



45V PNP SMALL-SIGNAL TRANSISTOR IN X2-DFN1006-3

Features

- BVcEo > -45V
- I_C = -100mA High Collector Current
- P_D = 1W Power Dissipation
- 0.6mm² 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)
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.

https://www.diodes.com/quality/product-definitions/

 An automotive-compliant part is available under separate datasheet (<u>BC857BLP4Q</u>)

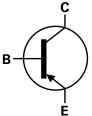
Mechanical Data

- Package: X2-DFN1006-3
- Package 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: 0.0008 grams (Approximate)

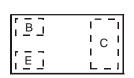
X2-DFN1006-3



Bottom View



Device Symbol



Top View Device Schematic

Ordering Information (Note 4)

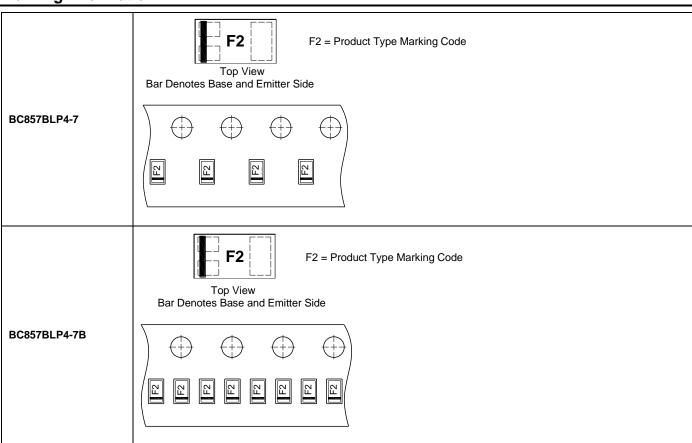
Part Number	Dookowa	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
Part Number	Package	Warking	Reel Size (Illulies)	rape widin (ililii)	Qty.	Carrier
BC857BLP4-7	X2-DFN1006-3	F2	7	8	3,000	Reel
BC857BLP4-7B	X2-DFN1006-3	F2	7	8	10,000	Reel

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/



Marking Information





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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	Vсво	-50	V
Collector-Emitter Voltage	VCEO	-45	V
Emitter-Base Voltage	Vebo	-5	V
Collector Current	Ic	-100	mA
Peak Pulse Collector Current	Ісм	-200	mA

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

Characteristic	Symbol	Value	Unit		
Power Discinction	(Note 5)	PD	0.4	W	
Power Dissipation	(Note 6)	רם	1	V V	
Thermal Resistance, Junction to Ambient	(Note 5)	Dov	310	°C/W	
Thermal Resistance, Junction to Ambient	(Note 6)	Reja	120	C/VV	
Thermal Resistance, Junction to Lead (Note 7)		RøJL	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	В

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

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-50	_	_	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BVceo	-45	_	_	V	Ic = -10mA
Emitter-Base Breakdown Voltage	BVEBO	-5	_	_	V	I _E = -100μA
DC Current Gain	h _{FE}	220	300	475	_	$V_{CE} = -5V$, $I_C = -2mA$
Collector-Emitter Saturation Voltage (Note 9)	VCE(sat)	_	-90 -250	-300 -650	mV	I _C = -10mA, I _B = -0.5mA I _C = -100mA, I _B = -5mA
Base-Emitter Saturation Voltage (Note 9)	VBE(sat)	_	-700 -850	_	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5\text{mA}$
Base-Emitter Voltage (Note 9)	V _{BE(on)}	-600 —	-670 -710	-750 -820	mV	VcE = -5V, Ic = -2mA VcE = -5V, Ic = -10mA
Collector-Cutoff Current	Ісво	_	_	-15 -4.0	nΑ μΑ	V _{CB} = -30V V _{CB} = -30V, T _A = +150°C
Gain Bandwidth Product	f _T	100	_	_	MHz	V _{CE} = -5V, I _C = -10mA f = 100MHz
Collector-Base Capacitance	Ссво	_	3.0	_	pF	V _{CB} = -10V, f = 1MHz

Notes:

- 5. For the device mounted on minimum recommended pad layout 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady state condition.

 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 ≤ 300μs. Duty cycle ≤ 2%.



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

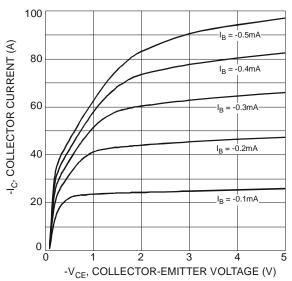


Figure 1. Typical Collector Current vs. Collector-Emitter Voltage

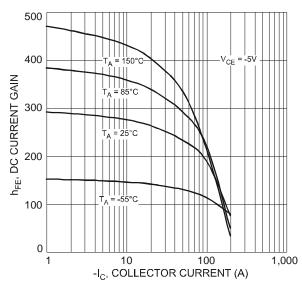


Figure 2. Typical DC Current Gain vs. Collector Current

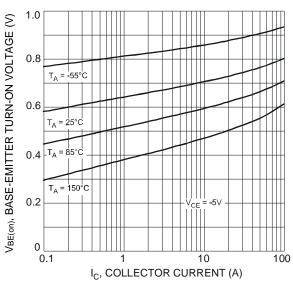


Figure 3. Typical Base-Emitter Turn-On Voltage vs. Collector Current

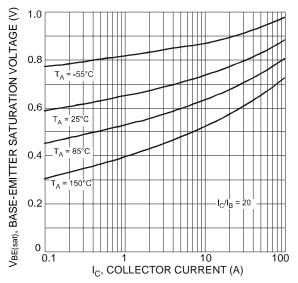


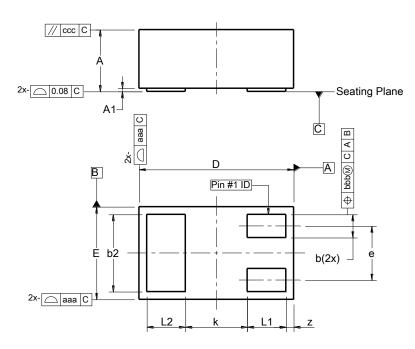
Figure 4. Typical Base-Emitter Saturation Voltage vs. Collector Current



Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

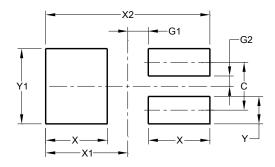
X2-DFN1006-3



X2-DFN1006-3					
Dim	Min	Max	Тур		
Α		0.40			
A1	0.00	0.05	0.03		
b	0.10	0.20	0.15		
b2	0.45	0.55	0.50		
D	0.95	1.05	1.00		
Е	0.55	0.65	0.60		
е	ı	1	0.35		
L1	0.20	0.30	0.25		
L2	0.20	0.30	0.25		
k	0.40				
z	0.02 0.08 0.05				
aaa	0.15				
bbb	0.05				
CCC	0.05				
All Dimensions in mm					

Suggested Pad Layout

X2-DFN1006-3



Dimensions	Value (in mm)
C	0.350
G1	0.150
G2	0.075
Х	0.450
X1	0.600
X2	1.200
Y	0.200
Y1	0.550



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