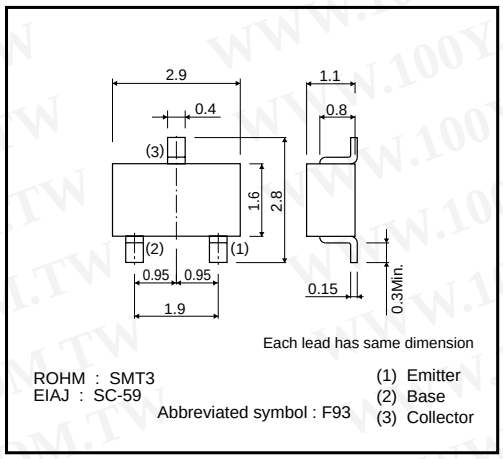
-500mA / -40V Digital transistors (with built-in resistor)

DTB143TK

●Applications
Inverter, Interface, Driver

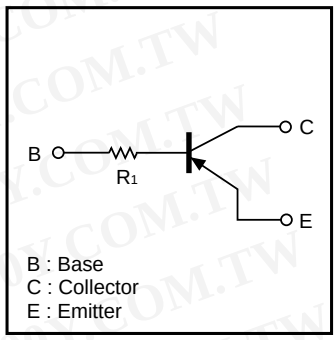
●Features
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
3) Only the on / off conditions need to be set for operation, making the device design easy.

●External dimensions (Unit : mm)



●Structure
PNP epitaxial planar silicon transistor
(Resistor built-in type)

●Equivalent circuit



R_1=4.7kΩ

●Packaging specifications

Part No.	Package	SMT3
	Packaging type	Taping
	Code	T146
	Basic ordering unit (pieces)	3000
DTB143TK		○

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	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
Collector power dissipation	P_C	200	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	–55 to +150	℃

●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}	–40	–	–	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= –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_T *	–	200	–	MHz	V_{CE}= –10V, I_E=50mA, f=100MHz

* Characteristics of built-in transistor

●Electrical characteristic curves

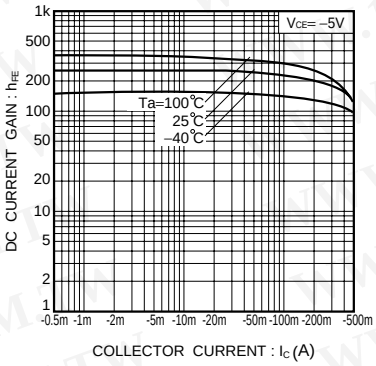


Fig.1 DC current gain vs. collectorcurrent

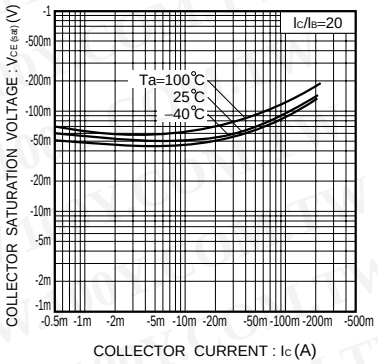


Fig.2Collector-emitter saturation voltage vs. collector current

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