

## Digital transistors (built-in resistors)

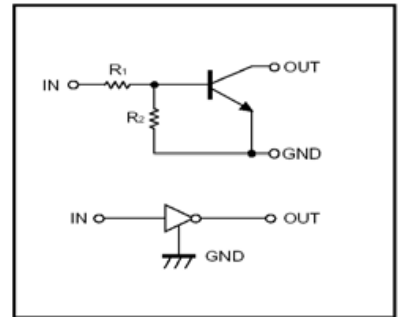
### DTC143ZM/ DTC143ZE/DTC143ZUA DTC143ZKA /DTC143ZSA/ DTC143ZCA

DIGITAL TRANSISTOR (NPN)

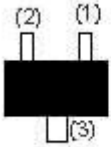
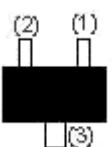
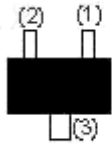

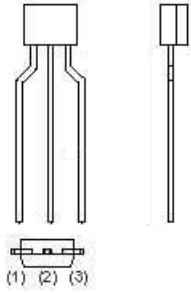
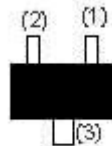
#### FEATURES

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>DTC143ZE</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-523      Abbreviated symbol: E23</p>	<p>DTC143ZUA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-323      Abbreviated symbol: E23</p>
<p>DTC143ZKA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-23-3L      Abbreviated symbol: E23</p>	<p>DTC143ZCA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-23      Abbreviated symbol: E23</p>
<p>DTC143ZSA</p>  <p>1.GND 2.OUT 3.IN</p> <p>TO-92S</p>	<p>DTC143ZM</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-723      Abbreviated symbol: E23</p>

**Absolute maximum ratings(Ta=25°C)**

Parameter	Symbol	Limits (DTC143Z )						Unit
		M	E	UA	CA	KA	SA	
Supply voltage	$V_{CC}$	50						V
Input voltage	$V_{IN}$	-5~30						V
Output current	$I_O$	100						mA
	$I_{C(MAX)}$	100						
Power dissipation	$P_d$	100	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	$V_{I(off)}$	0.5			V	$V_{CC}=5V, I_O=100\mu A$
	$V_{I(on)}$			1.3		$V_O=0.3V, I_O=5mA$
Output voltage	$V_{O(on)}$		0.1	0.3	V	$I_O/I_I=5mA/0.25mA$
Input current	$I_I$			1.8	mA	$V_I=5V$
Output current	$I_{O(off)}$			0.5	$\mu A$	$V_{CC}=50V, V_I=0$
DC current gain	$G_I$	80				$V_O=5V, I_O=10mA$
Input resistance	$R_1$	3.29	4.7	6.11	K $\Omega$	
Resistance ratio	$R_2/R_1$	8	10	12		
Transition frequency	$f_T$		250		MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$

# Typical Characteristics

# DTC143ZSA

