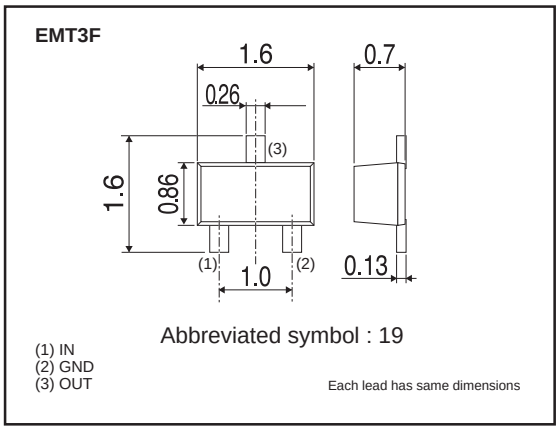
100mA / 50V Digital transistors (with built-in resistors)

DTA115EEB

●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) Each bias resistor is a thin-film resistor. Since they are completely insulated, the input can be negatively biased. The insulation also eliminates most of the parasitic effects.
3) Only the on / off conditions need to be set for operation, making the device design easy.

● Dimensions (Unit : mm)

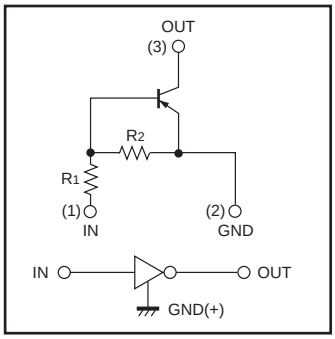


●Structure
PNP silicon epitaxial planar digital transistor

●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
DTA115EEB		○

●Inner circuit



R1=100kΩ, R2=100kΩ

●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	$I_{C(Max.)}$ *1	−100	mA
Output Current	I_O	−20	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 recommended 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= –1mA
Output voltage	$V_{O(on)}$	–	–100	–300	mV	I_O/I_I= –5mA/–0.25mA
Input current	I_I	–	–	–0.15	mA	V_I= –5V
Output current	$I_{O(off)}$	–	–	–500	nA	V_{CC}= –50V, V_I=0V
DC current gain	G_I	82	–	–	–	V_O= –5V, I_O= –5mA
Transition frequency	f_T *	–	250	–	MHz	V_{CE}= –10V, I_E=5mA, f=100MHz
Input resistance	R_1	70	100	130	kΩ	–
Resistance ratio	R_2/R_1	0.8	1	1.2	–	–

* Characteristics of built-in transistor

●Electrical characteristic curves

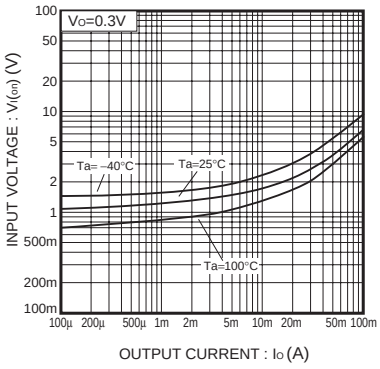


Fig.1 Input voltage vs. Output current (ON characteristics)

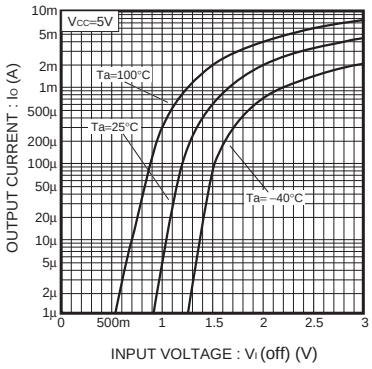


Fig.2 Output current vs. Input voltage (OFF characteristics)

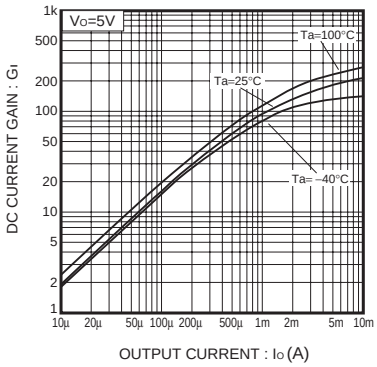


Fig.3 DC current gain vs. Output current

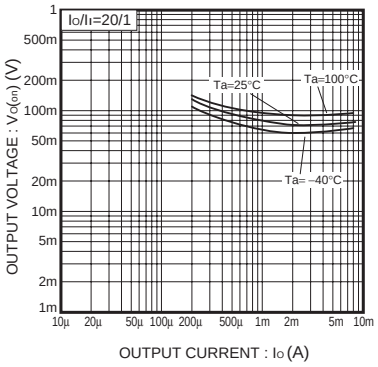


Fig.4 Output voltage vs. Output current

Notes

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