BC847CDXV6T1G, SBC847CDXV6T1G, BC847CDXV6T5G, BC848CDXV6T1G

Dual General Purpose Transistors

NPN Duals

These transistors are designed for general purpose amplifier applications. They are housed in the SOT−563 which is designed for low power surface mount applications.

Features

- AEC−Q101 Qualified and PPAP Capable
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These are Pb−Free Devices

MAXIMUM RATINGS

Rating	Symbol	BC847	BC848	Unit
Collector − Emitter Voltage	V_{CEO}	45	30	V
Collector − Base Voltage	V_{CBO}	50	30	V
Emitter − Base Voltage	V_{EBO}	6.0	5.0	V
Collector Current − Continuous	I_C	100	100	mAdc

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL CHARACTERISTICS

Characteristic (One Junction Heated)	Symbol	Max	Unit
Total Device Dissipation, (Note 1) T_A = 25°C Derate above 25°C	P_D	 357 2.9	 mW mW/°C
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	350	°C/W
Characteristic (Both Junctions Heated)	**Symbol**	**Max**	**Unit**
Total Device Dissipation, (Note 1) T_A = 25°C Derate above 25°C	P_D	 500 4.0	 mW mW/°C
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	250	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

1. FR−4 @ Minimum Pad

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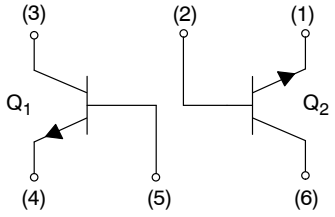
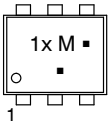


BC847CDXV6T1

SOT−563
CASE 463A

MARKING DIAGRAMS



1x = Device Code
x = G or M
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

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)	BC847CDXV6T1, SBC847CDXV6	$V_{(BR)CEO}$	45	–	–	V
	BC848CDXV6T1		30	–	–	
Collector – Emitter Breakdown Voltage (I_C = 10 μA, V_{EB} = 0)	BC847CDXV6T1, SBC847CDXV6	$V_{(BR)CES}$	50	–	–	V
	BC848CDXV6T1		30	–	–	
Collector – Base Breakdown Voltage (I_C = 10 μA)	BC847CDXV6T1, SBC847CDXV6	$V_{(BR)CBO}$	50	–	–	V
	BC848CDXV6T1		30	–	–	
Emitter – Base Breakdown Voltage (I_E = 1.0 μA)	BC847CDXV6T1, SBC847CDXV6	$V_{(BR)EBO}$	6.0	–	–	V
	BC848CDXV6T1		5.0	–	–	
Collector Cutoff Current (V_{CB} = 30 V)		I_{CBO}	–	–	15	nA
(V_{CB} = 30 V, T_A = 150°C)			–	–	5.0	μA
ON CHARACTERISTICS						
DC Current Gain (I_C = 10 μA, V_{CE} = 5.0 V)		h_{FE}	–	270	–	–
(I_C = 2.0 mA, V_{CE} = 5.0 V)			420	520	800	
Collector – Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA)		$V_{CE(sat)}$	–	–	0.25	V
(I_C = 100 mA, I_B = 5.0 mA)			–	–	0.6	
Base – Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.5 mA)		$V_{BE(sat)}$	–	0.7	–	V
(I_C = 100 mA, I_B = 5.0 mA)			–	0.9	–	
Base – Emitter Voltage (I_C = 2.0 mA, V_{CE} = 5.0 V)		$V_{BE(on)}$	580	660	700	mV
(I_C = 10 mA, V_{CE} = 5.0 V)			–	–	770	
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}	–	–	1.5	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

ORDERING INFORMATION

Device	Specific Marking	Package	Shipping†
BC847CDXV6T1G	1G	SOT–563 (Pb–Free)	4000 Units / Tape & Reel
SBC847CDXV6T1G			
BC847CDXV6T5G			8000 Units / Tape & Reel
BC848CDXV6T1G	1L	SOT–563 (Pb–Free)	4000 Units / 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

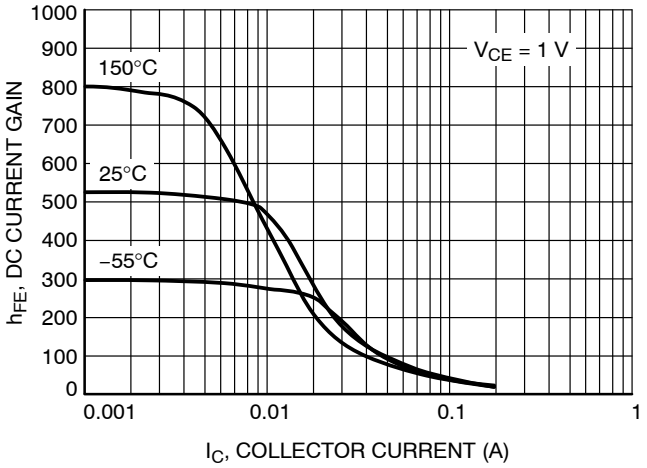


Figure 1. DC Current Gain vs. Collector Current

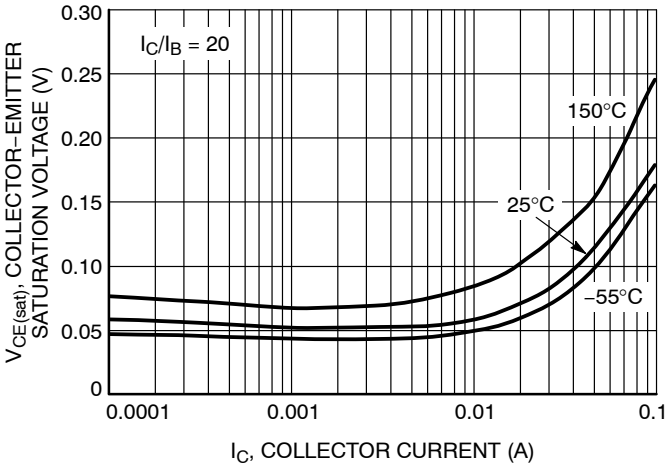


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

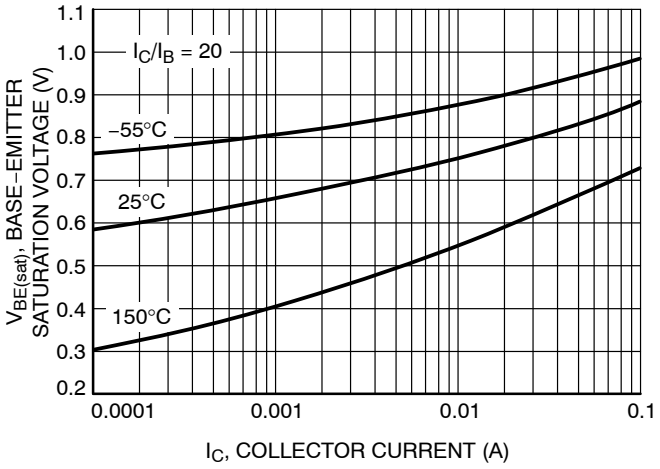


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

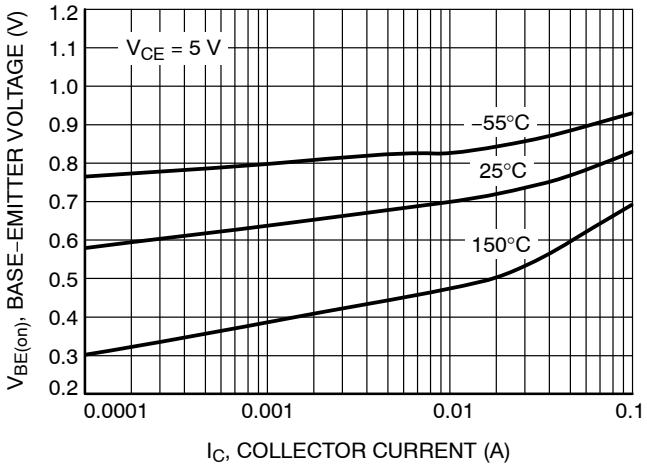


Figure 4. Base Emitter Voltage vs. Collector Current

TYPICAL CHARACTERISTICS

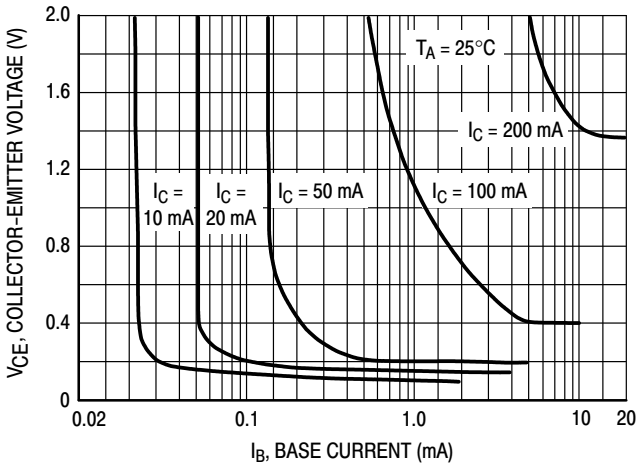


Figure 5. Collector Saturation Region

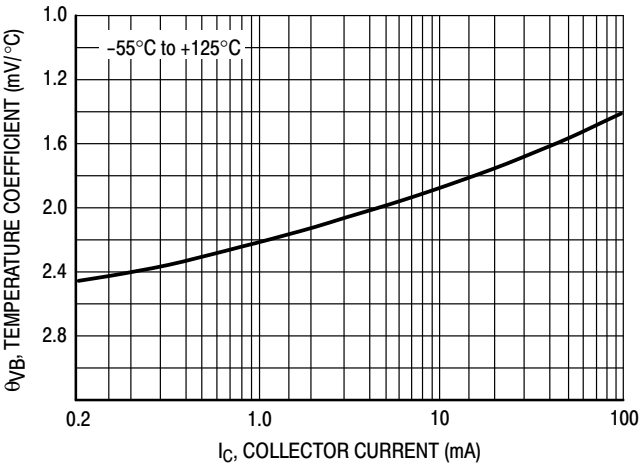


Figure 6. Base−Emitter Temperature Coefficient

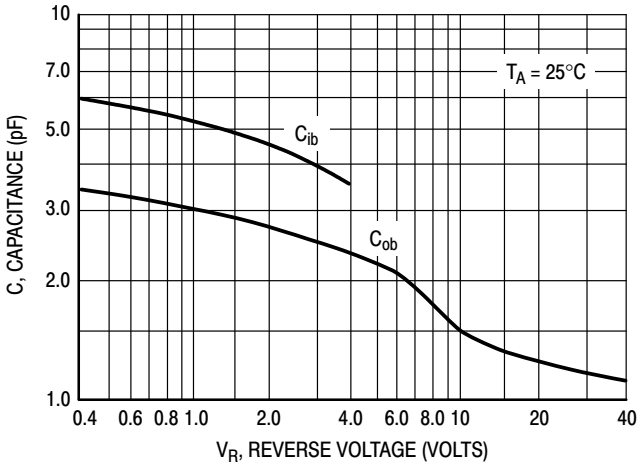


Figure 7. Capacitances

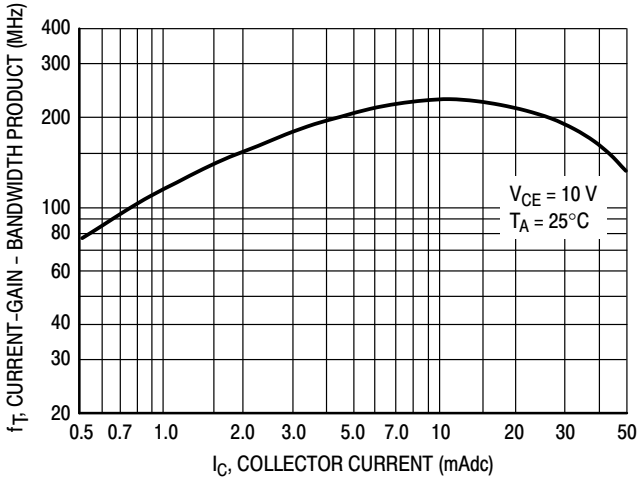


Figure 8. Current−Gain − Bandwidth Product

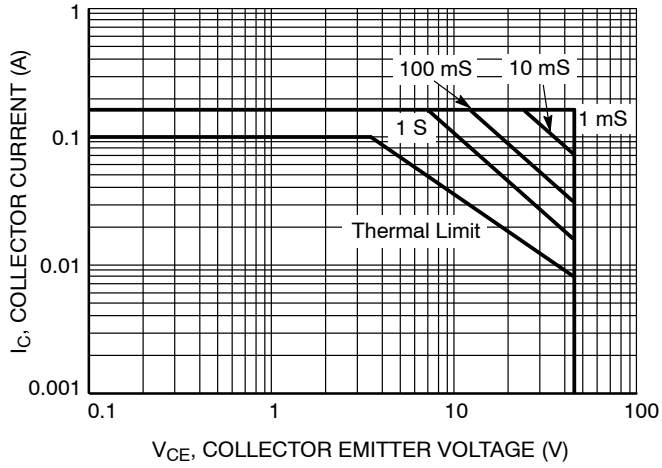
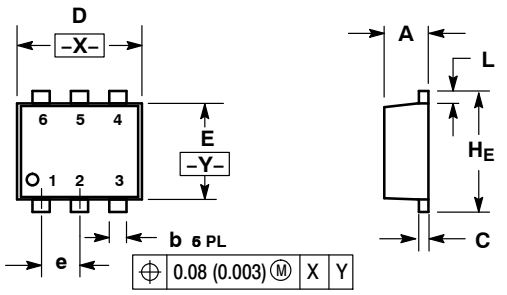


Figure 9. Safe Operating Area

PACKAGE DIMENSIONS

SOT−563, 6 LEAD
CASE 463A−01
ISSUE F

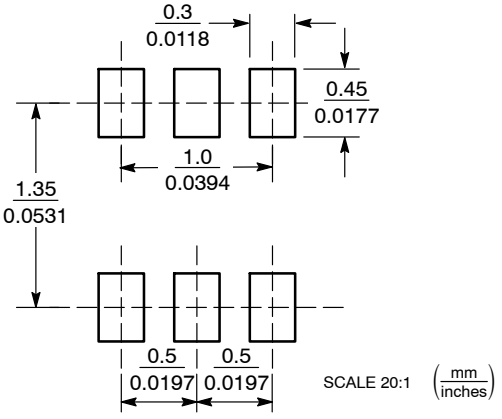


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.021	0.023
b	0.17	0.22	0.27	0.007	0.009	0.011
C	0.08	0.12	0.18	0.003	0.005	0.007
D	1.50	1.60	1.70	0.059	0.062	0.066
E	1.10	1.20	1.30	0.043	0.047	0.051
e	0.5 BSC			0.02 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H_E	1.50	1.60	1.70	0.059	0.062	0.066

STYLE 1:
PIN 1. EMITTER 1
2. BASE 1
3. COLLECTOR 2
4. EMITTER 2
5. BASE 2
6. COLLECTOR 1

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 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5817−1050

ON Semiconductor Website: **www.onsemi.com**

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For additional information, please contact your local Sales Representative

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