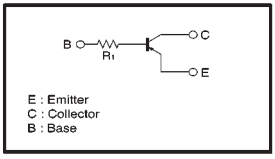
Digital transistor (built in resistor)

DTA113TKA

●**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 positive 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～+10	V
Collector current	I_C	−100	mA
Collector Power dissipation	Pc	200	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	−55～+150	℃

●**Package, marking, and packaging specifications**

Part No.	DTA113TKA
Package	SMT3
Marking	91
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=−10mA/−1mA
DC current transfer ratio	h_{FE}	100	250	600	—	I_C=−1mA , V_{CE}=−5V
Input resistance	R_1	0.7	1	1.3	kΩ	—
Transition frequency	f_T	—	250	—	MHz	V_{CB}=−10V , I_E=5mA , f=100MHz ＊

＊ Transition frequency of the device.

(SPEC-A113T)

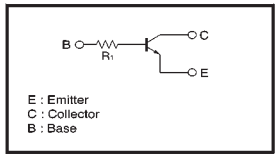
Digital transistor (built-in resistor)

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	Pc	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 ＊

＊ Transition frequency of the device.

(SPEC-C123T)