

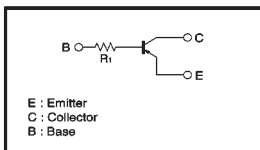
Digital transistor (built-in resistor)

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°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V _{CB0}	−50	V
Collector-emitter voltage	V _{CE0}	−40	V
Emitter-base voltage	V _{EB0}	−5	V
Collector current	I _C	−500	mA
Collector power dissipation	P _C	200	mW
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	−55~+150	°C

●Package, marking, and packaging specifications

Part No.	DTB114TK
Package	SMT3
Marking	E94
Packaging code	T146
Basic ordering unit (pieces)	3000

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	V _{CB0}	−50	—	—	V	I _C =−50 μA
Collector-emitter breakdown voltage	V _{CE0}	−40	—	—	V	I _C =−1mA
Emitter-base breakdown voltage	V _{EB0}	−5	—	—	V	I _E =−50 μA
Collector cutoff current	I _{CB0}	—	—	−0.5	μA	V _{CB} =−50V
Emitter cutoff current	I _{EB0}	—	—	−0.5	μA	V _{EB} =−4V
Collector-emitter saturation voltage	V _{CE(sat)}	—	—	−0.3	V	I _C /I _E =−50mA/−2.5mA
DC current transfer ratio	h _{FE}	100	250	600	—	I _C =−50mA, V _{CE} =−5V
Input resistance	R _I	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

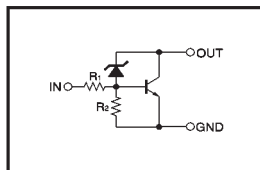
●Features

- 1) High DC current gain. (Min. 300 at V_O/I_O=2V/0.5A)
- 2) Low output voltage. (Typ. 0.4V at I_O/I_I=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°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V _{CC}	60±10	V
Input voltage	V _{IN}	−6~+40	V
Collector current	I _C	1	A
	I _{C(max)}	2	A (Pulse) *1
Power dissipation	P _d	1.5	W *2
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	−55~+150	°C

*1 P_W≤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°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(on)}	—	—	0.3	V	V _{CC} =5V, I _O =100 μA
	V _{I(off)}	2	—	—	V	V _O =0.4V, I _O =100mA
Output voltage	V _{O(on)}	—	—	0.4	V	I _O /I _I =500mA/5mA
Input current	I _I	—	—	3.6	mA	V _I =5V
Output current	I _{O(on)}	—	—	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 _I	1.54	2.2	2.86	kΩ	—
Emitter-base resistance	R _E	7	10	13	kΩ	—

* Transition frequency of the device.

(96-378-DS23YP)