



50V PRE-BIASED SMALL SIGNAL SURFACE MOUNT PNP TRANSISTOR

Features

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

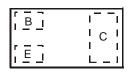
Mechanical Data

- Case: DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.0009 grams (approximate)

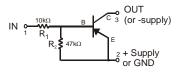
DFN1006-3



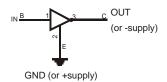
Bottom View



Top View Pin-Out



Device Symbol



Equivalent Inverter Circuit

Ordering Information (Note 3)

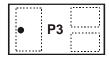
Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DDTA114YLP-7	P3	7	8	3,000
DDTA114YLP-7B	P3	7	8	10,000

Notes:

- 1. No purposefully added lead.
- 2. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com.
- 3. For packaging details, go to our website at http://www.diodes.com.

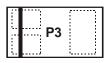
Marking Information

DDTC113TLP-7



Top View Dot Denotes Collector Side

DDTC113TLP-7B



Top View Bar Denotes Base and Emitter Side

P3 = Product Type Marking Code



Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	-50	V
Input Voltage	V _{IN}	+6 to -40	V
Output Current	lo	-70	mA
Output (Collector) Current	I _{C(MAX)}	-100	mA

Thermal Characteristics @TA = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_{D}	250	mW
Power Derating above 25°C	P _{der}	2	mW/°C
Thermal Resistance, Junction to Ambient Air (Note 4) (Equivalent to one heated junction of PNP)	$R_{ hetaJA}$	500	°C/W
Operating and Storage Temperature Range	T_J , T_{STG}	-55 to +150	°C

Electrical Characteristics: Discrete PNP Transistor (Q1) @TA = 25°C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Off Characteristics (Note 5)						
Collector-Base Breakdown Voltage	BV_CBO	-50			V	$I_C = -10\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage	BV_{CEO}	-50	_	_	V	$I_C = -1.0 \text{mA}, I_B = 0$
Collector-Base Cut Off Current	I _{CBO}			-0.1	μΑ	$V_{CB} = -50V, I_{E} = 0$
Collector-Emitter Cut Off Current, IO(off)	I _{CEO}			-0.5	μΑ	$V_{CB} = -50V, I_B = 0$
Emitter-Base Cut Off Current	I _{EBO}			-0.2	mA	$V_{EB} = 4V, I_{C} = 0$
Input Off Voltage	$V_{I(off)}$			-0.3	V	$V_{CC} = -5V$, $I_{O} = -100uA$
On Characteristics (Note 5)						
Input-On Voltage	$V_{I(on)}$	-1.4			V	$V_O = -0.3V$, $I_O = I_C = 1mA$
Input Current	I _I	_	_	-0.88	mA	$V_I = -5V$
DC Current Gain	h _{FE}	80			_	$V_{CE} = -5V$, $I_C = -5mA$
Collector-Emitter Saturation Voltage	V _{CE(sat)}			-0.25	V	$I_C = -50 \text{mA}, I_B = -2.5 \text{mA}$
Output On Voltage	V _{O(on)}	_	-0.1	-0.3	V	$I_{I} = -0.25 \text{mA}, I_{O} = -5 \text{mA}$
Input Resistance	R1	7	10	13	ΚΩ	_
Resistance Ratio	(R2/R1)	3.7	4.7	5.7	_	_
Small Signal Characteristics						
Current Gain-Bandwidth Product	f _T		250	_	MHz	V _{CE} = -10V, I _E = -5mA, f = 100 MHz

Notes:

- 4. Device mounted on FR-4 PCB, 1" x 0.85" x 0.062".
- 5. Short duration pulse test used to minimize self-heating effect. Pulse width tp<300μS, Duty Cycle, d≤2%.



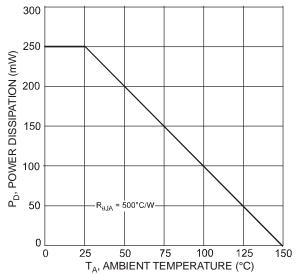


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

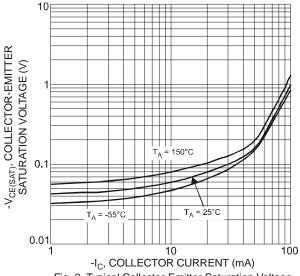


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

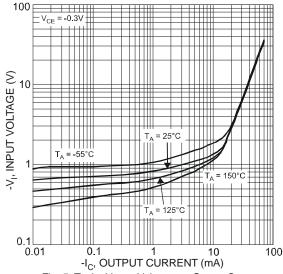


Fig. 5 Typical Input Voltage vs. Output Current (On Characteristics)

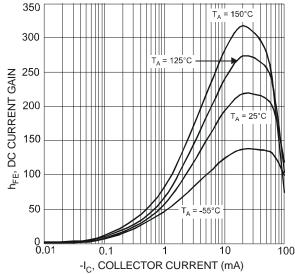


Fig. 2 Typical DC Current Gain vs. Collector Current

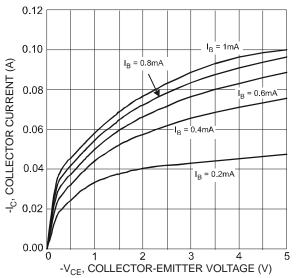


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

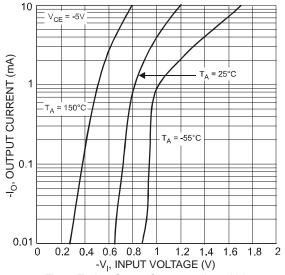
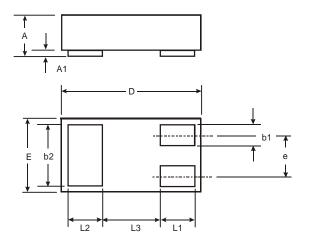


Fig. 6 Typical Output Current vs. Input Voltage (Off Characteristics)

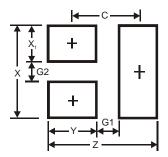


Package Outline Dimensions



DFN1006-3						
Dim	Min	Max	Тур			
Α	A 0.47 A1 0		0.50			
A1			0.03			
b1	0.10	0.20	0.15			
b2	0.45	0.55	0.50			
D 0.95		1.075	1.00			
Е	0.55	0.675	0.60			
е	_	_	0.35			
L1	0.20	0.30	0.25			
L2	0.20	0.30	0.25			
L3 —		_	0.40			
All Dimensions in mm						

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
Х	0.7
X1	0.25
Y	0.4
С	0.7



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