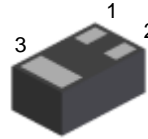


**Features**

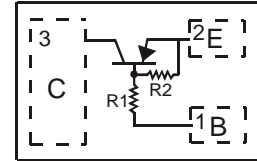
- Epitaxial Planar Die Construction
- Ultra-Small Leadless Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- Lead Free By Design/RoHS Compliant (Note 1)
- "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

**Mechanical Data**

- Case: DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: Collector Dot (See Diagram and Marking Information)
- Terminals: Finish — NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Code P2, Dot denotes Collector Side
- Ordering Information: See Page 4
- Weight: 0.0009 grams (approximate)

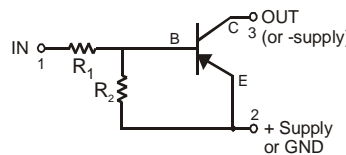


Bottom View

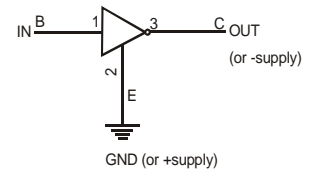


Top View

DFN1006-3



Schematic and Pin Configuration



Equivalent Inverter Circuit

Component P/N	R1(NOM)	R2(NOM)
DDTA144ELP	47K	47K

**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>	+10 to -40	V
Output Current (I <sub>o</sub> )	I <sub>C(max)</sub>	-100	mA
Power Dissipation (Note 3)	P <sub>D</sub>	250	mW
Power Deration above 25°C	P <sub>der</sub>	2	mW/°C

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient Air (Note 3) (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

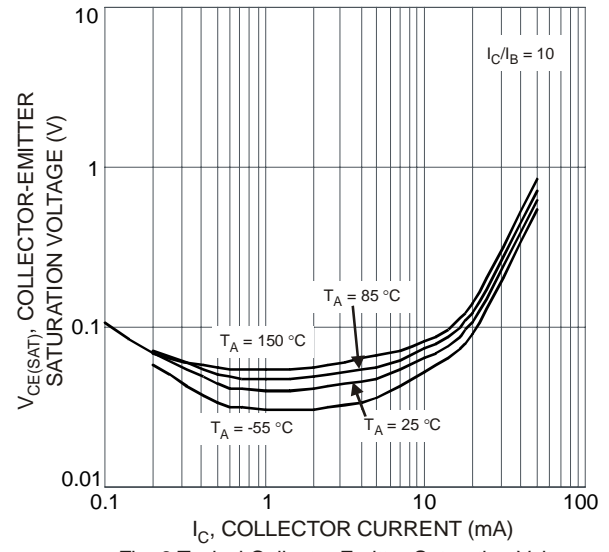
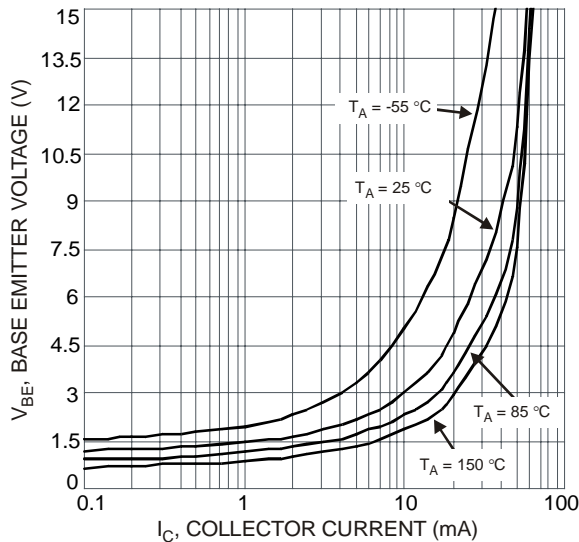
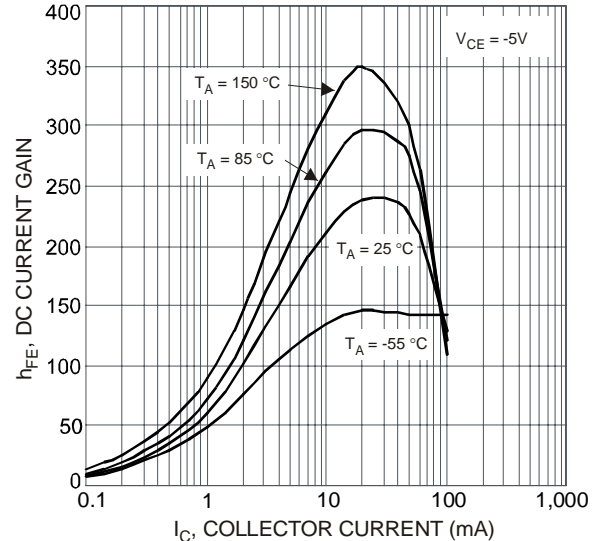
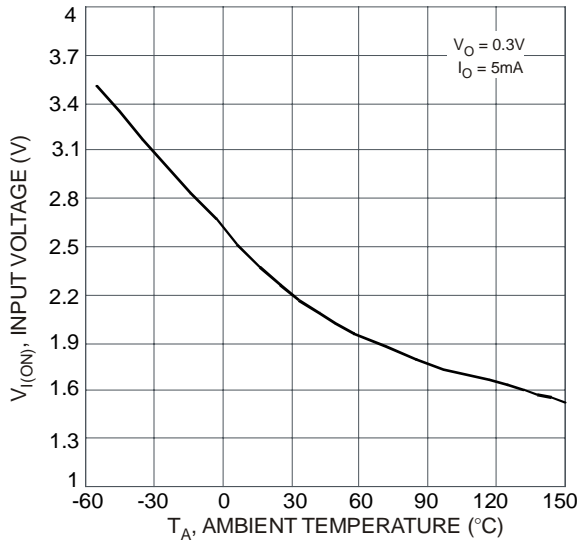
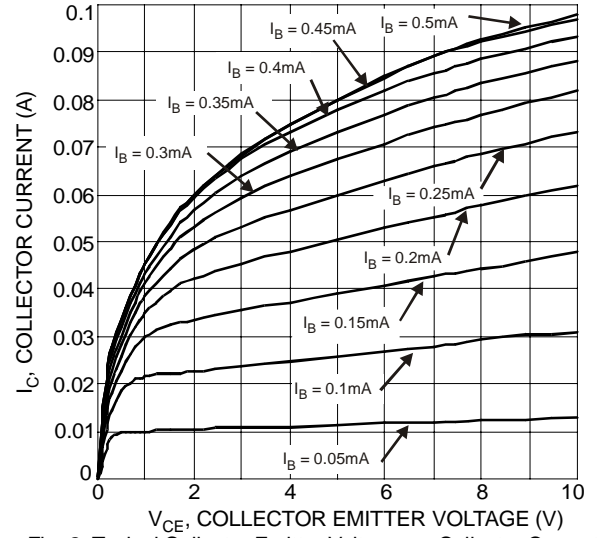
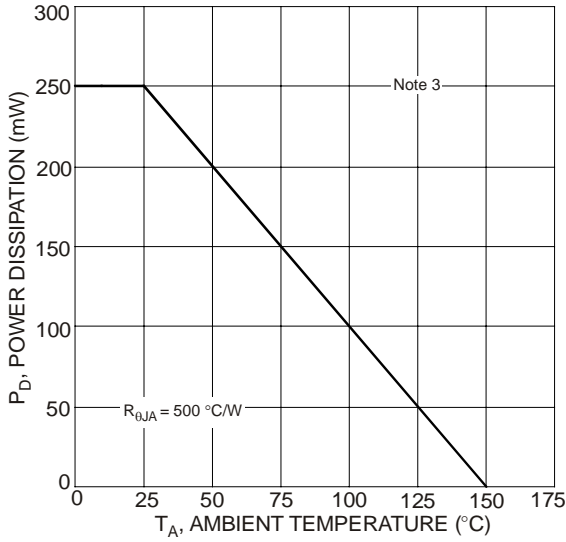
- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  3. Device mounted on FR-4 PCB, 1" x 0.85" x 0.062"; pad layout as shown on page 5 or Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>Off Characteristics (Note 4)</b>						
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-50	—	—	V	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-50	—	—	V	I <sub>C</sub> = -1.0mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage*	V <sub>(BR)EBO</sub>	-4.5	—	—	V	I <sub>E</sub> = -50μA, I <sub>C</sub> = 0
Collector Cutoff Current*	I <sub>CEX</sub>	—	—	-0.5	μA	V <sub>CE</sub> = -50V, V <sub>EB(OFF)</sub> = 3.0V
Base Cutoff Current (I <sub>BEX</sub> )	I <sub>BL</sub>	—	—	-0.5	μA	V <sub>CE</sub> = -50V, V <sub>EB(OFF)</sub> = 3.0V
Collector-Base Cut Off Current	I <sub>CBO</sub>	—	—	-0.5	μA	V <sub>CB</sub> = -50V, I <sub>E</sub> = 0
Collector-Emitter Cut Off Current, I <sub>O(OFF)</sub>	I <sub>CEO</sub>	—	—	-0.5	μA	V <sub>CE</sub> = -50V, I <sub>B</sub> = 0
Emitter-Base Cut Off Current	I <sub>EBO</sub>	—	—	-0.5	mA	V <sub>EB</sub> = 4V, 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> = -100uA
<b>On Characteristics (Note 4)</b>						
Base-Emitter Turn-On Voltage*	V <sub>BE(ON)</sub>	—	—	-0.69	V	V <sub>CE</sub> = -5V, I <sub>C</sub> = -2mA
		—	—	-0.78	V	V <sub>CE</sub> = -5V, I <sub>C</sub> = -10mA
Base-Emitter Saturation Voltage*	V <sub>BE(SAT)</sub>	—	—	-0.88	V	I <sub>C</sub> = -10mA, I <sub>B</sub> = -1mA, V <sub>CE</sub> = -5V
		—	—	-0.98	V	I <sub>C</sub> = -50mA, I <sub>B</sub> = -5mA, V <sub>CE</sub> = -5V
Input-On Voltage	V <sub>I(ON)</sub>	-3	—	—	V	V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA
Input Current	I <sub>I</sub>	—	—	-7.2	mA	V <sub>I</sub> = -5V
DC Current Gain	h <sub>FE</sub>	90	—	—	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -2mA
		120	—	—	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -5mA
		150	—	—	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -10mA
		100	—	—	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -100mA
		180	—	—	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -200mA
		250	—	—	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -300mA
Collector-Emitter Saturation Voltage*	V <sub>CE(SAT)</sub>	—	—	-0.15	V	I <sub>B</sub> = -1mA, I <sub>C</sub> = -10mA
		—	—	-0.85	V	I <sub>B</sub> = -5mA, I <sub>C</sub> = -50mA
Output On Voltage (Same as V <sub>CE(SAT)</sub> )	V <sub>O(ON)</sub>	—	—	-0.3	V	I <sub>I</sub> = -0.5mA, I <sub>O</sub> = -50mA
Input Resistance	R <sub>1</sub>	32.9	47	61.1	KΩ	—
Resistance Ratio	(R <sub>2</sub> /R <sub>1</sub> )	0.8	1.0	1.2	—	—
<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

\* Guaranteed by design.

Notes: 4. Short duration pulse test used to minimize self-heating effect.  
Pulse Test: Pulse width t<sub>p</sub> < 300 uS, Duty Cycle, d < 2%.



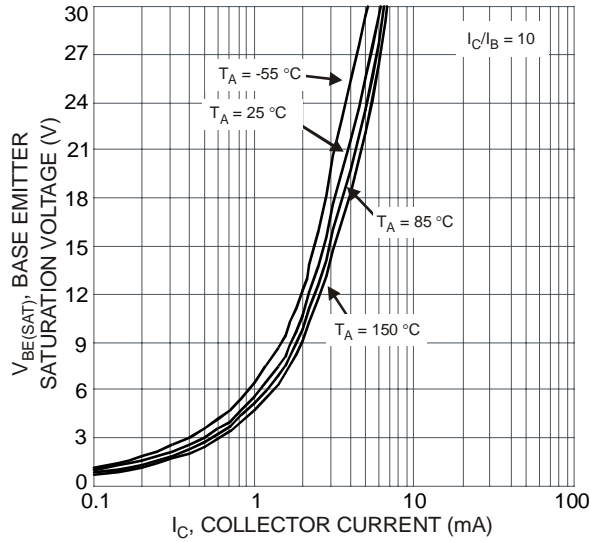


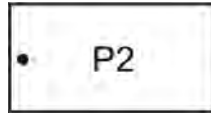
Fig. 7 Typical Base Emitter Saturation Voltage vs. Collector Current

## Ordering Information (Note 6)

Device	Packaging	Shipping
DDTA144ELP-7	DFN1006-3	3000/Tape & Reel

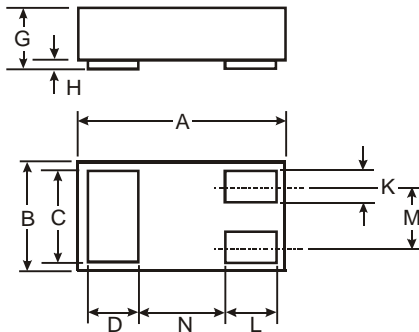
Notes: 6. For packaging details, please see page 5 or go to our website at <http://www.diodes.com/ap2007.pdf>.

## Marking Information



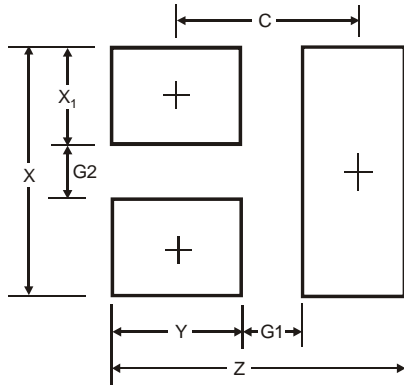
P2 = Product Type Marking Code  
Dot Denotes Collector, Pin 3

## Mechanical Details



DFN1006-3			
Dim	Min	Max	Typ
A	0.95	1.075	1.00
B	0.55	0.675	0.60
C	0.45	0.55	0.50
D	0.20	0.30	0.25
G	0.47	0.53	0.50
H	0	0.05	0.03
K	0.10	0.20	0.15
L	0.20	0.30	0.25
M	—	—	0.35
N	—	—	0.40
All Dimensions in mm			

**Suggested Pad Layout**



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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