

Bias Resistor Transistor

NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

LDTC123EWT1G

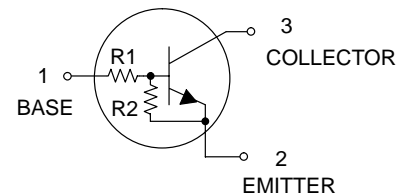
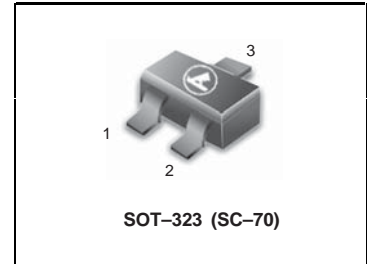
● **Applications**

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 _{CC}	50	V
Input voltage	V _{IN}	-10 to +12	V
Output current	I _o	100	mA
	I _{C(Max.)}	100	
Power dissipation	P _d	150	mW
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1 (K)	R2 (K)	Shipping
LDTC123EWT1G	N1	2.2	2.2	3000/Tape & Reel
LDTC123EWT3G	N1	2.2	2.2	10000/Tape & Reel

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	-	-	0.5	V	V _{CC} =5V, I _o =100μA
	V _{I(on)}	3	-	-		V _o =0.3V, I _o =20mA
Output voltage	V _{O(on)}	-	0.1	0.3	V	I _o /I _I =10mA/0.5mA
Input current	I _I	-	-	3.8	mA	V _I =5V
Output current	I _{O(off)}	-	-	0.5	μA	V _{CC} =50V, V _I =0V
DC current gain	G _I	20	-	-	-	V _o =5V, I _o =20mA
Input resistance	R ₁	1.54	2.2	2.86	kΩ	-
Resistance ratio	R ₂ /R ₁	0.8	1	1.2	-	-
Transition frequency	f _T *	-	250	-	MHz	V _{CE} =10V, I _E =-5mA, f=100MHz

* Characteristics of built-in transistor

LDTC123EWT1G

● **Electrical characteristic curves**

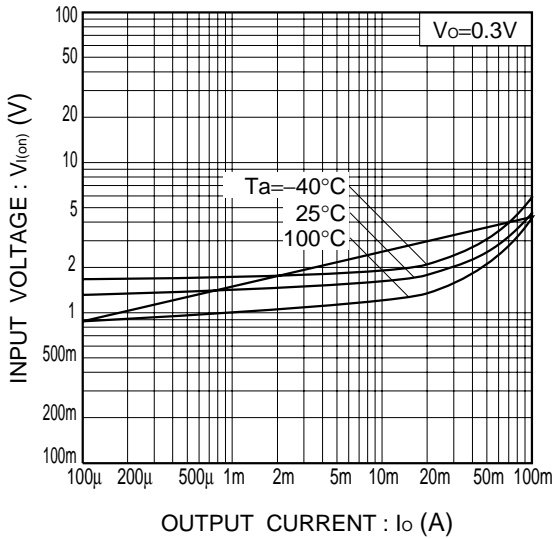


Fig.1 Input voltage vs. output current (ON characteristics)

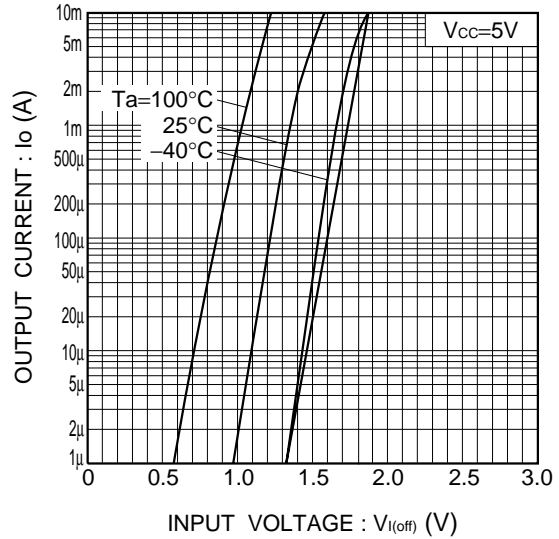


Fig.2 Output current vs. input voltage (OFF characteristics)

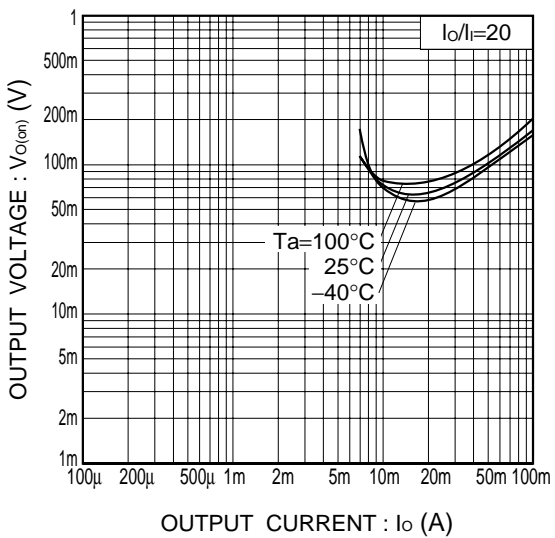


Fig.4 Output voltage vs. output current

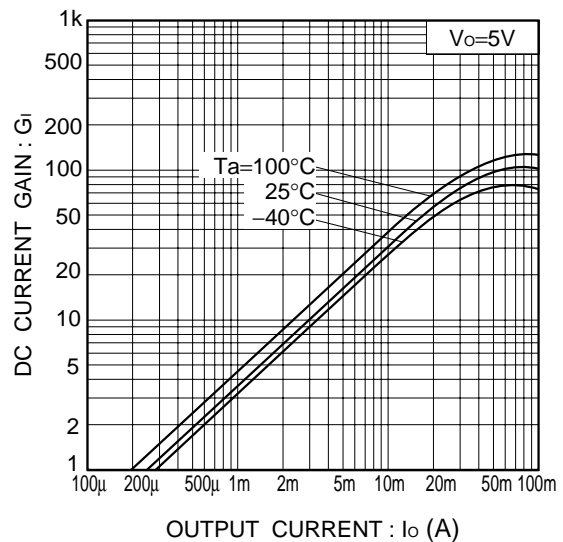
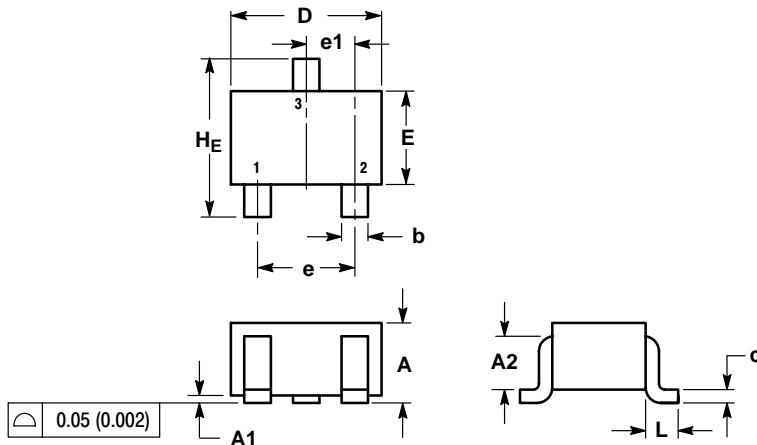


Fig.3 DC current gain vs. output current

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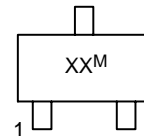
SC-70 (SOT-323)



- 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*

