

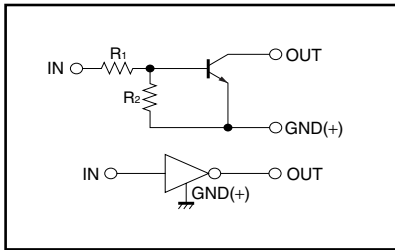
Digital transistors (built-in resistors)

DTC114WE/DTC114WUA/DTC114WKA/DTC114WSA

●Features

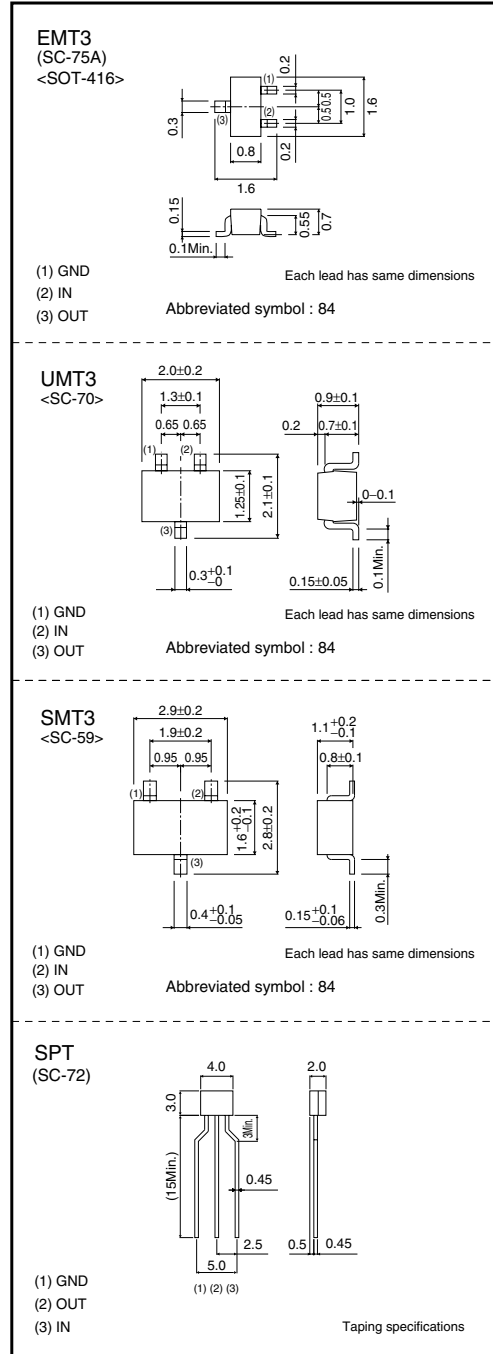
- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
- 3)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



DTC114WE / DTC114WUA / DTC114WKA / DTC114WSA

Transistors

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Supply voltage		V _{CC}	50	V
Input voltage		V _I	-10 to +30	V
Output current		I _O	100	mA
		I _{C(Max.)}	100	
Power dissipation	DTC114WE	P _d	150*	mW
	DTC114WUA / DTC114WKA		200*	
	DTC114WSA		300*	
Junction temperature		T _j	150	°C
Storage temperature		T _{stg}	-55 to +150	°C

* 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.	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 ₁	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 _E =-5mA, f=100MHz *

* Transition frequency of the device.

Transistors

●Electrical characteristics curves

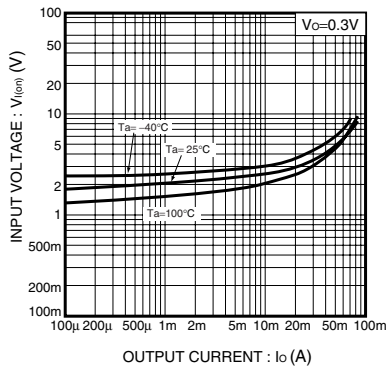


Fig.1 Input voltage vs. Output current (ON characteristics)

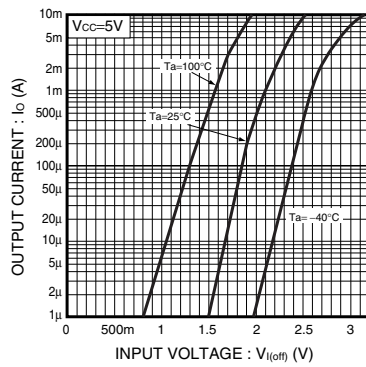


Fig.2 Output current vs. Input voltage (OFF characteristics)

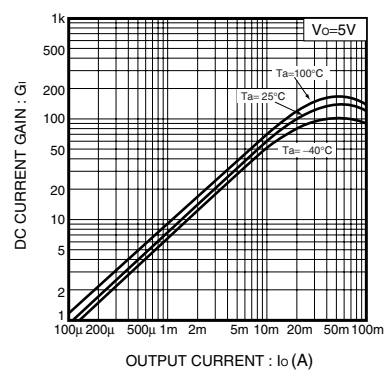


Fig.3 DC current gain vs. Output current

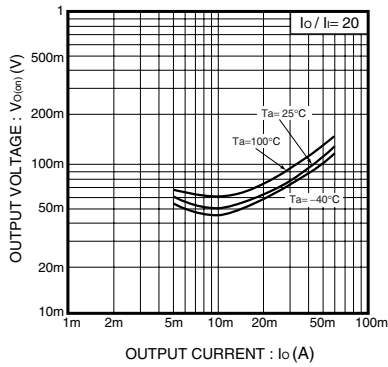


Fig.4 Output voltage vs. Output current

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