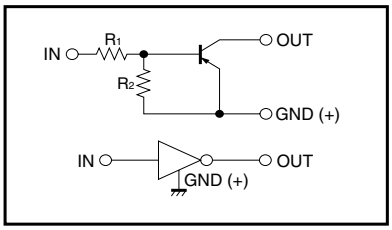
Digital transistor (built-in resistors)

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_{CC}	–50	V
Input voltage	V_I	–5 to +5	V
Output current	I_O	–500	mA
Power dissipation	Pd	200	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	–55 to +150	℃

●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	$V_{I(off)}$	–	–	–0.3	V	V_{CC}= –5V , I_O= –100μA
	$V_{I(on)}$	–2	–	–		V_O= –0.3V , I_O= –30mA
Output voltage	$V_{O(on)}$	–	–0.1	–0.3	V	I_O/I_I= –50mA/–2.5mA
Input current	I_I	–	–	–45	mA	V_I= –5V
Output current	$I_{O(off)}$	–	–	–10	μA	V_{CC}= –30V , V_I=0V
DC current gain	G_I	47	–	–	–	I_O= –50mA , V_O= –5V
Input resistance	R_1	154	220	286	Ω	–
Resistance ratio	R_2/R_1	17.1	21.3	25.6	–	–
Transition frequency	f_T	–	200	–	MHz	V_{CE}= –10V , I_E=50mA , f=100MHz *

*Transition frequency of the device.

●**Electrical characteristics curves**

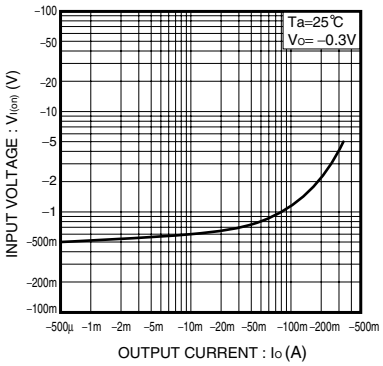


Fig.1 Input voltage vs. Output current (ON characteristics)

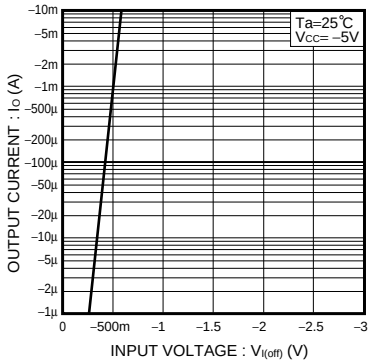


Fig.2 Output current vs. Input voltage (OFF characteristics)

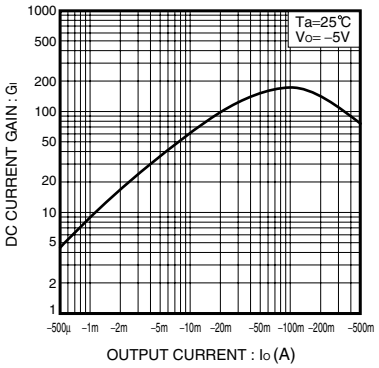


Fig.3 DC current gain vs. Output current

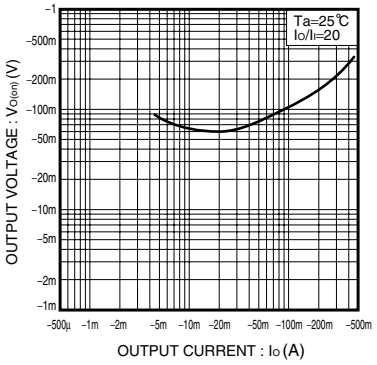


Fig.4 Output voltage vs. Output current

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