

# Bias Resistor Transistor

## PNP 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
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-40	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-500	mA
Collector power dissipation	$P_C$	200	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

### DEVICE MARKING AND RESISTOR VALUES

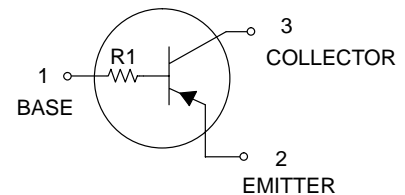
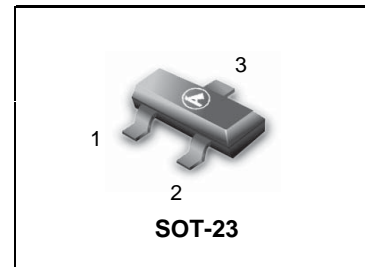
Device	Marking	R1 (K)	R2 (K)	Shipping
LDTB123TLT1G S-LDTB123TLT1G	K1	2.2	—	3000/Tape & Reel
LDTB123TLT3G S-LDTB123TLT3G	K1	2.2	—	10000/Tape & Reel

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-50	—	—	V	$I_C = -50 \mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	-40	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -50 \mu A$
Collector cutoff current	$I_{CBO}$	—	—	-0.5	$\mu A$	$V_{CB} = -50V$
Emitter cutoff current	$I_{EBO}$	—	—	-0.5	$\mu A$	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.3	V	$I_C/I_B = -50mA/-2.5mA$
DC current transfer ratio	$h_{FE}$	100	250	600	—	$V_{CE} = -5V, I_C = -50mA$
Input resistance	$R_1$	1.54	2.2	2.86	k $\Omega$	
Transition frequency	$f_T$	—	200	—	MHz	$V_{CE} = -10V, I_E = 50mA, f = 100MHz$ *

\* Transition frequency of the device

**LDTB123TLT1G**  
**S-LDTB123TLT1G**



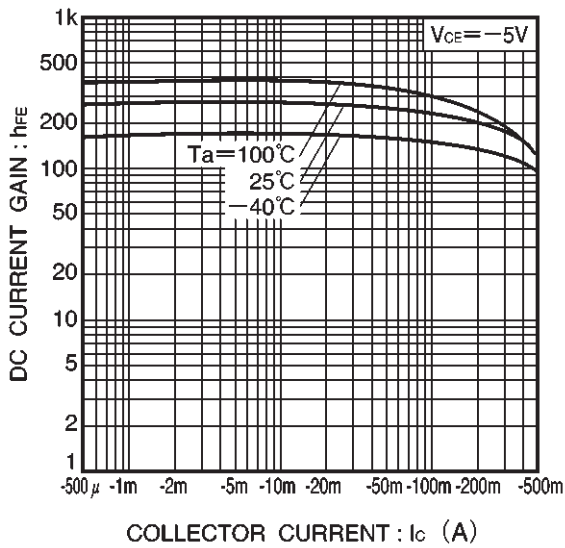
**LDTB123TLT1G ;S-LDTB123TLT1G**
**●Electrical characteristic curves**


Fig.1 DC current gain vs. collector current

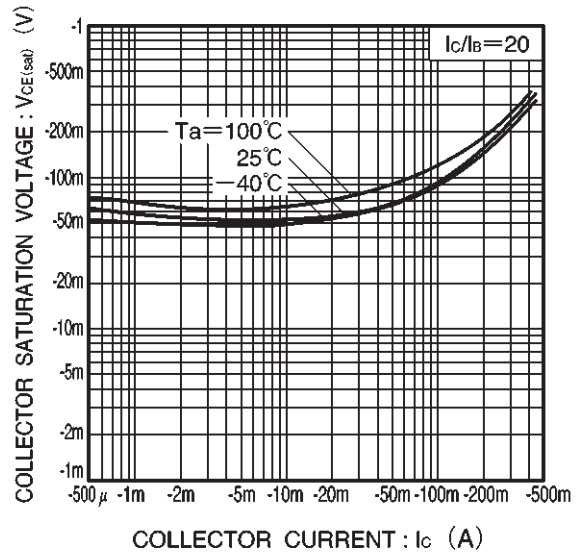


Fig.2 Collector-emitter saturation voltage vs. collector current

LDTB123TLT1G ;S-LDTB123TLT1G

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

