

Features

- Built-In Bias Resistors Enable the Configuration of an Inverter Circuit Without Connecting External Input Resistors
- The Bias Resistors Consist of Thin-Film Resistors With Complete Isolation to Allow Negative Biasing of the Input. They Also Have the Advantage of Almost Completely Eliminating Parasitic Effects
- Only the On/Off Conditions Need to Be Set For Operation, Making Device Design Easy
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

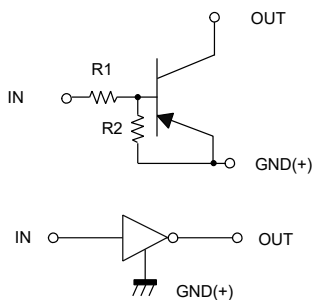
Maximum Ratings @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	---	-50	---	V
Input Voltage	V_{IN}	-20	---	7	V
Output Current	I_O	---	-100	---	mA
	$I_{C(Max)}$	---	-100	---	mA
Power Dissipation	P_D	---	200	---	mW
Junction Temperature	T_J	---	---	150	°C
Storage Temperature	T_{stg}	-55	---	150	°C

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

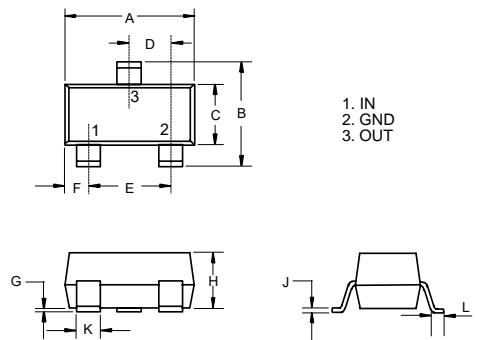
Device Marking: 33

Internal Structure



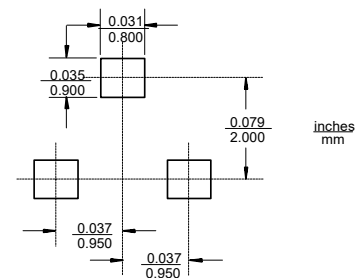
**PNP
Digital Transistor**

SOT-23



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Input Voltage	$V_{I(off)}$	-0.3	---	---	V	$V_{CC}=-5V, I_O=-100\mu A$
	$V_{I(on)}$	---	---	-2.5	V	$V_O=-0.3V, I_O=-2mA$
Output Voltage	$V_{O(on)}$	---	-0.1	-0.3	V	$I_O=-10mA, I_I=-0.5mA$
Input Current	I_I	---	---	-1.8	mA	$V_I=-5V$
Output Current	$I_{O(off)}$	---	---	-0.5	μA	$V_{CC}=-50V, V_I=0$
DC Current Gain	G_I	30	---	---		$V_O=-5V, I_O=-5mA$
Collector-base Cut-off Current	I_{CBO}	---	---	-100	nA	$V_{CB}=50V; I_E=0A$
Collector-emitter Cut-off Current	I_{CEO}	---	---	-1	μA	$V_{CE}=-30V; I_B=0A, T_J=25^\circ C$
		---	---	-5	μA	$V_{CE}=-30V; I_B=0A, T_J=150^\circ C$
Input Resistance	R_I	3.29	4.7	6.11	K Ω	
Resistance Ratio	R_2/R_1	1.7	2.1	2.6		
Collector Capacitance	C_C	---	2.50	---	pF	$V_{CB}=-10V, I_E=I_e=0A, f=1MHz$
Transition Frequency	f_T	---	250	---	MHz	$V_{CE}=-10V, I_E=5mA, f=100MHz$

Curve Characteristics

Fig. F - DC Current Gain Characteristics

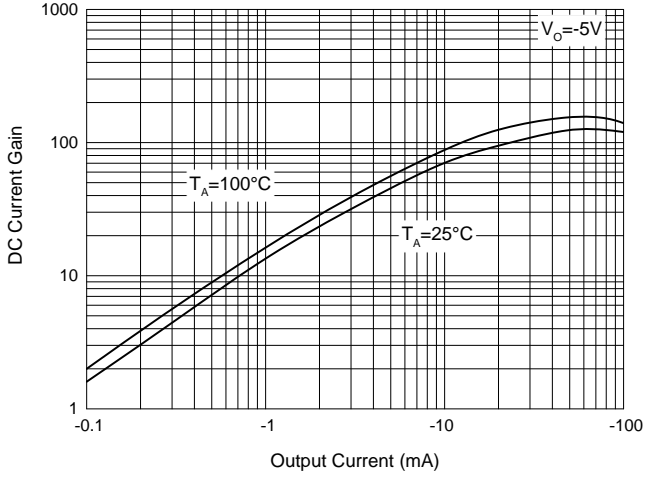


Fig. G - Input Voltage (on) Characteristics

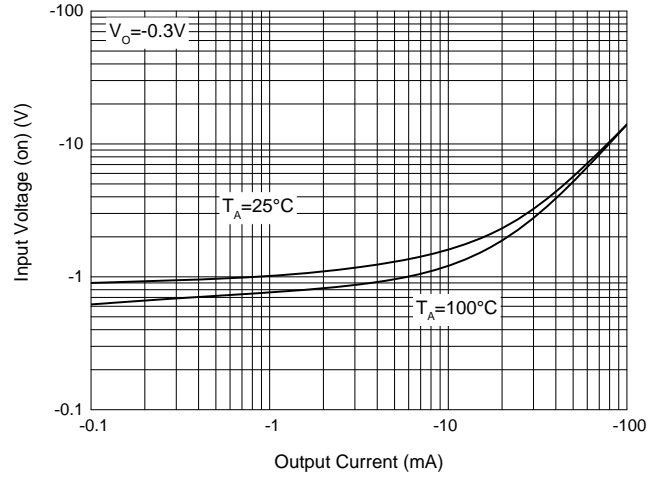


Fig. H - Input Voltage (off) Characteristics

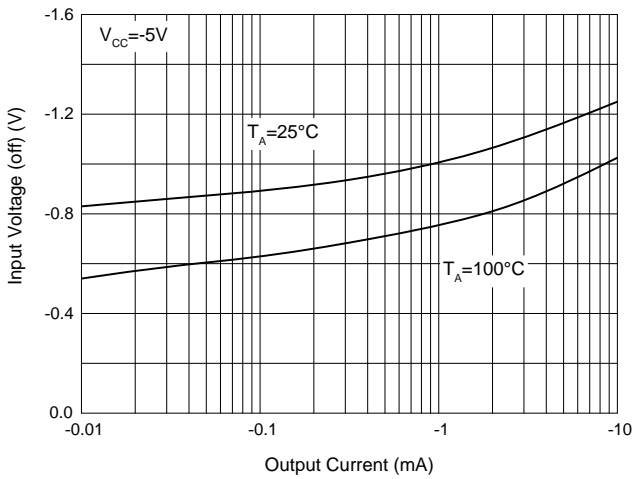


Fig. I - Output Voltage Characteristics

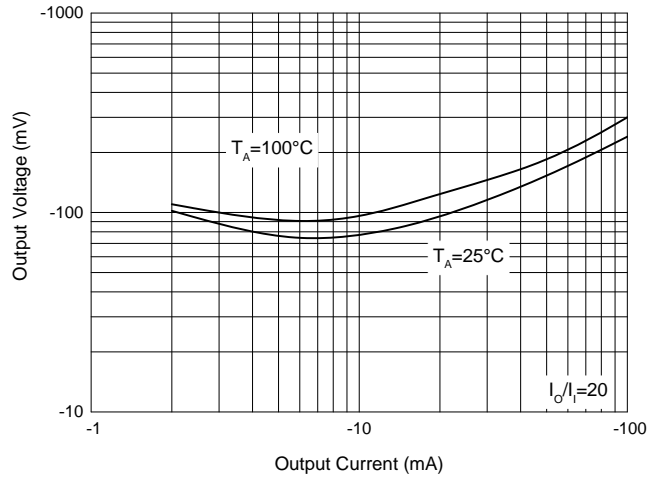
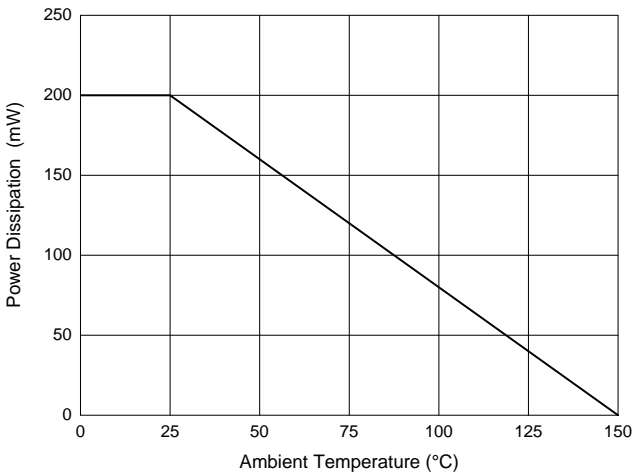


Fig. J - Power Derating Curve



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

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