

Bias Resistor Transistor

NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

LDTC143TWT1G

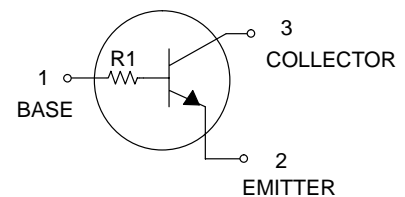
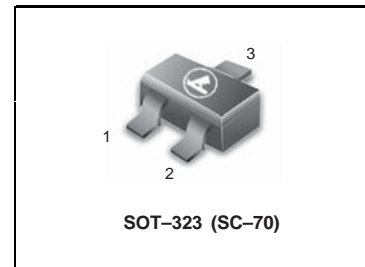
● **Applications**

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.



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

Parameter	Symbol	Limits		Unit
Supply voltage	V _{CC}	50		V
Input voltage	V _{IN}	50		V
Output current	I _o	5		mA
	I _{C(Max.)}	100		
Power dissipation	P _D	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
LDTC143TWT1G	H2	4.7	-	3000/Tape & Reel
LDTC143TWT3G	H2	4.7	-	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 =50μA
Collector-emitter breakdown voltage	BV _{CEO}	50	-	-	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EBO}	5	-	-	V	I _E =50μA
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 =5mA/0.25mA
DC current transfer ratio	h _{FE}	100	250	600	-	I _C =1mA, V _{CE} =5V
Input resistance	R ₁	3.29	4.7	6.11	kΩ	-
Transition frequency	f _t *	-	250	-	MHz	V _{CE} =10V, I _E =-5mA, f=100MHz

* Characteristics of built-in transistor

●Electrical characteristic curves

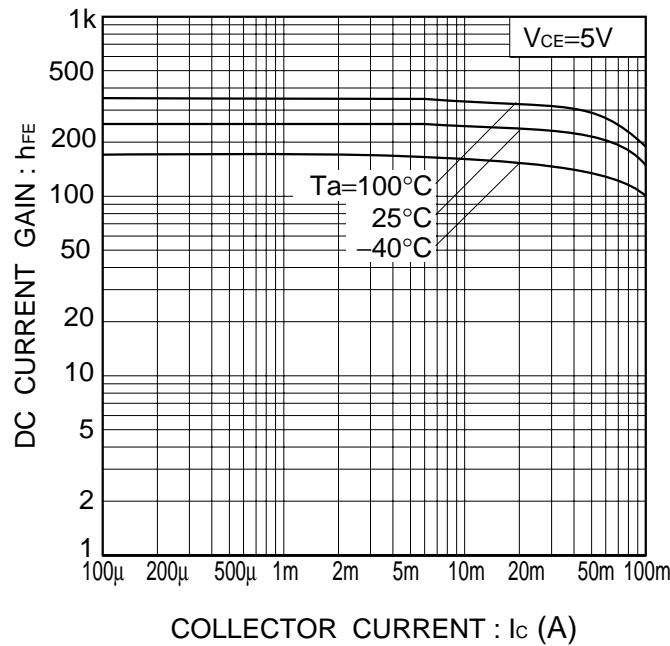


Fig.1 DC current gain vs. collector current

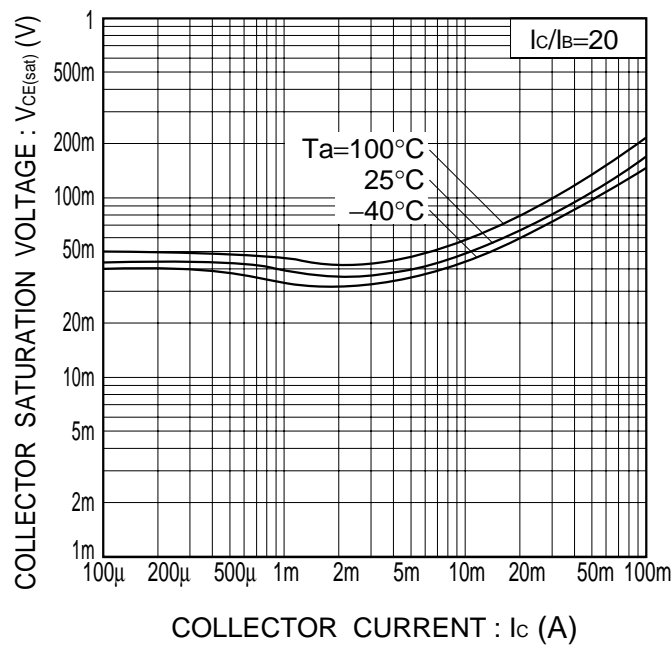
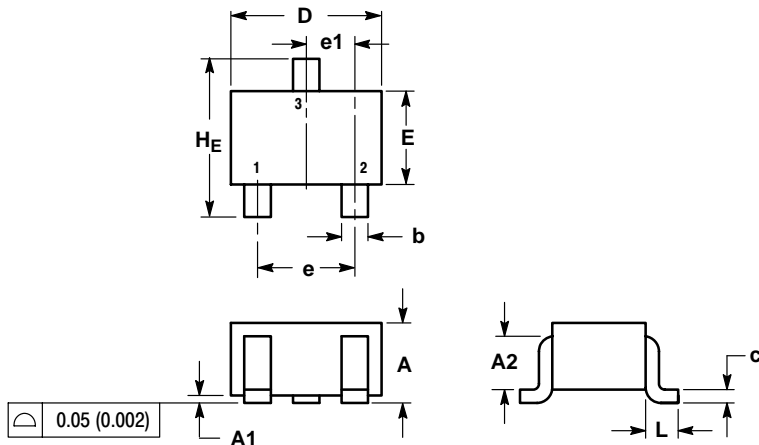


Fig.2 Collector-emitter saturation voltage vs. collector current

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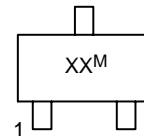
SC-70 (SOT-323)



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

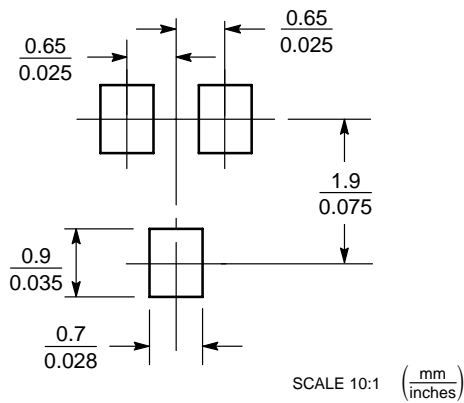
DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.7 REF			0.028 REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40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