

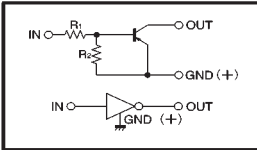
# Digital transistor (built-in resistors)

## DTB122JK

### ●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
Supply voltage	V <sub>cc</sub>	-50	V
Input voltage	V <sub>i</sub>	-5~+5	V
Output current	I <sub>o</sub>	-500	mA
Power dissipation	P <sub>d</sub>	200	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

### ●Package, marking, and packaging specification

Part No.	DTB122JK
Package	SMT3
Marking	G3C
Packaging code	T146
Basic ordering unit (pieces)	3000

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>i(off)</sub>	—	—	-0.5	V	V <sub>cc</sub> =-5V, I <sub>o</sub> =-100 μA
	V <sub>i(on)</sub>	-2	—	—	—	V <sub>o</sub> =-0.3V, I <sub>o</sub> =-30mA
Output voltage	V <sub>o(on)</sub>	—	-0.1	-0.3	V	I <sub>o</sub> /I <sub>i</sub> =-50mA/-2.5mA
Input current	I <sub>i</sub>	—	—	-4.5	mA	V <sub>i</sub> =-5V
Output current	I <sub>o(off)</sub>	—	—	-10	μA	V <sub>cc</sub> =-30V, V <sub>i</sub> =0V
DC current gain	G <sub>i</sub>	47	—	—	—	I <sub>o</sub> =-50mA, V <sub>o</sub> =-5V
Input resistance	R <sub>i</sub>	154	220	286	Ω	—
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	17.1	21.3	25.6	—	—
Transition frequency	f <sub>r</sub>	—	250	—	MHz	V <sub>CE</sub> =-10V, I <sub>E</sub> =50mA, f=100MHz

\* Transition frequency of the device.

(96-296-B122J)

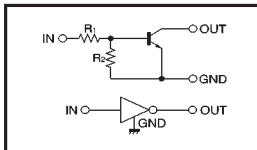
# Digital transistor (built-in resistors)

## DTD122JK

### ●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



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

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>cc</sub>	50	V
Input voltage	V <sub>i</sub>	-5~+5	V
Output current	I <sub>o</sub>	500	mA
Power dissipation	P <sub>d</sub>	200	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

### ●Package, marking, and packaging specification

Part No.	DTD122JK
Package	SMT3
Marking	G4C
Packaging code	T146
Basic ordering unit (pieces)	3000

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>i(off)</sub>	—	—	0.5	V	V <sub>cc</sub> =5V, I <sub>o</sub> =100 μA
	V <sub>i(on)</sub>	2	—	—	—	V <sub>o</sub> =0.3V, I <sub>o</sub> =30mA
Output voltage	V <sub>o(on)</sub>	—	0.1	0.3	V	I <sub>o</sub> /I <sub>i</sub> =50mA/2.5mA
Input current	I <sub>i</sub>	—	—	45	mA	V <sub>i</sub> =5V
Output current	I <sub>o(off)</sub>	—	—	0.5	μA	V <sub>cc</sub> =50V, V <sub>i</sub> =0V
DC current gain	G <sub>i</sub>	47	—	—	—	I <sub>o</sub> =50mA, V <sub>o</sub> =5V
Input resistance	R <sub>i</sub>	154	220	286	Ω	—
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	17.1	21.3	25.6	—	—
Transition frequency	f <sub>r</sub>	—	250	—	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> =-50mA, f=100MHz

\* Transition frequency of the device.

(96-364-D122J)