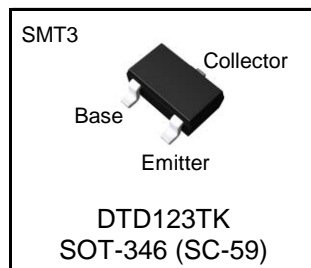


Parameter	Value
$V_{CEO}$	40V
$I_C$	500mA
R	2.2k $\Omega$

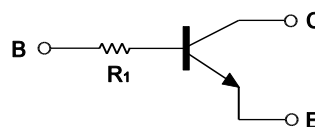
### ●Outline



### ●Features

- 1) Built-In Biasing Resistors
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of completely eliminating parasitic effects.
- 4) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 5) Complementary PNP Types :DTB123TK
- 6) Lead Free/RoHS Compliant.

### ●Inner circuit



### ●Application

Switching circuit, Inverter circuit, Interface circuit, Driver circuit

### ●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
DTD123TK	SMT3	2928	T146	180	8	3,000	F02

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Values	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
Power dissipation	$P_d^{*2}$	200	mW
Junction temperature	$T_j$	150	°C
Range of storage temperature	$T_{stg}$	-55 to +150	°C

●Electrical characteristics(Ta = 25°C)

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

\*1 Characteristics of built-in transistor

\*2 Each terminal mounted on a reference footprint

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Grounded emitter propagation characteristics

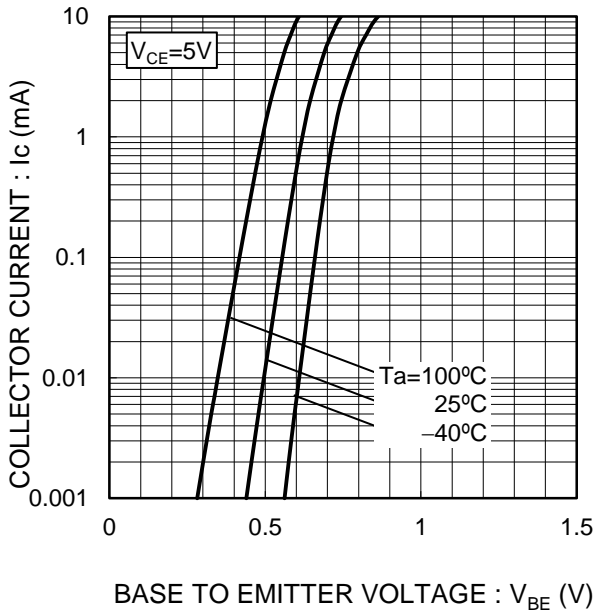


Fig.2 Grounded emitter output characteristics

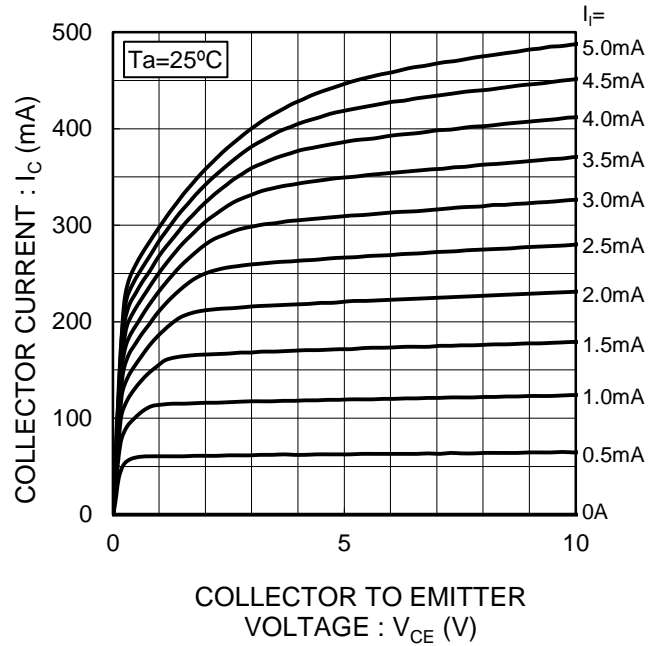


Fig.3 DC Current gain vs. Collector Current

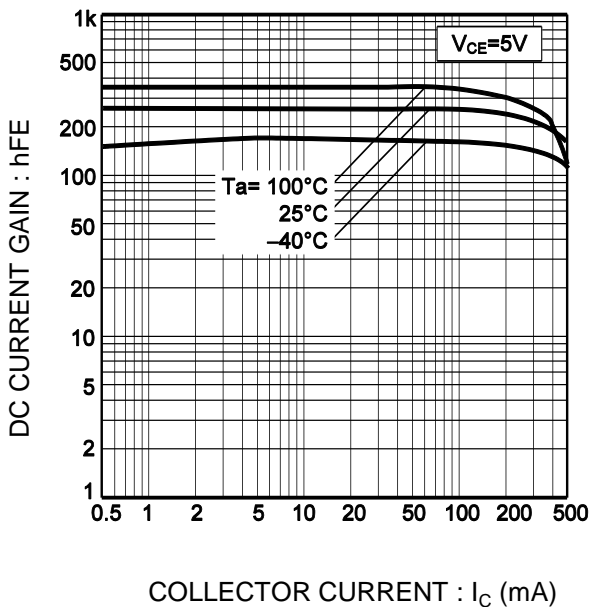
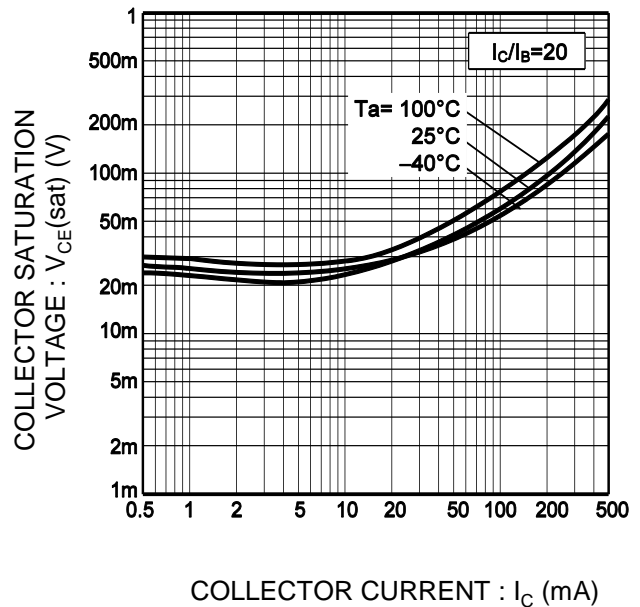
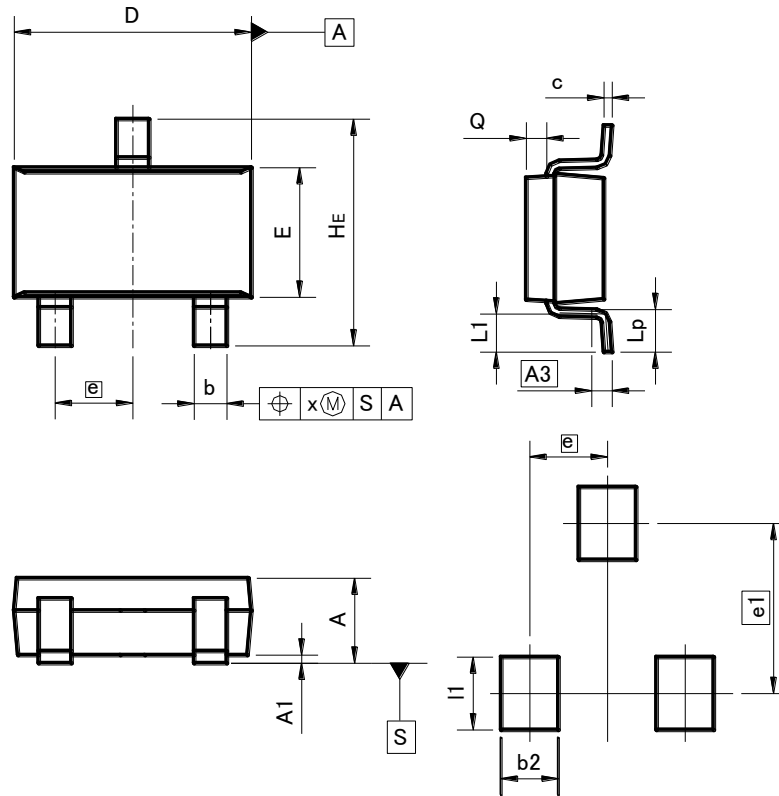


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●Dimensions (Unit : mm)

SMT3



Pattern of terminal position areas

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.30	-	0.051
A1	0.00	0.10	0	0.004
A3	0.25		0.01	
b	0.35	0.50	0.014	0.02
c	0.09	0.25	0.004	0.01
D	2.80	3.00	0.11	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.04	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	-	0.10	-	0.004
y	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
e1	2.10		0.08	
b2	-	0.60	-	0.024
l1	-	0.90	-	0.035

Dimension in mm/inches

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