

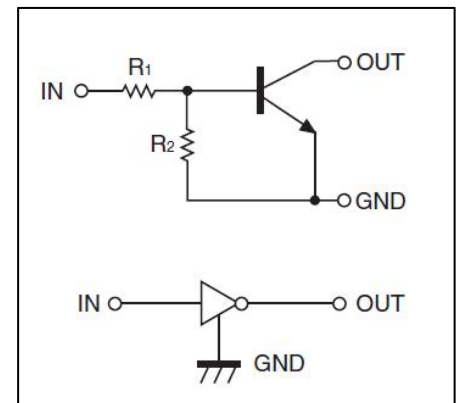
Digital Transistors (Built-in Resistors)

DIGITAL TRANSISTOR (NPN)

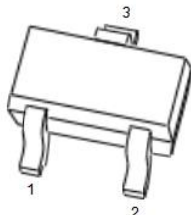
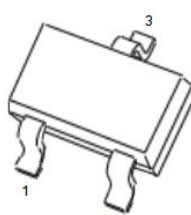
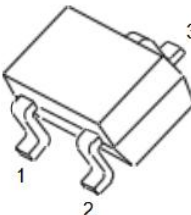
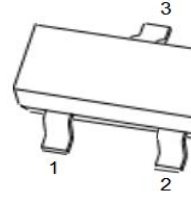
FEATURES

- 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

• Equivalent Circuit



PIN CONNENCTIONS and MARKING

<p>DTC124EE</p>  <p>SOT-523</p> <p>1. IN 2. GND 3. OUT</p>	<p>DTC124EUA</p>  <p>SOT-323</p> <p>1. IN 2. GND 3. OUT</p>
<p>DTC124EKA</p>  <p>SOT-23-3L</p> <p>1. IN 2. GND 3. OUT</p>	<p>DTC124ECA</p>  <p>SOT-23</p> <p>1. IN 2. GND 3. OUT</p>

ORDERING INFORMATION

MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Limits(DTC124E□)						Unit
		M	E	UA	KA	CA	SA	
V_{CC}	Supply Voltage	50						V
V_{IN}	Input Voltage	-10~+40						V
I_o	Output Current	30						mA
I_{CM}	Peak Collector Current	100						mA
P_D	Power Dissipation	100	150	200	200	200	300	mW
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150						$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_o=100\mu\text{A}$	0.5			V
	$V_{I(on)}$	$V_o=0.2V, I_o=5\text{mA}$			3	V
Output voltage	$V_{O(on)}$	$I_o/I_i=10\text{mA}/0.5\text{mA}$		0.1	0.3	V
Input current	I_i	$V_i=5V$			0.36	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_i=0$			0.5	μA
DC current gain	G_i	$V_o=5V, I_o=5\text{mA}$	56			
Input resistance	R_1		15.4	22	28.6	$\text{k}\Omega$
Resistance ratio	R_2/R_1		0.8	1	1.2	
Transition frequency	f_T	$V_o=10V, I_o=5\text{mA}, f=100\text{MHz}$		250		MHz

Typical Characteristics

