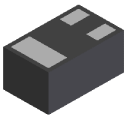
DDTC144ELP

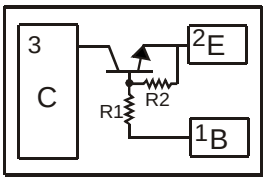
PRE-BIASED (R1=R2) SMALL SIGNAL SURFACE MOUNT 100mA NPN TRANSISTOR

NEW PRODUCT

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**

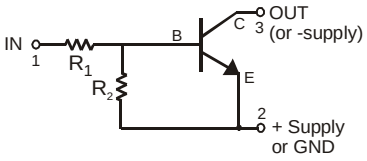




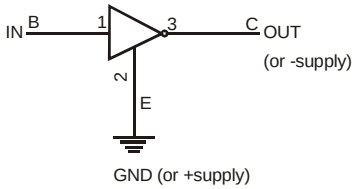
DFN1006-3

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)



Schematic and Pin Configuration



Equivalent Inverter Circuit

Component P/N	R1(NOM)	R2(NOM)
DDTC144ELP	47K	47K

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	50	V
Input Voltage	V_{IN}	-10 to +40	V
Output Current	$I_{C(max)}$	100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P_D	250	mW
Power Deration above 25°C	P_{der}	2	mW/°C
Thermal Resistance, Junction to Ambient Air (Note 3)	$R_{\theta JA}$	500	°C/W
Operation and Storage Temperature Range	T_j, T_{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50	—	—	V	I_C = 10μA, I_E = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	50	—	—	V	I_C = 1.0mA, I_B = 0
Collector-Base Cut Off Current	I_{CBO}	—	—	0.5	μA	V_{CB} = 50V, I_E = 0
Input Voltage	$V_{I(OFF)}$	—	1.2	0.5	V	V_{CE} = 5V, I_O = 100μA
	$V_{I(ON)}$	3	1.6	—		V_O = 0.3V, I_O = 2mA
Output Voltage	$V_{O(ON)}$	—	—	0.3	V	I_O/I_I = 10mA/0.5mA
Input Current	I_I	—	—	0.18	mA	V_I = 5V
Output Current	$I_{O(OFF)}$	—	—	0.5	μA	V_{CC} = 50V, V_I = 0V
DC Current Gain	G_1	68	—	—	—	V_O = 5V, I_O = 5mA
Input Resistance	R_1	32.9	47	61.1	kΩ	—
Resistance Ratio	R_2/R_1	0.8	1	1.2	—	—
Transition Frequency*	f_T	—	250	—	MHz	V_{CE} = 10V, I_E = 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.
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.

NEW PRODUCT

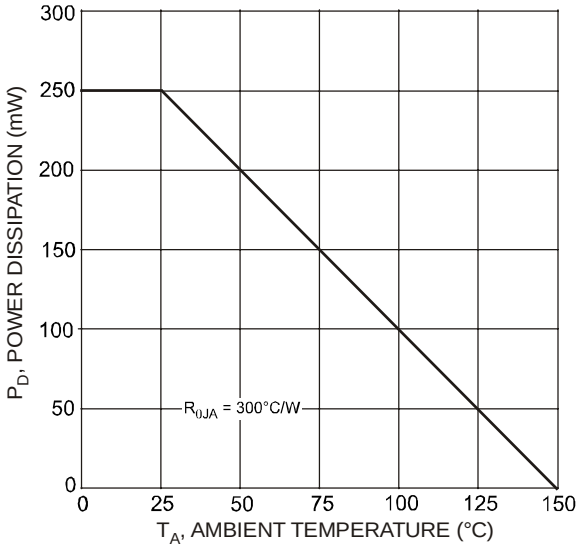


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

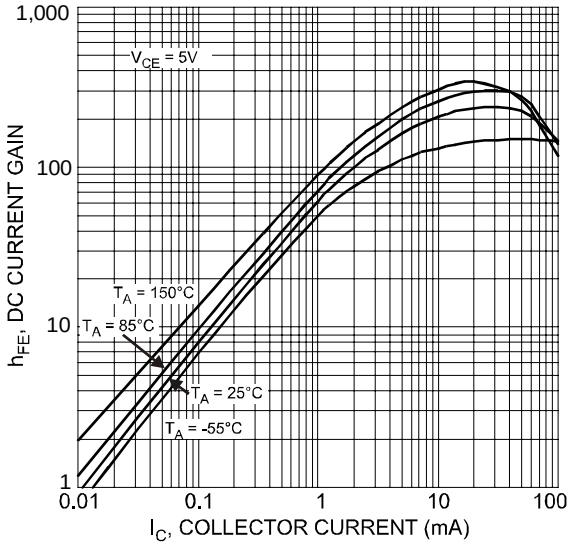


Fig. 2 Typical DC Current Gain vs. Collector Current

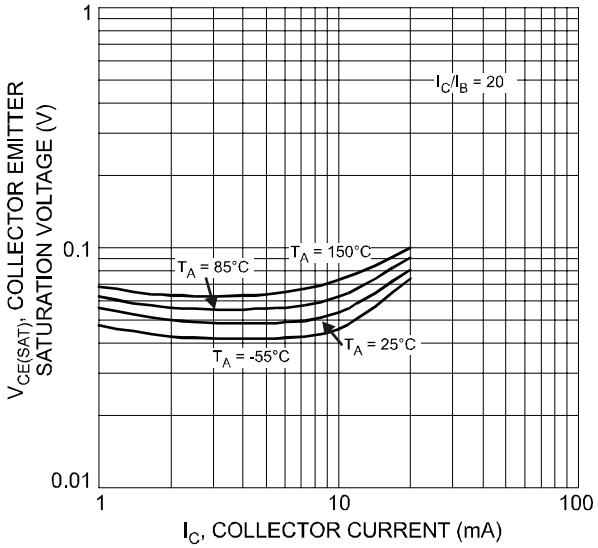


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

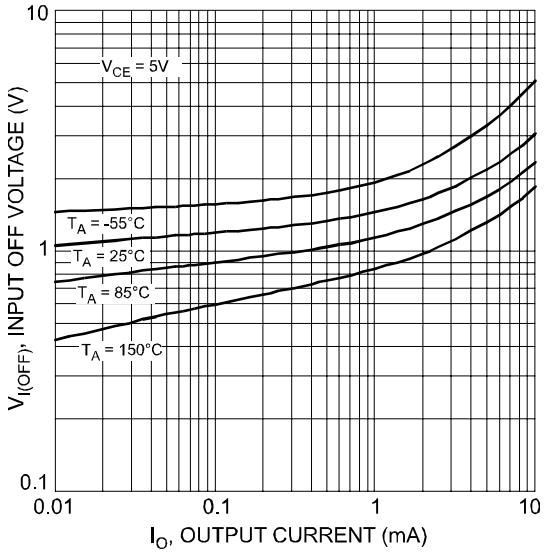


Fig. 4 Typical Input Off Voltage vs. Output Current

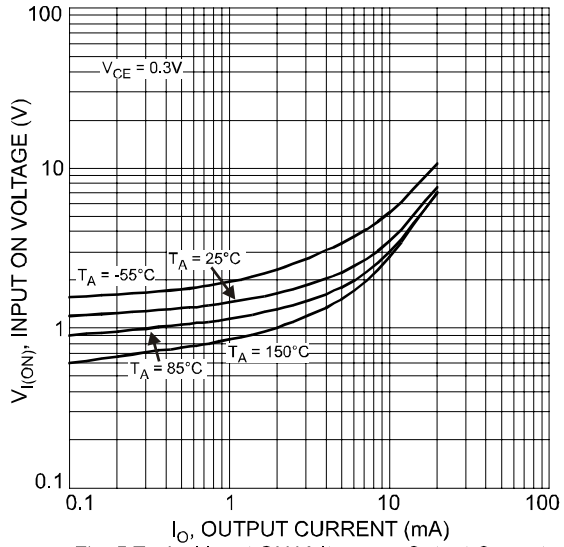


Fig. 5 Typical Input ON Voltage vs. Output Current

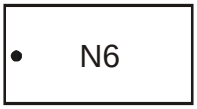
NEW PRODUCT

Ordering Information (Note 4)

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

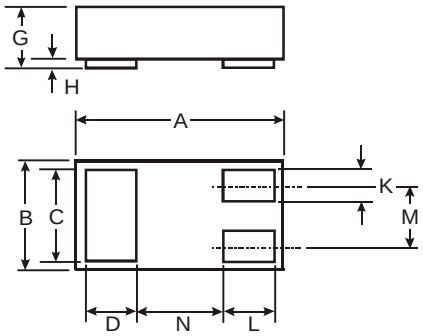
Notes: 4. For packaging details, go to our website at http://www.diodes.com/ap2007.pdf.

Marking Information



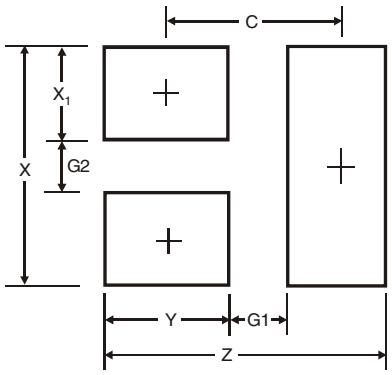
N6 = Product Type Marking Code
Dot Denotes Collector, Pin 3

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