

## Features

- $BV_{CEO} > -45V$
- $I_C = -100mA$  High Collector Current
- $P_D = 1000mW$  Power Dissipation
- 0.60mm<sup>2</sup> Package Footprint, 13 times Smaller than SOT23
- 0.4mm Height Package Minimizing Off-Board Profile
- Complementary NPN Type BC847BLP4
- **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

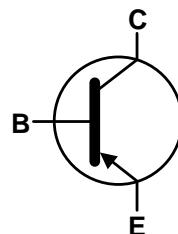
## Mechanical Data

- Case: X2-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 (Note 4)
- Weight: 0.0008 grams (Approximate)

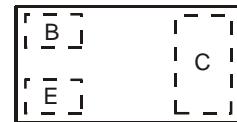
X2-DFN1006-3



Bottom View



Device Symbol


 Top View  
 Device Schematic

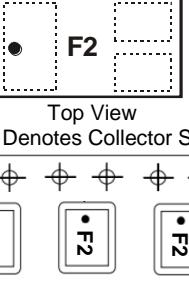
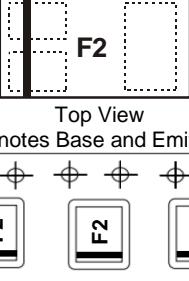
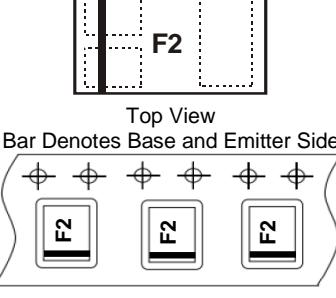
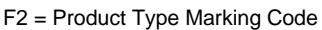
## Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BC857BLP4-7	F2	7	8	3,000
BC857BLP4-7B	F2	7	8	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](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

<b>BC857BLP4-7</b>	 <b>BC857BLP4-7B</b>	 <b>BC857BLP4-7B</b>
		

**Absolute Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , 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	$I_C$	-100	mA
Peak Pulse Collector Current	$I_{CM}$	-200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation	$P_D$	400	mW
		1000	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	310	°C/W
		120	
Thermal Resistance, Junction to Lead	$R_{\theta JL}$	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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-50	—	—	V	$I_C = 10\mu\text{A}, I_B = 0$
Collector-Emitter Breakdown Voltage (Note 9)	$BV_{CEO}$	-45	—	—	V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-5	—	—	V	$I_E = 1\mu\text{A}, I_C = 0$
DC Current Gain	$h_{FE}$	220	300	475	—	$V_{CE} = -5.0\text{V}, I_C = -2.0\text{mA}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(\text{SAT})}$	—	-90 -250	-300 -650	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5.0\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(\text{SAT})}$	—	-700 -850	—	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5.0\text{mA}$
Base-Emitter Voltage (Note 9)	$V_{BE(\text{ON})}$	-600	-670 -710	-750 -820	mV	$V_{CE} = -5.0\text{V}, I_C = -2.0\text{mA}$ $V_{CE} = -5.0\text{V}, I_C = -10\text{mA}$
Collector-Cutoff Current	$I_{CBO}$	—	—	-15 -4.0	nA $\mu\text{A}$	$V_{CB} = -30\text{V}$ $V_{CB} = -30\text{V}, T_A = +150^\circ\text{C}$
Gain Bandwidth Product	$f_T$	100	—	—	MHz	$V_{CE} = -5.0\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$
Collector-Base Capacitance	$C_{CBO}$	—	3.0	—	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}$

Notes:

5. 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.
6. Same as Note 5, except the exposed collector pad is mounted on 25mm x 25mm 2oz copper.
7. Thermal resistance from junction to solder-point (on the exposed collector pad).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.
9. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

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

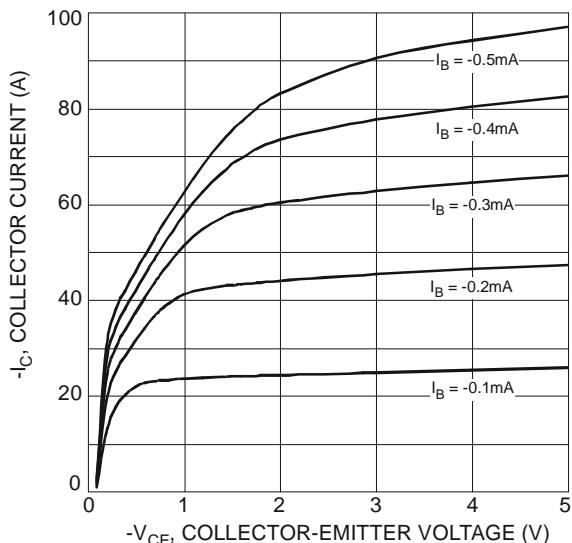


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

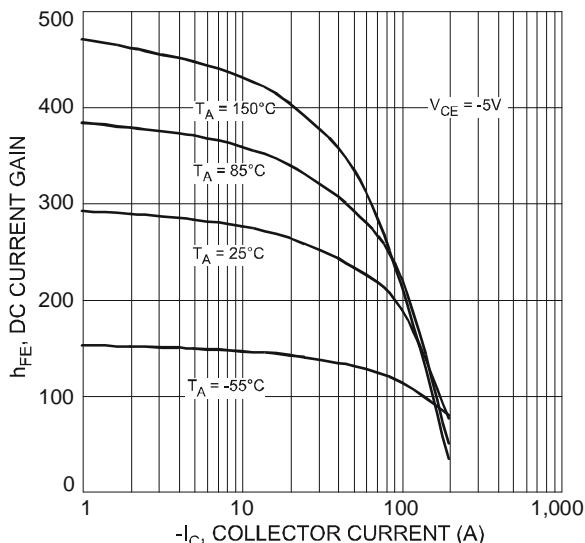


Fig. 3 Typical DC Current Gain vs. Collector Current

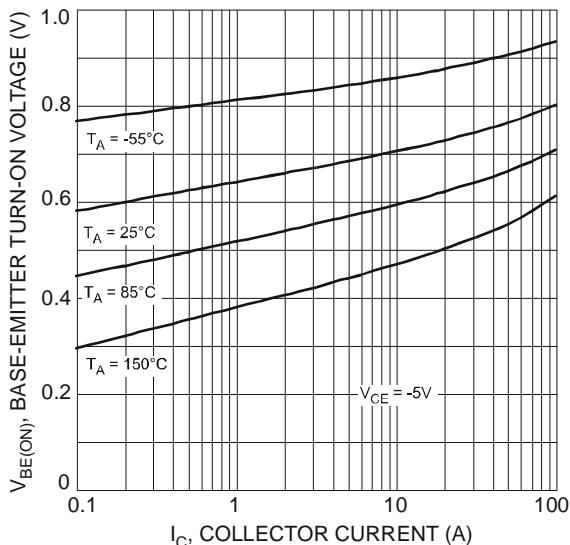


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

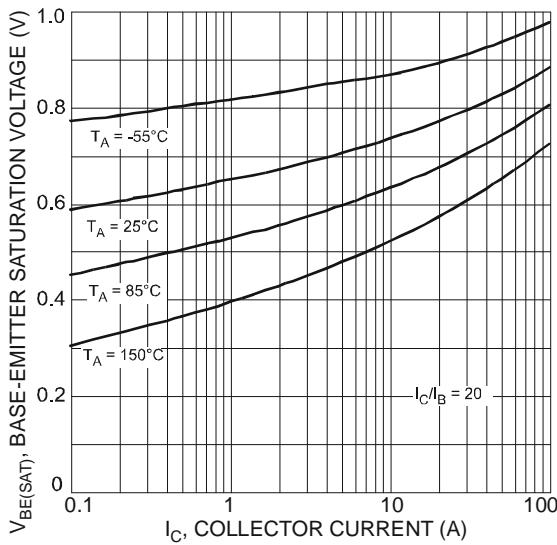
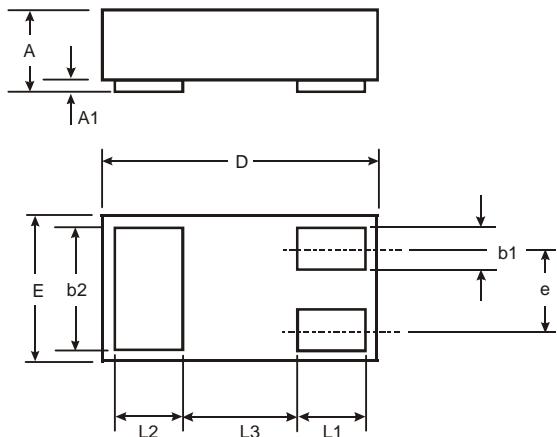


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

## Package Outline Dimensions

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

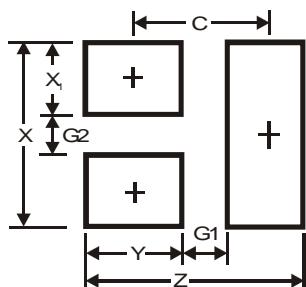


X2-DFN1006-3			
Dim	Min	Max	Typ
<b>A</b>	—	0.40	—
<b>A1</b>	0	0.05	0.02
<b>b1</b>	0.10	0.20	0.15
<b>b2</b>	0.45	0.55	0.50
<b>D</b>	0.95	1.075	1.00
<b>E</b>	0.55	0.675	0.60
<b>e</b>	—	—	0.35
<b>L1</b>	0.20	0.30	0.25
<b>L2</b>	0.20	0.30	0.25
<b>L3</b>	—	—	0.40

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)
<b>Z</b>	1.1
<b>G1</b>	0.3
<b>G2</b>	0.2
<b>X</b>	0.7
<b>X1</b>	0.25
<b>Y</b>	0.4
<b>C</b>	0.7

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