

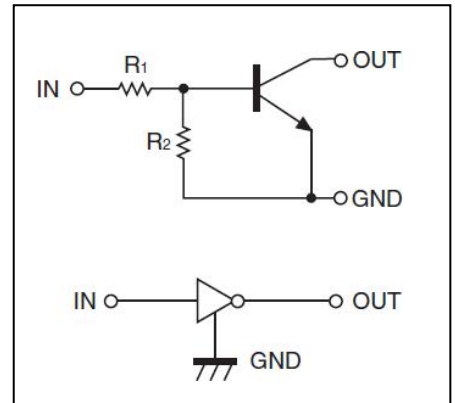
## Digital Transistors (Built-in Resistors)

### • Equivalent Circuit

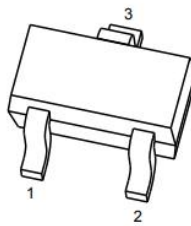
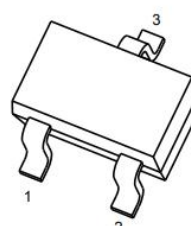
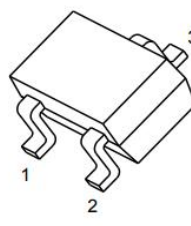
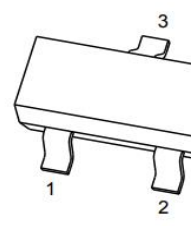
DIGITAL TRANSISTOR (NPN)

### FEATURES

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- 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
- Only the on/off conditions need to be set for operation, making device design easy



### PIN CONNENCTIONS and MARKING

<b>DTC123JE</b>  1. IN 2. GND 3. OUT	<b>SOT-523</b> 1. IN 2. GND 3. OUT	<b>DTC123JUA</b>  1. IN 2. GND 3. OUT	<b>SOT-323</b> 1. IN 2. GND 3. OUT
<b>DTC123JKA</b>  1. IN 2. GND 3. OUT	<b>SOT-23-3L</b> 1. IN 2. GND 3. OUT	<b>DTC123JCA</b>  1. IN 2. GND 3. OUT	<b>SOT-23</b> 1. IN 2. GND 3. OUT

### ORDERING INFORMATION

Part Number	MARKING	Package	Packing Method	Pack Quantity
DTC123JE	<b>E42</b>	SOT-523	Reel	3000pcs/Reel
DTC123JUA	<b>E42</b>	SOT-323	Reel	3000pcs/Reel
DTC123JKA	<b>E42</b>	SOT-23-3L	Reel	3000pcs/Reel
DTC123JCA	<b>E42</b>	SOT-23	Reel	3000pcs/Reel

**MAXIMUM RATINGS(Ta=25°C unless otherwise noted)**

Symbol	Parameter	Limits(DTC123J□)						Unit
		M	E	UA	KA	CA	SA	
V <sub>CC</sub>	Supply Voltage	50						V
V <sub>IN</sub>	Input Voltage	-5~+12						V
I <sub>o</sub>	Output Current	100						mA
P <sub>D</sub>	Power Dissipation	100	150	200	200	200	300	mW
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55~+150						°C

**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	V <sub>I(off)</sub>	V <sub>CC</sub> =5V, I <sub>o</sub> =100μA	0.5			V
	V <sub>I(on)</sub>	V <sub>o</sub> =0.3V, I <sub>o</sub> =5mA			1.1	V
Output voltage	V <sub>O(on)</sub>	I <sub>o</sub> /I <sub>i</sub> =5mA/0.25mA		0.1	0.3	V
Input current	I <sub>i</sub>	V <sub>i</sub> =5V			3.6	mA
Output current	I <sub>o(off)</sub>	V <sub>CC</sub> =50V, V <sub>i</sub> =0			0.5	μA
DC current gain	G <sub>i</sub>	V <sub>o</sub> =5V, I <sub>o</sub> =10mA	80			
Input resistance	R <sub>1</sub>		1.54	2.2	2.86	kΩ
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>		17	21	26	
Transition frequency	f <sub>r</sub>	V <sub>o</sub> =10V, I <sub>o</sub> =5mA, f=100MHz		250		MHz

### Typical Characteristics

