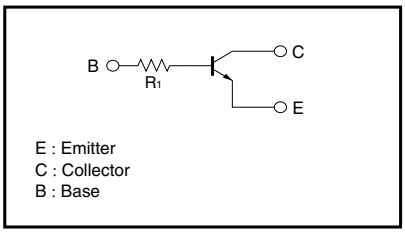
Digital transistor (built-in resistor)

DTC123TKA

●Features

1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
3) Only the on/ off conditions need to be set for operation, making device design easy.
4) Higher mounting densities can be achieved.

●Circuit schematic



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	VCBO	50	V
Collector-emitter voltage	VCEO	50	V
Emitter-base voltage	VEBO	5	V
Collector current	IC	100	mA
Collector Power dissipation	Pc	200	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55 to +150	°C

●Package, marking, and packaging specifications

Part No.	DTC123TKA
Package	SMT3
Marking	02
Packaging code	T146
Basic ordering unit (pieces)	3000

●**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}	50	–	–	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=5mA/0.25mA
DC current transfer ratio	h_{FE}	100	250	600	–	I_C=1mA , V_{CE}=5V
Input resistance	f_T	1.54	2.2	2.86	kΩ	–
Transition frequency	f_T	–	250	–	MHz	V_{CB}=10V , I_E= –5mA , f=100MHz ✻

✻ Transition frequency of the device.

●**Electrical characteristics curves**

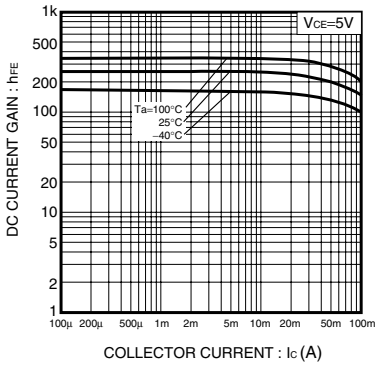


Fig.1 DC Current gain vs. Collector Current

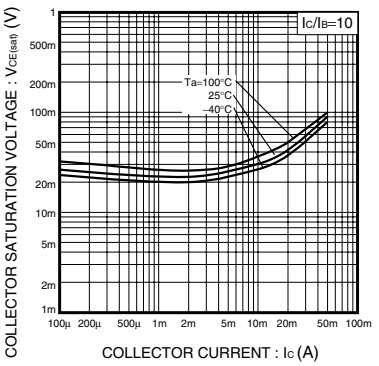


Fig.2 Collector-emitter saturation voltage vs. Collector Current

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