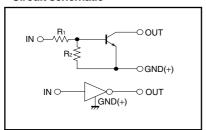
# Digital transistors (built-in resistors) DTC114WE/DTC114WUA/DTC114WKA/DTC114WSA

#### Features

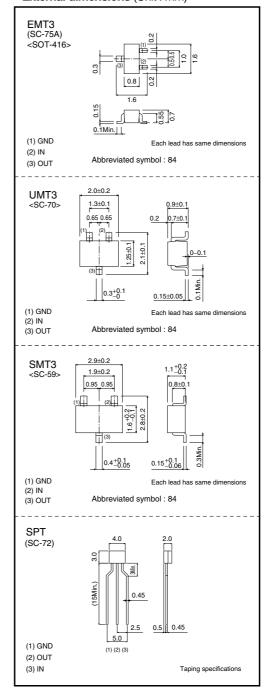
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only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

### ●Circuit schematic



 $R_1=10k\Omega$  /  $R_2=4.7k\Omega$ 

## ●External dimensions (Unit:mm)



# ●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit	
Supply voltage		Vcc	50	V	
Input voltage		Vı	-10 to +30	V	
Output current		lo	100	mA	
		IC(Max.)	100		
Power dissipation	DTC114WE		150*	mW	
	DTC114WUA / DTC114WKA	Pd	200*		
	DTC114WSA		300*		
Junction temperature		Tj	150	°C	
Storage temperature		Tstg	-55 to +150	°C	

<sup>\*</sup> Recommended land

## ● Package, marking, and packaging specifications

Part No.	DTC114WE	DTC114WUA	DTC114WKA	DTC114WSA
Package	EMT3	UMT3	SMT3	SPT
Marking	84	84	84	C114WS
Packaging code	TL	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	3000	5000

## ●External characteristics (Unit: mm)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	VI(off)	_	_	0.8	٧	Vcc=5V, lo=100μA
Input voltage	VI(on)	3	_	-		Vo=0.3V, Io=2mA
Output voltage	V <sub>O(on)</sub>	_	0.1	0.3	V	lo=10mA, l≔0.5mA
Input current	lı	_	_	0.88	mA	Vi=5V
Output current	IO(off)	_	_	0.5	μΑ	Vcc=50V, Vi=0V
DC current gain	Gı	24	_	_	_	Io=10mA, Vo=5V
Input resistance	R <sub>1</sub>	7	10	13	kΩ	_
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	0.37	0.47	0.57	-	-
Transition frequency	f⊤	_	250	-	MHz	VcE=10V, IE= -5mA, f=100MHz *

<sup>\*</sup> Transition frequency of the device.

### •Electrical characteristics curves

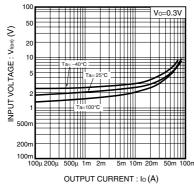


Fig.1 Input voltage vs. Output current (ON characteristics)

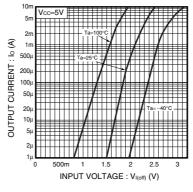


Fig.2 Output current vs. Input voltage (OFF characteristics)

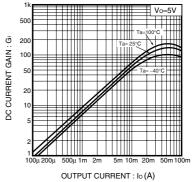


Fig.3 DC current gain vs. Output current

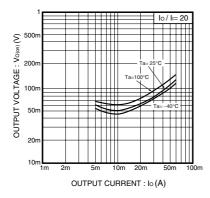


Fig.4 Output voltage vs. Output current

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