



Digital transistors (built-in resistors)

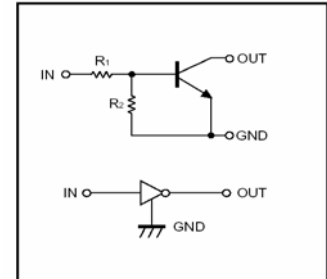
**DTC114WE/DTC114WUA/DTC114WCA
DTC114WKA/DTC114WSA**

DIGITAL TRANSISTOR (NPN)

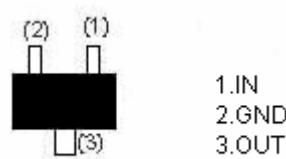
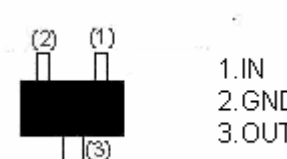
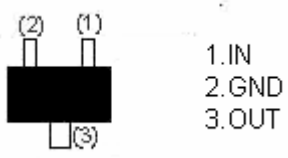
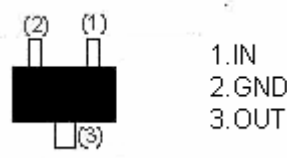
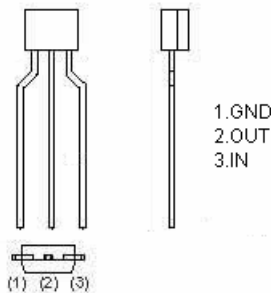
Features

- 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 =100μA
	V _{I(on)}	3				V _O =0.3V, I _O =2 mA
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	μA	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	KΩ	
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