

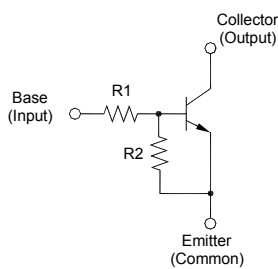
## Digital Transistors (Built-in Resistors)

DIGITAL TRANSISTOR (NPN)

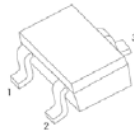
### FEATURES

- 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



SOT-523



1. IN
2. GND
3. OUT

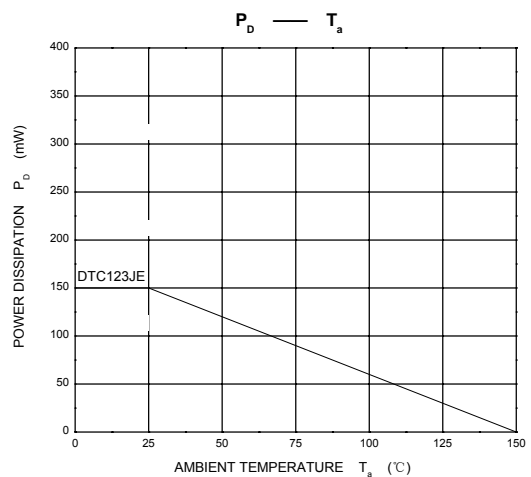
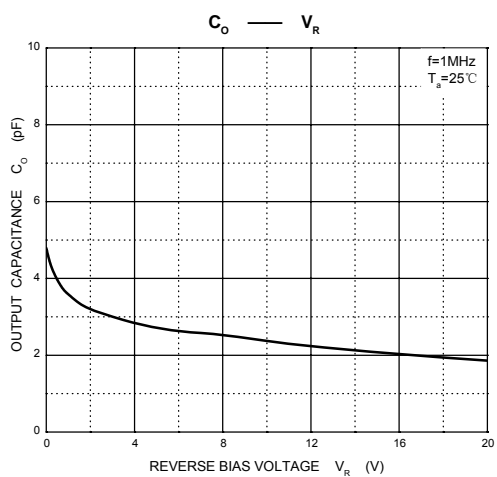
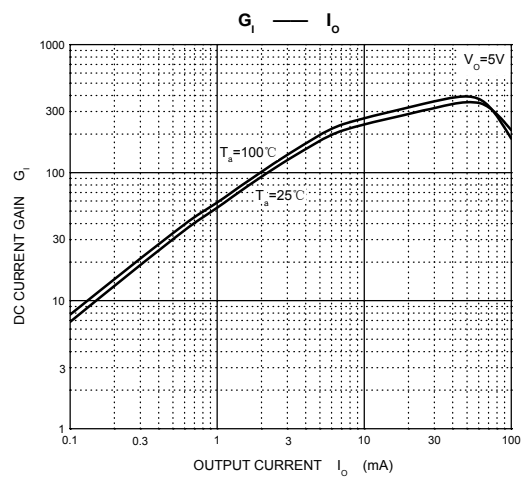
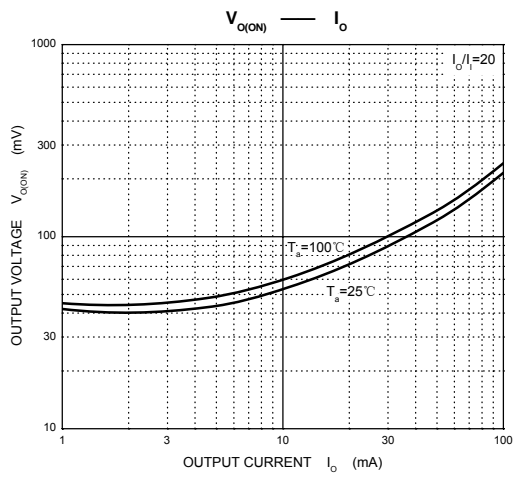
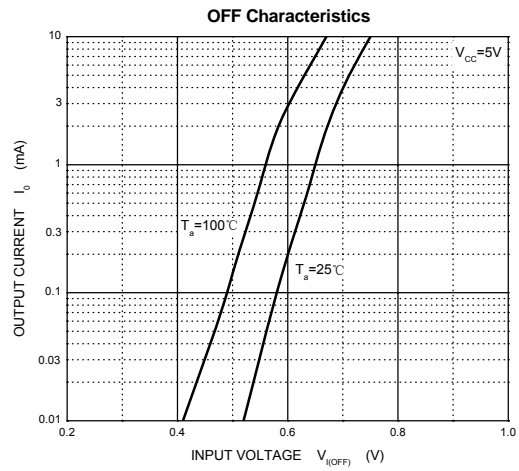
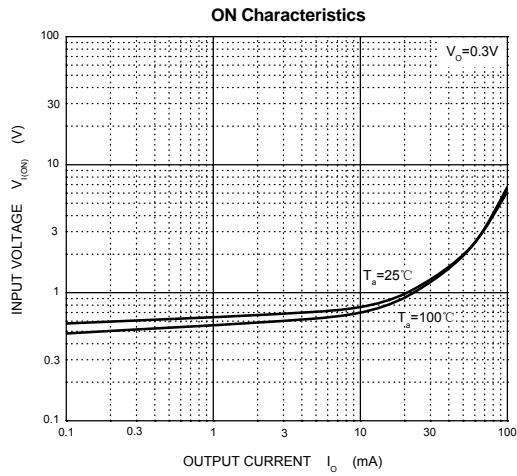
MARKING: E42

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

Symbol	Parameter	Limits(DTC123JE)	Unit
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	150	
T <sub>j</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55~+150	°C

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_O=100\mu A$	0.5			V
	$V_{I(on)}$	$V_O=0.3V, I_O=5mA$			1.1	V
Output voltage	$V_{O(on)}$	$I_O/I_I=5mA/0.25mA$		0.1	0.3	V
Input current	$I_I$	$V_I=5V$			3.6	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_I=0$			0.5	$\mu A$
DC current gain	$G_I$	$V_O=5V, I_O=10mA$	80			
Input resistance	$R_1$		1.54	2.2	2.86	k $\Omega$
Resistance ratio	$R_2/R_1$		17	21	26	
Transition frequency	$f_T$	$V_O=10V, I_O=5mA, f=100MHz$		250		MHz



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