



BC857BV

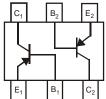
PNP DUAL SMALL SIGNAL SURFACE MOUNT TRANSISTOR

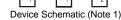
Features

- Epitaxial Die Construction
- Complementary PNP Type Available (BC847BV)
- Ultra-Small Surface Mount Package
- Lead Free By Design/RoHS Compliant (Note 3)
- "Green" Device (Notes 5 and 6)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic, "Green" Molding Compound, Note 6. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Finish Matte Tin annealed over Alloy 42 leadframe.
 Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.003 grams (approximate)









op View

Bottom Vie

Maximum Ratings @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---------------------------|-----------|-------|------|
| Collector-Base Voltage | V_{CBO} | -50 | V |
| Collector-Emitter Voltage | V_{CEO} | -45 | V |
| Emitter-Base Voltage | V_{EBO} | -5.0 | V |
| Collector Current | Ic | -100 | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 2) | P_{D} | 150 | mW |
| Thermal Resistance, Junction to Ambient (Note 2) | $R_{	hetaJA}$ | 833 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Тур | Max | Unit | Test Condition |
|---|----------------------|-----------|--------------|--------------|----------|--|
| Collector-Base Breakdown Voltage (Note 4) | V _{(BR)CBO} | -50 | | _ | V | $I_C = 10\mu A, I_B = 0$ |
| Collector-Emitter Breakdown Voltage (Note 4) | V _{(BR)CEO} | -45 | | | V | $I_C = 10 \text{mA}, I_B = 0$ |
| Emitter-Base Breakdown Voltage (Note 4) | $V_{(BR)EBO}$ | -5 | | | V | $I_E = 1\mu A, I_C = 0$ |
| DC Current Gain (Note 4) | h _{FE} | 220 | 290 | 475 | l | $V_{CE} = -5.0V, I_{C} = -2.0mA$ |
| Collector-Emitter Saturation Voltage (Note 4) | V _{CE(SAT)} | | 1 1 | -100 -400 | mV | $I_C = -10$ mA, $I_B = -0.5$ mA $I_C = -100$ mA, $I_B = -5.0$ mA |
| Base-Emitter Saturation Voltage (Note 4) | V _{BE(SAT)} | | -700 -900 | | mV | $I_C = -10$ mA, $I_B = -0.5$ mA $I_C = -100$ mA, $I_B = -5.0$ mA |
| Base-Emitter Voltage (Note 4) | V _{BE(ON)} | -600 — | 1 1 | -750 -820 | mV | $V_{CE} = -5.0V$, $I_{C} = -2.0$ mA $V_{CE} = -5.0V$, $I_{C} = -10$ mA |
| Collector-Cutoff Current (Note 4) | I _{CBO} | | 1 1 | -15 -4.0 | nΑ μΑ | V _{CB} = -30V V _{CB} = -30V, T _A = 150°C |
| Gain Bandwidth Product | f _T | 100 | _ | _ | MHz | $V_{CE} = -5.0V$, $I_{C} = -10mA$, $f = 100MHz$ |
| Output Capacitance | C _{OB} | _ | | 4.5 | pF | V _{CB} = -10V, f = 1.0MHz |
| Noise Figure | NF | _ | | 10 | dB | I_{C} = -0.2mA, V_{CE} = -5.0Vdc, R_{S} = 2.0K Ω , f = 1.0KHz, BW = 200Hz |

Notes:

- 1. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).
- 2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
- 3. No purposefully added lead.
- 4. Short duration pulse test used to minimize self-heating effect.
- 5. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
- 6. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.



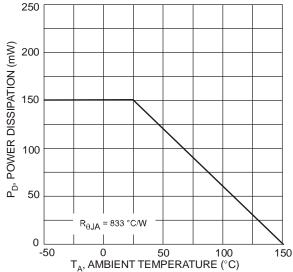
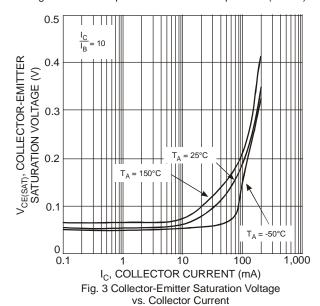


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 2)



1,000

T_A = 150°C

V_{CE} = 5V

V_{CE} = 5V

T_A = -50°C

T_A = -50°C

10

1

1

10

100

1,000

I_C, COLLECTOR CURRENT (mA)

Fig. 2 Typical DC Current Gain vs. Collector Current

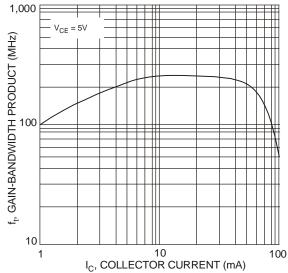


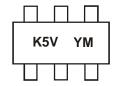
Fig. 4 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 7)

| Part Number | Case | Packaging |
|-------------|---------|------------------|
| BC857BV-7 | SOT-563 | 3000/Tape & Reel |

Notes: 7. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



K5V = Product Type Marking Code YM = Date Code Marking Y = Year (ex: T = 2006)

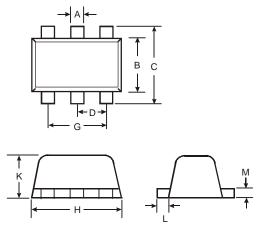
M = Month (ex: 9 = September)

Date Code Key

| Year | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 201 | 0 201 | 1 2012 | 2013 | 2014 | 2015 |
|-------|------|------|------|------|------|------|------|-----|-------|--------|------|------|------|
| Code | Р | R | S | Т | U | V | W | Х | Υ | Z | Α | В | С |
| Month | Jan | Feb | Mar | Apr | Ma | ıy J | un | Jul | Aug | Sep | Oct | Nov | Dec |
| Code | 1 | 2 | 3 | 4 | 5 | | 6 | 7 | 8 | 9 | 0 | Ν | D |

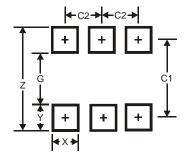


Package Outline Dimensions



| SOT-563 | | | | | | |
|---------|----------------------|------|------|--|--|--|
| Dim | Min | Max | Тур | | | |
| Α | 0.15 | 0.30 | 0.20 | | | |
| В | 1.10 | 1.25 | 1.20 | | | |
| С | 1.55 | 1.70 | 1.60 | | | |
| D | - | - | 0.50 | | | |
| G | 0.90 | 1.10 | 1.00 | | | |
| Н | 1.50 | 1.70 | 1.60 | | | |
| K | 0.55 | 0.60 | 0.60 | | | |
| L | 0.10 | 0.30 | 0.20 | | | |
| M | 0.10 | 0.18 | 0.11 | | | |
| All | All Dimensions in mm | | | | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.2 |
| G | 1.2 |
| Х | 0.375 |
| Υ | 0.5 |
| C1 | 1.7 |
| C2 | 0.5 |



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