

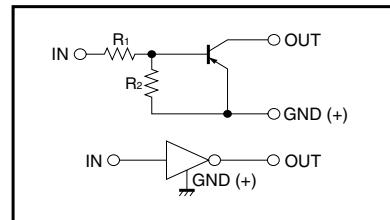
# Digital transistor (built-in resistors)

## 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 to +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 to +150	°C

### ●Package, marking, and packaging specifications

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

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>i(off)</sub>	—	—	-0.3	V	V <sub>cc</sub> = -5V , I <sub>o</sub> = -100μA
	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>	—	—	-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>T</sub>	—	200	—	MHz	V <sub>ce</sub> = -10V , I <sub>e</sub> =50mA , f=100MHz *

\*Transition frequency of the device.

## Transistors

## ●Electrical characteristics curves

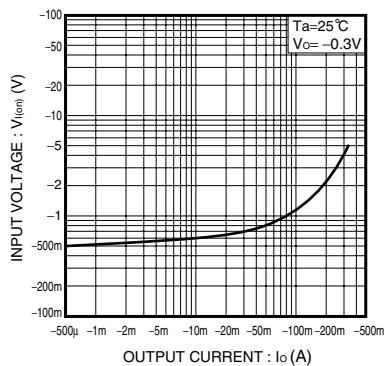


Fig.1 Input voltage vs. Output current (ON characteristics)

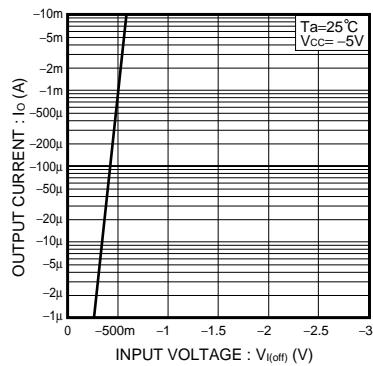


Fig.2 Output current vs. Input voltage (OFF characteristics)

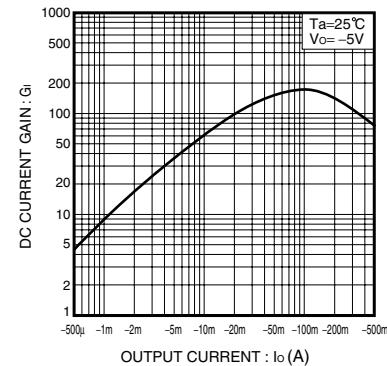


Fig.3 DC current gain vs. Output current

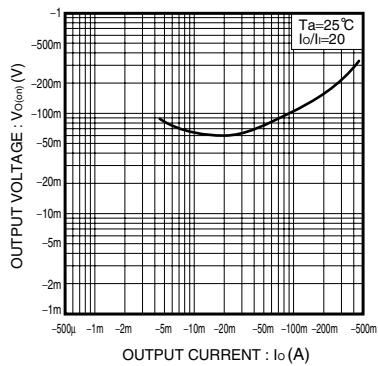


Fig.4 Output voltage vs. Output current

## Appendix

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