BC817-16LT1, BC817-25LT1, BC817-40LT1

General Purpose Transistors

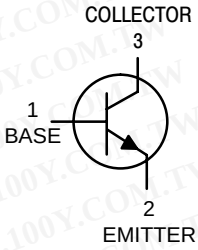
NPN Silicon

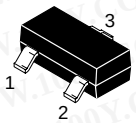
ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Packages are Available





SOT−23
CASE 318
STYLE 6

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

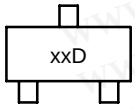
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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}	−55 to +150	°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.

MARKING DIAGRAM



xx = Specific Device Code
D = Date Code

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

Characteristic	Symbol	Min	Typ	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 V) (V_{CB} = 20 V, T_A = 150°C)	I_{CBO}	− −	− −	100 5.0	nA μA
ON CHARACTERISTICS					
DC Current Gain (I_C = 100 mA, V_{CE} = 1.0 V) BC817−16 BC817−25 BC817−40 (I_C = 500 mA, V_{CE} = 1.0 V)	h_{FE}	 100 160 250 40	 − − − −	 250 400 600 −	−
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

ORDERING INFORMATION

Device	Specific Marking Code	Package	Shipping†
BC817−16LT1	6A	SOT−23	3,000 / Tape & Reel
BC817−16LT1G	6A	SOT−23 (Pb−Free)	
BC817−16LT3	6A	SOT−23	10,000 / Tape & Reel
BC817−25LT1	6B	SOT−23	3,000 / Tape & Reel
BC817−25LT1G	6B	SOT−23 (Pb−Free)	
BC817−25LT3	6B	SOT−23	10,000 / Tape & Reel
BC817−25LT3G	6B	SOT−23 (Pb−Free)	
BC817−40LT1	6C	SOT−23	3,000 / Tape & Reel
BC817−40LT1G	6C	SOT−23 (Pb−Free)	
BC817−40LT3	6C	SOT−23	10,000 / Tape & Reel
BC817−40LT3G	6C	SOT−23 (Pb−Free)	
SBC817−40LT1	6C	SOT−23	3,000 / Tape & Reel
SBC817−40LT3	6C	SOT−23	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.

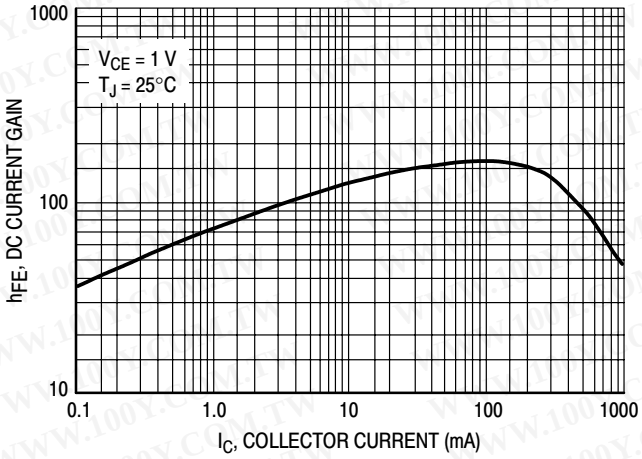


Figure 1. DC Current Gain

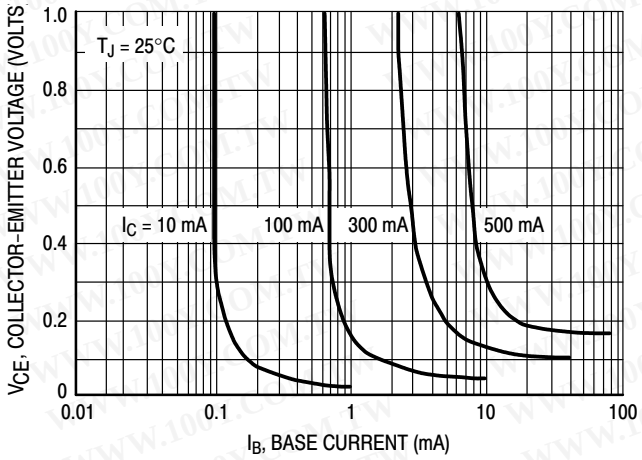


Figure 2. Saturation Region

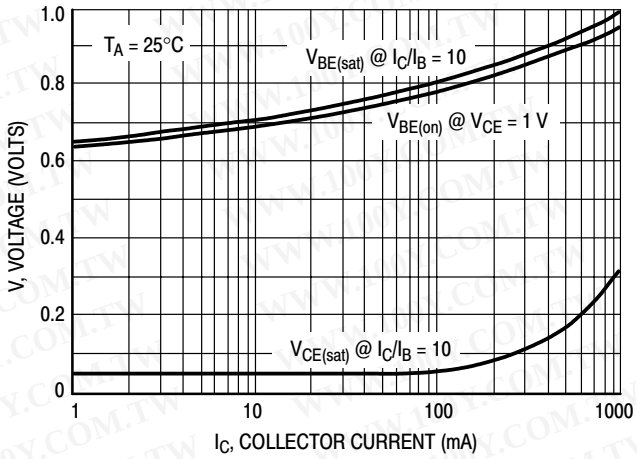


Figure 3. “On” Voltages

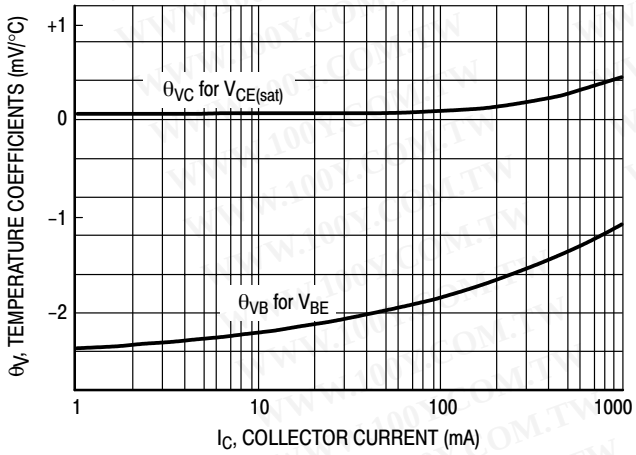


Figure 4. Temperature Coefficients

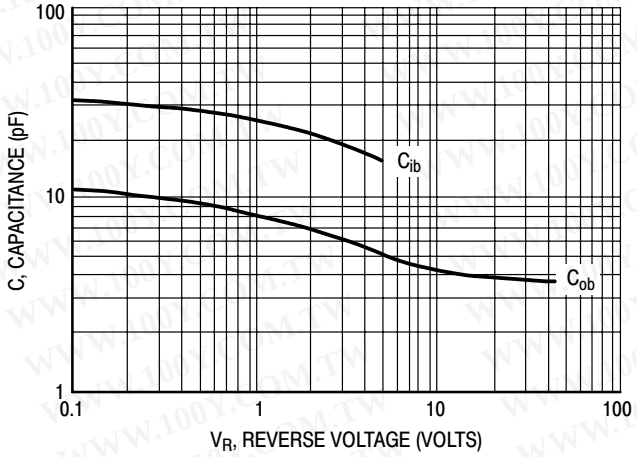
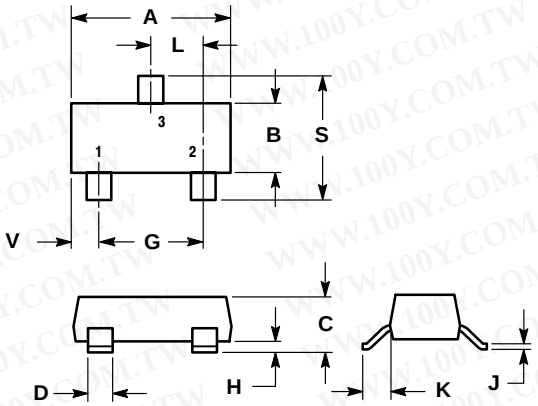


Figure 5. Capacitances

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−09
ISSUE AI

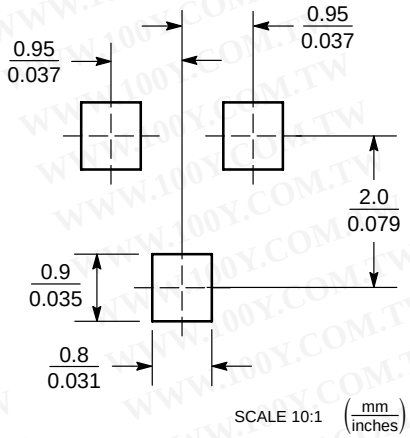


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−01, −02, AND −06 OBSOLETE, NEW STANDARD 318−09.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0385	0.0498	0.99	1.26
D	0.0140	0.0200	0.36	0.50
G	0.0670	0.0826	1.70	2.10
H	0.0040	0.0098	0.10	0.25
J	0.0034	0.0070	0.085	0.177
K	0.0180	0.0236	0.45	0.60
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.0984	2.10	2.50
V	0.0177	0.0236	0.45	0.60

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.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.