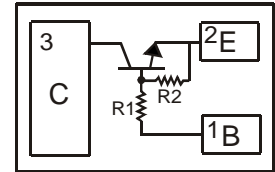
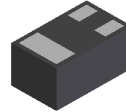


**Features**

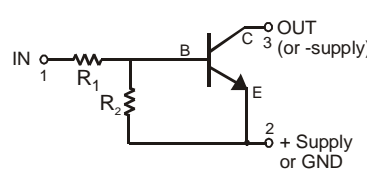
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DDTA144ELP)
- Ultra-Small Leadless Surface Mount Package
- Ideally Suited for Automated Assembly Processes
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**



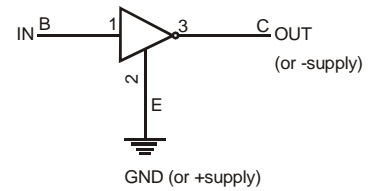
**Mechanical Data**

- Case: DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: Collector Dot - See Marking Information
- Terminals: Finish — NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Code N6, Dot denotes Collector Side
- Ordering Information: See Page 3
- Weight: 0.001 grams (approximate)

DFN1006-3



Schematic and Pin Configuration



Equivalent Inverter Circuit

Component P/N	R1(NOM)	R2(NOM)
DDTC144ELP	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>C(max)</sub>	100	mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P <sub>D</sub>	250	mW
Power Deration above 25°C	P <sub>der</sub>	2	mW/°C
Thermal Resistance, Junction to Ambient Air (Note 3)	R <sub>θJA</sub>	500	°C/W
Operation and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
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
Collector-Base Cut Off Current	I <sub>CBO</sub>	—	—	0.5	μA	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0
Input Voltage	V <sub>I(OFF)</sub>	—	1.2	0.5	V	V <sub>CE</sub> = 5V, I <sub>O</sub> = 100μA
	V <sub>I(ON)</sub>	3	1.6	—	V	V <sub>O</sub> = 0.3V, I <sub>O</sub> = 2mA
Output Voltage	V <sub>O(ON)</sub>	—	—	0.3	V	I <sub>O</sub> /I <sub>I</sub> = 10mA/0.5mA
Input Current	I <sub>I</sub>	—	—	0.18	mA	V <sub>I</sub> = 5V
Output Current	I <sub>O(OFF)</sub>	—	—	0.5	μA	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V
DC Current Gain	G <sub>1</sub>	68	—	—	—	V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA
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	1.2	—	—
Transition Frequency*	f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = 10V, I <sub>E</sub> = 5mA, f = 100MHz

\* Characteristics of transistor only.

- 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 3 or Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

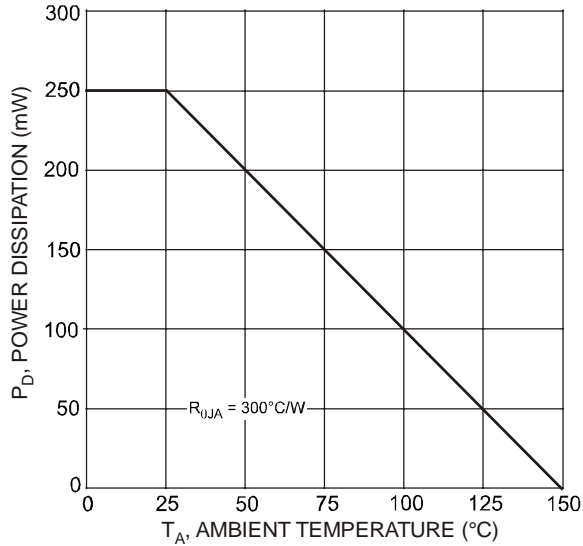


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

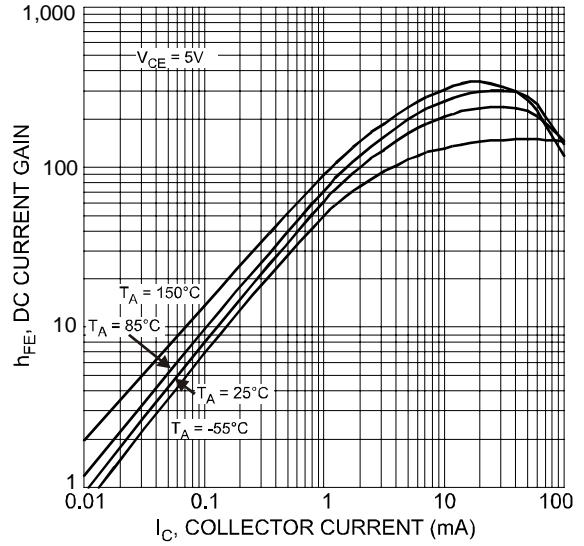


Fig. 2 Typical DC Current Gain vs. Collector Current

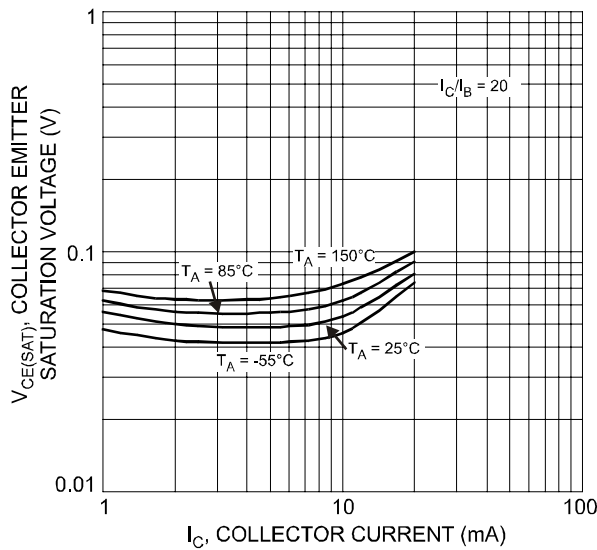


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

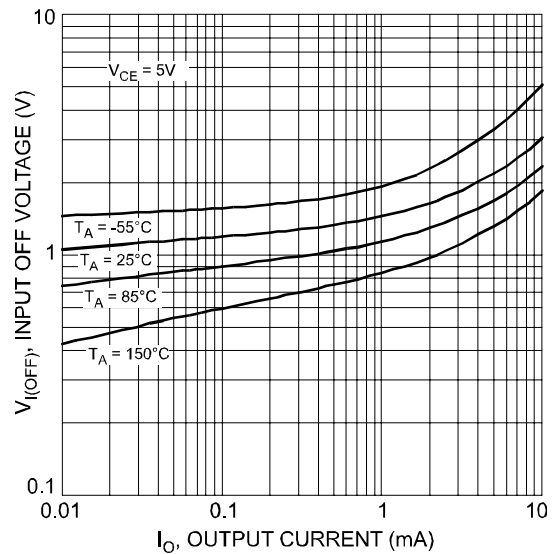


Fig. 4 Typical Input Off Voltage vs. Output Current

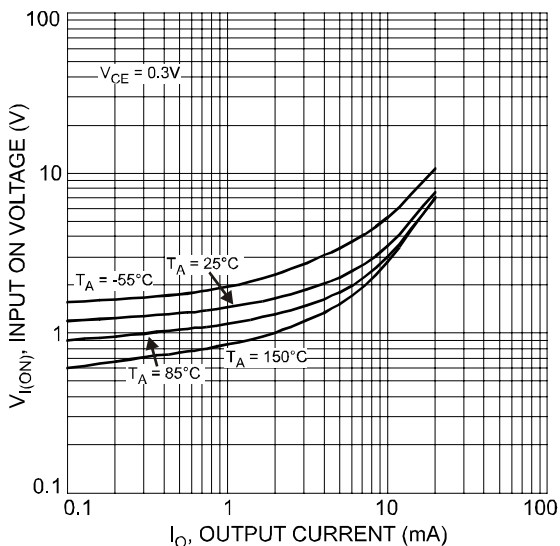


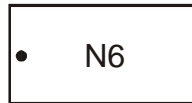
Fig. 5 Typical Input ON Voltage vs. Output Current

## Ordering Information (Note 4)

Device	Packaging	Shipping
DDTC144ELP-7	DFN1006-3	3000/Tape & Reel

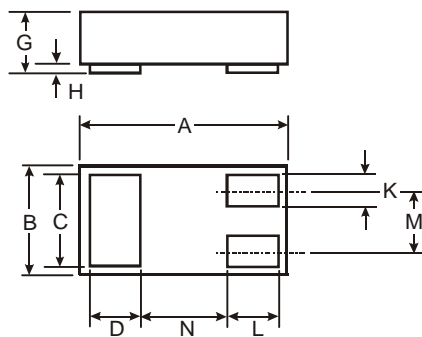
Notes: 4. For packaging details, go to our website at <http://www.diodes.com/ap2007.pdf>.

## Marking Information



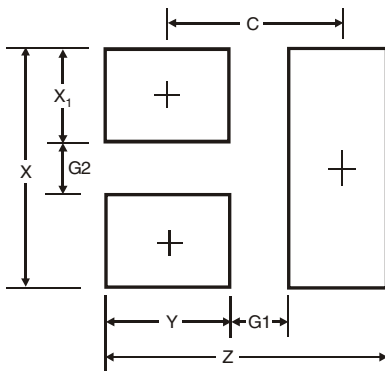
N6 = Product Type Marking Code  
Dot Denotes Collector, Pin 3

## 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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