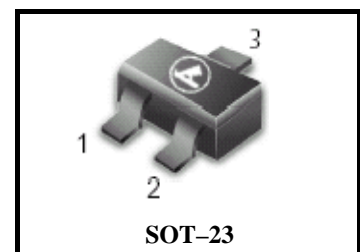


# Digital transistors

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

**LDTD123ELT1G**



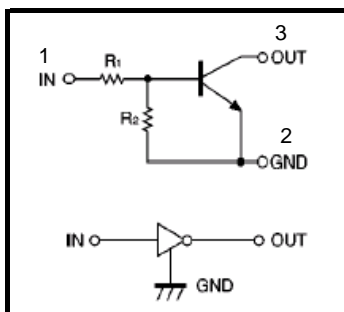
## ●Structure

NPN digital transistor  
(Built-in resistor type)

## Driver Marking

LDTD123ELT1G= F22

## ●Equivalent circuit



## Ordering Information

Device	Marking	Shipping
LDTD123ELT1G	F22	3000/Tape&Reel
LDTD123ELT3G	F22	10000/Tape&Reel

**LDTD123ELT1G**
**●Absolute maximum ratings (Ta = 25°C)**

Parameter	Symbol	Limits(DTD123E□)		Unit
		K	S	
Supply voltage	V <sub>CC</sub>	50		V
Input voltage	V <sub>IN</sub>	-10~+12		V
Output current	I <sub>c</sub>	500		mA
Power dissipation	P <sub>d</sub>	200	300	mW
Junction temperature	T <sub>j</sub>	150		°C
Storage temperature	T <sub>stg</sub>	-55~+150		°C

**●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> =100 μA
	V <sub>I(on)</sub>	3	—	—		V <sub>O</sub> =0.3V, I <sub>o</sub> =20mA
Output voltage	V <sub>O(on)</sub>	—	0.1	0.3	V	I <sub>o</sub> /I <sub>i</sub> =50mA/2.5mA
Input current	I <sub>i</sub>	—	—	3.8	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>	39	—	—	—	V <sub>O</sub> =5V, I <sub>o</sub> =50mA
Input resistance	R <sub>1</sub>	1.54	2.2	2.86	kΩ	—
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	0.8	1	1.2	—	—
Transition frequency	f <sub>T</sub>	—	200	—	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> =-5mA, f=100MHz *

**LDTD123ELT1G**

● **Electrical characteristic curves**

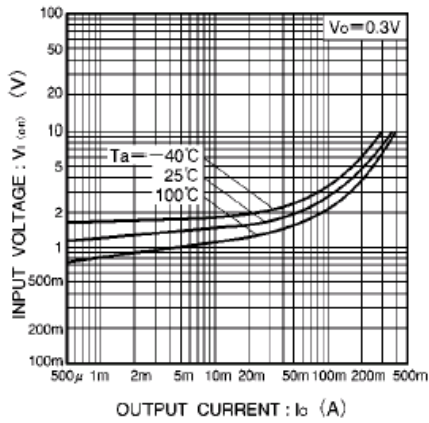


Fig.1 Input voltage vs. output current (ON characteristics)

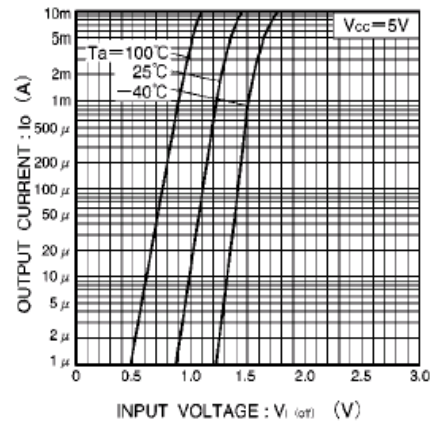


Fig.2 Output current vs. input voltage (OFF characteristics)

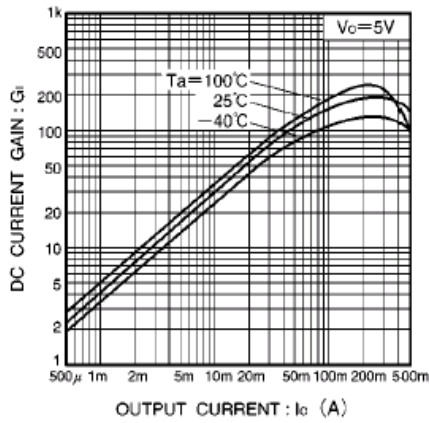


Fig.3 DC current gain vs. output current

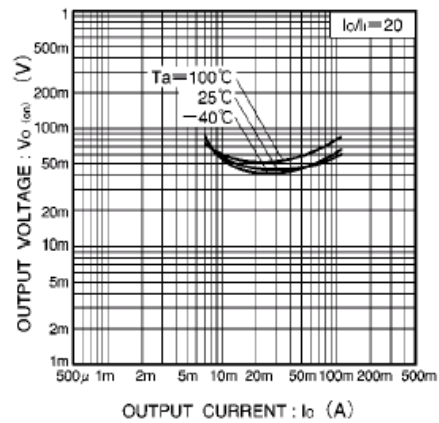


Fig.4 Output voltage vs. output current

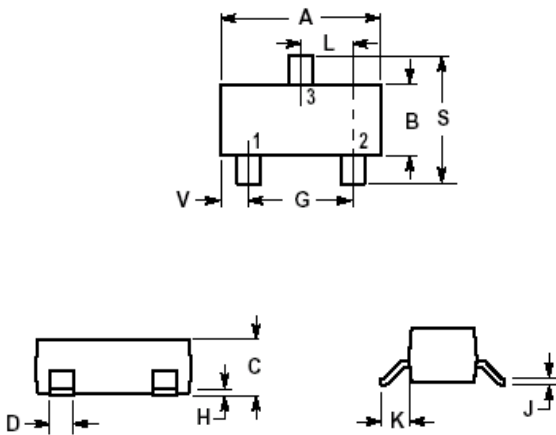
**LDTD123ELT1G**

**SOT-23**

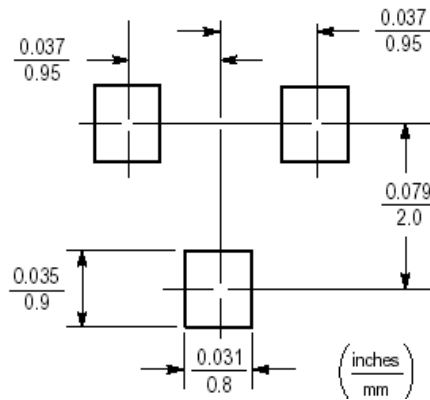
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982

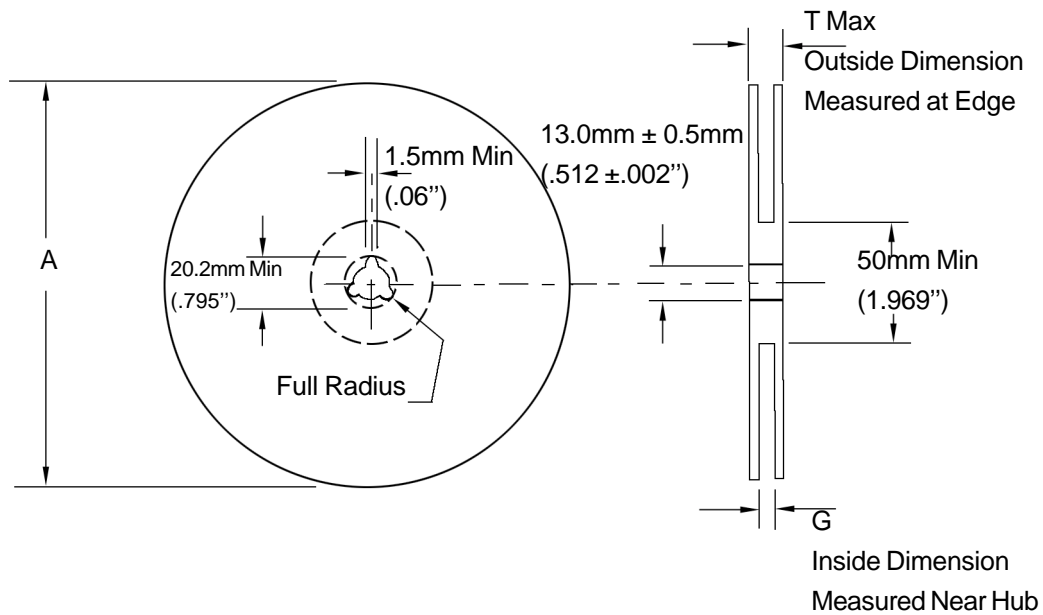
2. CONTROLLING DIMENSION: INCH



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



## EMBOSSED TAPE AND REEL DATA FOR DISCRETES



Size	A Max	G	T Max
8 mm	330mm (12.992")	8.4mm+1.5mm, -0.0 (.33"+.059", -0.00)	14.4mm (.56")

### Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

### Storage Conditions

Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)

Humidity: 30 to 80 RH (40 to 60 is preferred )

Recommended Period: One year after manufacturing

(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)

## Shipment Specification

