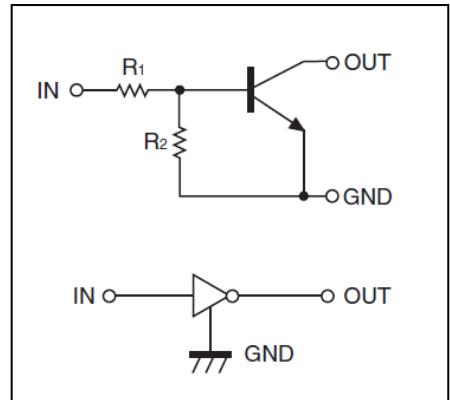


## Digital Transistors (Built-in Resistors)

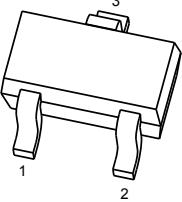
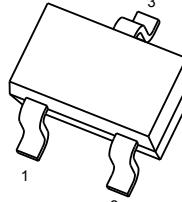
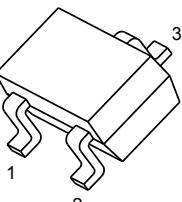
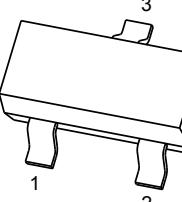
- **Equivalent Circuit DIGITAL TRANSISTOR (NPN)**

### 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 CONNECTIONS and MARKING

<b>DTC143XE</b>	<b>SOT-523</b>	<b>DTC143XUA</b>	<b>SOT-323</b>
	1. IN 2. GND 3. OUT		1. IN 2. GND 3. OUT
<b>DTC143XKA</b>	<b>SOT-23-3L</b>	<b>DTC143XCA</b>	<b>SOT-23</b>
	1. IN 2. GND 3. OUT		1. IN 2. GND 3. OUT

### ORDERING INFORMATION

Part Number	MARKING	Package	Packing Method	Pack Quantity
DTC143XE	<b>43</b>	SOT-523	Reel	3000pcs/Reel
DTC143XUA	<b>43</b>	SOT-323	Reel	3000pcs/Reel
DTC143XKA	<b>43</b>	SOT-23-3L	Reel	3000pcs/Reel
DTC143XCA	<b>43</b>	SOT-23	Reel	3000pcs/Reel

**MAXIMUM RATINGS(T<sub>a</sub>=25°C unless otherwise noted)**

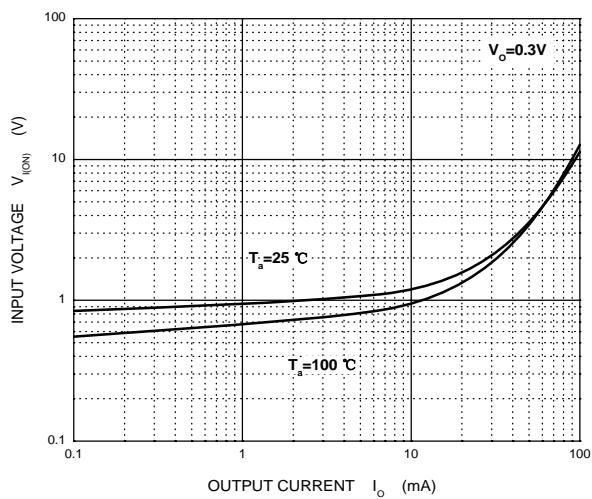
Symbol	Parameter	Limits(DTC143X□)				Unit	
		E	UA	CA	KA		
V <sub>cc</sub>	Supply Voltage	50					
V <sub>IN</sub>	Input Voltage	-7~+20					
I <sub>o</sub>	Output Current	100					
P <sub>D</sub>	Power Dissipation	150	200	200	200	mW	
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55~+150					

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

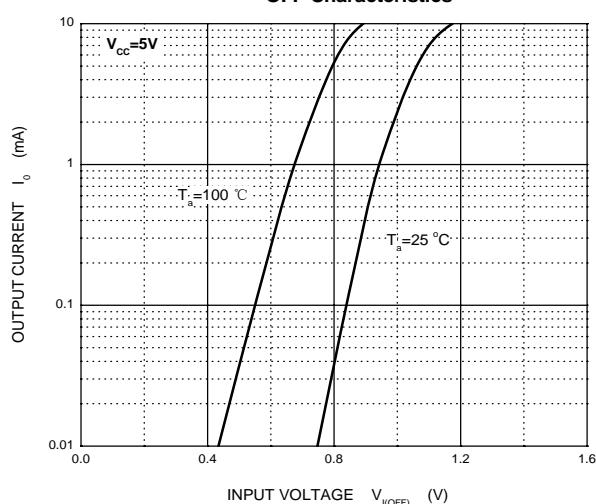
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Input voltage</b>	V <sub>I(off)</sub>	V <sub>CC</sub> =5V,I <sub>O</sub> =100μA	0.3			V
	V <sub>I(on)</sub>	V <sub>O</sub> =0.3V,I <sub>O</sub> =20mA			2.5	V
<b>Output voltage</b>	V <sub>O(on)</sub>	I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA		0.1	0.3	V
<b>Input current</b>	I <sub>I</sub>	V <sub>I</sub> =5V			1.8	mA
<b>Output current</b>	I <sub>O(off)</sub>	V <sub>CC</sub> =50V,V <sub>I</sub> =0			0.5	μA
<b>DC current gain</b>	G <sub>I</sub>	V <sub>O</sub> =5V,I <sub>O</sub> =10mA	30			
<b>Input resistance</b>	R <sub>1</sub>		3.29	4.7	6.11	kΩ
<b>Resistance ratio</b>	R <sub>2</sub> /R <sub>1</sub>		1.7	2.1	2.6	
<b>Transition frequency</b>	f <sub>T</sub>	V <sub>O</sub> =10V,I <sub>O</sub> =5mA,f=100MHz		250		MHz

## Typical Characteristics

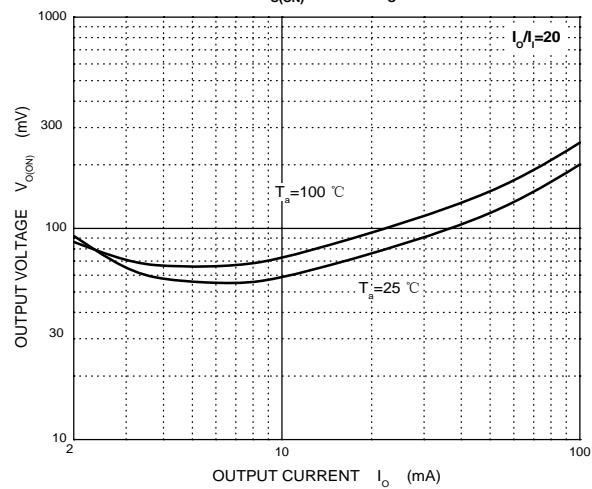
ON Characteristics



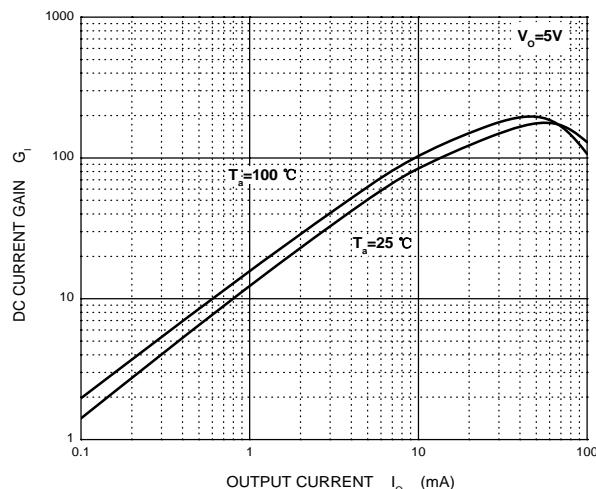
OFF Characteristics



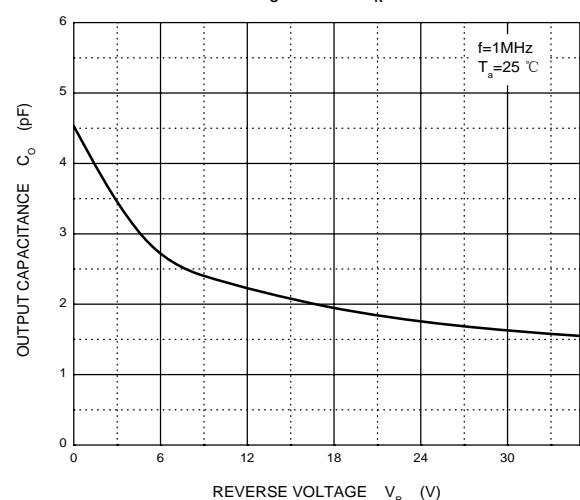
$V_{o(ON)}$  —  $I_o$



$G_i$  —  $I_o$



$C_o$  —  $V_R$



$P_D$  —  $T_a$

