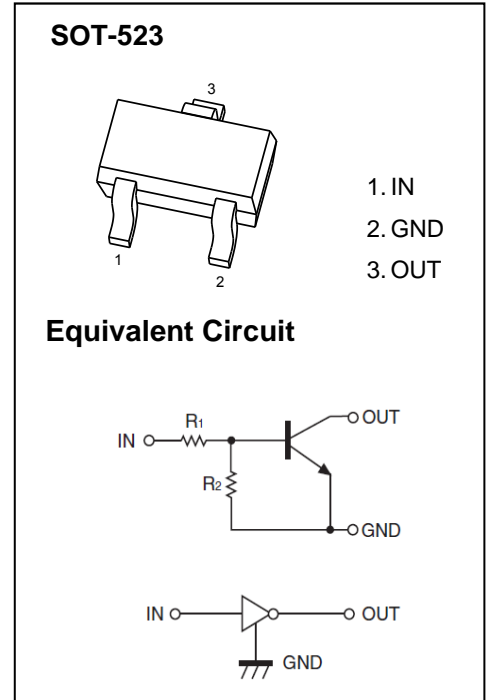


Digital Transistors (Built-in Resistors)

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



ORDERING INFORMATION

Part Number	MARKING ⁽¹⁾	Package	Packing Method	Pack Quantity
DTC143ZE	E23	SOT-523	Reel	3000pcs/Reel

Notes: (1). Solid dot = Green molding compound device, if none, the normal device.
(2). XXX = Code

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

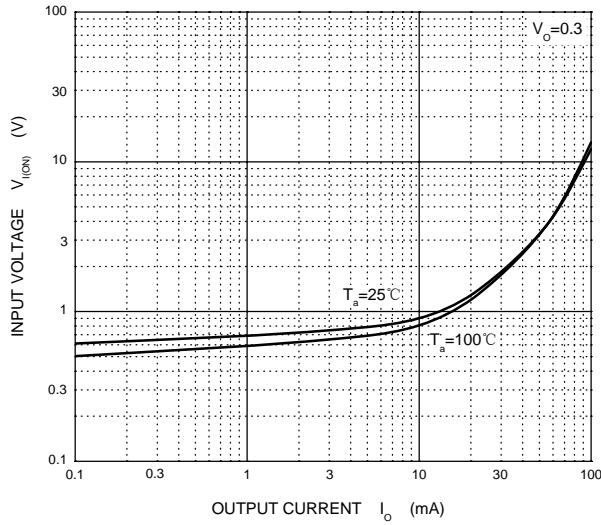
Symbol	Parameter	Limits	Unit
V_{CC}	Supply Voltage	50	V
V_{IN}	Input Voltage	-5~+30	V
I_o	Output Current	100	mA
P_D	Power Dissipation	150	mW
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	$^{\circ}\text{C}$

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

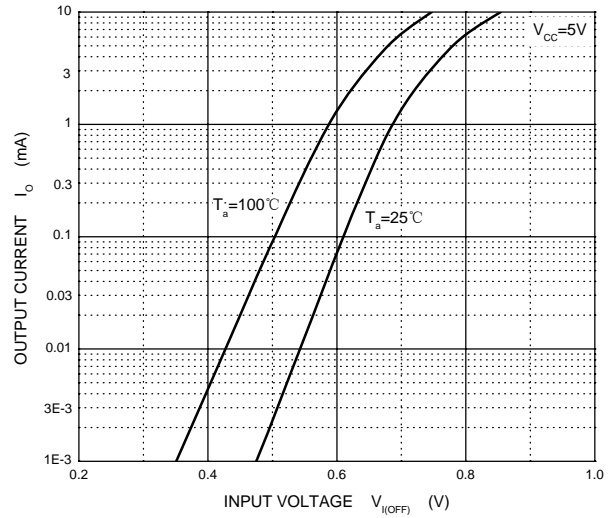
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_o=100\mu\text{A}$	0.5			V
	$V_{I(on)}$	$V_o=0.3V, I_o=5\text{mA}$			1.3	V
Output voltage	$V_{O(on)}$	$I_o/I_i=5\text{mA}/0.25\text{mA}$		0.1	0.3	V
Input current	I_i	$V_i=5V$			1.8	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_i=0$			0.5	μA
DC current gain	G_i	$V_o=5V, I_o=10\text{mA}$	80			
Input resistance	R_1		3.29	4.7	6.11	$\text{k}\Omega$
Resistance ratio	R_2/R_1		8	10	12	
Transition frequency	f_T	$V_o=10V, I_o=5\text{mA}, f=100\text{MHz}$		250		MHz

Typical Characteristics

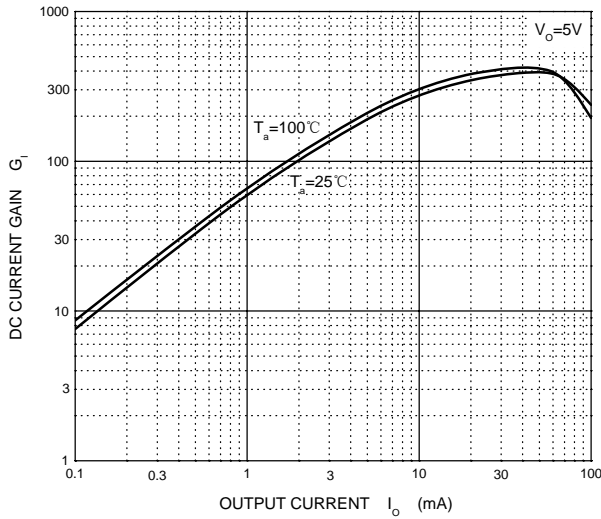
ON Characteristics



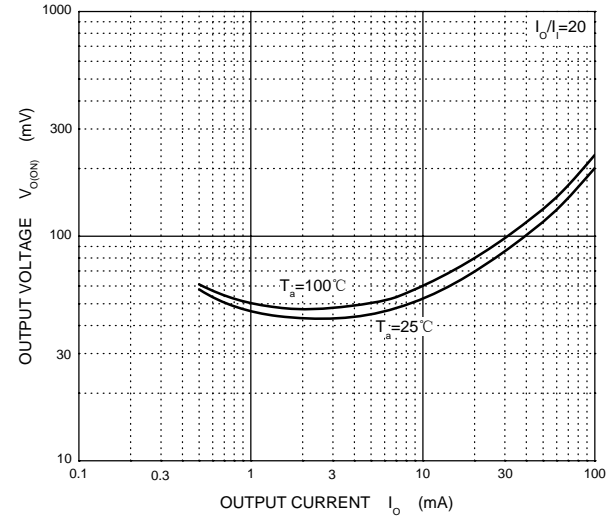
OFF Characteristics



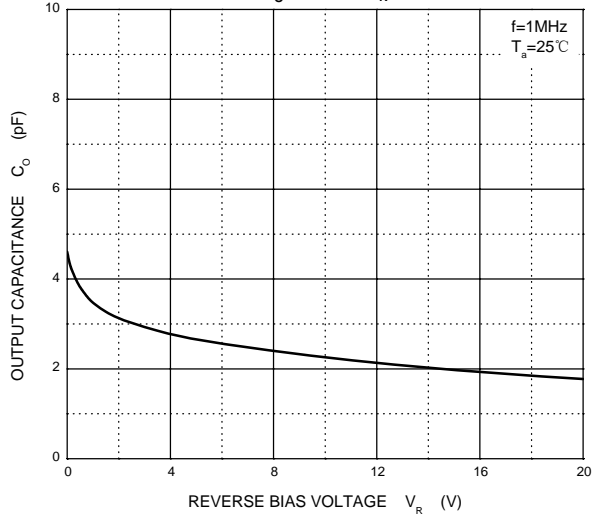
$G_i - I_o$



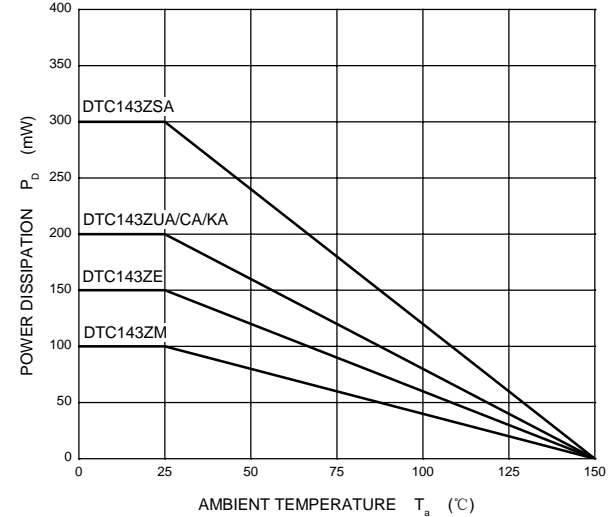
$V_{o(ON)} - I_o$

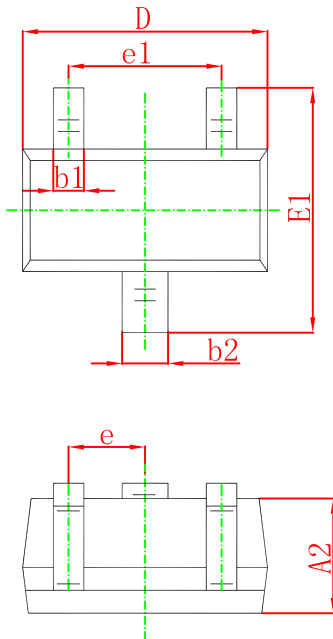


$C_o - V_R$



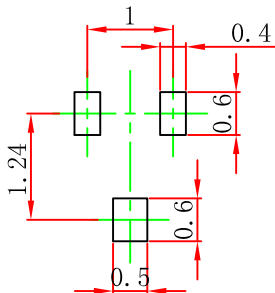
$P_D - T_a$





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.