



## Digital transistors (built-in resistors)

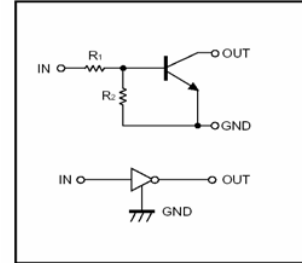
### DTC114WE/DTC114WUA/DTC114WCA DTC114WKA/DTC114WSA

DIGITAL TRANSISTOR (NPN)

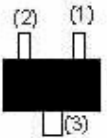
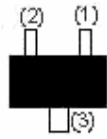
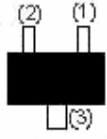
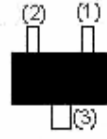
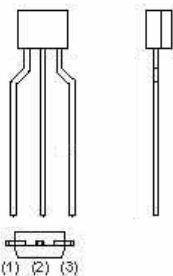
#### Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making device design easy.

#### ●Equivalent circuit



#### PIN CONNENCTIONS AND MARKING

<p>DTC114WE</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-523      Abbreviated symbol: 84</p>	<p>DTC114WUA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-323      Abbreviated symbol: 84</p>
<p>DTC114WKA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-23-3L      Abbreviated symbol: 84</p>	<p>DTC114WCA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-23      Abbreviated symbol: 84</p>
<p>DTC114WSA</p>  <p>1.GND 2.OUT 3.IN</p> <p>TO-92S</p>	

### Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits (DTC114W )					Unit
		E	UA	CA	KA	SA	
Supply voltage	$V_{CC}$	50					V
Input voltage	$V_{IN}$	-10~30					V
Output current	$I_O$	100					mA
	$I_{C(MAX)}$	100					
Power dissipation	$P_d$	150		200		300	mW
Junction temperature	$T_j$	150					°C
Storage temperature	$T_{stg}$	-55~150					°C

### Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$			0.8	V	$V_{CC}=5V, I_O=100\mu A$
	$V_{I(on)}$	3				$V_O=0.3V, I_O=2mA$
Output voltage	$V_{O(on)}$		0.1	0.3	V	$I_O/I_I=10mA/0.5mA$
Input current	$I_I$			0.88	mA	$V_I=5V$
Output current	$I_{O(off)}$			0.5	$\mu A$	$V_{CC}=50V, V_I=0$
DC current gain	$G_I$	24				$V_O=5V, I_O=10mA$
Input resistance	$R_1$	7	10	13	K $\Omega$	
Resistance ratio	$R_2/R_1$	0.37	0.47	0.57		
Transition frequency	$f_T$		250		MHz	$V_O=10V, I_O=5mA, f=100MHz$