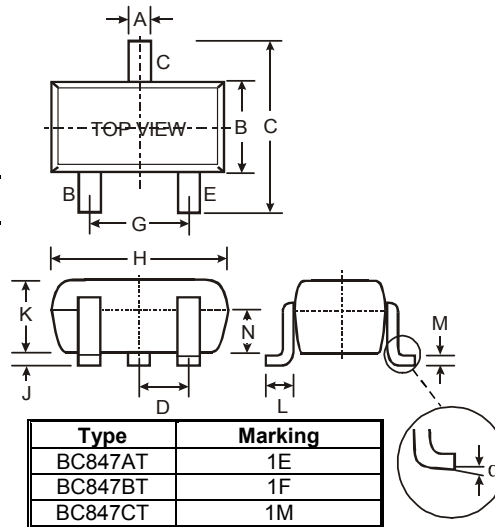


Features

- Epitaxial Die Construction
- Complementary PNP Types Available (BC857AT,BT,CT)
- Ultra-Small Surface Mount Package
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 4 and 5)**

Mechanical Data

- Case: SOT-523
- Case Material - Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking Code: See Table
- Ordering Information: See Page 2
- Marking Information: See Page 2
- Weight: 0.002 grams (approximate)



| SOT-523 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.15 | 0.30 | 0.22 |
| B | 0.75 | 0.85 | 0.80 |
| C | 1.45 | 1.75 | 1.60 |
| D | — | — | 0.50 |
| G | 0.90 | 1.10 | 1.00 |
| H | 1.50 | 1.70 | 1.60 |
| J | 0.00 | 0.10 | 0.05 |
| K | 0.60 | 0.80 | 0.75 |
| L | 0.10 | 0.30 | 0.22 |
| M | 0.10 | 0.20 | 0.12 |
| N | 0.45 | 0.65 | 0.50 |
| α | 0° | 8° | — |
| All Dimensions in mm | | | |

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} | 6.0 | V |
| Collector Current | I _C | 100 | mA |
| Power Dissipation (Note 1) | P _d | 150 | mW |
| Thermal Resistance, Junction to Ambient (Note 1) | R _{θJA} | 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 | Typ | Max | Unit | Test Condition |
|---|--------------------------------------|-------------------|-----------------|-------------------|----------|---|
| DC Current Gain (Note 3) | Current Gain A B C | 110 200 420 | — 290 520 | 220 450 800 | — | V _{CE} = 5.0V, I _C = 2.0mA |
| Collector-Emitter Saturation Voltage (Note 3) | V _{CE(SAT)} | — | — | 250 600 | mV | I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA |
| Base-Emitter Saturation Voltage (Note 3) | V _{BE(SAT)} | — | 700 900 | — | mV | I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA |
| Base-Emitter Voltage (Note 3) | V _{BE} | 580 — | 660 — | 700 770 | mV | V _{CE} = 5.0V, I _C = 2.0mA V _{CE} = 5.0V, I _C = 10mA |
| Collector-Emitter Cutoff Current (Note 3) | I _{CBO} I _{CB0} | — | — | 15 5.0 | nA μA | 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 _{OBO} | — | — | 4.5 | pF | V _{CB} = 10V, f = 1.0MHz |
| Noise Figure | BC847BT BC847CT | NF | — | 10 4.0 | dB | V _{CE} = 5V, R _S = 2.0kΩ, f = 1.0kHz, BW = 200Hz |

- Notes:
1. 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>.
 2. No purposefully added lead.
 3. Short duration pulse test used to minimize self-heating effect.
 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 5. 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.

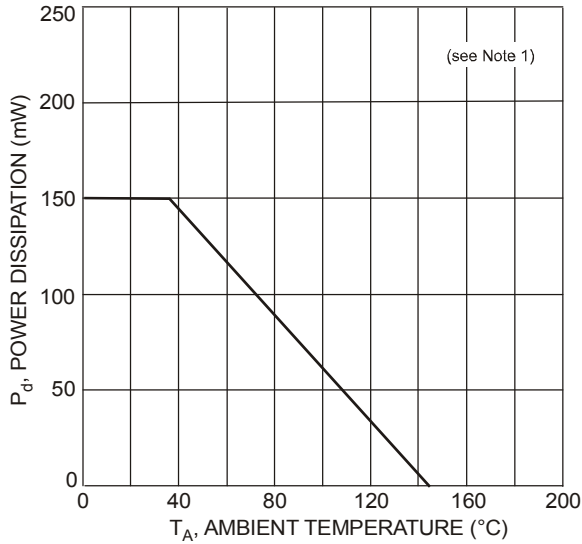


Fig. 1, Power Derating Curve

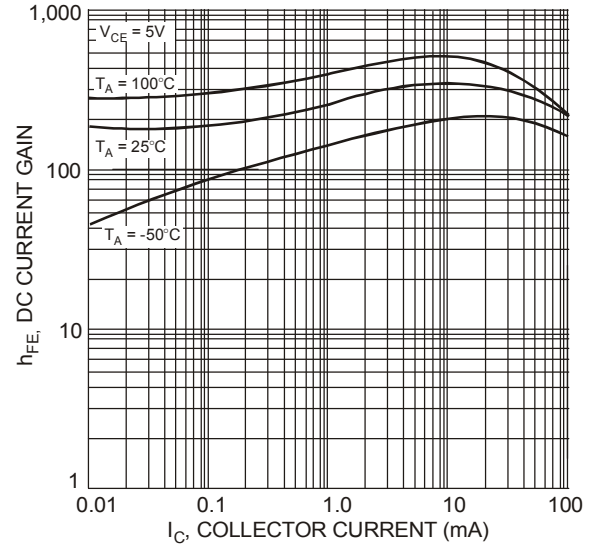


Fig. 2, DC Current Gain vs Collector Current

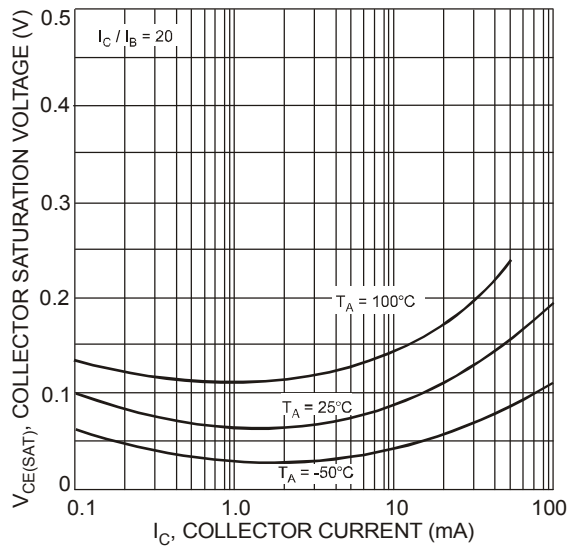


Fig. 3, Collector Saturation Voltage vs Collector Current

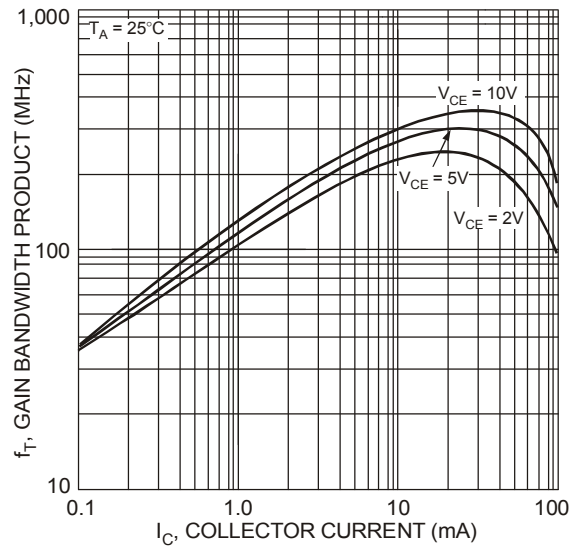


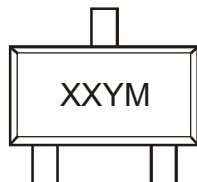
Fig. 4, Gain Bandwidth Product vs Collector Current

Ordering Information (Note 4)

| Device | Packaging | Shipping |
|-------------|-----------|------------------|
| BC847AT-7-F | SOT-523 | 3000/Tape & Reel |
| BC847BT-7-F | SOT-523 | 3000/Tape & Reel |
| BC847CT-7-F | SOT-523 | 3000/Tape & Reel |

Notes: 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



XX = Product Type Marking Code (See Page 1), e.g. 1E = BC847AT
 YM = Date Code Marking
 Y = Year (ex: N = 2002)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | J | K | L | M | N | P | R | S | T | U | V | W | X | Y | Z |
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | |
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D | | | |

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