Dual General Purpose Transistors

NPN Duals

BC847CDXV6T1G, SBC847CDXV6T1G, BC847CDXV6T5G, BC848CDXV6T1G

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

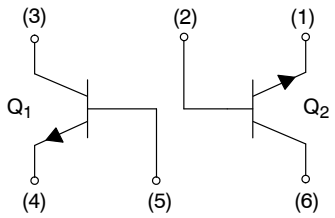
Rating	Symbol	BC847	BC848	Unit
Collector – Emitter Voltage	V_{CEO}	45	30	V
Collector – Base Voltage	V_{CBO}	50	30	V
Emitter – Base Voltage	V_{EBO}	6.0	5.0	V
Collector Current – Continuous	I_C	100	100	mAdc

Stresses exceeding 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.

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

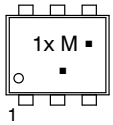
1. FR-4 @ Minimum Pad



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 on page 2 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 2.

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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 BC848CDXV6T1	$V_{(BR)CEO}$	45 30	– –	– –	V
Collector - Emitter Breakdown Voltage (I_C = 10 μA, V_{EB} = 0)	BC847CDXV6T1, SBC847CDXV6 BC848CDXV6T1	$V_{(BR)CES}$	50 30	– –	– –	V
Collector - Base Breakdown Voltage (I_C = 10 μA)	BC847CDXV6T1, SBC847CDXV6 BC848CDXV6T1	$V_{(BR)CBO}$	50 30	– –	– –	V
Emitter - Base Breakdown Voltage (I_E = 1.0 μA)	BC847CDXV6T1, SBC847CDXV6 BC848CDXV6T1	$V_{(BR)EBO}$	6.0 5.0	– –	– –	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}	– 420	270 520	– 800	–
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}	–	–	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

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†
BC847CDXV6T1G	1G	SOT-563 (Pb-Free)	4000 / Tape & Reel
SBC847CDXV6T1G			

DISCONTINUED (Note 2)

BC847CDXV6T5G	1G	SOT-563 (Pb-Free)	8000 / Tape & Reel
BC848CDXV6T1G	1L	SOT-563 (Pb-Free)	4000 / 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.

2. **DISCONTINUED:** These devices are not available. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

TYPICAL CHARACTERISTICS

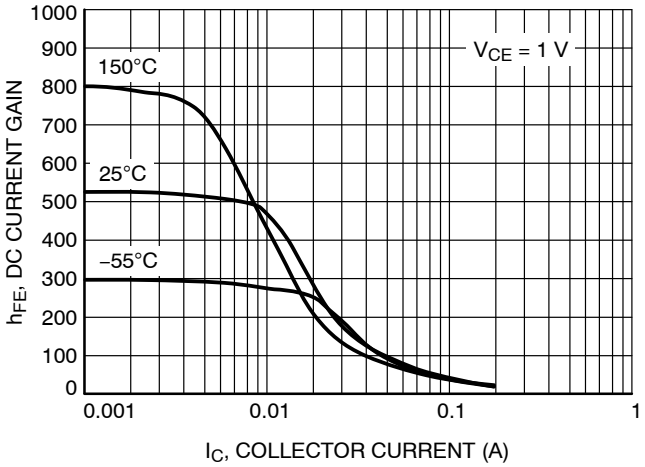


Figure 1. DC Current Gain vs. Collector Current

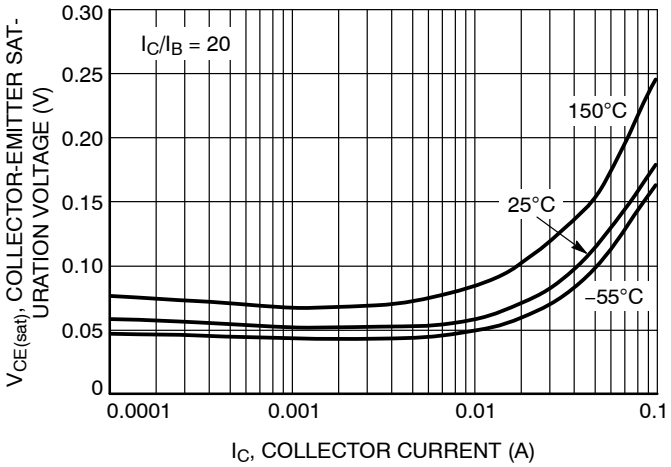


Figure 2. Collector Emitter Saturation Voltage vs. Collector Current

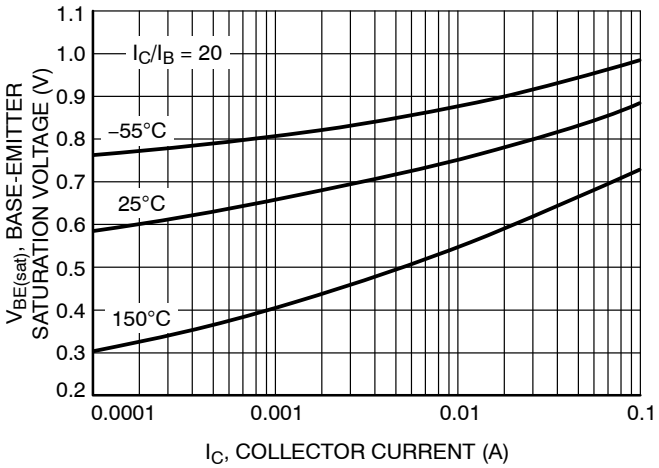


Figure 3. Base Emitter Saturation Voltage vs. Collector Current

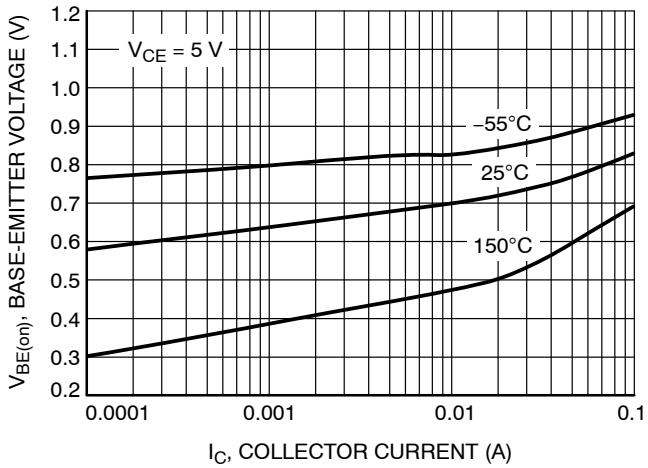


Figure 4. Base Emitter Voltage vs. Collector Current

TYPICAL CHARACTERISTICS

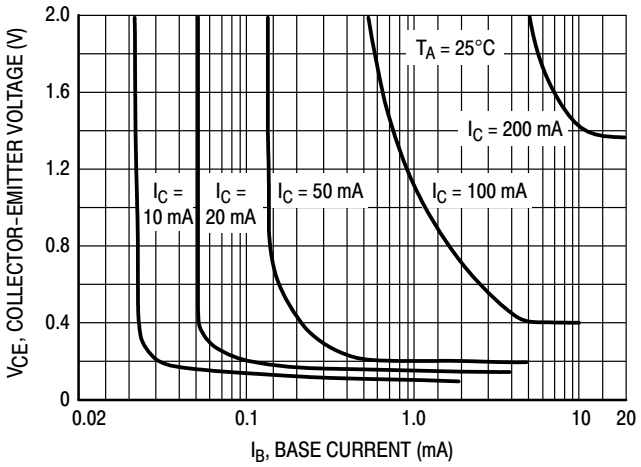


Figure 5. Collector Saturation Region

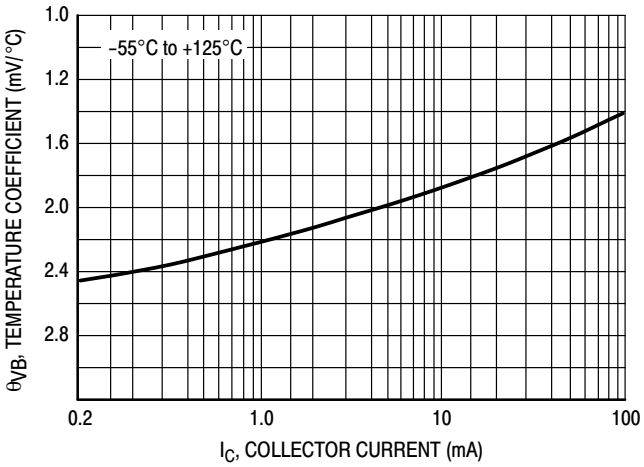


Figure 6. Base-Emitter Temperature Coefficient

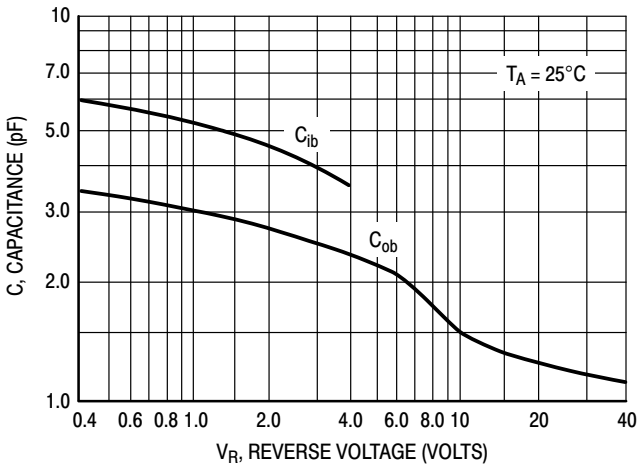


Figure 7. Capacitances

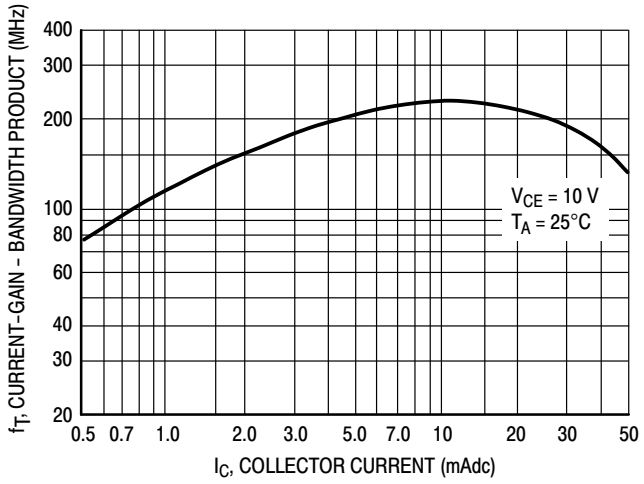


Figure 8. Current-Gain − Bandwidth Product

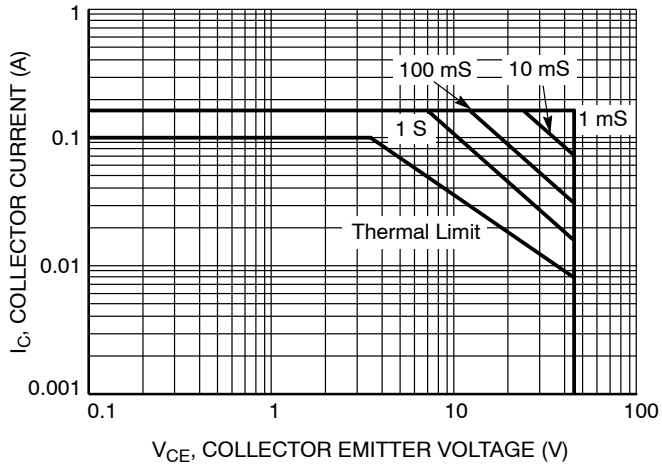
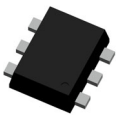


Figure 9. Safe Operating Area

REVISION HISTORY

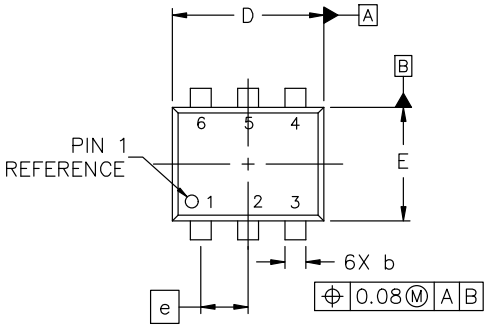
Revision	Description of Changes	Date
5	Rebranded the Data Sheet to **onsemi** format. BC847CDXV6T5G, BC848CDXV6T1G OPNs Marked as Discontinued.	05/23/2025



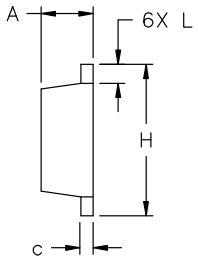
SOT−563−6 1.60x1.20x0.55, 0.50P
CASE 463A
ISSUE J

DATE 15 FEB 2024

NOTES:
1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5−2018.
2. ALL DIMENSION ARE IN MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

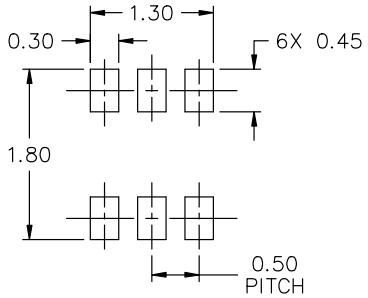


TOP VIEW



SIDE VIEW

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.50	0.55	0.60
b	0.17	0.22	0.27
c	0.08	0.13	0.18
D	1.50	1.60	1.70
E	1.10	1.20	1.30
e	0.50 BSC		
H	1.50	1.60	1.70
L	0.10	0.20	0.30



RECOMMENDED MOUNTING 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.

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

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

STYLE 3:
PIN 1. CATHODE 1
2. CATHODE 1
3. ANODE/ANODE 2
4. CATHODE 2
5. CATHODE 2
6. ANODE/ANODE 1

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

STYLE 5:
PIN 1. CATHODE
2. CATHODE
3. ANODE
4. ANODE
5. CATHODE
6. CATHODE

STYLE 6:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. CATHODE
6. CATHODE

STYLE 7:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. ANODE
6. CATHODE

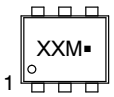
STYLE 8:
PIN 1. DRAIN
2. DRAIN
3. GATE
4. SOURCE
5. DRAIN
6. DRAIN

STYLE 9:
PIN 1. SOURCE 1
2. GATE 1
3. DRAIN 2
4. SOURCE 2
5. GATE 2
6. DRAIN 1

STYLE 10:
PIN 1. CATHODE 1
2. N/C
3. CATHODE 2
4. ANODE 2
5. N/C
6. ANODE 1

STYLE 11:
PIN 1. EMITTER 2
2. BASE 2
3. COLLECTOR 1
4. EMITTER 1
5. BASE 1
6. COLLECTOR 2

GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Month Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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