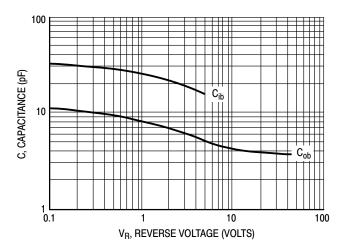


Figure 16. Capacitances

BC817-16L, SBC817-16L, BC817-25L, SBC817-25L, BC817-40L, SBC817-40L

TYPICAL CHARACTERISTICS - BC817-40L, SBC817-40L

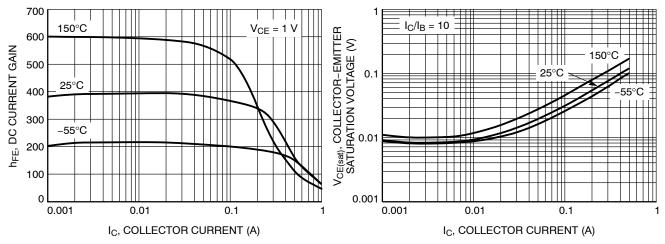


Figure 17. DC Current Gain vs. Collector Current

Figure 18. Collector Emitter Saturation Voltage vs. Collector Current

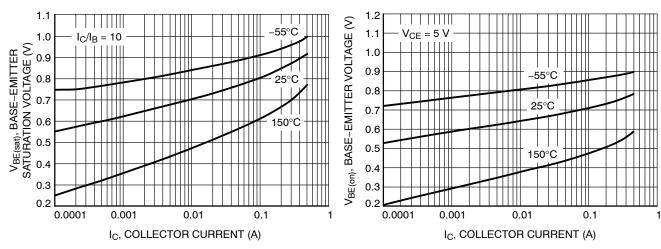


Figure 19. Base Emitter Saturation Voltage vs. Collector Current

Figure 20. Base Emitter Voltage vs. Collector Current

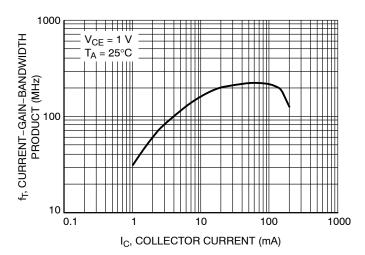
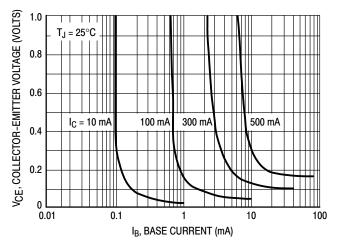


Figure 21. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS - BC817-40L, SBC817-40L



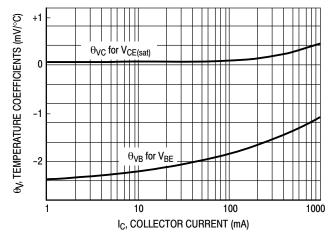


Figure 22. Saturation Region

Figure 23. Temperature Coefficients

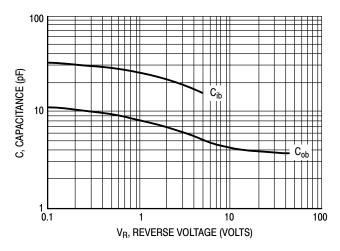


Figure 24. Capacitances

TYPICAL CHARACTERISTICS - BC817-16L, SBC817-16L, BC817-25L, SBC817-25L, BC817-40L, SBC817-40L

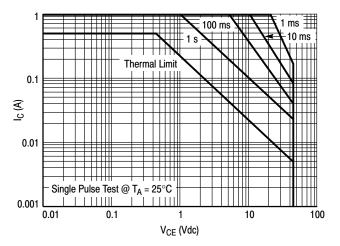


Figure 25. Safe Operating Area

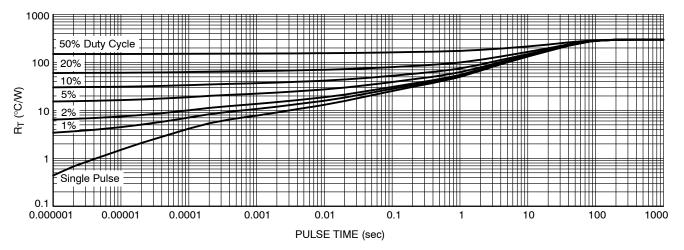


Figure 26. Thermal Response

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