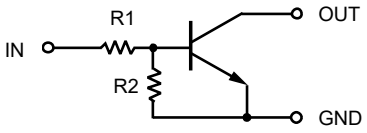
Prisemi®

PDTC143EE

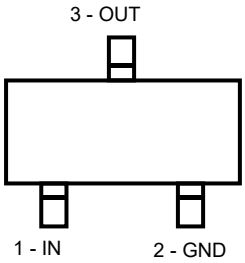
Digital Transistor(built-in resistors)

Feature

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 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 the device design easy.



R1=4.7KΩ
R2=4.7KΩ



Top View

Applications

- Inverter
- Interface
- Driver

Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17 um
- Pin flatness：≤3mil

Structure

NPN epitaxial planar silicon transistor (Resistor built-in type)

Electrical characteristics per line@25℃(unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input voltage	$V_{I(off)}$	V_{CC}=5V,I_O=100μA	0.5	1.2	1.5	V
	$V_{I(on)}$	V_O=0.3V,I_O=20mA	1.5	2.0	2.5	V
Output voltage	$V_{O(off)}$	I_O/I_I=10mA/0. 5mA	-	0.1	0.3	V
Input current	I_I	V_I=5V	-	-	1.8	mA
Output current	$I_{O(off)}$	V_{CC}=50V, V_I=0V	-	-	0.5	μA
DC current gain	G_1	V_O=5V, I_O=10mA	30	-	-	-
Input resistance	R_1	-	3.29	4.7	6.11	KΩ
Resistance ration	R_2/R_1	-	0.8	1.0	1.2	-
Transition frequency	f_T	V_{CE}=10V, I_E= −5mA, f=100MHz	-	250	-	MHz

Absolute maximum rating@25℃

Rating	Symbol	Value	Units
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10 to +30	V
Output current	I_O	100	mA
	$I_{C(MAX.)}$	100	mA
Power dissipation	P_d	150	mW
Junction temperature	T_j	150	℃
Storage temperature	T_{stg}	-55 to +150	℃

Typical Characteristics

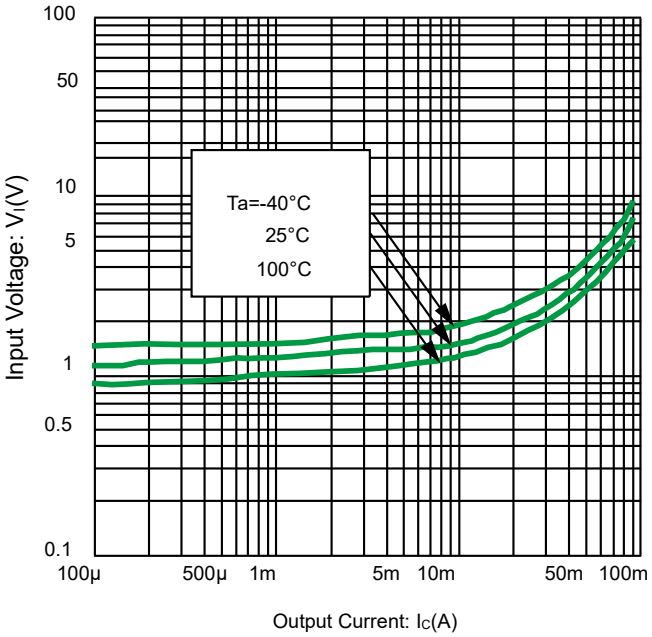


Fig 1.Input Voltage vs. output current
@V_C=0.3V (ON characteristics)

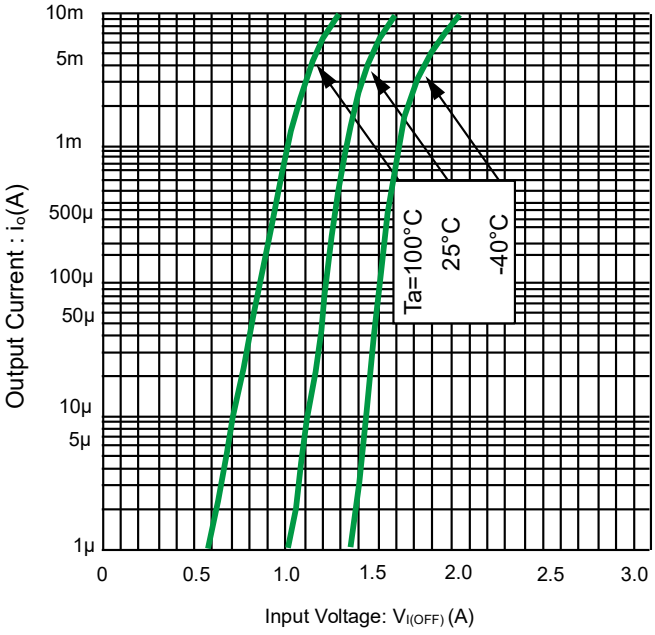
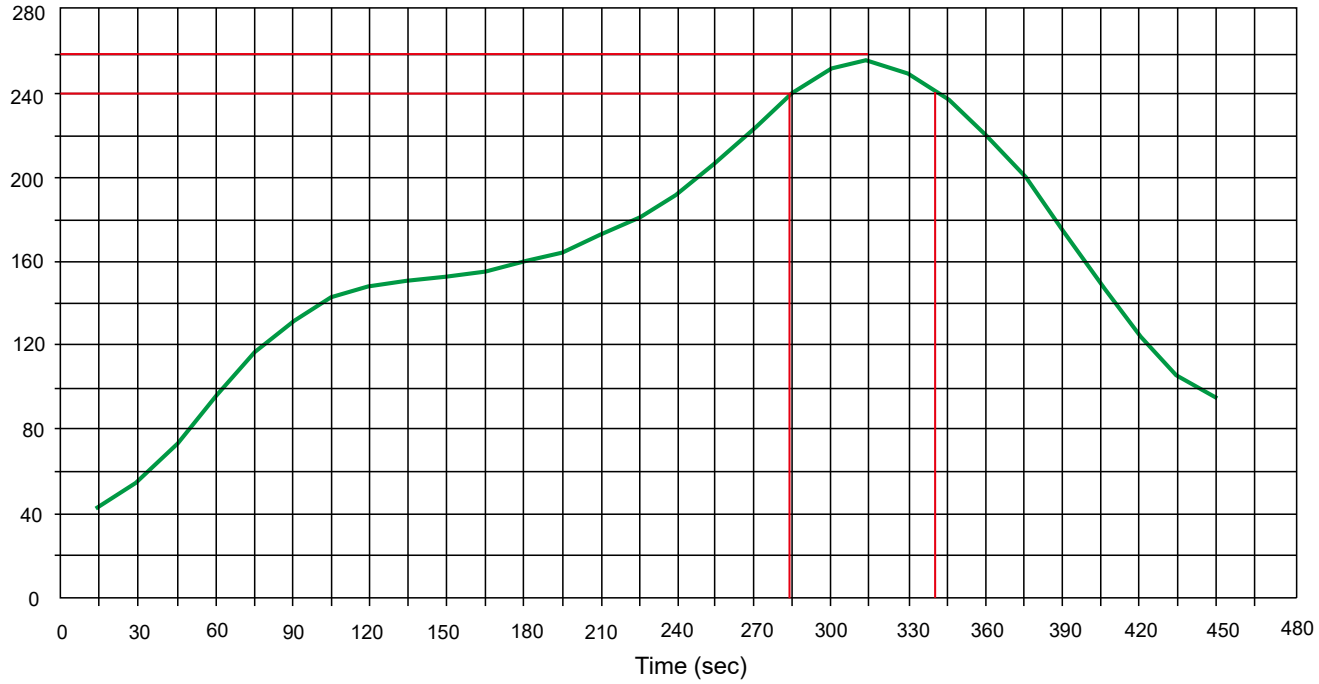


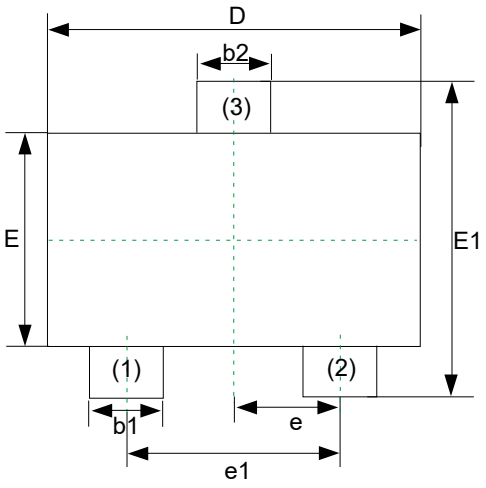
Fig 2.Output current vs. input voltage
@V_{CC}=5V(OFF characteristics)

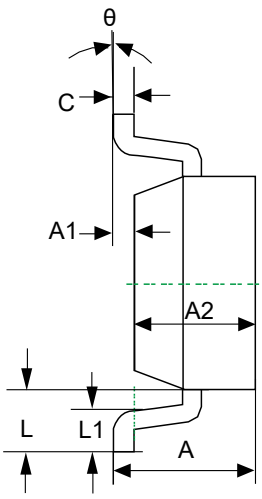
Solder Reflow Recommendation

Peak Temp=257℃, Ramp Rate=0.802deg. ℃/sec

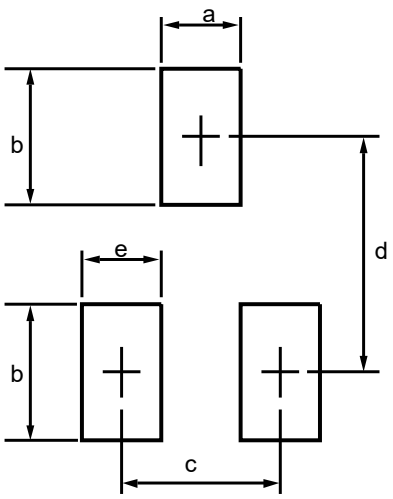


Product dimension（SOT-523）





Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500TYP		0.020TYP	
e1	0.900	1.100	0.035	0.043
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°



Dim	Millimeters	
	MIN	MAX
a	--	0.5
b	--	0.6
c	--	1.0
d	--	1.24
e	--	0.4

Ordering information

Device	Package	Shipping
PDTC143EE	SOT-523 (Pb-Free)	3000 / Tape & Reel

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