

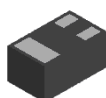
Features

- $BV_{CE0} > 45V$
- $I_C = 100mA$ High Collector Current
- $P_D = 100mW$ Power Dissipation
- 0.60mm² Package Footprint, 13 times Smaller than SOT23
- 0.5mm Height Package Minimizing Off-Board Profile
- Complementary PNP Type BC857BLP
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

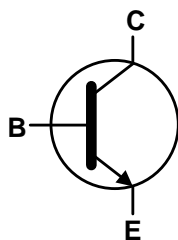
Mechanical Data

- Case: X1-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — NiPdAu.
- Solderable per MIL-STD-202, Method 208 @4
- Weight: 0.0009 grams (Approximate)

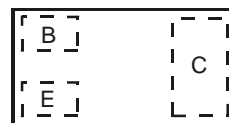
X1-DFN1006-3



Bottom View



Device Symbol


 Top View
Device Schematic

Ordering Information (Note 4)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|---------|--------------------|-----------------|-------------------|
| BC847BLP-7 | 1F | 7 | 8mm | 3,000 |
| BC847BLP-7B | 1F | 7 | 8mm | 10,000 |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information

| | |
|--------------------|---|
| BC847BLP-7 | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Top View Dot Denotes Collector Side</p> </div> <div style="text-align: center;"> <p>From date code 1527 (YYWW), this changes to:</p> <p>Top View Bar Denotes Base and Emitter Side</p> </div> </div> |
| BC847BLP-7B | <div style="text-align: center;"> <p>Top View Bar Denotes Base and Emitter Side</p> </div> <p style="text-align: right;">1F = Product Type Marking Code</p> |

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CB0} | 50 | V |
| Collector-Emitter Voltage | V _{CEO} | 45 | V |
| Emitter-Base Voltage | V _{EBO} | 6.0 | V |
| Collector Current | I _C | 100 | mA |
| Peak Pulse Collector Current | I _{CM} | 200 | mA |

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------------|------|
| Power Dissipation | P _D | (Note 5) 400 | mW |
| | | (Note 6) 1,000 | |
| Thermal Resistance, Junction to Ambient | R _{θJA} | (Note 5) 310 | °C/W |
| | | (Note 6) 120 | |
| Thermal Resistance, Junction to Lead | R _{θJL} | 120 | °C/W |
| Operating and Storage and Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 8)

| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V | 3A |
| Electrostatic Discharge - Machine Model | ESD MM | 200 | V | B |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|----------------------|-----|-----|-----|------|---|
| Collector-Base Breakdown Voltage | BV _{CB0} | 50 | — | — | V | I _C = 100μA, I _B = 0 |
| Collector-Emitter Breakdown Voltage (Note 9) | BV _{CEO} | 45 | — | — | V | I _C = 10mA, I _B = 0 |
| Emitter-Base Breakdown Voltage | BV _{EBO} | 6 | — | — | V | I _E = 100μA, I _C = 0 |
| DC Current Gain | h _{FE} | 200 | 350 | 450 | — | V _{CE} = 5.0V, I _C = 2.0mA |
| Collector-Emitter Saturation Voltage (Note 9) | V _{CE(sat)} | — | 80 | 250 | mV | I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA |
| | | — | 200 | 600 | | |
| Base-Emitter Saturation Voltage (Note 9) | V _{BE(sat)} | — | 700 | — | mV | I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA |
| | | — | 900 | — | | |
| Base-Emitter Voltage (Note 9) | V _{BE(ON)} | 580 | 640 | 700 | mV | V _{CE} = 5.0V, I _C = 2.0mA V _{CE} = 5.0V, I _C = 10mA |
| | | — | 725 | 770 | | |
| Collector-Cutoff Current | I _{CB0} | — | — | 15 | nA | V _{CB} = 30V |
| | | — | — | 5.0 | | |
| Gain Bandwidth Product | f _T | 100 | — | — | MHz | V _{CE} = 5.0V, I _C = 10mA, f = 100MHz |
| Collector-Base Capacitance | C _{CB0} | — | 3.0 | — | pF | V _{CB} = 10V, f = 1.0MHz |

- Notes:
- For the device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady state condition. The entire exposed collector pad is attached to the heatsink.
 - Same as Note 5, except the exposed collector pad is mounted on 25mm x 25mm 2oz copper.
 - Thermal resistance from junction to solder-point (on the exposed collector pad).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.
 - Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

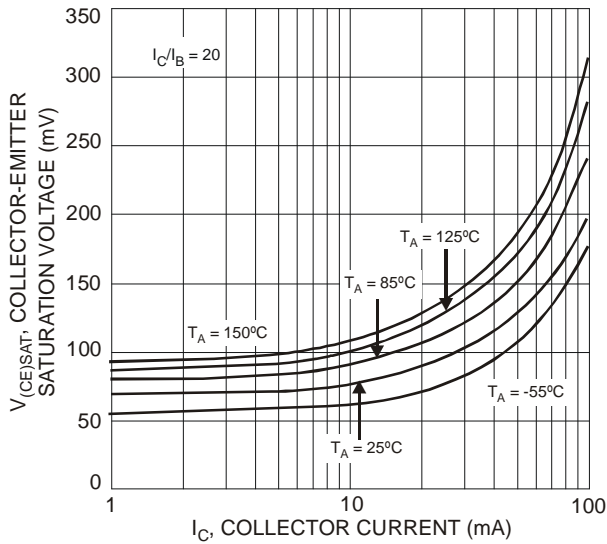


Fig. 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

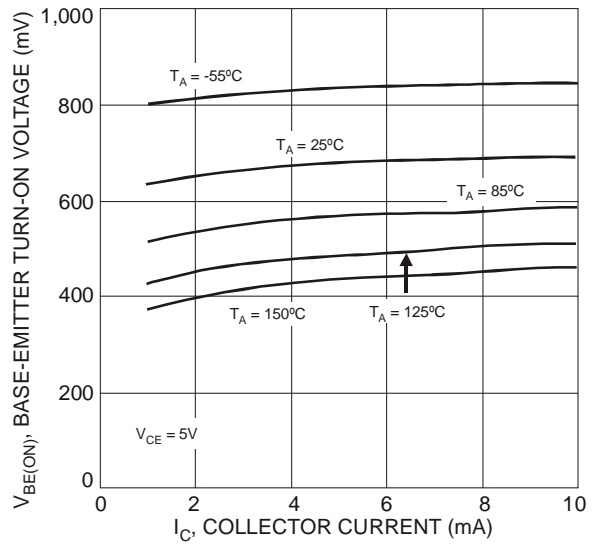


Fig. 3 Typical Base-Emitter Turn-On Voltage vs. Collector Current

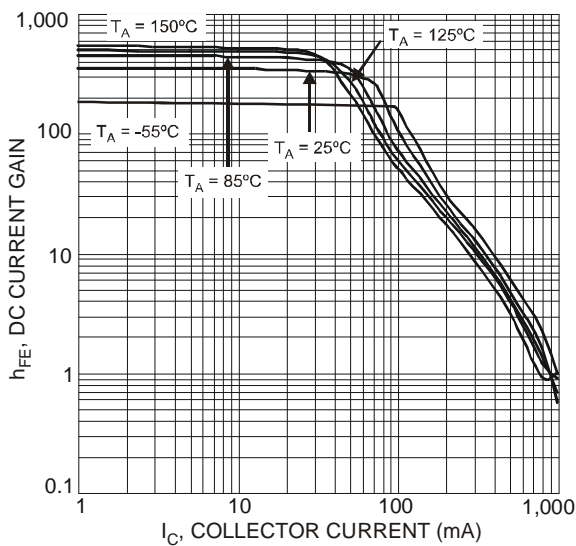


Fig. 5 Typical DC Current Gain vs. Collector Current

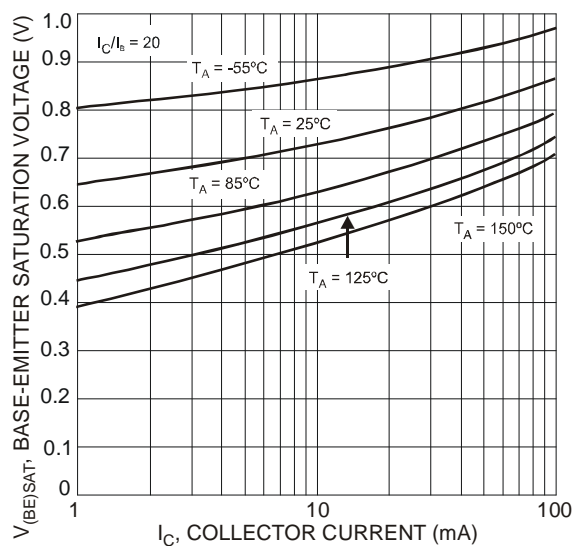
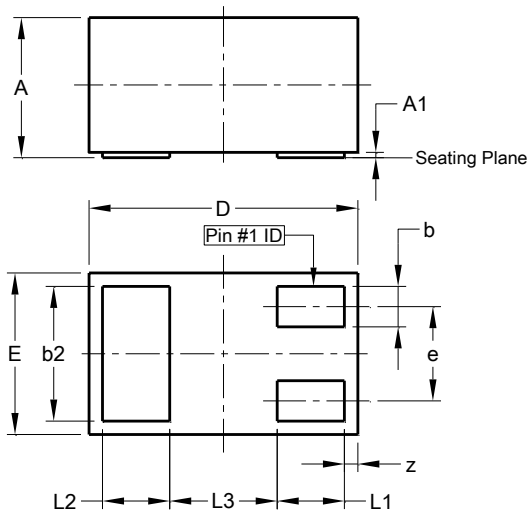


Fig. 4 Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions

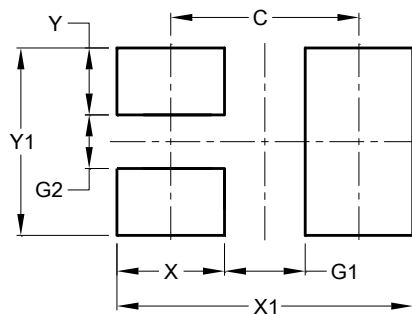
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| X1-DFN1006-3 | | | |
|----------------------|------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.47 | 0.53 | 0.50 |
| A1 | 0.00 | 0.05 | 0.03 |
| b | 0.10 | 0.20 | 0.15 |
| b2 | 0.45 | 0.55 | 0.50 |
| D | 0.95 | 1.075 | 1.00 |
| E | 0.55 | 0.675 | 0.60 |
| e | - | - | 0.35 |
| L1 | 0.20 | 0.30 | 0.25 |
| L2 | 0.20 | 0.30 | 0.25 |
| L3 | - | - | 0.40 |
| z | 0.02 | 0.08 | 0.05 |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.70 |
| G1 | 0.30 |
| G2 | 0.20 |
| X | 0.40 |
| X1 | 1.10 |
| Y | 0.25 |
| Y1 | 0.70 |

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