

Bias Resistor Transistor

NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

- Applications
Inverter, Interface, Driver

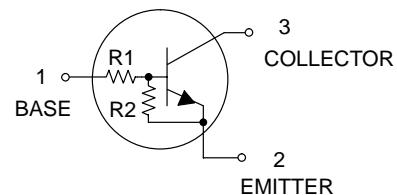
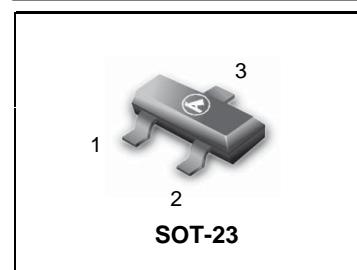
- Features

- 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.
 - S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

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

Parameter	Symbol	Limits		Unit
Supply voltage	V _{CC}	50		V
Input voltage	V _{IN}	-10 to +10		V
Output current	I _C	500		mA
Power dissipation	P _D	200		mW
Junction temperature	T _J	150		°C
Storage temperature	T _{STG}	-55 to +150		°C

**LDTD113ELT1G
S-LDTD113ELT1G**



DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1 (K)	R2 (K)	Shipping
LDTD113ELT1G S-LDTD113ELT1G	E4	1	1	3000/Tape & Reel
LDTD113ELT3G S-LDTD113ELT3G	E4	1	1	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 _l =50mA/2.5mA
Input current	I _l	—	—	7.2	mA	V _I =5V
Output current	I _{O(off)}	—	—	0.5	μA	V _{CC} =50V, V _I =0V
DC current gain	G _I	33	—	—	—	V _O =5V, I _O =50mA
Input resistance	R _l	0.7	1	1.3	kΩ	—
Resistance ratio	R ₂ /R _l	0.8	1	1.2	—	—
Transition frequency	f _T *	—	200	—	MHz	V _{CE} =10V, I _E =-50mA, f=100MHz

* Characteristics of built-in transistor

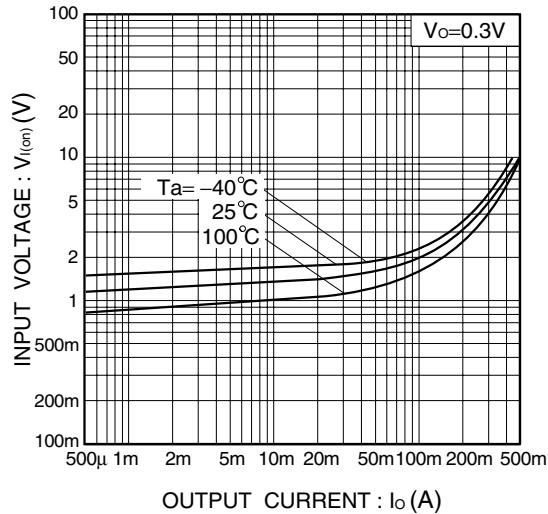
LDTD113ELT1G;S-LDTD113ELT1G
●Electrical characteristic curves


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

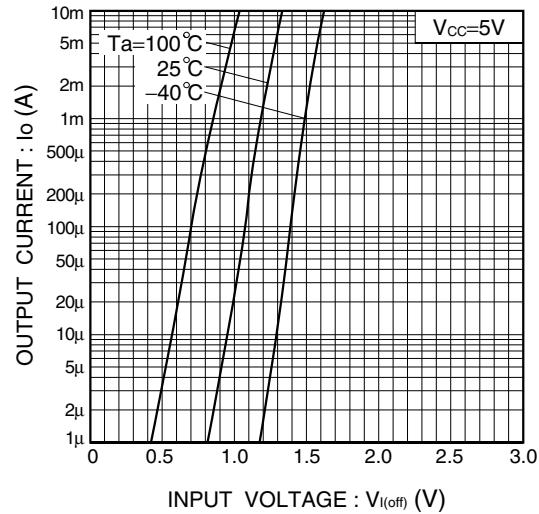


Fig.2 Output current vs. input voltage
(OFF characteristics)

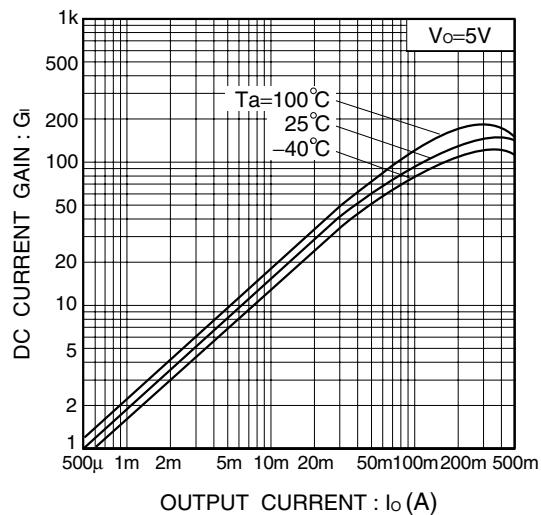


Fig.3 DC current gain
vs. output current

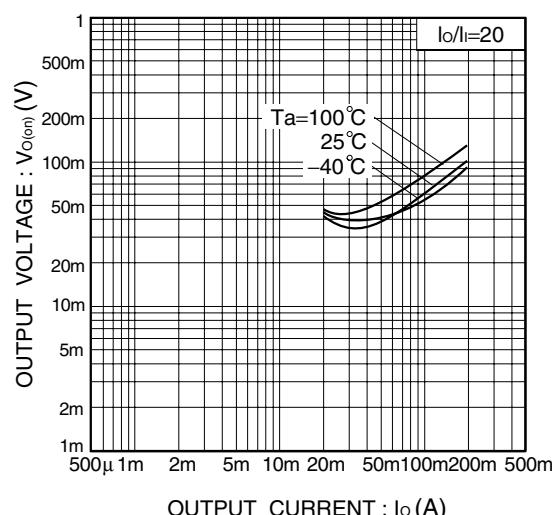
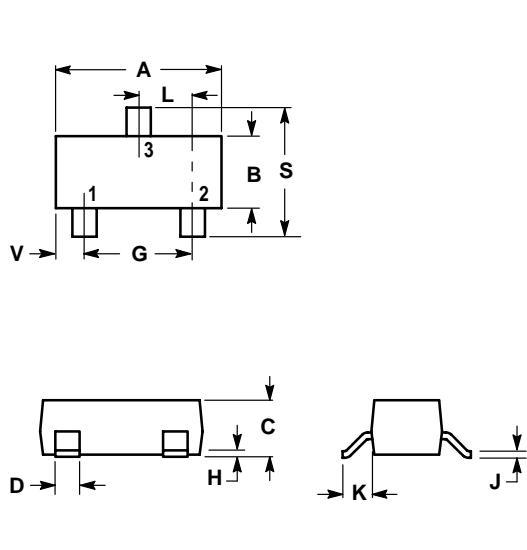


Fig.4 Output voltage vs. output current

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NOTES:

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

