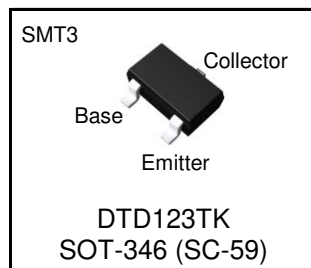


Parameter	Value
$V_{CEO}$	40V
$I_C$	500mA
R	2.2k $\Omega$

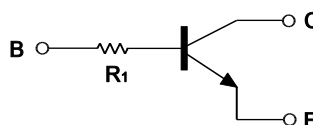
### ●Outline



### ●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** ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Values	Unit
Collector-base voltage	$V_{\text{CBO}}$	50	V
Collector-emitter voltage	$V_{\text{CEO}}$	40	V
Emitter-base voltage	$V_{\text{EBO}}$	5	V
Collector current	$I_{\text{C}}$	500	mA
Power dissipation	$P_{\text{d}}^{*2}$	200	mW
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Range of storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

**●Electrical characteristics** ( $T_a = 25^\circ\text{C}$ )

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

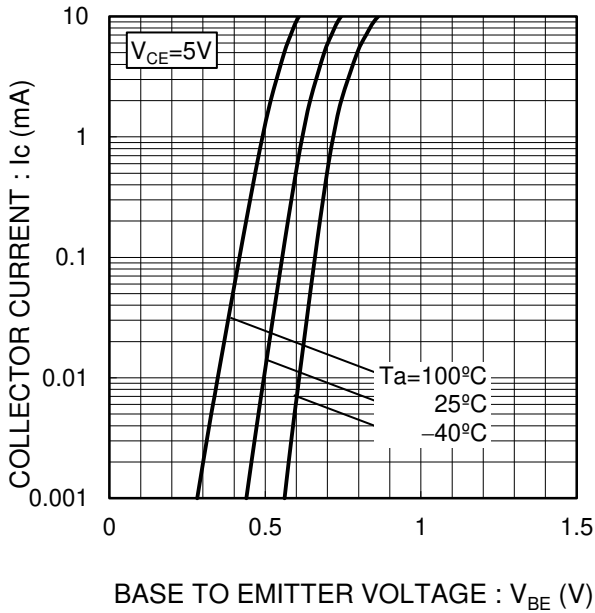


Fig.2 Grounded emitter output characteristics

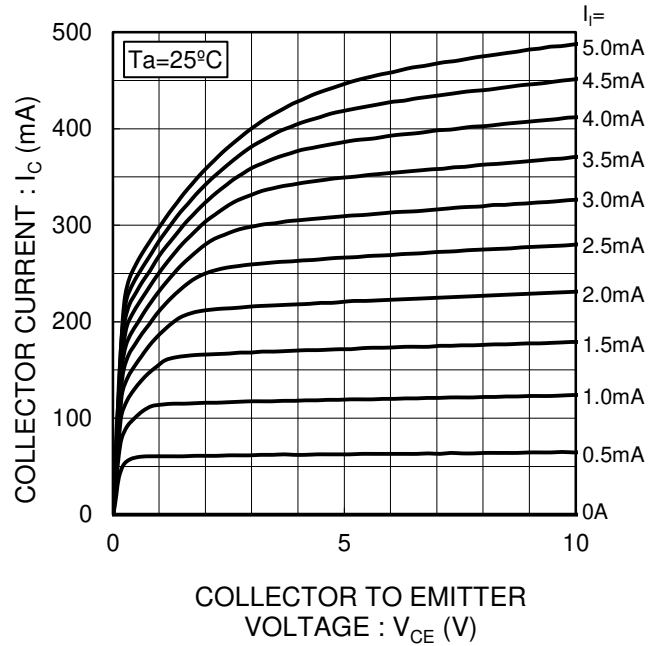


Fig.3 DC Current gain vs. Collector Current

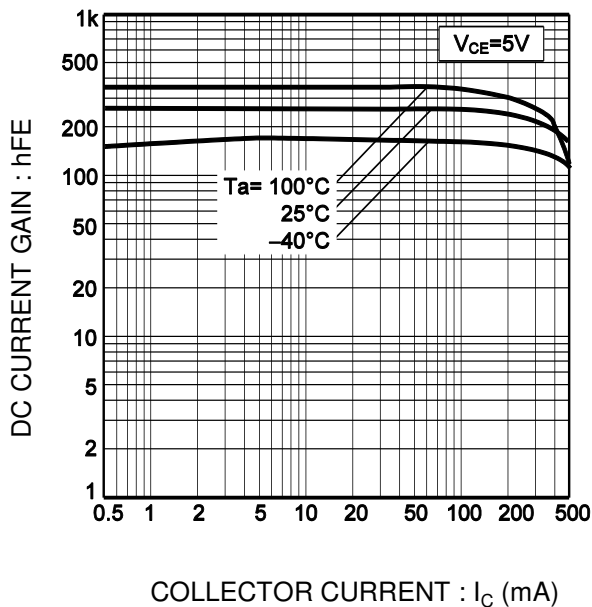
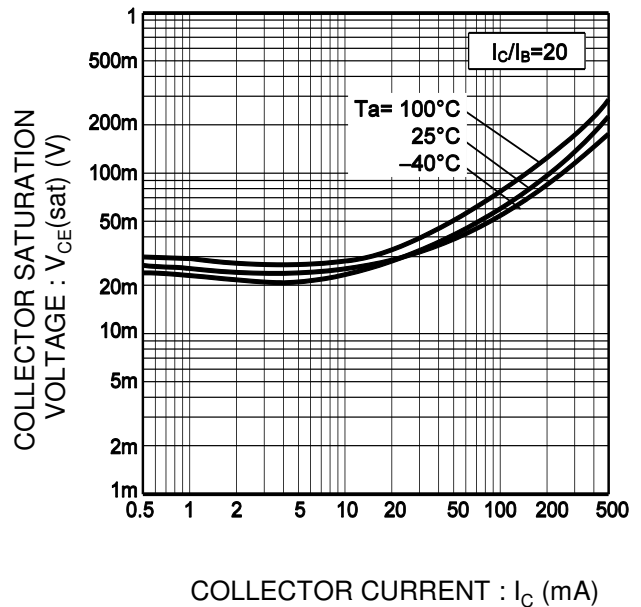
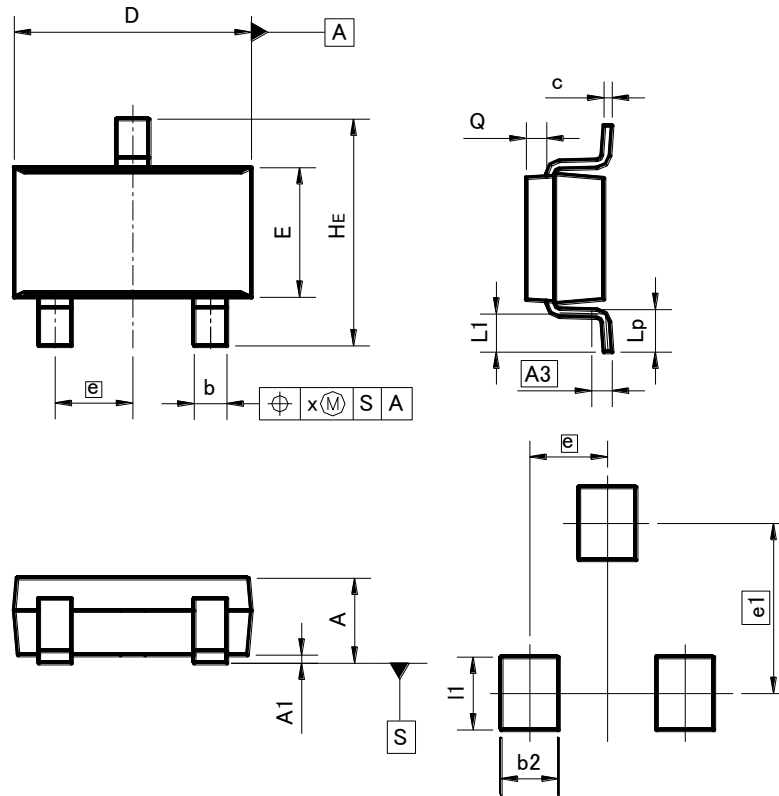


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●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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