

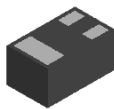
## Product Summary

Part Number	R1 (NOM)	R2 (NOM)	Marking
DDTA114YLP	10kΩ	47kΩ	P3

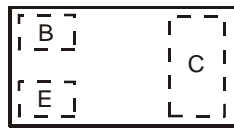
## Features

- Epitaxial Planar Die Construction
- Ultra-Small Leadless Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **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**

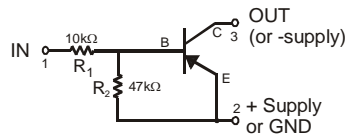
X1-DFN1006-3



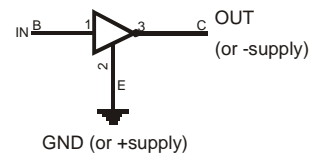
Bottom View



Top View  
Pin-Out



Device Symbol



Equivalent Inverter  
Circuit

## Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DDTA114YLP-7	P3	7	8	3,000
DDTA114YLP-7B	P3	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>DDTA114YLP-7</b>	 Top View Dot Denotes Collector Side 	From date code 1527 (YYWW), this changes to:  Top View Bar Denotes Base and Emitter Side 
<b>DDTA114YLP-7B</b>	 Top View Bar Denotes Base and Emitter Side 	P3 = Product Type Marking Code

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	-50	V
Input Voltage	V <sub>IN</sub>	+6 to -40	V
Output Current	I <sub>O</sub>	-70	mA
Output (Collector) Current	I <sub>C(MAX)</sub>	-100	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	250	mW
Power Derating above +25°C	P <sub>der</sub>	2	mW/°C
Thermal Resistance, Junction to Ambient Air (Note 5) (Equivalent to one heated junction of PNP)	R <sub>θJA</sub>	500	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics: Discrete PNP Transistor (Q1)** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>Off Characteristics (Note 6)</b>						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-50	—	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	-50	—	—	V	I <sub>C</sub> = -10.0mA, I <sub>B</sub> = 0
Collector-Base Cut Off Current	I <sub>CBO</sub>	—	—	-0.1	μA	V <sub>CB</sub> = -50V, I <sub>E</sub> = 0
Collector-Emitter Cut Off Current, I <sub>O(off)</sub>	I <sub>CE(sat)</sub>	—	—	-0.1	μA	V <sub>CE</sub> = -50V, I <sub>B</sub> = 0
Emitter-Base Cut Off Current	I <sub>EBO</sub>	—	—	-0.2	mA	V <sub>EB</sub> = 5V, I <sub>C</sub> = 0
Input Off Voltage	V <sub>I(off)</sub>	-0.3	—	—	V	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
<b>On Characteristics (Note 6)</b>						
Input-On Voltage	V <sub>I(on)</sub>	—	—	-1.4	V	V <sub>O</sub> = -0.3V, I <sub>O</sub> = I <sub>C</sub> = 1mA
Input Current	I <sub>I</sub>	—	—	-0.88	mA	V <sub>I</sub> = -5V
DC Current Gain	h <sub>FE</sub>	80	—	—	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -5mA
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	—	-0.25	V	I <sub>C</sub> = -50mA, I <sub>B</sub> = -2.5mA
Output On Voltage (Same as V <sub>CE(sat)</sub> )	V <sub>O(on)</sub>	—	-0.1	-0.3	V	I <sub>I</sub> = -0.25mA, I <sub>O</sub> = -5mA
Input Resistance	R <sub>1</sub>	7	10	13	kΩ	—
Resistance Ratio	(R <sub>2</sub> /R <sub>1</sub> )	3.7	4.7	5.7	—	—
<b>Small Signal Characteristics</b>						
Current Gain-Bandwidth Product	f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100 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. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

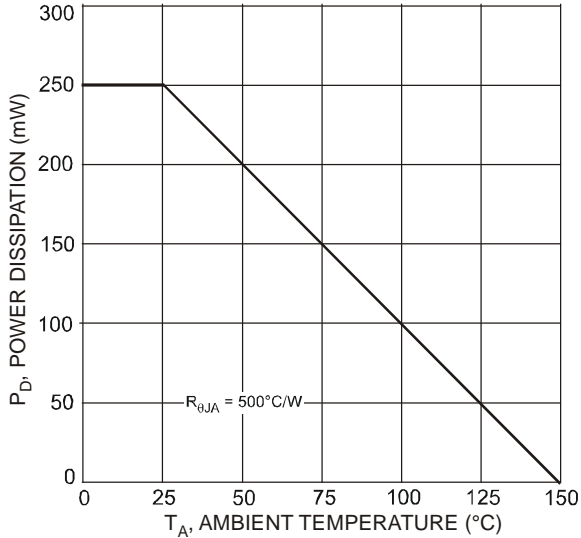


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

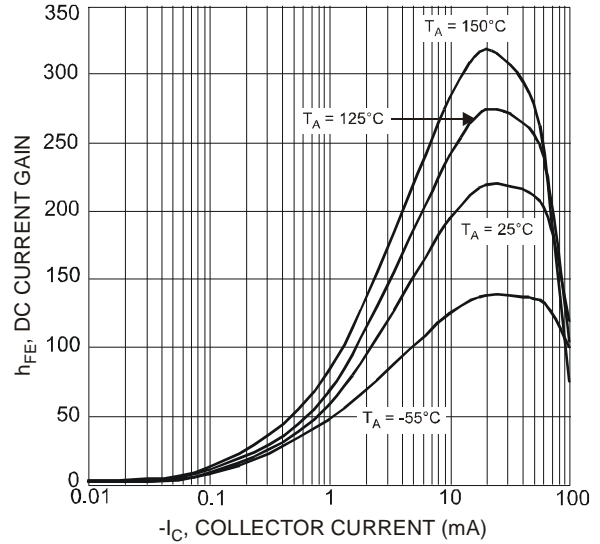


Fig. 2 Typical DC Current Gain vs. Collector Current

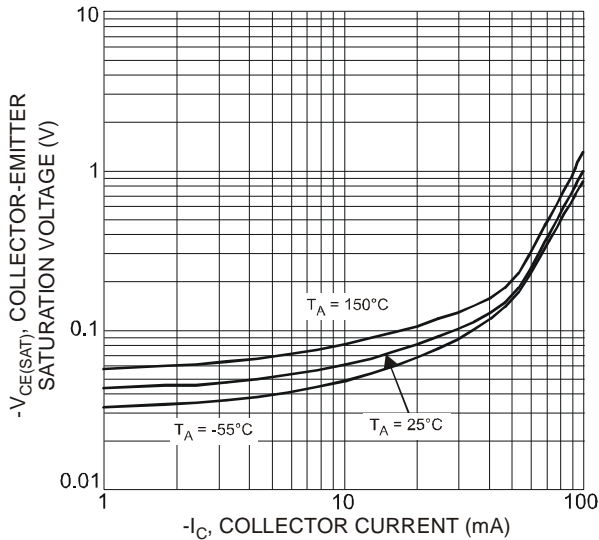


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

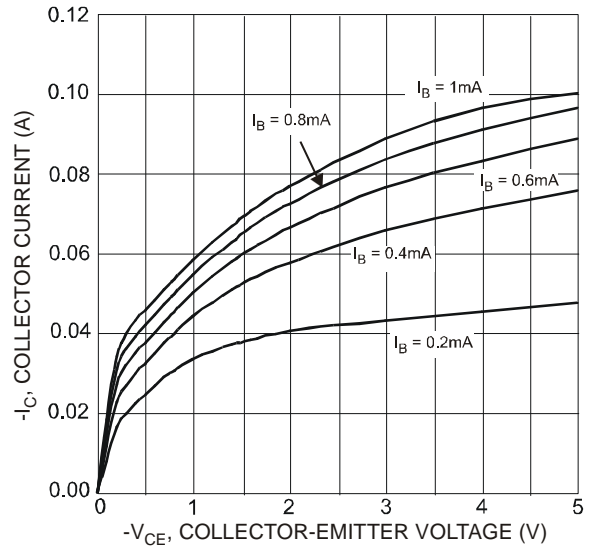


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

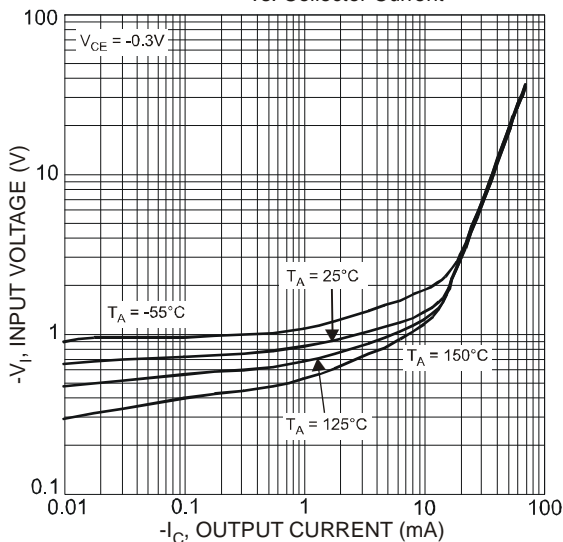


Fig. 5 Typical Input Voltage vs. Output Current (On Characteristics)

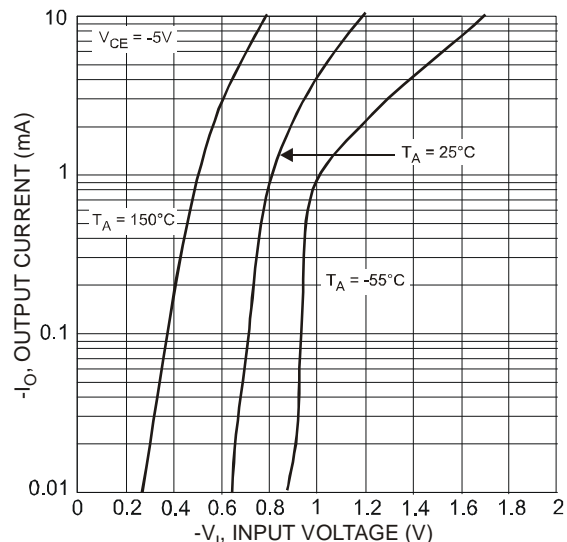
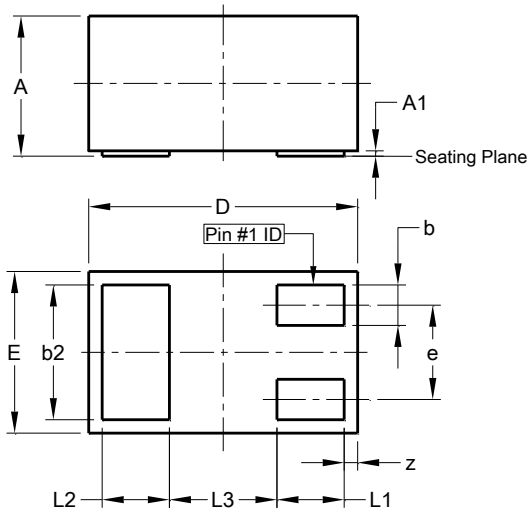


Fig. 6 Typical Output Current vs. Input Voltage (Off Characteristics)

**Package Outline Dimensions**

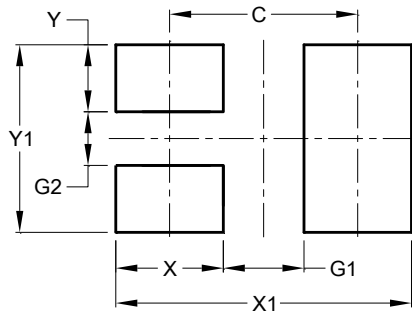
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



X1-DFN1006-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	0.70
G1	0.30
G2	0.20
X	0.40
X1	1.10
Y	0.25
Y1	0.70

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