



**THE DATASHEET OF
DP0150ALP4-7B**



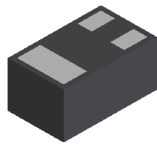
Features

- $BV_{CEO} > -50V$
- $I_C = -100mA$ High Collector Current
- $P_D = 100mW$ Power Dissipation
- $0.60mm^2$ Package Footprint, 13 times Smaller than SOT23
- 0.4mm Height Package Minimizing Off-Board Profile
- Complementary NPN Type: DN0150ALP4 / DN0150BLP4
- **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**

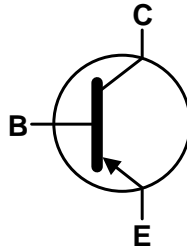
Mechanical Data

- 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 ④
- Weight: 0.0008 grams (Approximate)

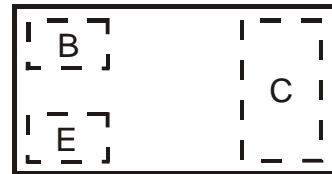
X2-DFN1006-3



Bottom View



Device Symbol



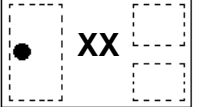
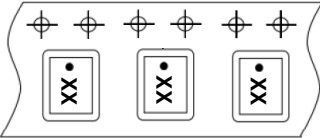
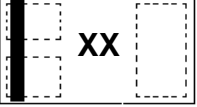
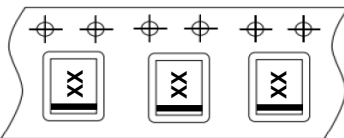
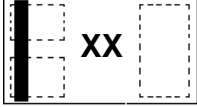
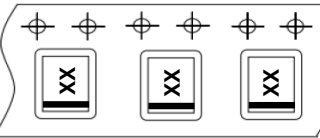
Top View
Pin Configuration

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DP0150ALP4-7	T5	7	8	3,000
DP0150ALP4-7B	T5	7	8	10,000
DP0150BLP4-7	T6	7	8	3,000
DP0150BLP4-7B	T6	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 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

<p>DP0150ALP4-7 DP0150BLP4-7</p>	<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>
<p>DP0150ALP4-7B DP0150BLP4-7B</p>	<div style="text-align: center;">  <p>Top View Bar Denotes Base and Emitter Side</p>  </div> <p style="text-align: right;">XX = Product Type Marking Code (See Ordering Information)</p>

Absolute 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}	-50	V
Emitter-Base Voltage	V _{EBO}	-5	V
Collector Current - Continuous	I _C	-100	mA
Peak Pulse Collector Current	I _{CM}	-200	mA
Base Current	I _B	-30	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	400	mW
		1000	
Thermal Resistance, Junction to Ambient	R _{θJA}	310	°C/W
		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	400	V	C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CBO}	-50	—	—	V	I _C = -10μA, I _E = 0
Collector-Emitter Breakdown Voltage (Note 8)	BV _{CEO}	-50	—	—	V	I _C = -1mA, I _B = 0
Emitter-Base Breakdown Voltage	BV _{EBO}	-5	—	—	V	I _E = -10μA, I _C = 0
Collector Cut-Off Current	I _{CBO}	—	—	-0.1	μA	V _{CB} = -50V, I _E = 0
Emitter Cut-Off Current	I _{EBO}	—	—	-0.1	μA	V _{EB} = -5V, I _C = 0
ON CHARACTERISTICS (Note 9)						
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	-0.15	-0.3	V	I _C = -100mA, I _B = -10mA
DC Current Gain	DP0150ALP4	120	—	240	—	V _{CE} = -6V, I _C = -2mA
	DP0150BLP4	200	—	400		
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f _T	80	—	—	MHz	V _{CE} = -10V, I _E = 1mA f = 30MHz
Output Capacitance	C _{ob}	—	1.6	—	pF	V _{CB} = -10V, I _E = 0, f = 1MHz

- 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%.

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

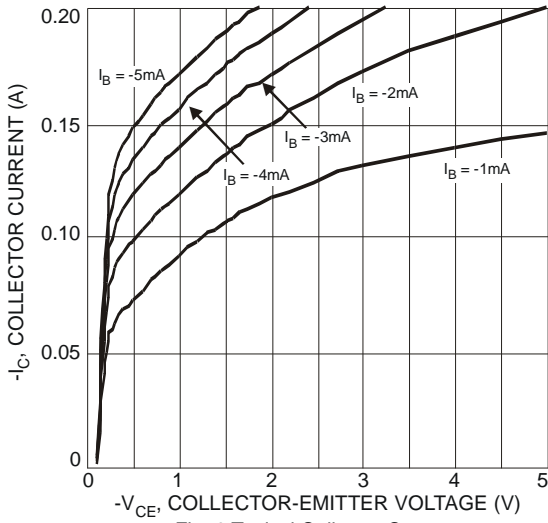


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage (DN0150BLP4)

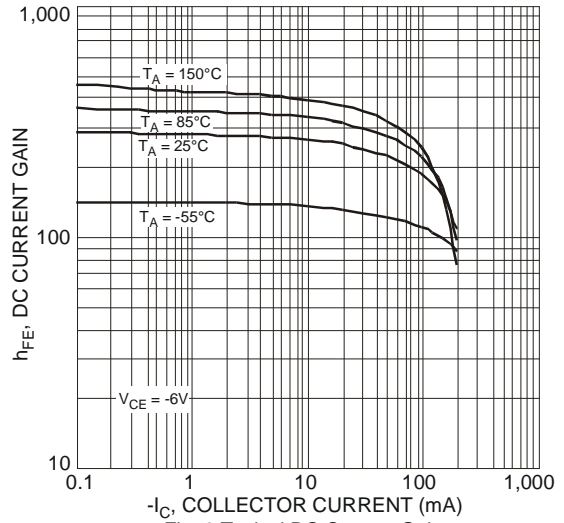


Fig. 3 Typical DC Current Gain vs. Collector Current (DN0150BLP4)

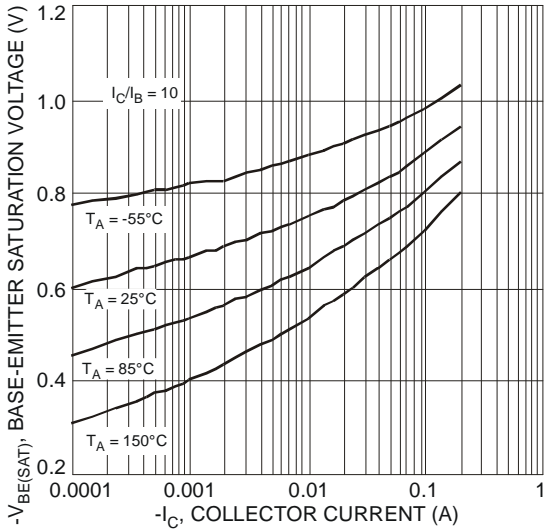


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

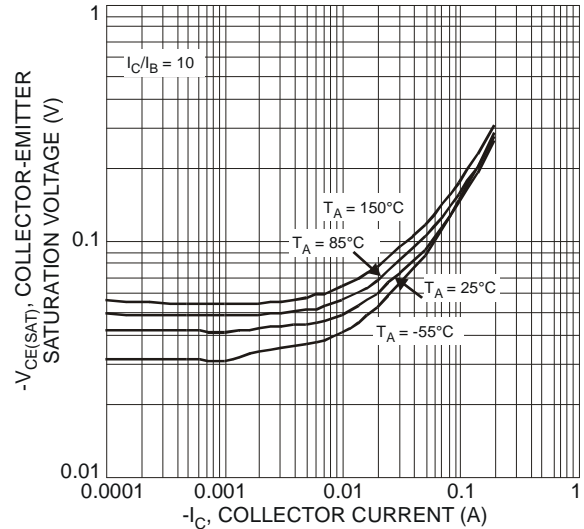


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

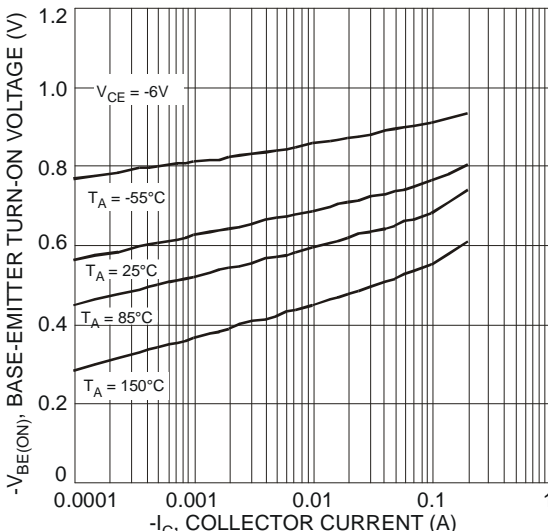


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

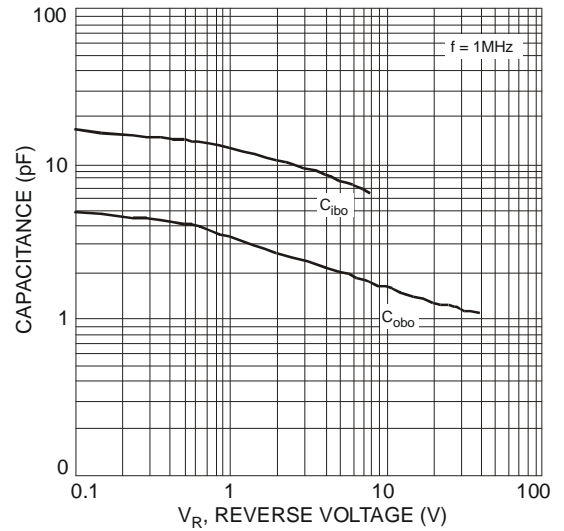


Fig. 7 Typical Capacitance Characteristics

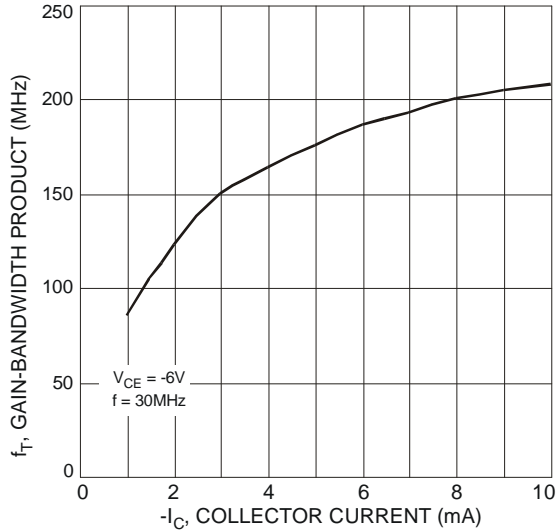
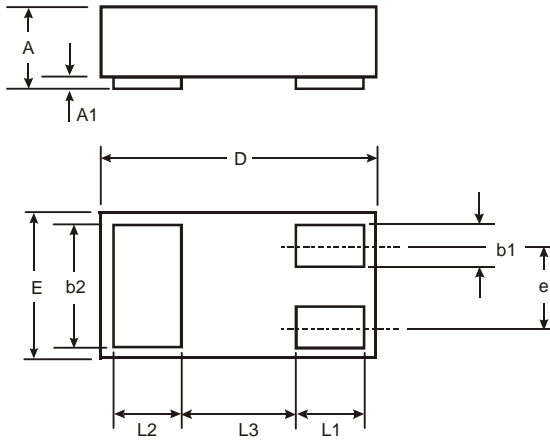


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

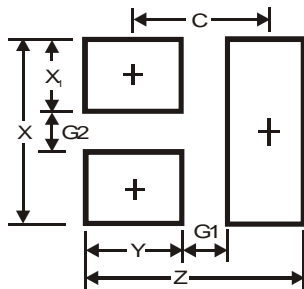


X2-DFN1006-3			
Dim	Min	Max	Typ
A	—	0.40	—
A1	0	0.05	0.02
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40

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)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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