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

DTA144WE / DTA144WUA / DTA144WKA

● Applications
Inverter, Interface, Driver

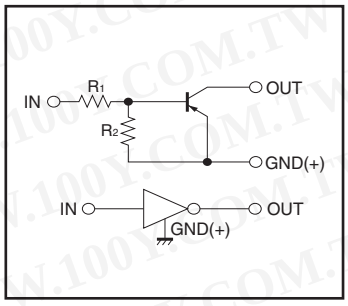
● Features
1)Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
2)The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
3)Only the on / off conditions need to be set for operation, making the device design easy.
4)Higher mounting densities can be achieved.

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

● Packaging specifications

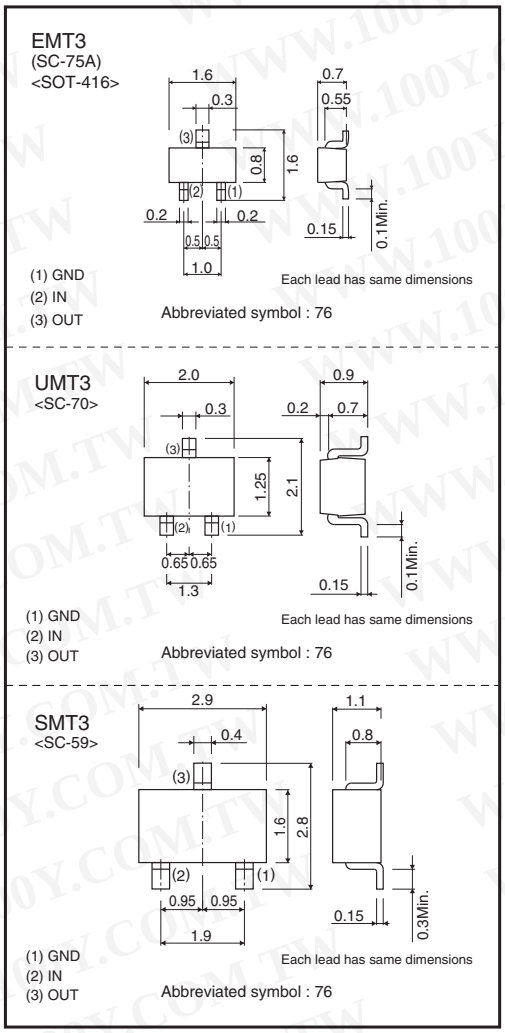
Part No.	Package	EMT3	UMT3	SMT3
	Packaging type	Taping	Taping	Taping
	Code	TL	T106	T146
	Basic ordering unit (pieces)	3000	3000	3000
DTA144WE		○	–	–
DTA144WUA		–	○	–
DTA144WKA		–	–	○

● Inner circuit



R_1=47kΩ, R_2=22kΩ

● Dimensions (Unit : mm)



● Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Supply voltage		V_{CC}	−50	V
Input voltage		V_I	−40 to +10	V
Output current		I_O	−30	mA
		$I_{C(Max.)}$	−100	
Power dissipation	DTA144WE	Pd	150	mW
	DTA144WUA / DTA144WKA		200	
Junction temperature		Tj	150	°C
Storage temperature		Tstg	−55 to +150	°C

● Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	−	−	−0.8	V	V_{CC}=−5V, I_O=−100μA
	$V_{I(on)}$	−4	−	−		V_O=−0.3V, I_O=−2mA
Output voltage	$V_{O(on)}$	−	−0.1	−0.3	V	I_O=−10mA, I_I=−0.5mA
Input current	I_I	−	−	−0.16	mA	V_I=−5V
Output current	$I_{O(off)}$	−	−	−0.5	μA	V_{CC}=−50V, V_I=0V
DC current gain	G_I	56	−	−	−	I_O=−5mA, V_O=5V
Input resistance	R_1	32.9	47	61.1	kΩ	−
Resistance ratio	R_2/R_1	0.37	0.47	0.57	−	−
Transition frequency	f_T *	−	250	−	MHz	V_{CE}=−10V, I_E= 5mA, f=100MHz

* Characteristics of built-in transistor

● Electrical characteristics curves

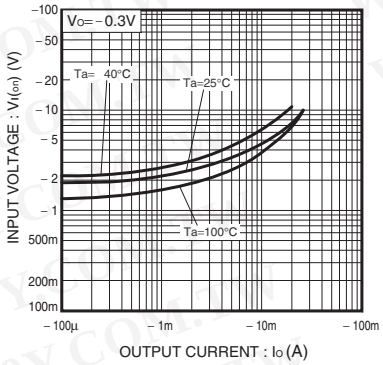


Fig.1 Input voltage vs. Output current (ON characteristics)

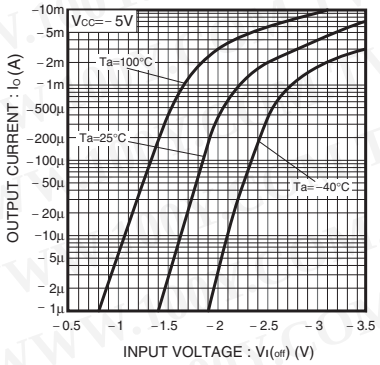


Fig.2 Output current vs. Input voltage (OFF characteristics)

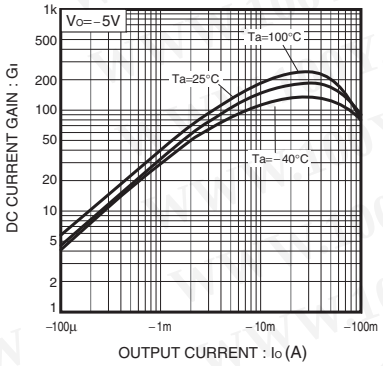


Fig.3 DC current gain vs. Output current

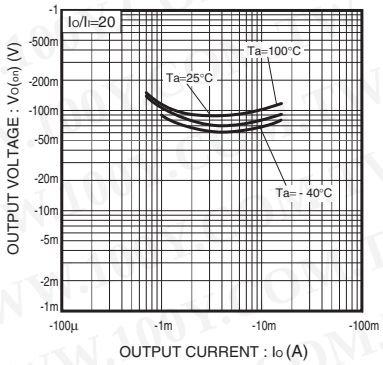


Fig.4 Output voltage vs. Output current

Notes

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