

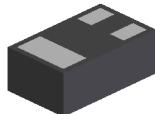
## Features

- Epitaxial Die Construction
- Ultra-Small Leadless Surface Mount Package
- Ultra Low Profile (0.4mm max)
- Complementary PNP Type: DP0150ALP4/DP0150BLP4
- 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

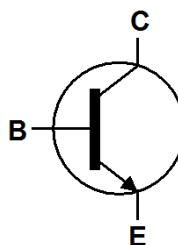
## Mechanical Data

- 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
- Weight: 0.0008 grams (approximate)

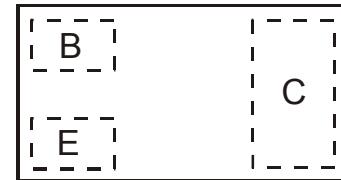
X2-DFN1006-3



Bottom View



Device Symbol


 Top View  
 Pin Configuration

## Ordering Information (Note 4)

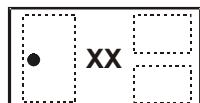
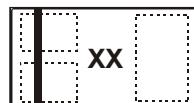
Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DN0150ALP4-7	T3	7	8	3,000
DN0150ALP4-7B	T3	7	8	10,000
DN0150BLP4-7	T4	7	8	3,000
DN0150BLP4-7B	T4	7	8	10,000

## Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information

 DN0150ALP4-7  
 DN0150BLP4-7

 DN0150ALP4-7B  
 DN0150BLP4-7B

 Top View  
 Dot Denotes  
 Collector Side

 Top View  
 Bar Denotes Base  
 and Emitter Side

 XX = Product Type Marking Code  
 (See Ordering Information)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	60	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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	450	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	278	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	110	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

**ESD Ratings** (Note 7)

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$BV_{CBO}$	60	—	—	V	$I_C = 10\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 8)	$BV_{CEO}$	50	—	—	V	$I_C = 1\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	5	—	—	V	$I_E = 10\mu\text{A}, I_C = 0$
Collector Cut-Off Current	$I_{CBO}$	—	—	0.1	μA	$V_{CB} = 60\text{V}, I_E = 0$
Emitter Cut-Off Current	$I_{EBO}$	—	—	0.1	μA	$V_{EB} = 5\text{V}, I_C = 0$
<b>ON CHARACTERISTICS (Note 8)</b>						
Collector-Emitter Saturation Voltage	$V_{CE(\text{SAT})}$	—	0.10	0.25	V	$I_C = 100\text{mA}, I_B = 10\text{mA}$
DC Current Gain	$h_{FE}$	120	—	240	—	$V_{CE} = 6\text{V}, I_C = 2\text{mA}$
		200	—	400	—	
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Transition Frequency	$f_T$	60	—	—	MHz	$V_{CE} = 10\text{V}, I_E = -1\text{mA}$ $f = 30\text{MHz}$
Output Capacitance	$C_{ob}$	—	1.3	—	pF	$V_{CB} = 10\text{V}, I_E = 0,$ $f = 1\text{MHz}$

Notes:

- For a device mounted on minimum recommended pad layout 1oz copper that is on a single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state. The entire exposed collector pad is attached to the heat sink.
- Thermal resistance from junction to solder-point (at the end of the collector lead).
- Refer to JEDEC specification JESD22-A114 and JESD22-A115.
- Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$

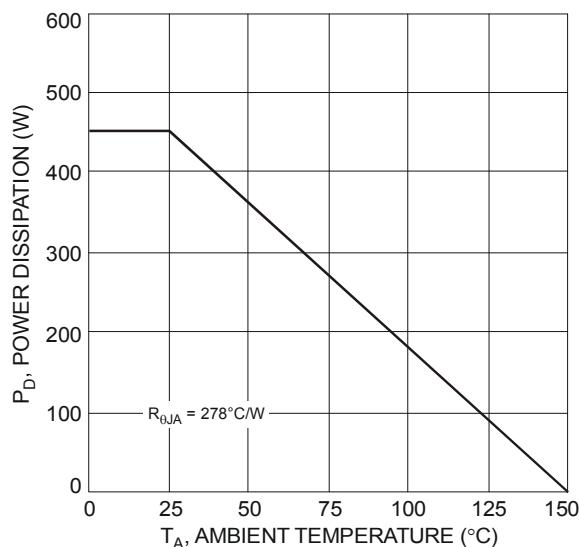


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

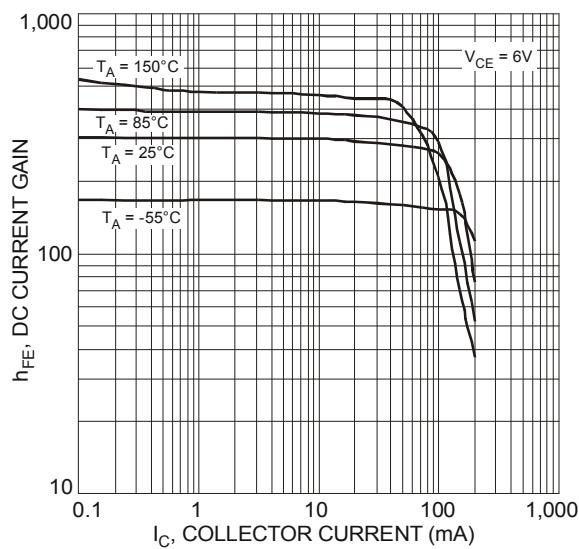


Fig. 3 Typical DC Current Gain vs. Collector Current (DN0150BLP4)

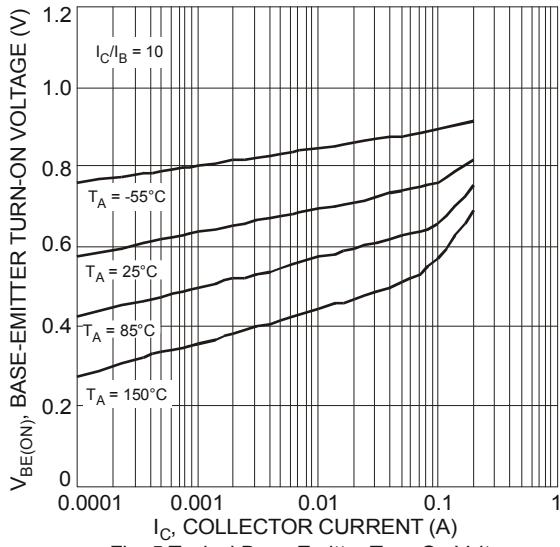


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

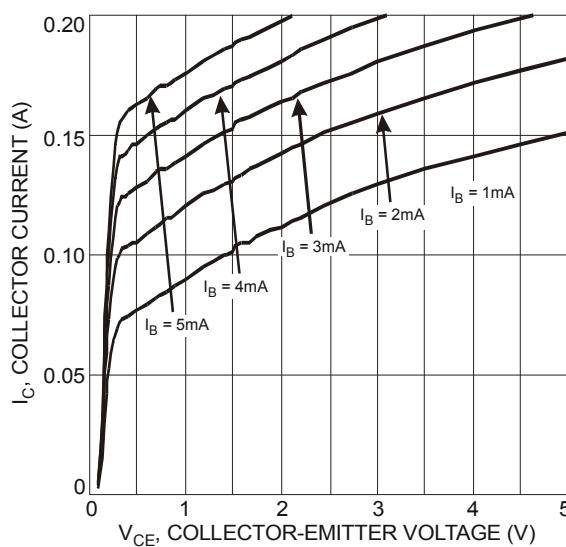


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage (DN0150BLP4)

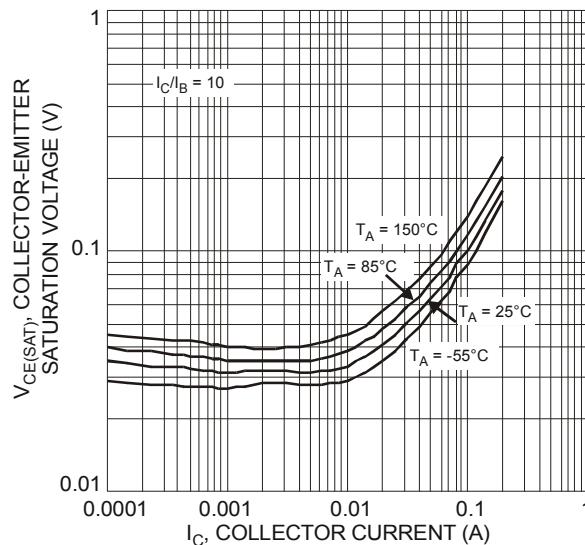


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

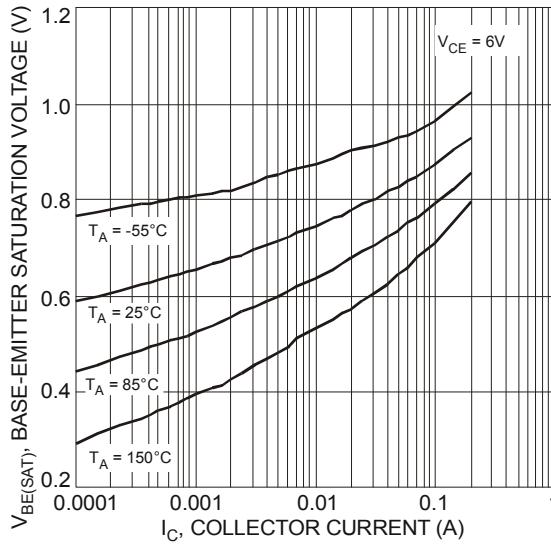


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

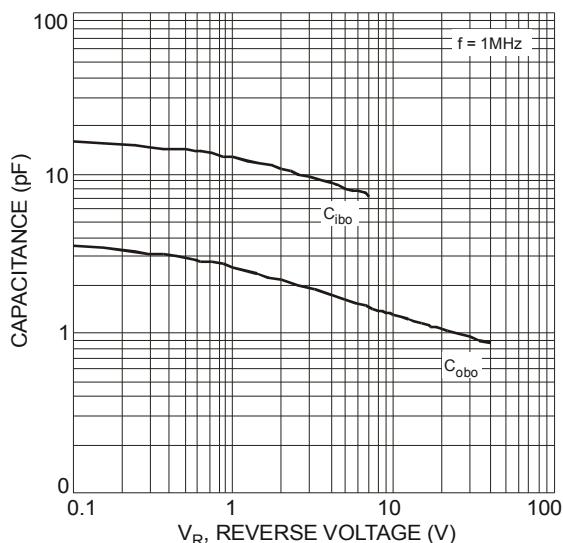


Fig. 7 Typical Capacitance Characteristics

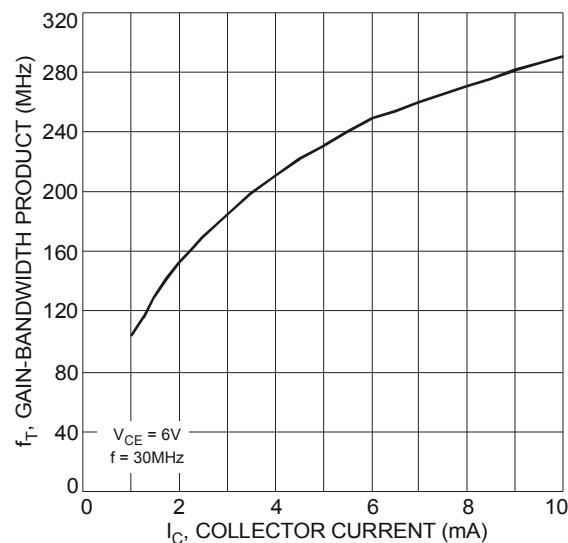
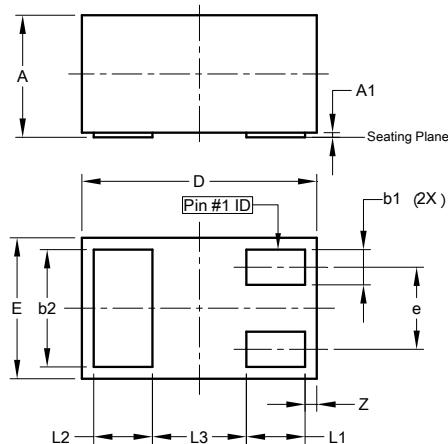


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

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

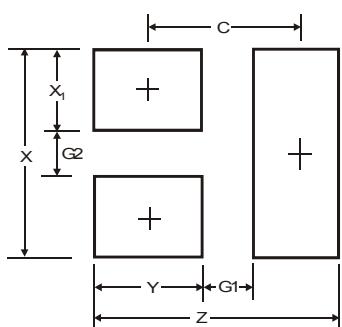


X2-DFN1006-3			
Dim	Min	Max	Typ
<b>A</b>	—	0.40	—
<b>A1</b>	0	0.05	0.02
<b>b1</b>	0.10	0.20	0.15
<b>b2</b>	0.45	0.55	0.50
<b>D</b>	0.95	1.05	1.00
<b>E</b>	0.55	0.65	0.60
<b>e</b>	—	—	0.35
<b>L1</b>	0.20	0.30	0.25
<b>L2</b>	0.20	0.30	0.25
<b>L3</b>	—	—	0.40

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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