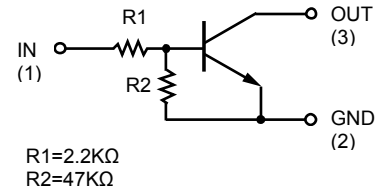


**Feature**

- 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.


**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 digital transistor (Built-in resistor type)

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_o=100\mu A$	-	-	0.5	V
	$V_{I(on)}$	$V_o=0.3V, I_o=5mA$	1.1	-	-	V
Output voltage	$V_{O(off)}$	$I_o/I_i=5mA/0.25mA$	-	0.1	0.3	V
Input current	$I_i$	$V_i=5V$	-	-	3.6	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_i=0V$	-	-	0.5	μA
DC current gain	$G_1$	$V_o=5V, I_o=10mA$	80	-	-	-
Input resistance	$R_1$	-	1.54	2.2	2.86	KΩ
Resistance ration	$R_2/R_1$	-	17	21	26	-
Transition frequency	$f_T$	$V_{CE}=10V, I_E=-5mA, f=100MHz$	-	250	-	MHz

Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-5 to +12	V
Output current	$I_o$	100	mA
	$I_{C(MAX.)}$	100	mA
Power dissipation	$P_d$	150	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Typical Characteristics

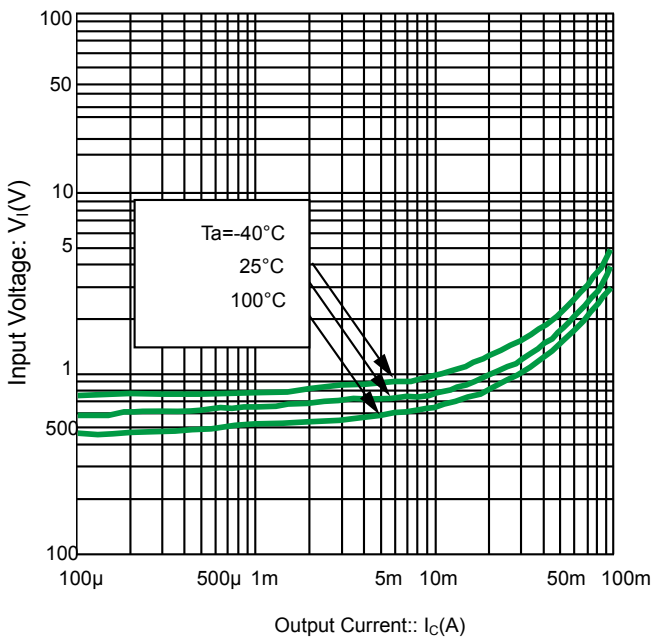


Fig 1. Input Voltage vs. output current  
@ $V_o=0.3V$  (ON characteristics)

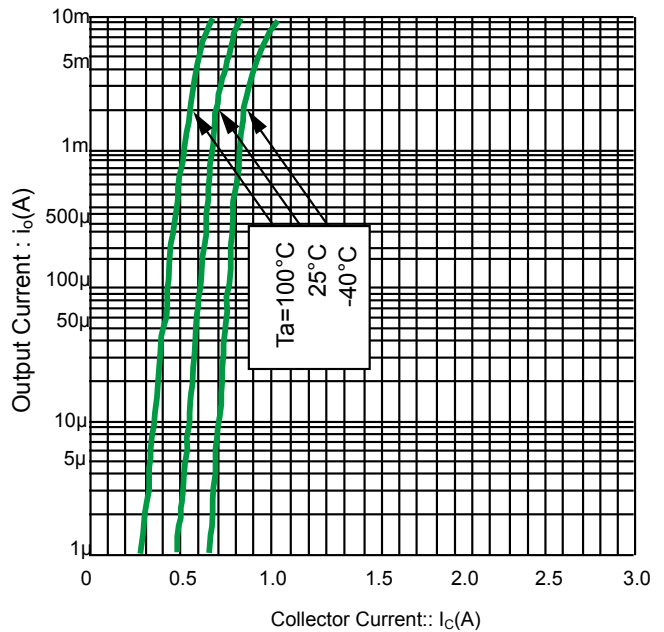


Fig 2. Output current vs. input voltage  
@ $V_{CC}=5V$  (OFF characteristics)

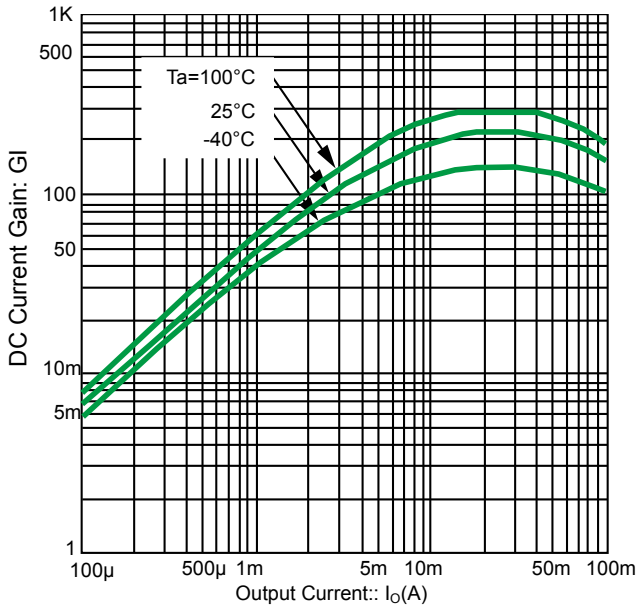


Fig 3. DC current gain vs. output  
@V<sub>O</sub>=5V

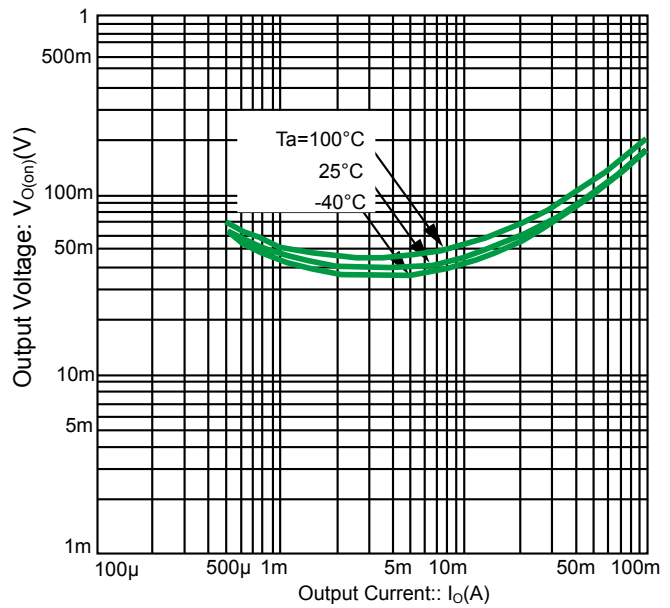
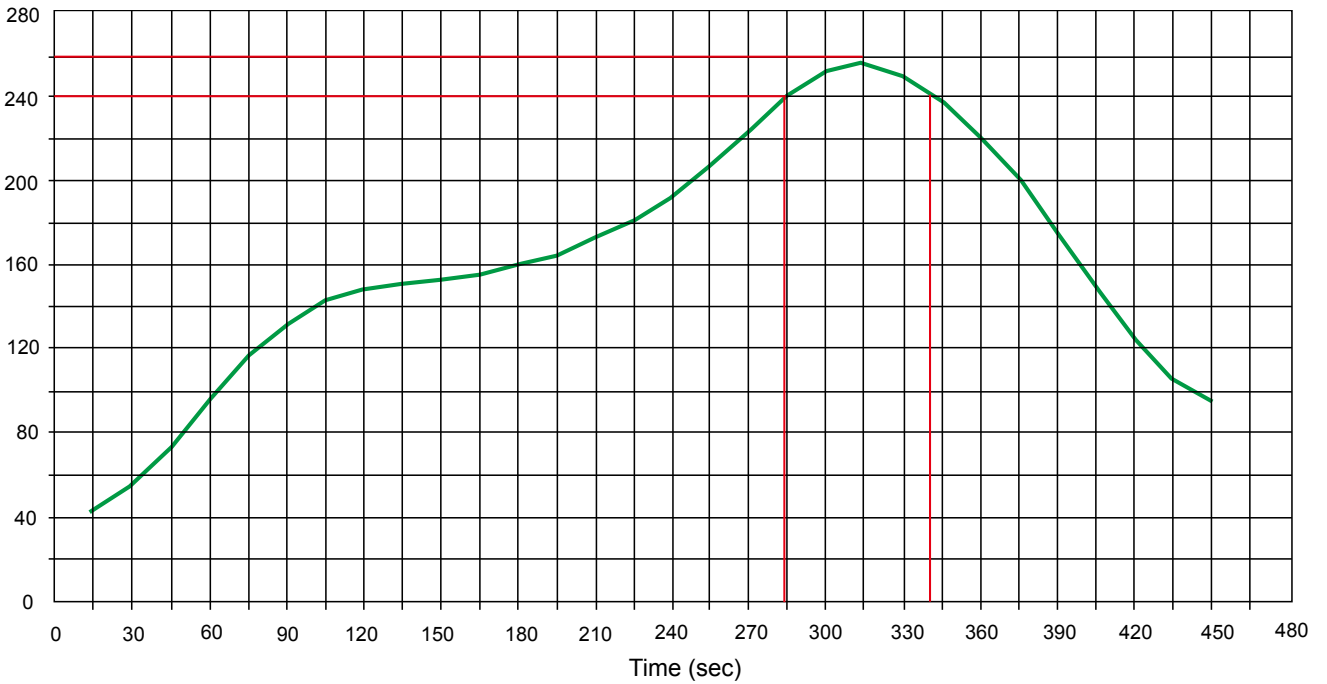


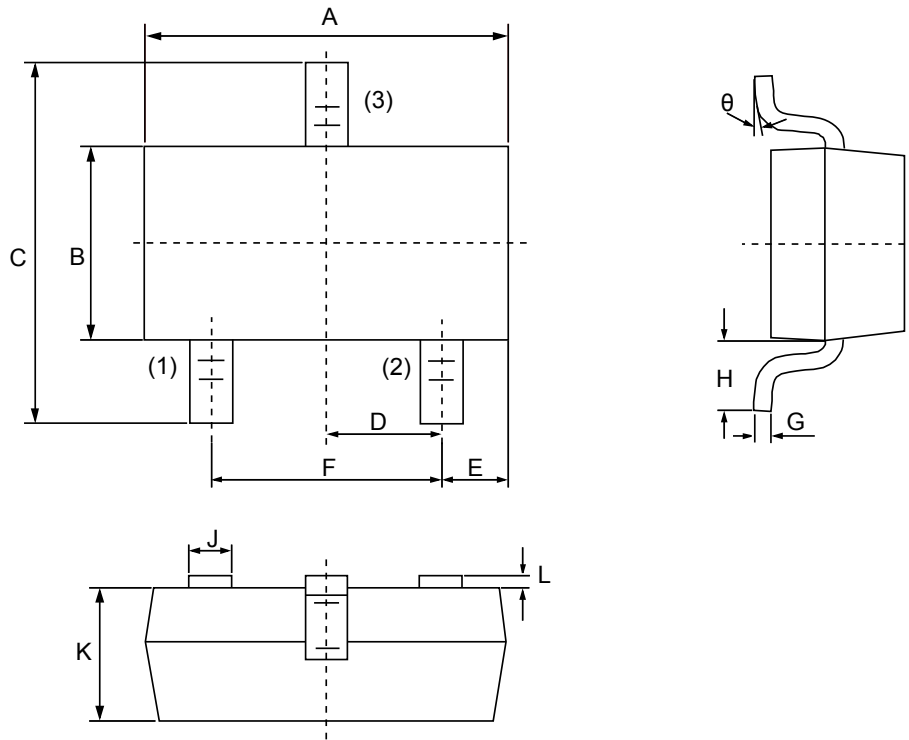
Fig 4. Output voltage vs. output current  
@I<sub>O</sub>/I<sub>1</sub>=5V

### Solder Reflow Recommendation

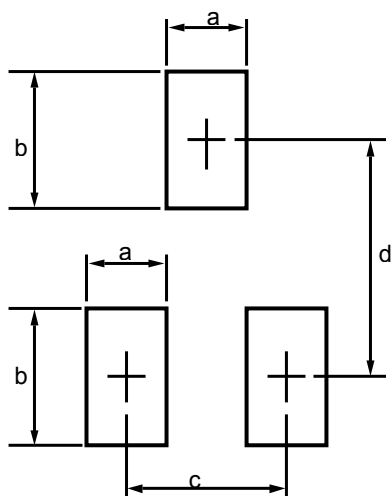
Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec



Product dimension (SOT-523)



Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.50	1.70	0.059	0.067
B	0.75	0.85	0.030	0.033
C	1.450	1.750	0.057	0.069
D	0.50BSC		0.020BSC	
E	0.30	0.33	0.012	0.015
F	0.900	1.100	0.035	0.043
G	0.100	0.200	0.004	0.008
H	0.550		0.022	
J	0.150	0.250	0.006	0.010
K	0.700	0.900	0.028	0.038
L	0.024	0.027	0.600	0.700
θ	0°	4°	0°	4°




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

Ordering information

Device	Package	Shipping
PDTC123JE	SOT-523 (Pb-Free)	3000 / Tape & Reel


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