BC817-40W

45 V, 0.5 A, General Purpose NPN Transistor

ON Semiconductor's BC817−40W is a General Purpose NPN Transistor that is housed in the SC−70/SOT−323 package.

Features

- AEC-Q101 Qualified and Consult Factory for PPAP Capable
- This Device is Pb−Free, Halogen Free/BFR Free and is RoHS Compliant

MAXIMUM RATINGS (T_A = 25°C)

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

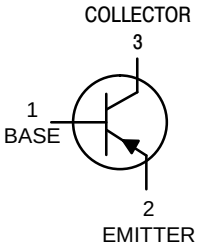
Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1)	P_D	460	mW
Thermal Resistance, Junction−to−Ambient (Note 1)	$R_{\theta JA}$	272	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

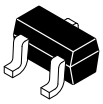
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR−4 Board, 1 oz. Cu, 100 mm^2

ON Semiconductor®

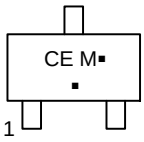
http://onsemi.com





SC−70
CASE 419
STYLE 3

MARKING DIAGRAM



CE = Specific Device Code
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†

Device	Package	Shipping
BC817−40WT1G	SC−70 (Pb−Free)	3000 / Tape & Reel

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

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)	$V_{(VR)CEO}$	45	−	−	V
Collector−Emitter Breakdown Voltage (V_{EB} = 0 V, I_C = 10 μA)	$V_{(VR)CES}$	50	−	−	V
Emitter−Base Breakdown Voltage (I_E = 1.0 μA)	$V_{(VR)EBO}$	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 (Note 2) (I_C = 100 mA, V_{CE} = 1.0 V) (I_C = 500 mA, V_{CE} = 1.0 V)	h_{FE}	 250 40	 − −	 600 −	−
Collector−Emitter Saturation Voltage (Note 2) (I_C = 500 mA, I_B = 50 mA)	$V_{CE(sat)}$	−	−	0.7	V
Base−Emitter On Voltage (Note 2) (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 V, f = 100 MHz)	f_T	100	−	−	MHz
Output Capacitance (V_{CB} = 10 V, f = 1.0 MHz)	C_{obo}	−	10	−	pF

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.

2. Pulse Condition: Pulse Width = 300 μsec, Duty Cycle ≤ 2%

TYPICAL CHARACTERISTICS

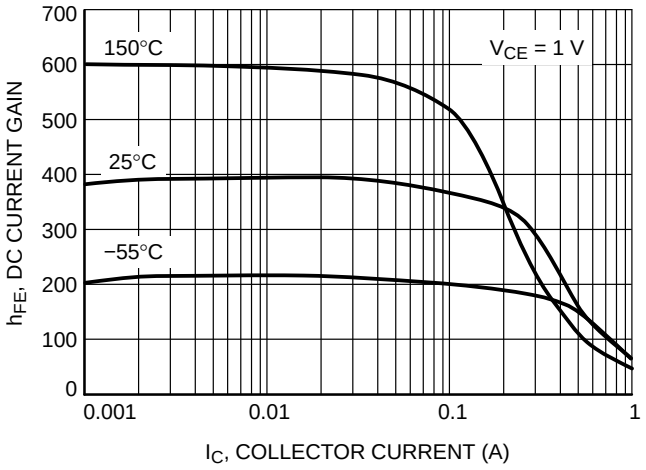


Figure 1. DC Current Gain vs. Collector Current

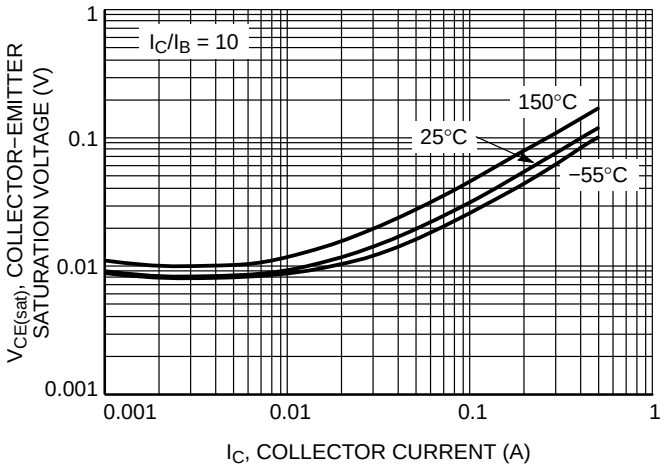


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

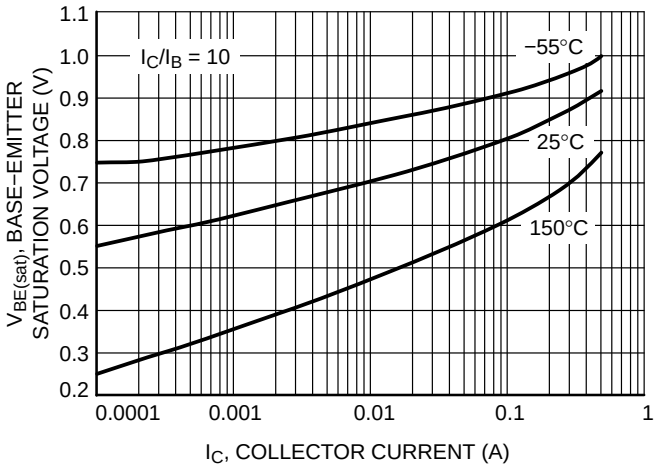


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

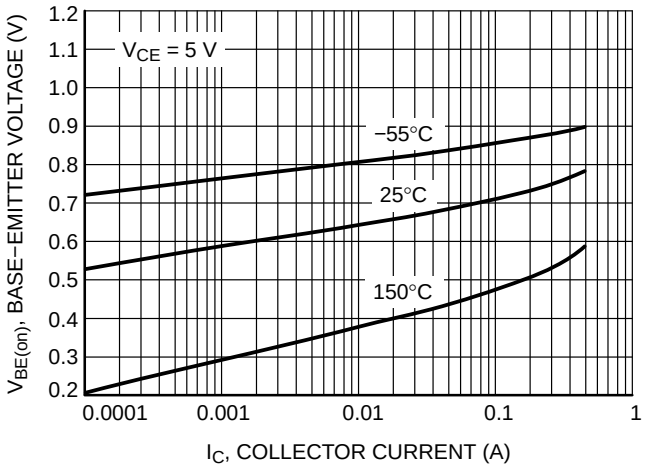


Figure 4. Base Emitter Voltage vs. Collector Current

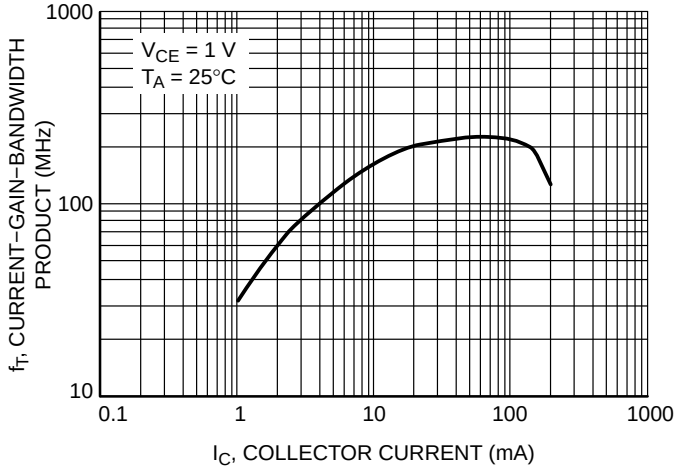


Figure 5. Current Gain Bandwidth Product vs. Collector Current

TYPICAL CHARACTERISTICS

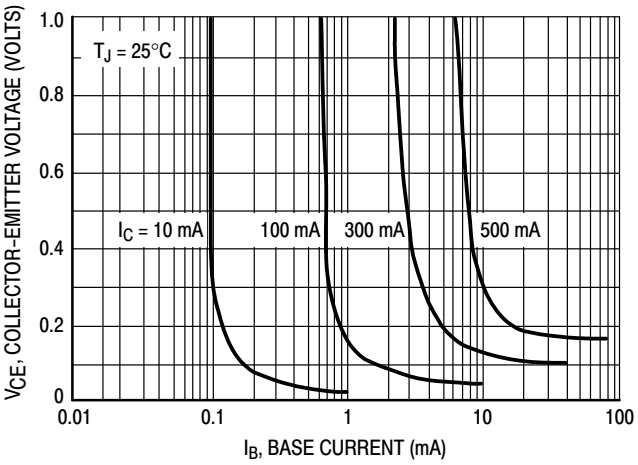


Figure 6. Saturation Region

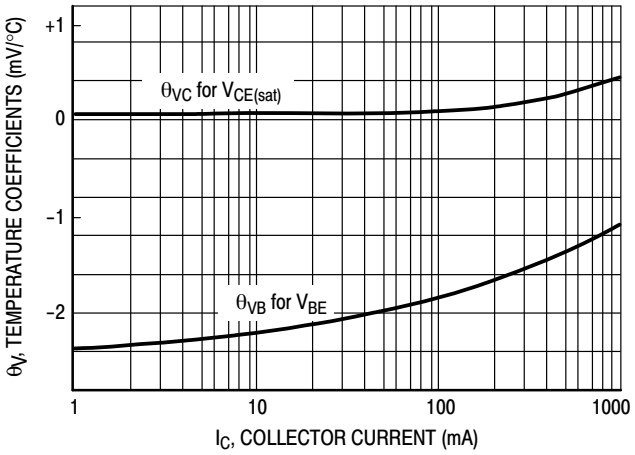


Figure 7. Temperature Coefficients

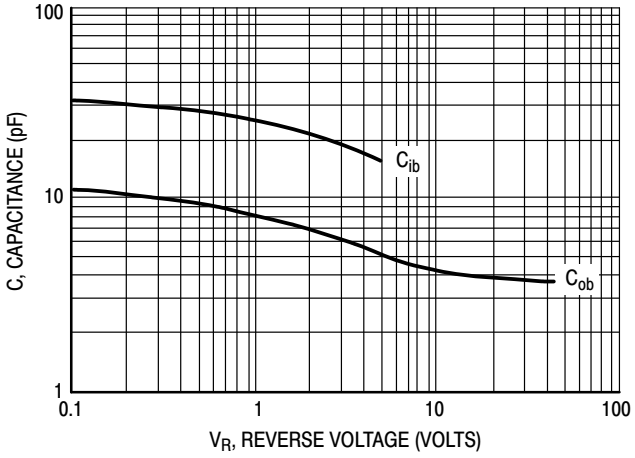


Figure 8. Capacitances

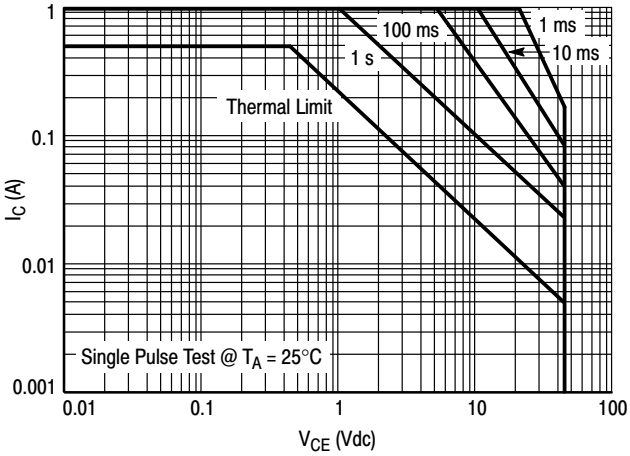
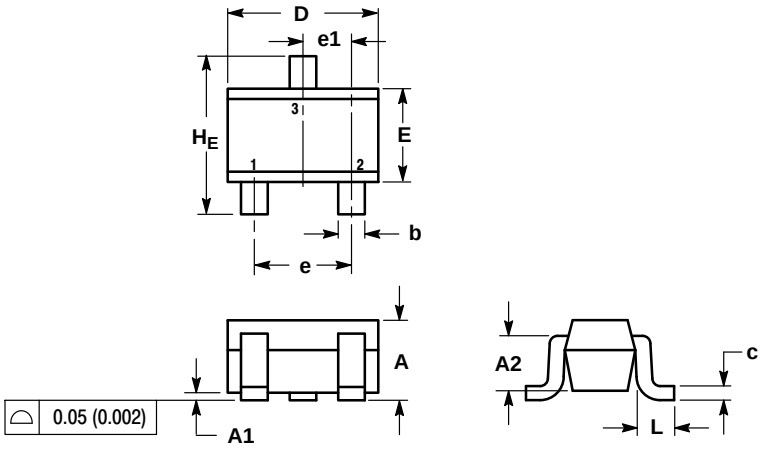


Figure 9. Safe Operating Area

PACKAGE DIMENSIONS

SC−70 (SOT−323)
CASE 419−04
ISSUE N

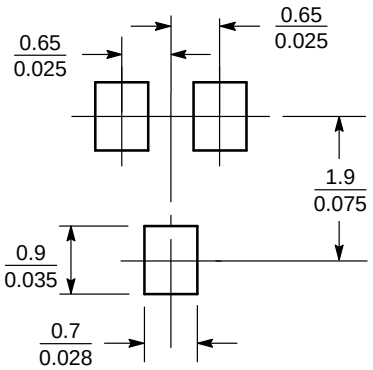


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	MILLIMETERS			INCHES		
DIM	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
H_E	2.00	2.10	2.40	0.079	0.083	0.095

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

SOLDERING FOOTPRINT*



SCALE 10:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*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 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
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