Bias Resistor Transistor

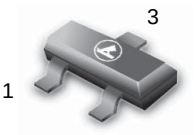
NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

LDTD123TET1G

- **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.



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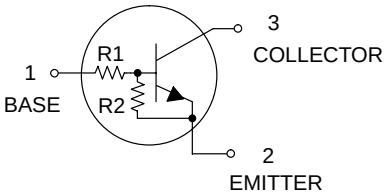

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits(DTD123T□)		Unit
		K	S	
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	300	mW
Junction temperature	Tj	150		℃
Storage temperature	Tstg	−55～+150		℃

DEVICE MARKING AND RESISTOR VALUES

Device	Marking	R1 (K)	R2 (K)	Shipping
LDTD123TET1G	E1	2.2	–	3000/Tape & Reel
LDTD123TET1G	E1	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 μA
Collector-emitter breakdown voltage	BV_{CEO}	40	—	—	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	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=50m/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_T	—	200	—	MHz	V_{CE}=10V, I_E=−50mA, f=100MHz✻

✻ Transition frequency of the device

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●Electrical characteristic curves

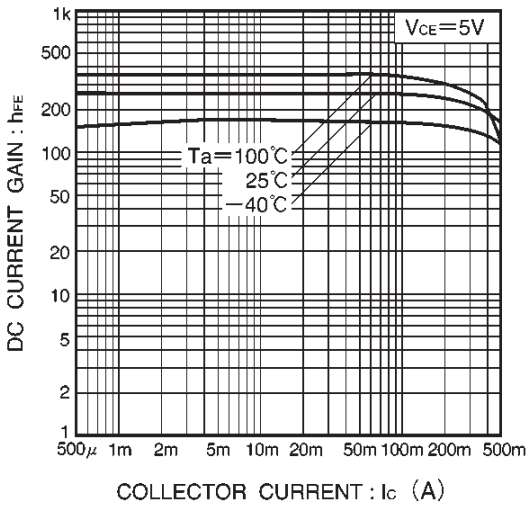

Fig.1 DC current gain vs. collector current

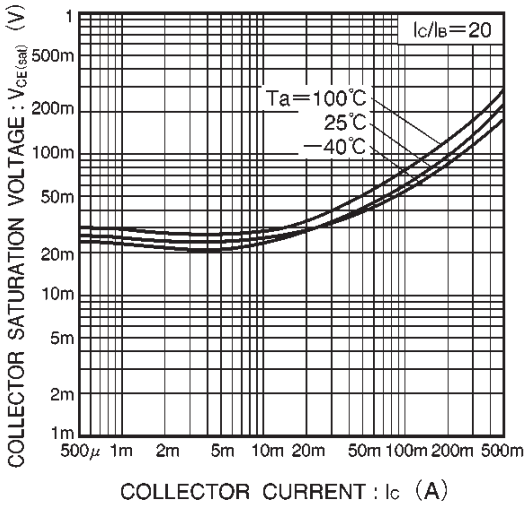

Fig.2 Collector-emitter saturation voltage vs. collector current

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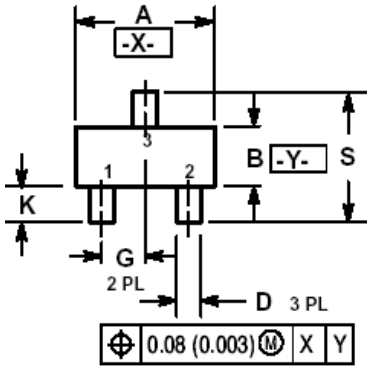
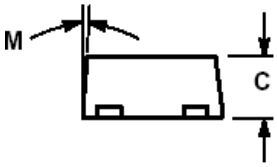
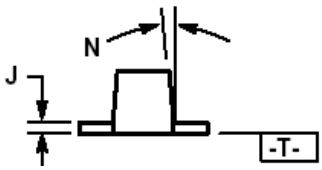


NOTES:
1.DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2.CONTROLLING DIMENSION: MILLIMETERS
3.MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4.463C-01 OBSOLETE, NEW STANDARD 463C-02.





	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	1.50	1.60	1.70	0.059	0.063	0.067
B	0.75	0.85	0.95	0.030	0.034	0.040
C	0.60	0.70	0.80	0.024	0.028	0.031
D	0.23	0.28	0.33	0.009	0.011	0.013
G	0.50 BSC			0.020 BSC		
H	0.53 REF			0.021 REF		
J	0.10	0.15	0.20	0.004	0.006	0.008
K	0.30	0.40	0.50	0.012	0.016	0.020
L	1.10 REF			0.043 REF		
M	---	---	10 °	---	---	10 °
N	---	---	10 °	---	---	10 °
S	1.50	1.60	1.70	0.059	0.063	0.067