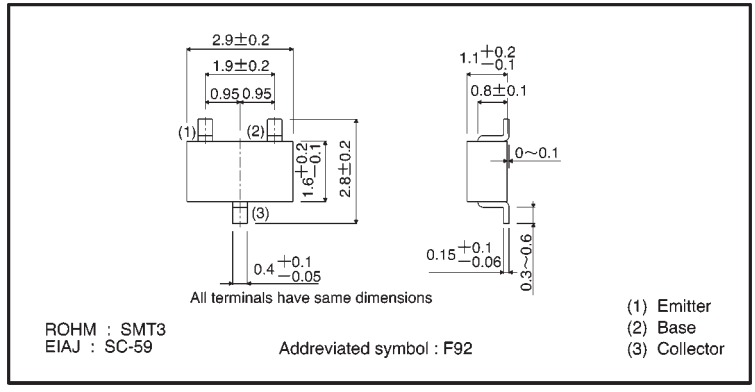
Digital transistors (built in resistor)
DTB123TK

●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 device design easy.
4) Higher mounting densities can be achieved.

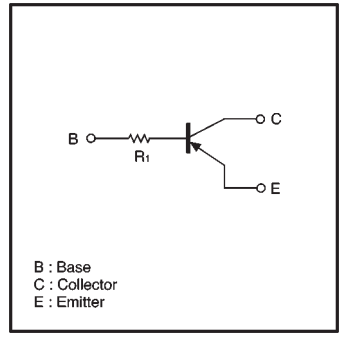
●External dimensions (Units: mm)



●Structure

PNP digital transistor
(Built-in resistor type)

●Equivalent circuit



●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~+150	℃

●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=−50mA/−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

●Packaging specifications

Part No.		
	Package	SMT3
	Packaging type	Taping
	Code	T146
	Basic ordering unit (pieces)	3000
DTB123TK		○

●Electrical characteristic curves

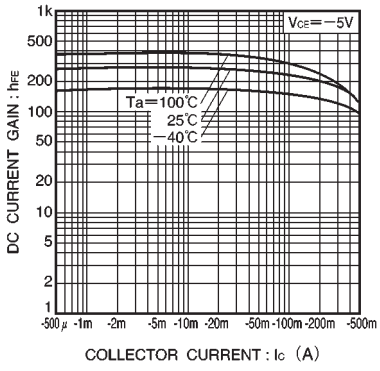


Fig.1 DC current gain vs. collector current

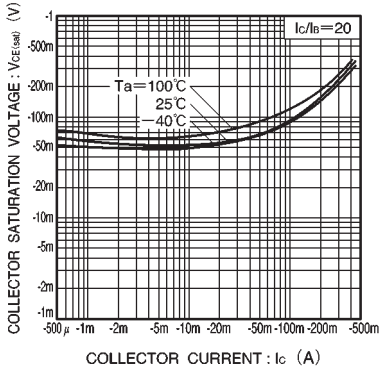


Fig.2 Collector-emitter saturation voltage vs. collector current