# -500mA / -40V Digital transistor (with built-in resistor) **DTB114TK**

#### Applications

Inverter, interface, driver

#### 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 the device design easy.
- 4) Higher mounting densities can be achieved.

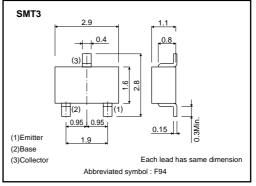
#### Structure

PNP epitaxial planar silicon transistor (Resistor built-in type)

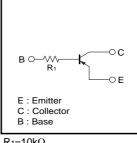
#### Packaging specifications

	Package	SMT3
	Packaging type	Taping
	Code	T146
Part No.	Basic ordering unit (pieces)	3000
DTB114TK		0

#### External dimensions (Unit : mm)



#### ●Circuit schematic



 $R_1=10k\Omega$ 

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#### Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	Vсво	-50	V	
Collector-emitter voltage	Vceo	-40	V	
Emitter-base voltage	Vево	-5	V	
Collector current	lc	-500	mA	
Collector power dissipation	Pc	200	mW	
Junction temperature	Tj	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

### Transistors

#### •External characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-base breakdown voltage	ВУсво	-50	-	_	V	Ic=-50μA
Collector-emitter breakdown voltage	BVCEO	-40	-	_	V	Ic=-1mA
Emitter-base breakdown voltage	ВVево	-5	-	_	V	Iε=-50μA
Collector cutoff current	Ісво	_	-	-0.5	μA	Vcb=-50V
Emitter cutoff curren	Іево	-	-	-0.5	μA	Veb=-4V
Collector-emitter saturation voltage	VCE(sat)	-	-	-0.3	V	Ic/I <sub>B</sub> = -50mA/-2.5mA
DC current transfer ratio	hfe	100	250	600	_	Ic=-50mA , Vce=-5V
Input resistance	R₁	7	10	13	kΩ	_
Transition frequency	f⊤ *	-	200	_	MHz	Vce= -10V , Ie=50mA , f=100MHz

\* Characteristics of built-in transistor

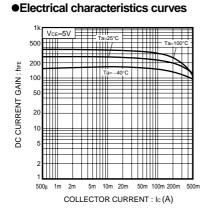
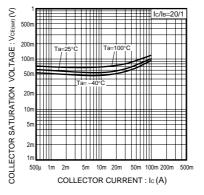
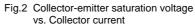


Fig.1 DC current gain vs. Collector current





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