

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 _{CB0}	-50	V
Collector-emitter voltage	V _{CE0}	-40	V
Emitter-base voltage	V _{EB0}	-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

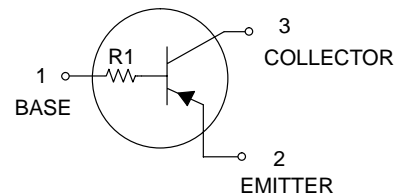
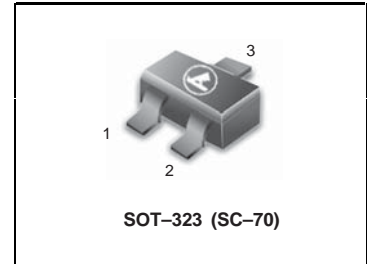
Device	Marking	R1 (K)	R2 (K)	Shipping
LDTB123TWT1G S-LDTB123TWT1G	K1	2.2	-	3000/Tape & Reel
LDTB123TWT3G S-LDTB123TWT3G	K1	2.2	-	10000/Tape & Reel

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	-50	—	—	V	I _c =-50 μA
Collector-emitter breakdown voltage	BV _{CE0}	-40	—	—	V	I _c =-1mA
Emitter-base breakdown voltage	BV _{EB0}	-5	—	—	V	I _E =-50 μA
Collector cutoff current	I _{cBO}	—	—	-0.5	μA	V _{CB} =-50V
Emitter cutoff current	I _{EBO}	—	—	-0.5	μA	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	kΩ	
Transition frequency	f _{tr}	—	200	—	MHz	V _{CE} =-10V, I _E =50mA, f=100MHz *

* Transition frequency of the device

**LDTB123TWT1G
S-LDTB123TWT1G**



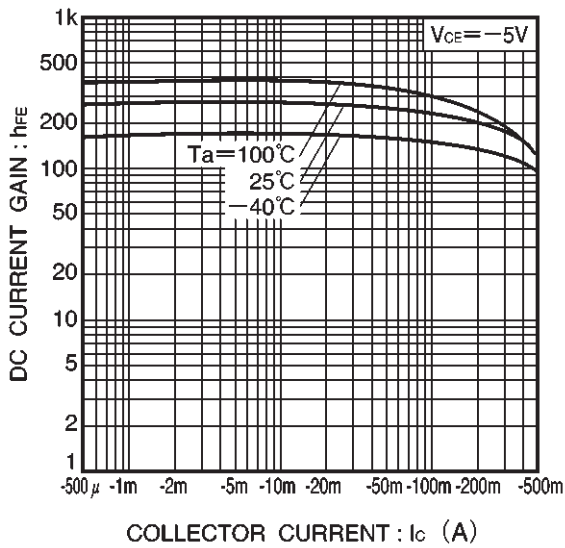
LDTB123TWT1G ;S-LDTB123TWT1G
●Electrical characteristic curves


Fig.1 DC current gain vs. collector current

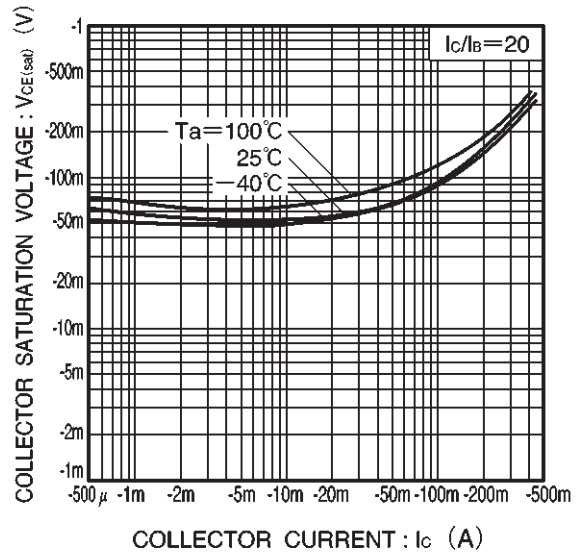
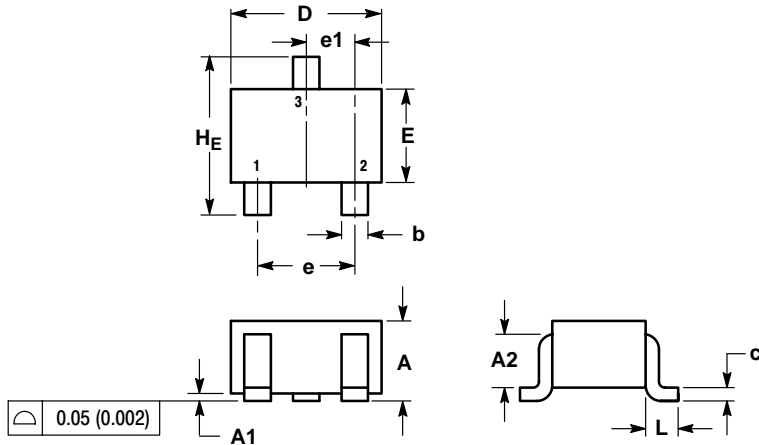


Fig.2 Collector-emitter saturation voltage vs. collector current

LDTB123TWT1G ;S-LDTB123TWT1G

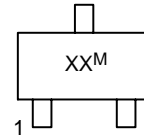
SC-70 (SOT-323)



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

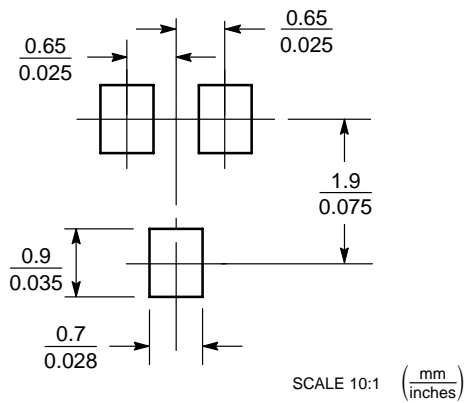
DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.7 REF			0.028 REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	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

SOLDERING FOOTPRINT*



*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.