

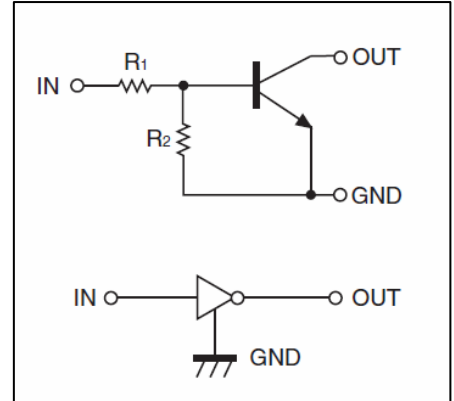


## Digital Transistors (Built-in Resistors)

### • 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

<p><b>DTC123EE</b></p> <p><b>SOT-523</b></p> <p>1. IN 2. GND 3. OUT</p>	<p><b>DTC123EUA</b></p> <p><b>SOT-323</b></p> <p>1. IN 2. GND 3. OUT</p>
<p><b>DTC123EKA</b></p> <p><b>SOT-23-3L</b></p> <p>1. IN 2. GND 3. OUT</p>	<p><b>DTC123ECA</b></p> <p><b>SOT-23</b></p> <p>1. IN 2. GND 3. OUT</p>

### ORDERING INFORMATION

Part Number	MARKING	Package	Packing Method	Pack Quantity
DTC123EE	<b>22</b>	SOT-523	Reel	3000pcs/Reel
DTC123EUA	<b>22</b>	SOT-323	Reel	3000pcs/Reel
DTC123EKA	<b>22</b>	SOT-23-3L	Reel	3000pcs/Reel
DTC123ECA	<b>22</b>	SOT-23	Reel	3000pcs/Reel



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

Symbol	Parameter	Limits(DTC123E□)				Unit
		E	UA	CA	KA	
V <sub>CC</sub>	Supply Voltage	50				V
V <sub>IN</sub>	Input Voltage	-10~+12				V
I <sub>O</sub>	Output Current	100				mA
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				°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> =20mA			3	V
Output voltage	V <sub>O(on)</sub>	I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA			0.3	V
Input current	I <sub>I</sub>	V <sub>I</sub> =5V			3.8	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> =20mA	20			
Input resistance	R <sub>1</sub>		1.54	2.2	2.86	kΩ
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>		0.8	1	1.2	
Transition frequency	f <sub>T</sub>	V <sub>O</sub> =10V, I <sub>O</sub> =5mA, f=100MHz		250		MHz



**Typical Characteristics**

Fig. 1 - DC Current Gain Characteristics

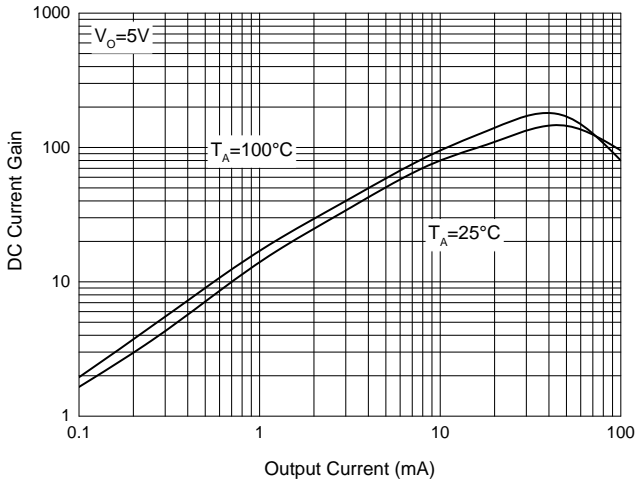


Fig. 2 - Input Voltage (on) Characteristics

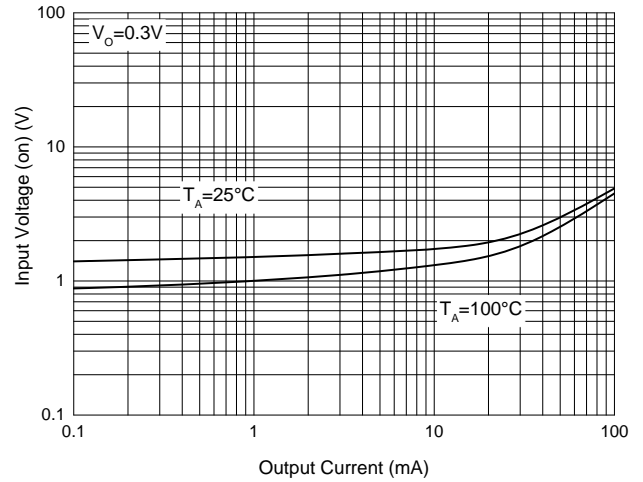


Fig. 3 - Input Voltage (off) Characteristics

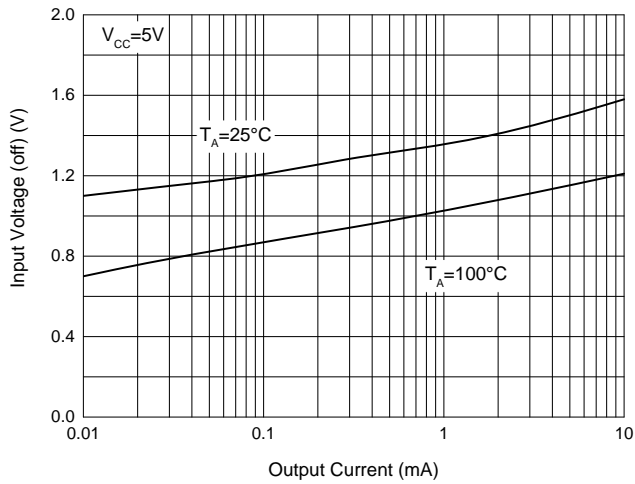


Fig. 4 - Output Voltage Characteristics

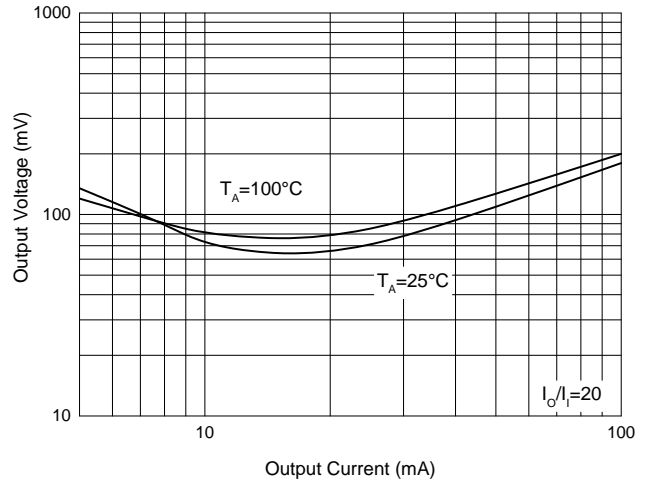


Fig. 5 - Power Derating Curve

