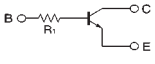
Digital transistor (built-in resistor)

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



E : Emitter
C : Collector
B : Base

●Absolute maximum ratings（Ta=25℃）

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Collector Power dissipation	P_C	200	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	−55～+150	℃

●Package, marking, and packaging specifications

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

●Electrical characteristics（Ta=25℃）

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}	50	—	—	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=5mA/0.25mA
DC current transfer ratio	h_{FE}	100	250	600	—	I_C=1mA , V_{CE}=5V
Input resistance	R_1	1.54	2.2	2.86	kΩ	—
Transition frequency	f_T	—	250	—	MHz	V_{CB}=10V , I_E=−5mA , f=100MHz *