



BC847CDLP

45V DUAL NPN SMALL SIGNAL TRANSISTOR

Features

- BV_{CEO} > 45V
- Low profile 0.4mm high package for thin applications
- Ultra-Small Surface Mount Package
- 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

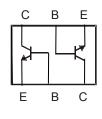
Mechanical Data

- Case: X2-DFN1310-6
- Nominal package height: 0.4mm
- 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: 0.0015 grams (approximate)

X2-DFN1310-6



Top View



Device Schematic Top View

Ordering Information (Note 4)

| Part Number | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-------------|---------|--------------------|-----------------|-------------------|
| BC847CDLP-7 | 1M | 7 | 8 | 3000 |

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/products/packages.html.

Marking Information



1M = Product Type Marking Code

(Top View)



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

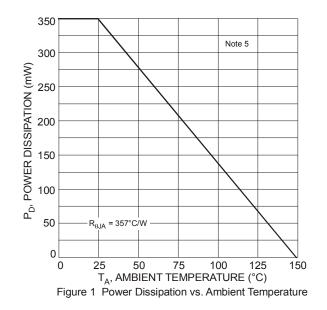
| Characteristic | Symbol | Value | Unit |
|---------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | 50 | V |
| Collector-Emitter Voltage | V _{CEO} | 45 | V |
| Emitter-Base Voltage | V _{EBO} | 6 | V |
| Collector Current | Ιc | 100 | mA |

Thermal Characteristics – Total Device (@T_A = +25°C unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5) Total Device | PD | 350 | mW |
| Thermal Resistance, Junction to Ambient (Note 5) | R _{θJA} | 357 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

Note: 5. For a device surface mounted on minimum recommended pad layout FR-4 PCB with single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.

Thermal Characteristics – Total Device

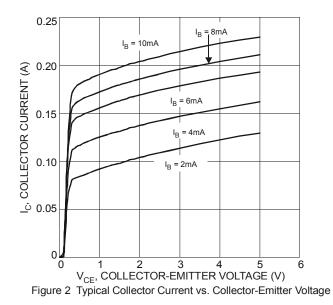


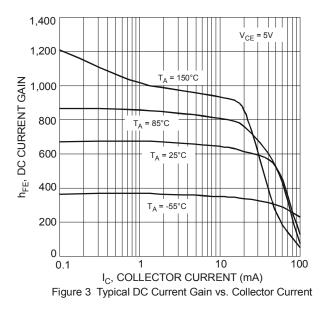


Electrical Characteristics (@T_A = +25°C unless otherwise specified.)

| Characteristic (Note 6) | Symbol | Min | Тур | Max | Unit | Test Condition |
|--------------------------------------|--------------------------|----------|------------|------------|----------|---|
| Collector-Base Breakdown Voltage | BV _{CBO} | 50 | _ | _ | V | I _C = 100μA, I _B = 0 |
| Collector-Emitter Breakdown Voltage | BV _{CEO} | 45 | _ | _ | V | $I_{\rm C} = 10 {\rm mA}, I_{\rm B} = 0$ |
| Emitter-Base Breakdown Voltage | BV _{EBO} | 6 | _ | _ | V | I _E = 100μA, I _C = 0 |
| DC Current Gain | h _{FE} | 420 | 650 | 800 | — | V _{CE} = 5.0V, I _C = 2.0mA |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | _ | 55 130 | 250 600 | mV | I_{C} = 10mA, I_{B} = 0.5mA I_{C} = 100mA, I_{B} = 5.0mA |
| Base-Emitter Saturation Voltage | V _{BE(sat)} | _ | 700 900 | _ | mV | I_{C} = 10mA, I_{B} = 0.5mA I_{C} = 100mA, I_{B} = 5.0mA |
| Base-Emitter Voltage | V _{BE(on)} | 580 — | 660 — | 700 770 | mV | V_{CE} = 5.0V, I _C = 2.0mA V_{CE} = 5.0V, I _C = 10mA |
| Collector-Cutoff Current | I _{CES} | | | 15 | nA | V _{CE} = 50V |
| Collector-Cutoff Current | I _{CBO} | _ | _ | 15 5 | 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 |
| Collector-Base Capacitance | C _{CBO} | _ | 2.0 | _ | pF | V _{CB} = 10V, f = 1.0MHz |

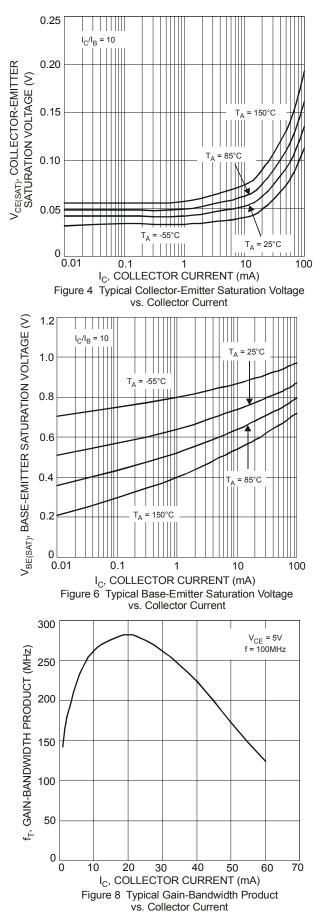
Note: 6. Measured under pulsed conditions. Pulse width \leq 300µs. Duty cycle \leq 2%.

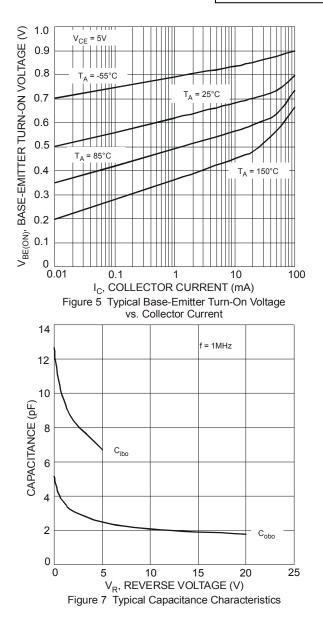








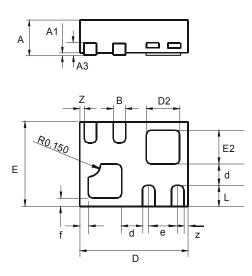






Package Outline Dimensions

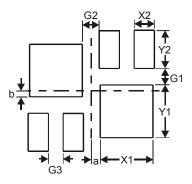
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



| X2-DFN1310-6 | | | | |
|----------------------|------|-------|------|--|
| Dim | Min | Max | Тур | |
| Α | | 0.40 | | |
| A1 | 0 | 0.05 | 0.02 | |
| A3 | | _ | 0.13 | |
| b | 0.10 | 0.20 | 0.15 | |
| D | 1.25 | 1.38 | 1.30 | |
| d | | _ | 0.25 | |
| D2 | 0.30 | 0.50 | 0.40 | |
| ш | 0.95 | 1.075 | 1.00 | |
| e | | | 0.35 | |
| E2 | 0.30 | 0.50 | 0.40 | |
| f | _ | | 0.10 | |
| L | 0.20 | 0.30 | 0.25 | |
| Z | | | 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) | |
|------------|---------------|--|
| G1 | 0.16 | |
| G2 | 0.17 | |
| G3 | 0.15 | |
| X1 | 0.52 | |
| X2 | 0.20 | |
| Y1 | 0.52 | |
| Y2 | 0.375 | |
| а | 0.09 | |
| b | 0.06 | |



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