

# BC858CDXV6T1, BC858CDXV6T5

## Dual General Purpose Transistor

### PNP Dual

This transistor is designed for general purpose amplifier applications. It is housed in the SOT-563 which is designed for low power surface mount applications.

#### Features

- These are Pb-Free Devices

#### MAXIMUM RATINGS

| Rating                         | Symbol    | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector – Emitter Voltage    | $V_{CEO}$ | –30   | V    |
| Collector – Base Voltage       | $V_{CBO}$ | –30   | V    |
| Emitter – Base Voltage         | $V_{EBO}$ | –5.0  | V    |
| Collector Current – Continuous | $I_C$     | –100  | 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

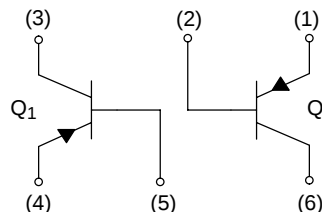
| Characteristic<br>(One Junction Heated)                                                           | Symbol          | Max         | Unit                       |
|---------------------------------------------------------------------------------------------------|-----------------|-------------|----------------------------|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

1. FR-4 @ Minimum Pad



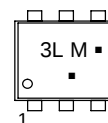
ON Semiconductor®

<http://onsemi.com>



SOT-563  
CASE 463A  
PLASTIC

#### MARKING DIAGRAMS



3L = Device Code  
M = Date Code  
■ = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

| Device        | Package              | Shipping <sup>†</sup> |
|---------------|----------------------|-----------------------|
| BC858CDXV6T1  | SOT-563              | 4000/Tape & Reel      |
| BC858CDXV6T1G | SOT-563<br>(Pb-Free) | 4000/Tape & Reel      |
| BC858CDXV6T5  | SOT-563              | 8000/Tape & Reel      |
| BC858CDXV6T5G | SOT-563<br>(Pb-Free) | 8000/Tape & Reel      |

<sup>†</sup>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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## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

| Characteristic                                                                                                                                        | Symbol               | Min       | Typ          | Max            | Unit     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|--------------|----------------|----------|
| <b>OFF CHARACTERISTICS</b>                                                                                                                            |                      |           |              |                |          |
| Collector – Emitter Breakdown Voltage<br>(I <sub>C</sub> = -10 mA)                                                                                    | V <sub>(BR)CEO</sub> | -30       | –            | –              | V        |
| Collector – Emitter Breakdown Voltage<br>(I <sub>C</sub> = -10 µA, V <sub>EB</sub> = 0)                                                               | V <sub>(BR)CES</sub> | -30       | –            | –              | V        |
| Collector – Base Breakdown Voltage<br>(I <sub>C</sub> = -10 µA)                                                                                       | V <sub>(BR)CBO</sub> | -30       | –            | –              | V        |
| Emitter – Base Breakdown Voltage<br>(I <sub>E</sub> = -1.0 µA)                                                                                        | V <sub>(BR)EBO</sub> | -5.0      | –            | –              | V        |
| Collector Cutoff Current (V <sub>CB</sub> = -30 V)<br>(V <sub>CB</sub> = -30 V, T <sub>A</sub> = 150°C)                                               | I <sub>CBO</sub>     | –         | –            | -15<br>-4.0    | nA<br>µA |
| <b>ON CHARACTERISTICS</b>                                                                                                                             |                      |           |              |                |          |
| DC Current Gain<br>(I <sub>C</sub> = -10 µA, V <sub>CE</sub> = -5.0 V)<br>(I <sub>C</sub> = -2.0 mA, V <sub>CE</sub> = -5.0 V)                        | h <sub>FE</sub>      | –<br>420  | 270<br>520   | –<br>800       | –        |
| Collector – Emitter Saturation Voltage<br>(I <sub>C</sub> = -10 mA, I <sub>B</sub> = -0.5 mA)<br>(I <sub>C</sub> = -100 mA, I <sub>B</sub> = -5.0 mA) | V <sub>CE(sat)</sub> | –<br>–    | –<br>–       | -0.3<br>-0.65  | V        |
| Base – Emitter Saturation Voltage<br>(I <sub>C</sub> = -10 mA, I <sub>B</sub> = -0.5 mA)<br>(I <sub>C</sub> = -100 mA, I <sub>B</sub> = -5.0 mA)      | V <sub>BE(sat)</sub> | –<br>–    | -0.7<br>-0.9 | –<br>–         | V        |
| Base – Emitter On Voltage<br>(I <sub>C</sub> = -2.0 mA, V <sub>CE</sub> = -5.0 V)<br>(I <sub>C</sub> = -10 mA, V <sub>CE</sub> = -5.0 V)              | V <sub>BE(on)</sub>  | -0.6<br>– | –<br>–       | -0.75<br>-0.82 | V        |
| <b>SMALL – SIGNAL CHARACTERISTICS</b>                                                                                                                 |                      |           |              |                |          |
| Current – Gain – Bandwidth Product<br>(I <sub>C</sub> = -10 mA, V <sub>CE</sub> = -5.0 Vdc, f = 100 MHz)                                              | f <sub>T</sub>       | 100       | –            | –              | MHz      |
| Output Capacitance<br>(V <sub>CB</sub> = -10 V, f = 1.0 MHz)                                                                                          | C <sub>ob</sub>      | –         | –            | 4.5            | pF       |
| Noise Figure<br>(I <sub>C</sub> = -0.2 mA, V <sub>CE</sub> = -5.0 Vdc, R <sub>S</sub> = 2.0 kΩ,<br>f = 1.0 kHz, BW = 200 Hz)                          | NF                   | –         | –            | 10             | dB       |

TYPICAL CHARACTERISTICS

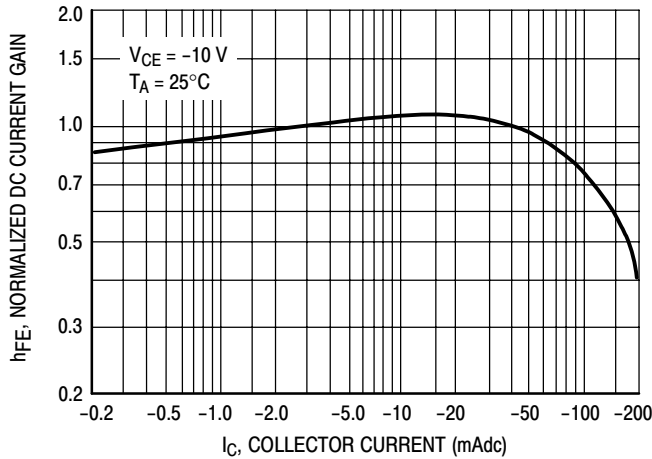


Figure 1. Normalized DC Current Gain

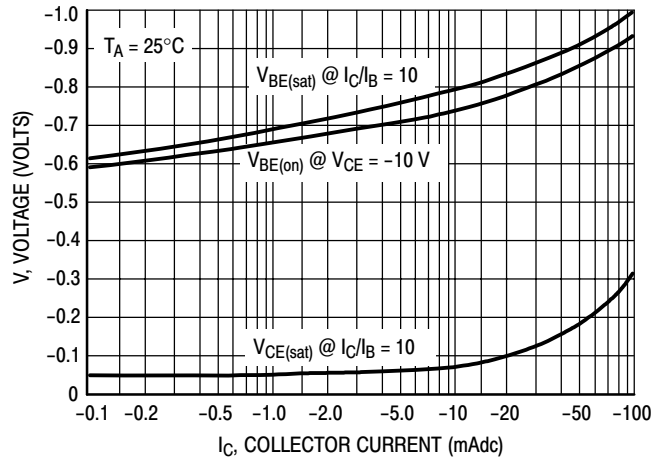


Figure 2. "Saturation" and "On" Voltages

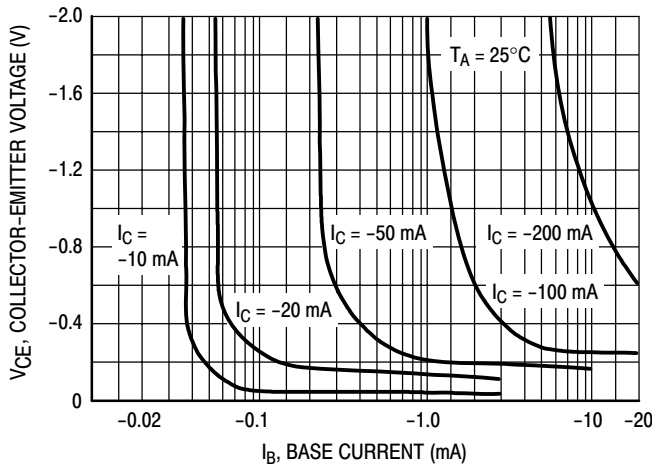


Figure 3. Collector Saturation Region

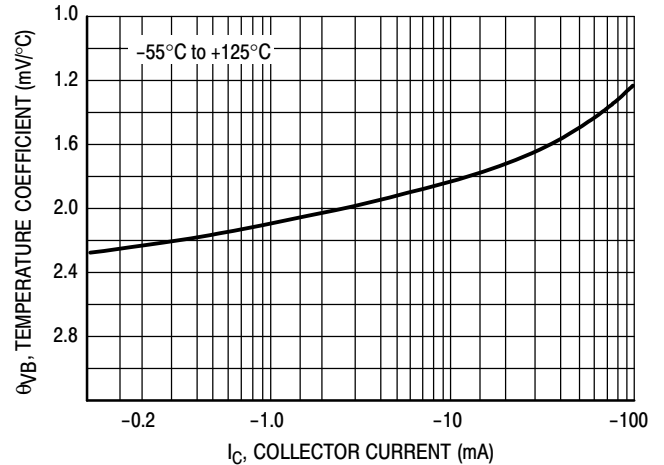


Figure 4. Base-Emitter Temperature Coefficient

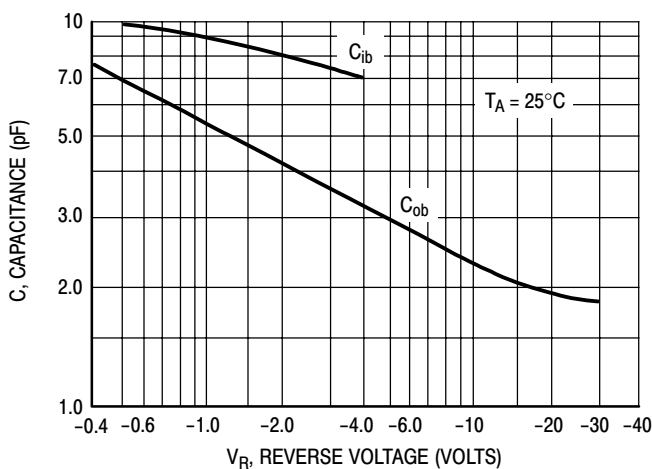


Figure 5. Capacitances

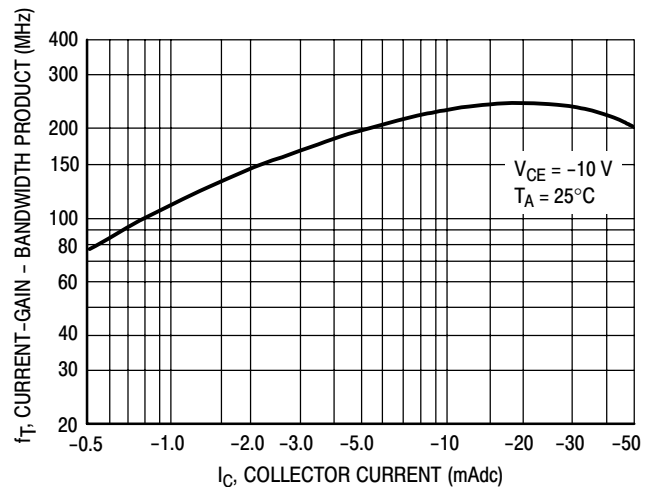
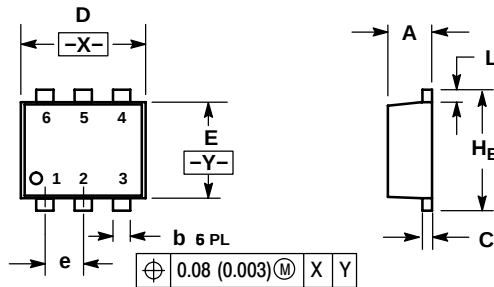


Figure 6. Current-Gain - Bandwidth Product

# BC858CDXV6T1, BC858CDXV6T5

## PACKAGE DIMENSIONS

SOT-563, 6 LEAD  
CASE 463A-01  
ISSUE F



### NOTES:

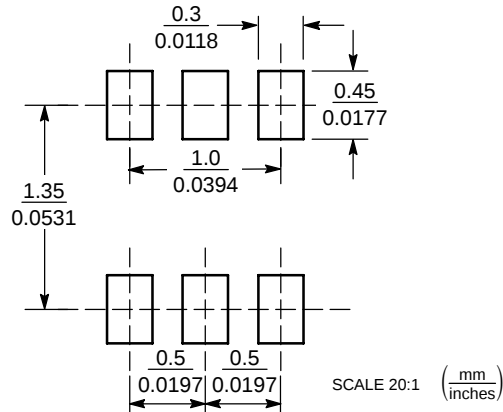
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| DIM | MILLIMETERS |      |      | INCHES   |       |       |
|-----|-------------|------|------|----------|-------|-------|
|     | 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.

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BC858CDXV6T1/D

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