BC847BM3T5G

Preferred Device

General Purpose Transistor

NPN Silicon

These transistors are designed for general purpose amplifier applications. They are housed in the SOT−723 package which is designed for low power surface mount applications.

- This is a Pb−Free Device

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Max	Unit
Collector−Emitter Voltage	V_{CEO}	45	V
Collector−Base Voltage	V_{CBO}	50	V
Emitter−Base Voltage	V_{EBO}	6.0	V
Collector Current − Continuous	I_C	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation, FR−4 Board (Note 1) T_A = 25°C	P_D	260	mW
Derated above 25°C		2.0	mW/°C
Thermal Resistance, Junction−to−Ambient (Note 1)	$R_{\theta JA}$	480	°C/W
Total Device Dissipation, FR−4 Board (Note 2) T_A = 25°C	P_D	600	mW
Derated above 25°C		4.8	mW/°C
Thermal Resistance, Junction−to−Ambient (Note 2)	$R_{\theta JA}$	205	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

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.

1. FR−4 @ Minimum Pad
2. FR−4 @ 1.0 × 1.0 Inch Pad

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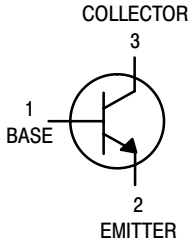

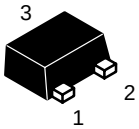

SOT−723
CASE 631AA
STYLE 1

MARKING DIAGRAM

1F = Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
BC847BM3T5G	SOT−723	8000/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.

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March, 2005 − Rev. 0

Publication Order Number:
BC847BM3/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)	$V_{(BR)CEO}$	45	–	–	V
Collector−Emitter Breakdown Voltage (I_C = 10 μA, V_{EB} = 0)	$V_{(BR)CES}$	50	–	–	V
Collector−Base Breakdown Voltage (I_C = 10 μA)	$V_{(BR)CBO}$	50	–	–	V
Emitter−Base Breakdown Voltage (I_E = 1.0 μA)	$V_{(BR)EBO}$	6.0	–	–	V
Collector Cutoff Current (V_{CB} = 30 V) (V_{CB} = 30 V, T_A = 150°C)	I_{CBO}	– –	– –	15 5.0	nA μA
ON CHARACTERISTICS					
DC Current Gain (I_C = 10 μA, V_{CE} = 5.0 V) (I_C = 2.0 mA, V_{CE} = 5.0 V)	h_{FE}	– 200	150 290	– 450	–
Collector−Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA) (I_C = 100 mA, I_B = 5.0 mA)	$V_{CE(sat)}$	– –	– –	0.25 0.6	V
Base−Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA) (I_C = 100 mA, I_B = 5.0 mA)	$V_{BE(sat)}$	– –	0.7 0.9	– –	V
Base−Emitter Voltage (I_C = 2.0 mA, V_{CE} = 5.0 V) (I_C = 10 mA, V_{CE} = 5.0 V)	$V_{BE(on)}$	580 –	660 –	700 770	mV
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}	–	–	4.5	pF
Noise Figure (I_C = 0.2 mA, V_{CE} = 5.0 Vdc, R_S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz)	NF	–	–	10	dB

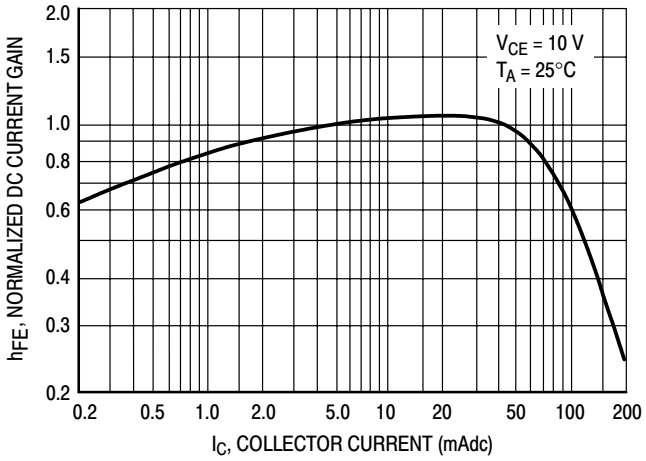


Figure 1. Normalized DC Current Gain

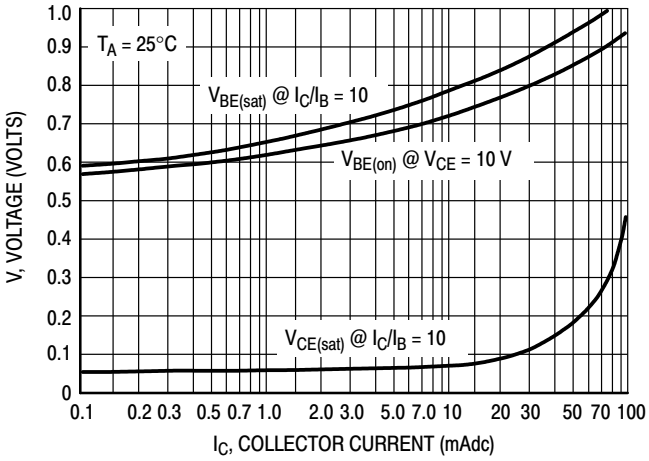


Figure 2. “Saturation” and “On” Voltages

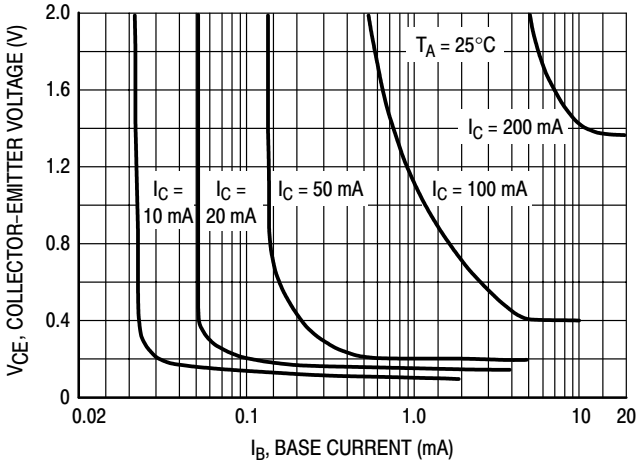


Figure 3. Collector Saturation Region

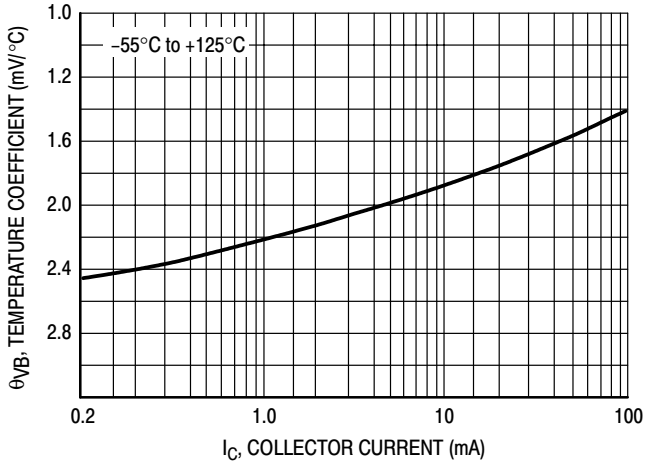


Figure 4. Base−Emitter Temperature Coefficient

BC847

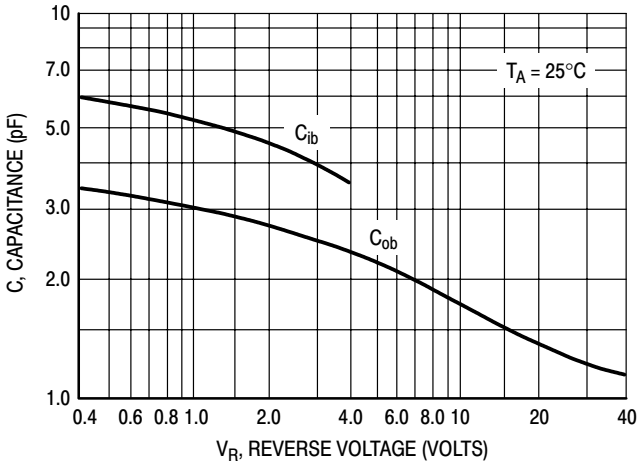


Figure 5. Capacitances

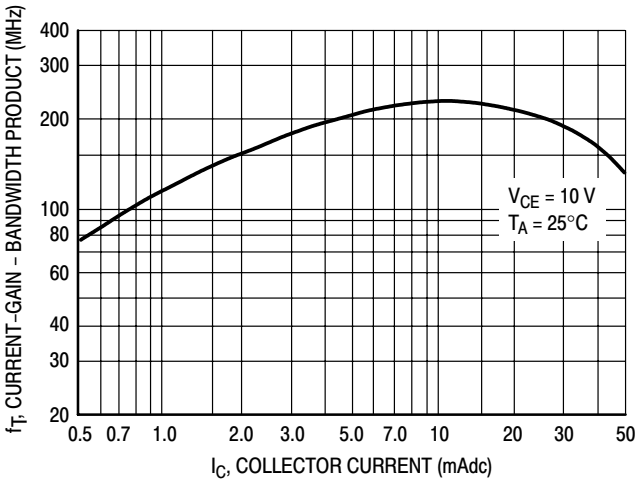
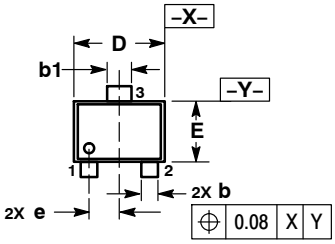


Figure 6. Current−Gain − Bandwidth Product

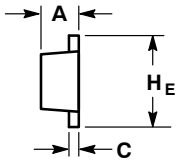
SOT−723
CASE 631AA−01
ISSUE D

DATE 10 AUG 2009

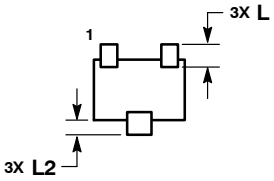
SCALE 4:1



TOP VIEW



SIDE VIEW



BOTTOM VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS		
DIM	**MIN**	**NOM**	**MAX**
A	0.45	0.50	0.55
b	0.15	0.21	0.27
b1	0.25	0.31	0.37
C	0.07	0.12	0.17
D	1.15	1.20	1.25
E	0.75	0.80	0.85
e	0.40 BSC		
H E	1.15	1.20	1.25
L	0.29 REF		
L2	0.15	0.20	0.25

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

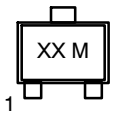
STYLE 2:
PIN 1. ANODE
2. N/C
3. CATHODE

STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 5:
PIN 1. GATE
2. SOURCE
3. DRAIN

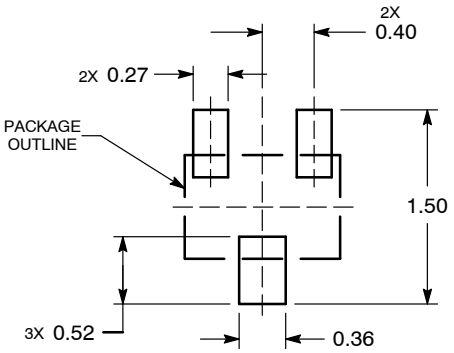
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G”, may or not be present.

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*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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DESCRIPTION:	**SOT−723**	**PAGE 1 OF 1**

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