

Bias Resistor Transistor

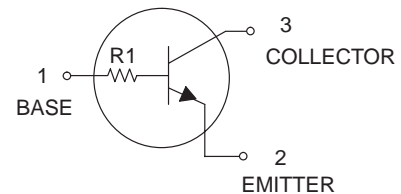
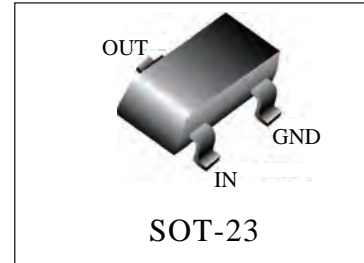
NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

- 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.



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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CB0}	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
DTD110	E2	4.7	–	3000/Tape & Reel
DTD110	E2	4.7	–	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 =50μA
Collector-emitter breakdown voltage	BV _{CEO}	40	–	–	V	I _c =1mA
Emitter-base breakdown voltage	BV _{EBO}	5	–	–	V	I _E =50μA
Collector cutoff current	I _{CB0}	–	–	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	3.29	4.7	6.11	kΩ	–
Transition frequency	f _r □	–	200	–	MHz	V _{CE} =10V, I _E =–50mA, f=100MHz

□ Characteristics of built-in transistor

●Electrical characteristic curves

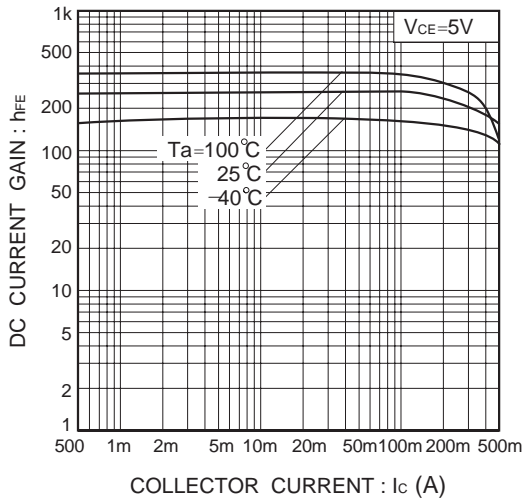


Fig.1 DC current gain vs. collector current

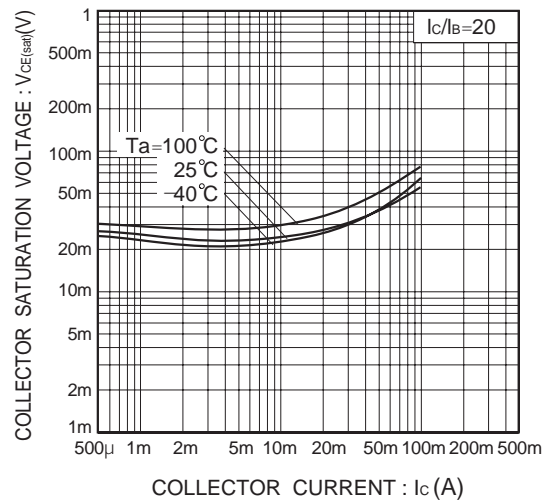
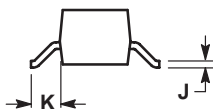
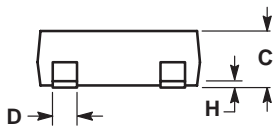
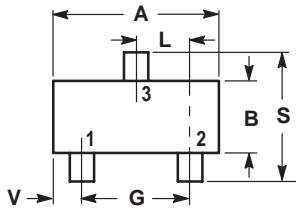


Fig.2 Collector-emitter saturation voltage vs. collector current

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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

