

# Bias Resistor Transistor

## PNP Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

**LDTA123JWT1G**

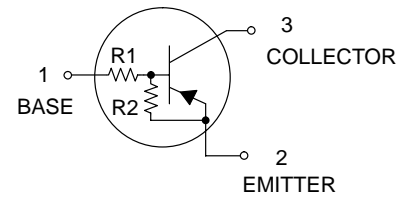
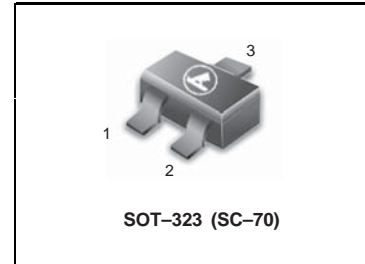
● **Applications**

Inverter, Interface, Driver

● **Features**

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making the device design easy.

- We declare that the material of product compliance with RoHS requirements.



● **Absolute maximum ratings** (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	-50	V
Input voltage	V <sub>IN</sub>	-12 to +5	V
Output current	I <sub>o</sub>	-100	mA
	I <sub>c(Max.)</sub>	-100	mA
Power dissipation	P <sub>D</sub>	200	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

**DEVICE MARKING AND RESISTOR VALUES**

Device	Marking	R1 (K)	R2 (K)	Shipping
LDTA123JWT1G	6M	2.2	47	3000/Tape & Reel
LDTA123JWT3G	6M	2.2	47	10000/Tape & Reel

● **Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I(off)</sub>	-	-	-0.5	V	V <sub>CC</sub> =-5V, I <sub>o</sub> =-100μA
	V <sub>I(on)</sub>	-1.1	-	-		V <sub>o</sub> =-0.3V, I <sub>o</sub> =-5mA
Output voltage	V <sub>O(on)</sub>	-	-0.1	-0.3	V	I <sub>o</sub> /I <sub>i</sub> =-5mA/-0.25mA
Input current	I <sub>i</sub>	-	-	-3.6	mA	V <sub>i</sub> =-5V
Output current	I <sub>o(off)</sub>	-	-	-0.5	μA	V <sub>CC</sub> =-50V, V <sub>i</sub> =0V
DC current gain	G <sub>i</sub>	80	-	-	-	V <sub>o</sub> =-5V, I <sub>o</sub> =-10mA
Input resistance	R <sub>1</sub>	1.54	2.2	2.86	kΩ	-
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	17	21	26	-	-
Transition frequency	f <sub>T</sub> *	-	250	-	MHz	V <sub>CE</sub> =-10V, I <sub>E</sub> =5mA, f=100MHz

\* Characteristics of built-in transistor

**LDTA123JWT1G**

● **Electrical characteristic curves**

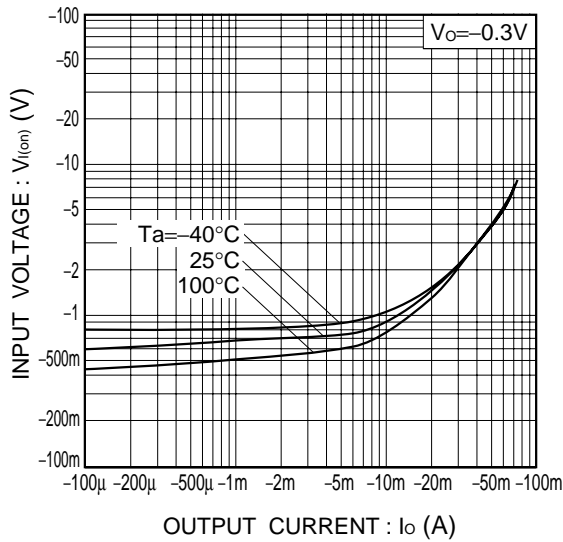


Fig.1 Input voltage vs. output current (ON characteristics)

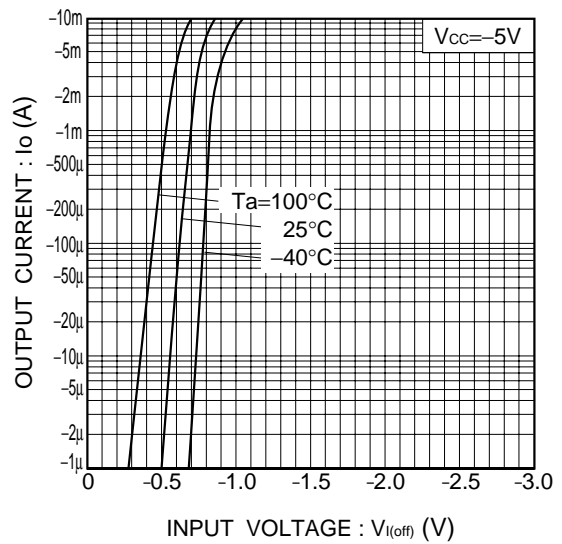


Fig.2 Output current vs. input voltage (OFF characteristics)

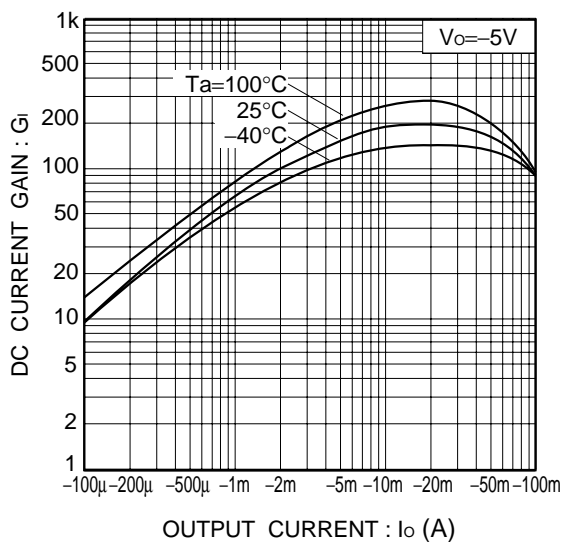


Fig.3 DC current gain vs. output current

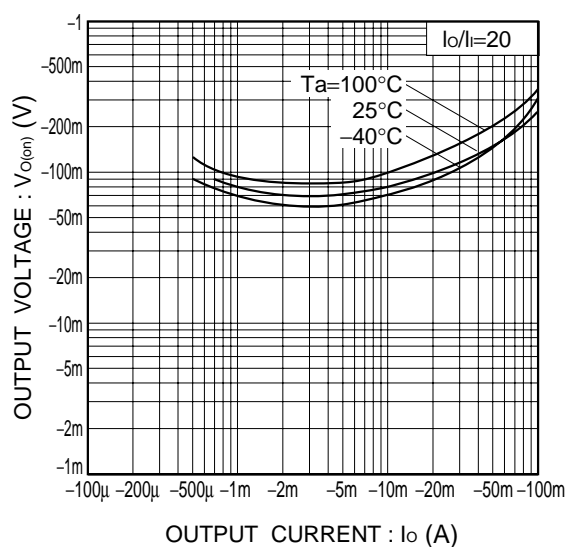
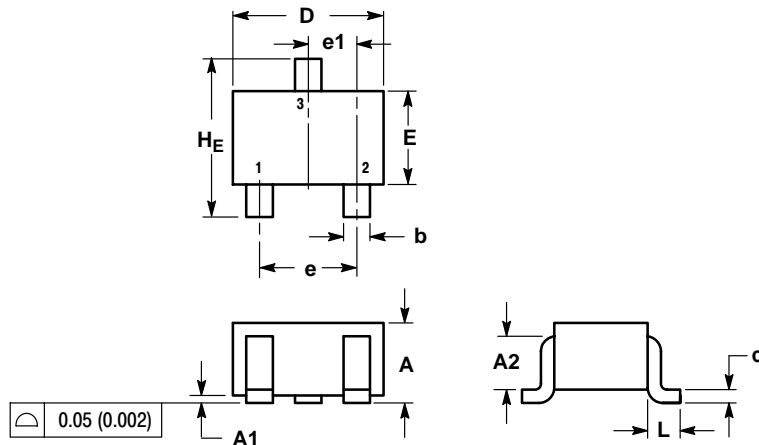


Fig.4 Output voltage vs. output current

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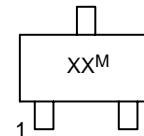
**SC-70 (SOT-323)**



NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.7 REF			0.028 REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65 BSC			0.026 BSC		
L	0.425 REF			0.017 REF		
HE	2.00	2.10	2.40	0.079	0.083	0.095

**GENERIC MARKING DIAGRAM**



XX = Specific Device Code  
 M = Date Code  
 ■ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

**SOLDERING FOOTPRINT\***

