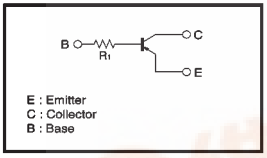
Digital transistor (built-in resistor)

DTB114TK

●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



●Absolute maximum ratings（Ta=25℃）

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	℃

●Package, marking, and packaging specifications

Part No.	DTB114TK
Package	SMT3
Marking	E94
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}	−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	—	I_C=−50mA , V_{CE}=−5V
Input resistance	R_1	7	10	13	kΩ	—
Transition frequency	f_T	—	200	—	MHz	V_{CE}=−10V , I_E=5mA , f=100MHz *

* Transition frequency of the device.

(96-294-B114T)

Digital transistor (built in resistors and zener diode), driver (60V, 1A)

DTDG23YP

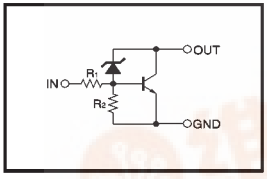
●Features

1）High DC current gain.（Min. 300 at Vo/Io=2V/0.5A）
2）Low output voltage.（Typ. 0.4V at Io/Ii=500/50mA）
3）Built-in zener diode gives strong protection against reverse

●Structure

NPN digital transistor
(with built in resistors and zener diode)

●Circuit schematic



●Absolute maximum ratings（Ta=25℃）

Parameter	Symbol	Limits	Unit	
Supply voltage	V_{CC}	60±10	V	
Input voltage	V_{IN}	−6～+40	V	
Collector current	Io	1	A	
	$I_{C(Max.)}$	2	A（Pulse）	*1
Power dissipation	Pd	1.5	W	*2
Junction temperature	Tj	150	℃	
Storage temperature	Tstg	−55～+150	℃	

*1 Pw≦10ms、Duty cycle≦2%　*2 On 40×40×0.7mm ceramic board.

●Package, marking, and packaging specifications

Part No.	DTDG23YP
Package	MPT3
Marking	E02
Packaging code	T100
Basic ordering unit (pieces)	1000

●Electrical characteristics（Ta=25℃）

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	—	—	0.3	V	V_{CC}=5V , I_O=100 μA
	$V_{I(on)}$	2	—	—		V_O=0.4V , I_O=100mA
Output voltage	$V_{O(on)}$	—	—	0.4	V	Io/Ii=500mA/5mA
Input current	I_I	—	—	3.6	mA	V_I=5V
Output current	$I_{O(off)}$	—	—	0.5	μA	V_{CC}=40V , V_I=0V
DC current gain	G_I	300	—	—	—	V_O=2V , I_O=500mA
Transition frequency	f_T	—	80	—	MHz	V_{CE}=5V , I_E=−0.1A , f=30MHz *
Input resistance	R_1	1.54	2.2	2.86	kΩ	—
Emitter-base resistance	R_2	7	10	13	kΩ	—

* Transition frequency of the device.

(96-378-DS23YP)