

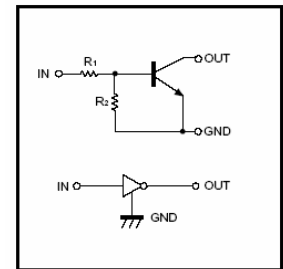


## Digital transistors (built-in resistors)

### DTC144EE/DTC144EUA /DTC144ECA/DTC144EKA/DTC144ESA

DIGITAL TRANSISTOR (NPN)

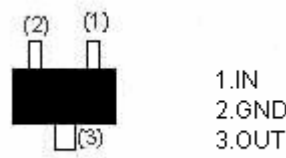
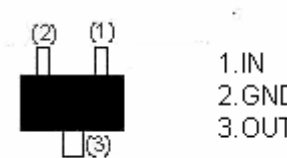
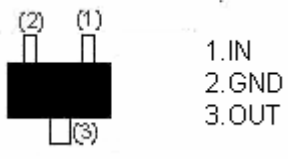
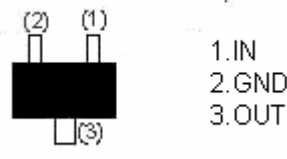
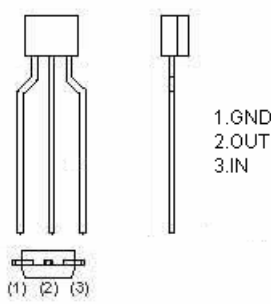
●Equivalent circuit



#### 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.

#### PIN CONNENCTIONS AND MARKING

<p>DTC144EE</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-523      Abbreviated symbol: 26</p>	<p>DTC144EUA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-323      Abbreviated symbol: 26</p>
<p>DTC144EKA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-23-3L      Abbreviated symbol: 26</p>	<p>DTC144ECA</p>  <p>1.IN 2.GND 3.OUT</p> <p>SOT-23      Abbreviated symbol: 26</p>
<p>DTC144ESA</p>  <p>1.GND 2.OUT 3.IN</p> <p>TO-92S</p>	

**Absolute maximum ratings(Ta=25°C)**

Parameter	Symbol	Limits (DTC144E□ )					Unit
		E	UA	CA	KA	SA	
Collector-base voltage	$V_{(BR)CBO}$	50					V
Collector-emitter voltage	$V_{(BR)CEO}$	50					V
Emitter-base voltage	$V_{(BR)EBO}$	5					V
Collector current	$I_c$	100					mA
Collector Power dissipation	$P_C$	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	$V_{CC}=5V, I_o=100\mu A$
	$V_{I(on)}$	3				$V_o=0.3V, I_o=2mA$
Output voltage	$V_{O(on)}$			0.3	V	$I_o/I_f=10mA/0.5mA$
Input current	$I_i$			0.18	mA	$V_i=5V$
Output current	$I_{o(off)}$			0.5	$\mu A$	$V_{CC}=50V, V_i=0$
DC current gain	$G_i$	68				$V_o=5V, I_o=5mA$
Input resistance	$R_1$	32.9	47	61.1	K $\Omega$	
Resistance ratio	$R_2/R_1$	0.8	1	1.2		
Transition frequency	$f_T$		250		MHz	$V_o=10V, I_o=5mA, f=100MHz$

**Typical Characteristics**

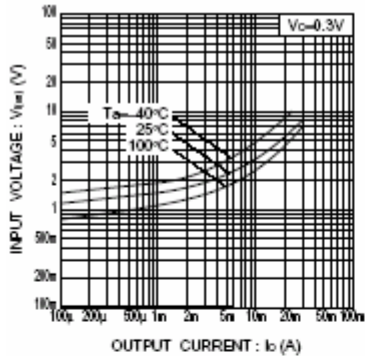


Fig.1 Input voltage vs. output current (ON characteristics)

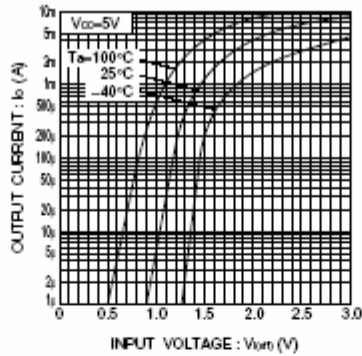


Fig.2 Output current vs. input voltage (OFF characteristics)

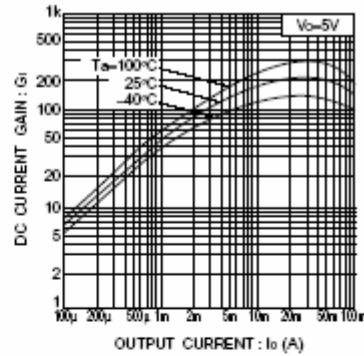


Fig.3 DC current gain vs. output current

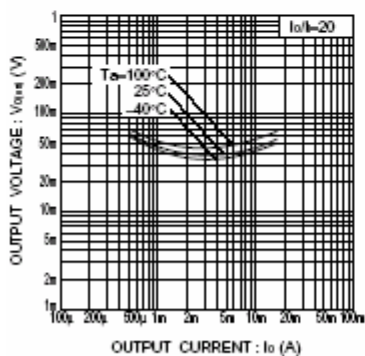


Fig.4 Output voltage vs. output current