-100mA / -50V Digital transistors (with built-in resistors)

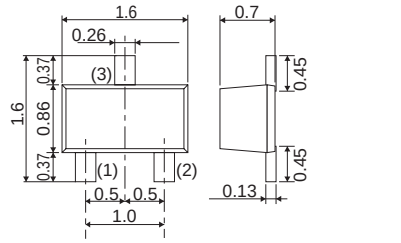
DTA144EEB

●Applications
Inverter, Interface, Driver

●Features
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
3) Only the on/off conditions need to be set for operation, making the device design easy.

●Dimensions (Unit : mm)

EMT3F



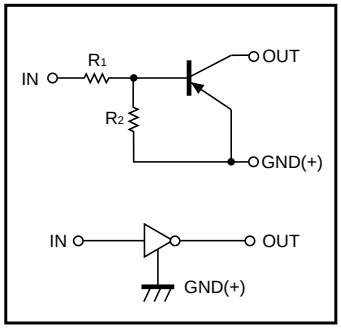
(1) IN
(2) GND
(3) OUT

Each lead has same dimensions

Abbreviated symbol : 16

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

●Equivalent circuit



$R_1=R_2=47k\Omega$

●Packaging specifications

Part No.	Package	EMT3F
	Packaging type	Taping
	Code	TL
	Basic ordering unit (pieces)	3000
DTA144EEB		○

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	−50	V
Input voltage	V_{IN}	−40 to +10	V
Collector current	Ic(max) *1	−100	mA
Output current	Io	−30	mA
Power dissipation	P_D *2	150	mW
Junction temperature	Tj	150	°C
Range of storage temperature	Tstg	−55 to +150	°C

*1 Characteristics of built-in transistor
*2 Each terminal mounted on a recomended land

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	–500	mV	V_{CC}=–5V, I_O=–100μA
	$V_{I(on)}$	–3.0	–	–	V	V_O=–0.3V, I_O=–2mA
Output voltage	$V_{O(on)}$	–	–100	–300	mV	I_O / I_I=–10mA / –0.5mA
Input current	I_I	–	–	–0.18	mA	V_I=–5V
Output current	$I_{O(off)}$	–	–	–500	nA	V_{CC}=–50V, V_I=0V
DC current gain	G_I	68	–	–	–	V_O=–5V, I_O=–5mA
Transition frequency	f_T *	–	250	–	MHz	V_{CE}=–10V, I_E=5mA, f=100MHz
Input resistance	R_1	32.9	47	61.1	kΩ	–
Resistance ratio	R_2/R_1	0.8	1	1.2	–	–

* Characteristics of built-in transistor

●**Electrical characteristic curves**

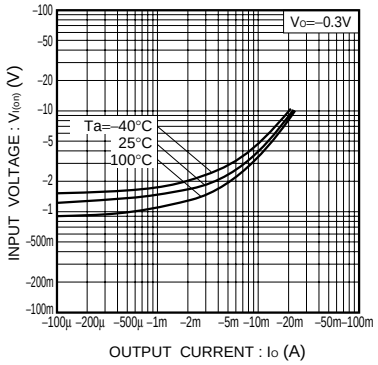


Fig.1 Input voltage vs. output current (ON characteristics)

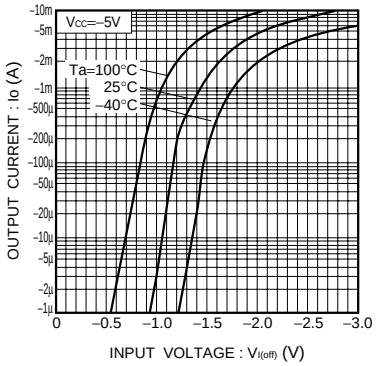


Fig.2 Output current vs. input voltage (OFF characteristics)

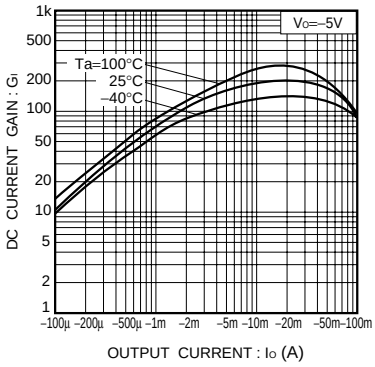


Fig.3 DC current gain vs. output current

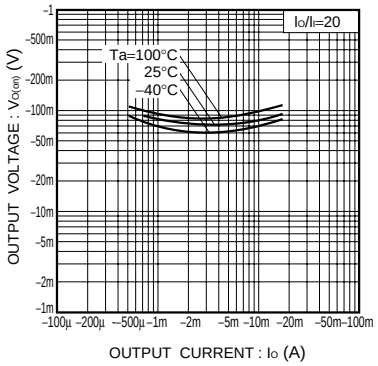


Fig.4 Output voltage vs. output current

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ROHM CO., LTD. 21, Saiin Mizosaki-cho, Ukyo-ku, Kyoto 615-8585, Japan
TEL : +81-75-311-2121
FAX : +81-75-315-0172