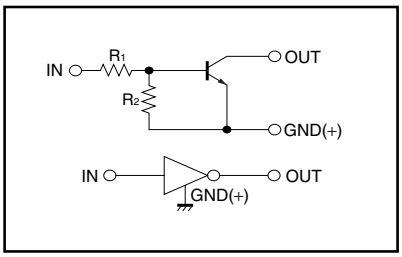
Digital transistors (built-in resistors)

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.

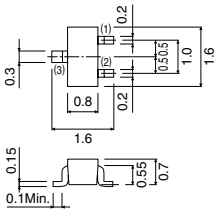
●Circuit schematic



R_1=10kΩ / R_2=4.7kΩ

●External dimensions (Unit : mm)

EMT3
(SC-75A)
<SOT-416>

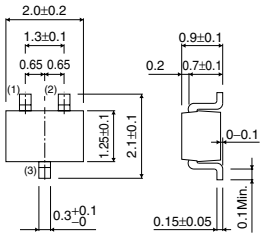


(1) GND
(2) IN
(3) OUT

Each lead has same dimensions

Abbreviated symbol : 84

UMT3
<SC-70>

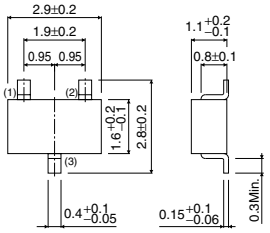


(1) GND
(2) IN
(3) OUT

Each lead has same dimensions

Abbreviated symbol : 84

SMT3
<SC-59>

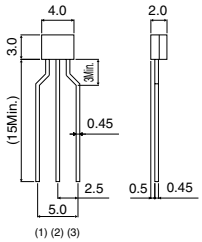


(1) GND
(2) IN
(3) OUT

Each lead has same dimensions

Abbreviated symbol : 84

SPT
(SC-72)



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

Taping specifications

●**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	Pd	150＊	mW
	DTC114WUA / DTC114WKA		200＊	
	DTC114WSA		300＊	
Junction temperature		Tj	150	°C
Storage temperature		Tstg	−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.

●**Electrical characteristics curves**

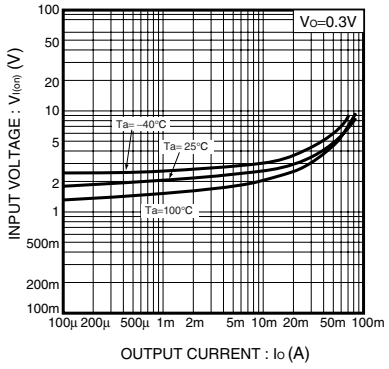


Fig.1 Input voltage vs. Output current (ON characteristics)

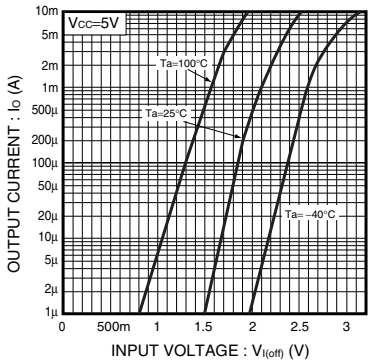


Fig.2 Output current vs. Input voltage (OFF characteristics)

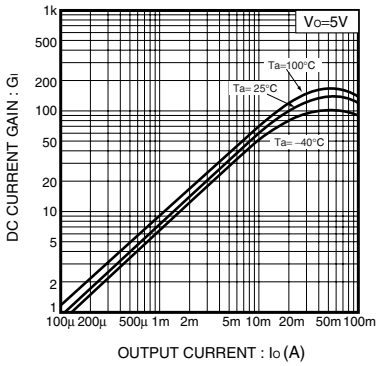


Fig.3 DC current gain vs. Output current

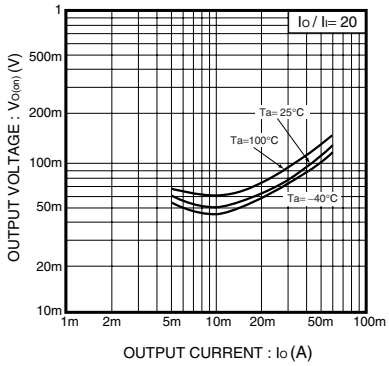


Fig.4 Output voltage vs. Output current

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