

Digital transistors

●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 negative 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 device design easy.

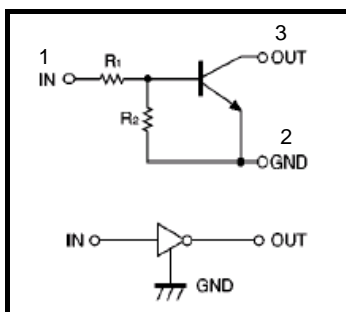
●Structure

NPN digital transistor
(Built-in resistor type)

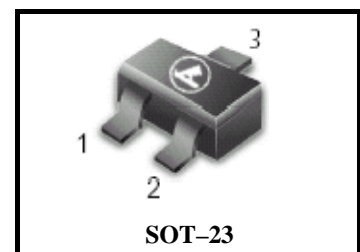
Driver Marking

LDTD123ELT1 =F22

●Equivalent circuit



LDTD123ELT1



LDTD123ELT1
●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits(DTD123E□)		Unit
		K	S	
Supply voltage	V _{CC}	50		V
Input voltage	V _{IN}	-10~+12		V
Output current	I _c	500		mA
Power dissipation	P _d	200	300	mW
Junction temperature	T _j	150		°C
Storage temperature	T _{stg}	-55~+150		°C

●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 =100 μA
	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 =50mA/2.5mA
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	39	—	—	—	V _o =5V, I _o =50mA
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	—	200	—	MHz	V _{CE} =10V, I _E =-5mA, f=100MHz *

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●Electrical characteristic curves

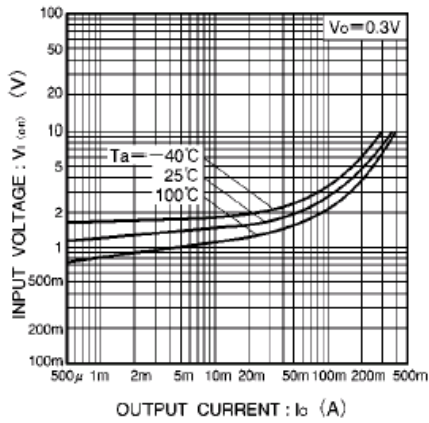


Fig.1 Input voltage vs. output current (ON characteristics)

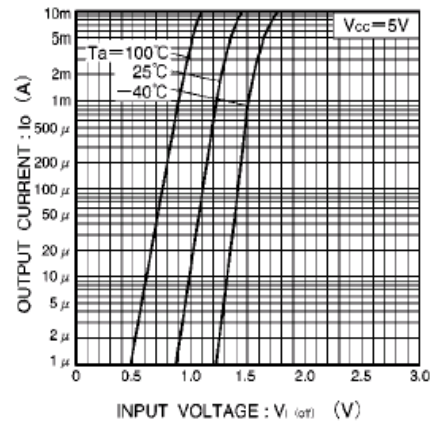


Fig.2 Output current vs. input voltage (OFF characteristics)

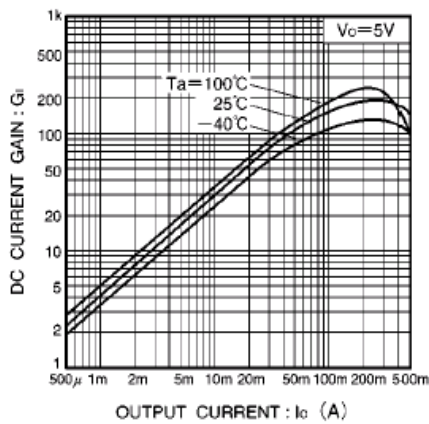


Fig.3 DC current gain vs. output current

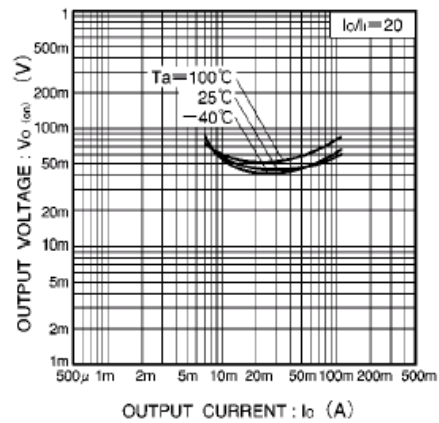


Fig.4 Output voltage vs. output current

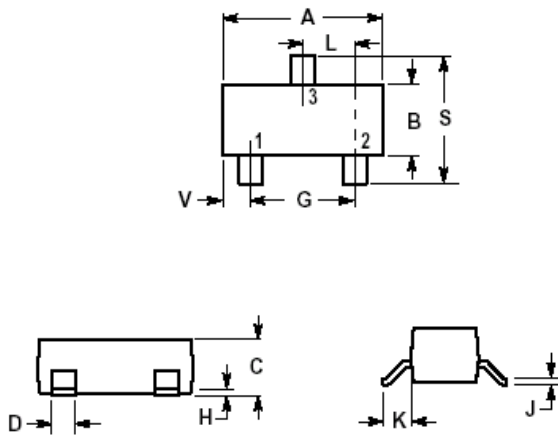
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NOTES:

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

