Digital transistors (built-in resistors)

DTA113ZE / DTA113ZUA / DTA113ZKA / DTA113ZSA

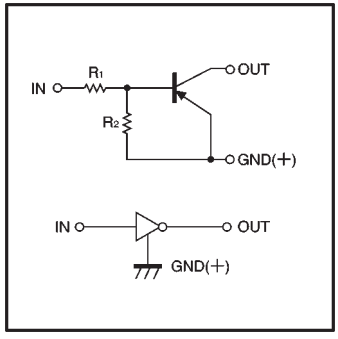
●Features

1) The built-in bias resistor allows the configuration of an inverter circuit without connecting any external input resistors (see Equivalent circuit).
2) Each bias resistor is a thin-film resistor. Since they are completely insulated, the input can be positively biased. The insulation also eliminates most of the parastic effects.
3) Circuit design is simplified since only the OFF and the ON conditions have to be set.

●Structure

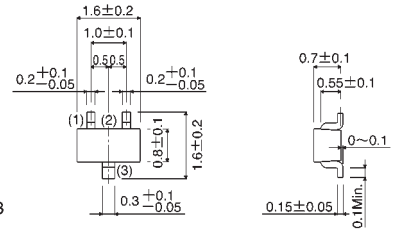
PNP digital transistor
(with built in resistors).

●Equivalent circuit



●External dimensions (Units: mm)

DTA113ZE

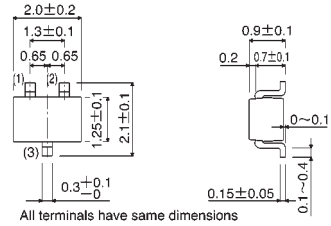


ROHM : EMT3

Addreviated symbol : E11

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

DTA113ZUA

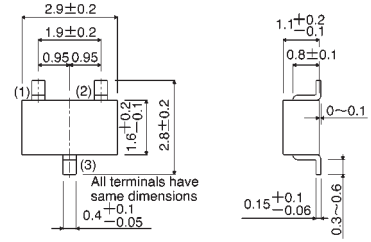


ROHM : UMT3
EIAJ : SC-70

Addreviated symbol : 111

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

DTA113ZKA

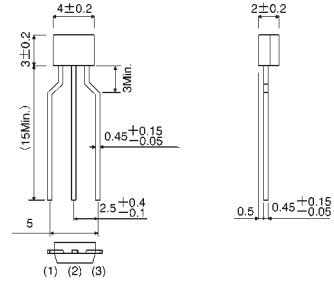


ROHM : SMT3
EIAJ : SC-59

Addreviated symbol : E11

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

DTA113ZSA



ROHM : SPT
EIAJ : SC-72

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

(94S-504A113Z)

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits(DTA113Z□)				Unit
		E	UA	KA	SA	
Supply voltage	V_{CC}	−50				V
Input voltage	V_{IN}	−10~+5				V
Output current	I_O	−100				mA
	$I_{C(Max.)}$	−100				
Power dissipation	Pd	150	200		300	mW
Junction temperature	Tj	150				℃
Storage temperature	Tstg	−55~+150				℃

●Electrical 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
	$V_{I(on)}$	−3	—	—		V_O=−0.3V, I_O=−20mA
Output voltage	$V_{O(on)}$	—	—	−0.3	V	I_O/I_I=−10mA/−0.5mA
Input current	I_I	—	—	−7.2	mA	V_I=−5V
Output current	$I_{O(off)}$	—	—	−0.5	μA	V_{CC}=−50V, V_I=0V
DC current gain	G_I	33	—	—	—	V_O=−5V, I_O=−5mA
Input resistance	R_1	0.7	1	1.3	kΩ	—
Resistance ratio	R_2/R_1	8	10	12	—	—
Transition frequency	f_T	—	250	—	MHz	V_{CE}=−10V, I_E=5mA, f=100MHz ✻

✻ Transition frequency of the device

●Packaging specifications

Part No.	Package	EMT3	UMT3	SMT3	SPT
	Package type	Taping	Taping	Taping	Taping
	Code	TL	T106	T146	TP
	Basic ordering unit (pieces)	3000	3000	3000	5000
DTA113ZE		○	—	—	—
DTA113ZUA		—	○	—	—
DTA113ZKA		—	—	○	—
DTA113ZSA		—	—	—	○

●Electrical characteristic curves

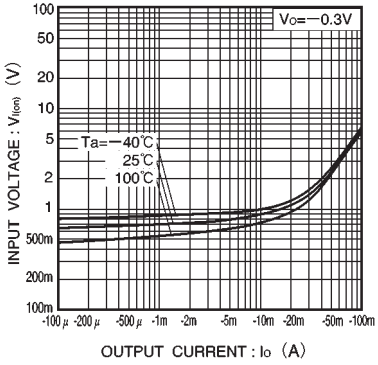


Fig.1 Input voltage vs. output current (ON characteristics)

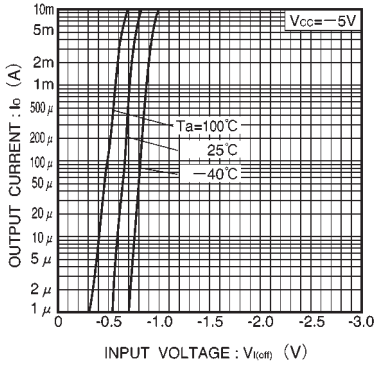


Fig.2 Output current vs. input voltage (OFF characteristics)

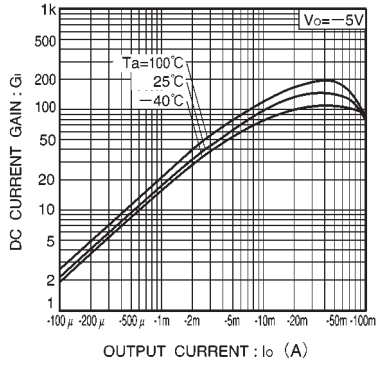


Fig.3 DC current gain vs. output current

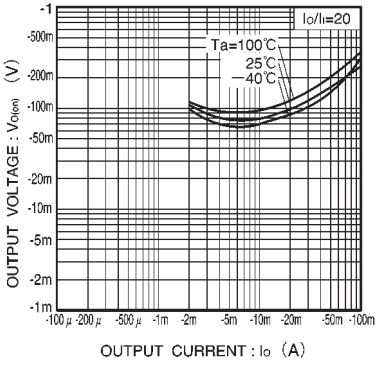


Fig.4 Output voltage vs. output current

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