

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

DTA114WE / DTA114WUA / DTA114WKA

● 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.

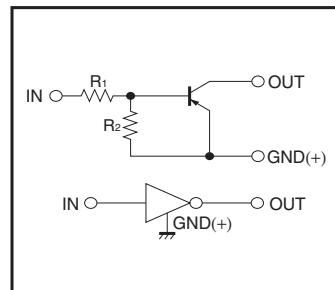
● Structure

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

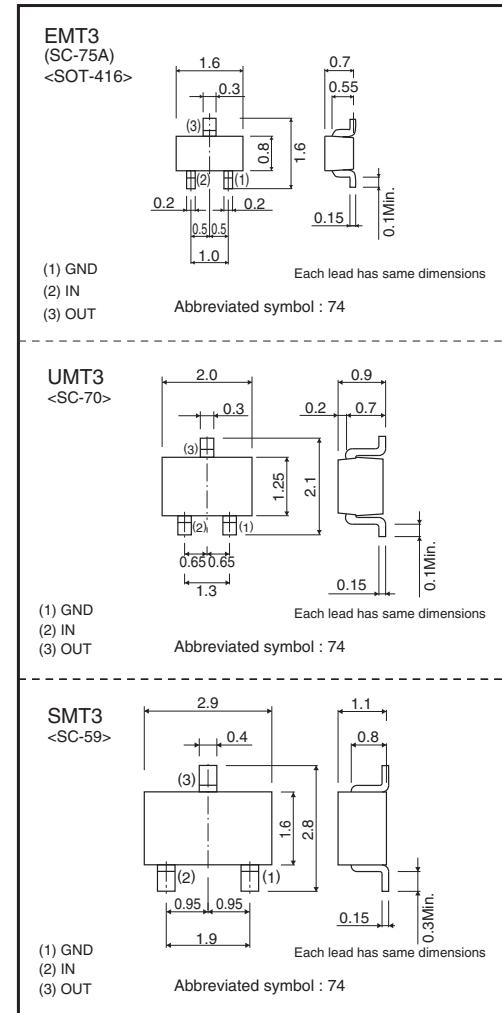
● Packaging specifications

	Package	EMT3	UMT3	SMT3
Part No.	Packaging type	Taping	Taping	Taping
	Code	TL	T106	T146
	Basic ordering unit (pieces)	3000	3000	3000
DTA114WE		○	—	—
DTA114WUA		—	○	—
DTA114WKA		—	—	○

● Inner circuit



● Dimensions (Unit : mm)



● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V _{CC}	-50	V
Input voltage	V _I	-30 to +10	V
Output current	I _O	-100	mA
	I _{C(Max.)}	-100	
Power dissipation	P _D	150	mW
		200	
Junction temperature	T _J	150	°C
Storage temperature	T _{STG}	-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)}	-3	—	—		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	—	—	-0.88	mA	V _I =-5V
Output current	I _{O(off)}	—	—	-0.5	μA	V _{CC} =-50V, V _I =0V
DC current gain	G _I	24	—	—	—	I _O =-10mA, V _O =-5V
Input resistance	R _I	7	10	13	kΩ	—
Resistance ratio	R ₂ /R ₁	0.37	0.47	0.57	—	—
Transition frequency	f _T *	—	250	—	MHz	V _{CE} =-10V, I _O =5mA, f=100MHz

* Characteristics of built-in transistor

● Electrical characteristic curves

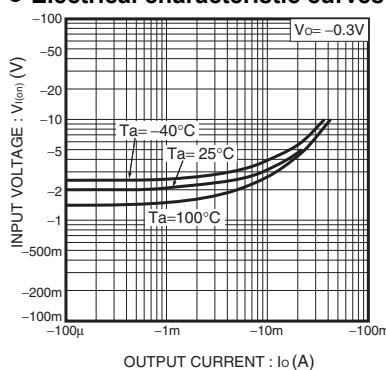


Fig.1 Input voltage vs. Output current (ON characteristics)

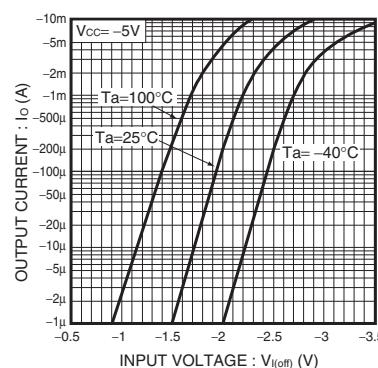


Fig.2 Output current vs. Input voltage (OFF characteristics)

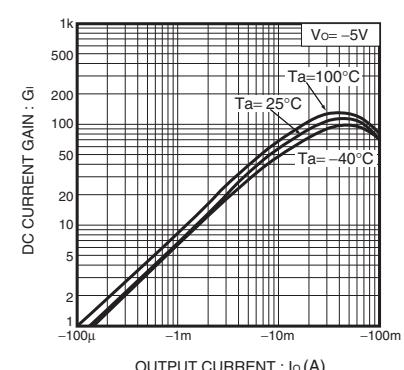


Fig.3 DC current gain vs. Output current

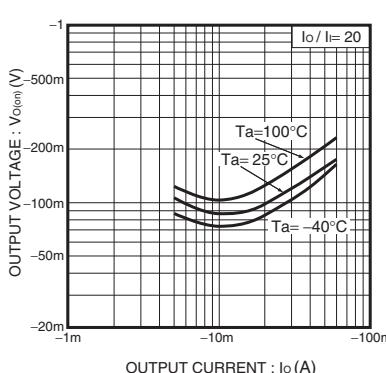


Fig.4 Output voltage vs. Output current

Notes

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