

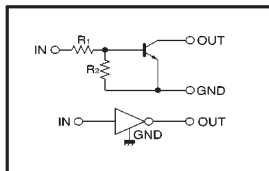
Digital transistors (built-in resistors)

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 negative 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



●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	—	—	0.8	V	$V_{CC}=5V$, $I_O=100\mu A$
	$V_{I(on)}$	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	k Ω	—
Resistance ratio	R_2/R_1	0.37	0.47	0.57	—	—
Transition frequency	f_T	—	250	—	MHz	$V_{CE}=10V$, $I_E=-5mA$, $f=100MHz$ *

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Supply voltage		V_{CC}	50	V
Input voltage		V_I	-10~+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~+150	°C

●Package, marking, and packaging specifications

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