DTC143Xxx Series

Digital Transistors (NPN) (Built-in Resistors)

1. 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 para sitic effects;
- Only the on/off conditions need to be set for operation, making device design easy.

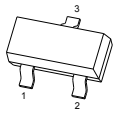
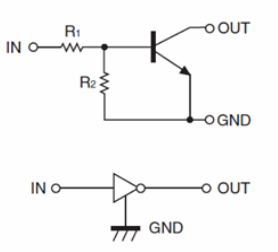
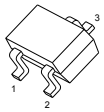
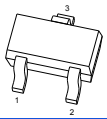
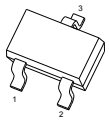
2.MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Limits(DTC143X xx)						Unit
		M	E	UA	CA	KA	SA	
Supply Voltage	V_{CC}	50						V
Input Voltage	V_{IN}	-7~+20						V
Output Current	I_O	100						mA
Power Dissipation	P_D	100	150	200	200	200	300	mW
Operation Junction and Storage Temperature Range	T_j ,T_{stg}	-55~+150						℃

3. Electrical Characteristics (Ta=25℃unless otherwise specified)

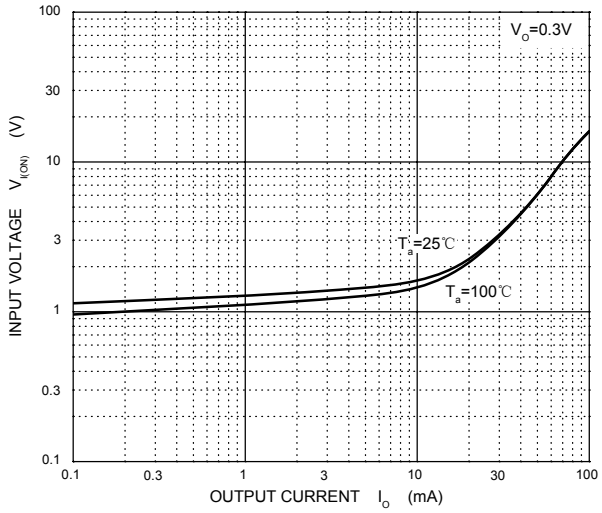
Symbol	Parameter	Condition	Min	Typ	Max	Unit
R_1	Input resistance		3.29	4.7	6.11	kΩ
R_2/R_1	Resistance ratio		1.7	2.1	2.6	
$V_{O(on)}$	Output voltage	I_O/I_I=10mA/0.5mA	—	—	0.3	V
I_I	Input current	V_I=5V	—	—	1.8	mA
$I_{O(off)}$	Output current	V_{CC}=50V, V_I =0	—	—	0.5	μA
G_1	DC current gain	V_O=5V, I_O=10mA	30	—	—	
$V_{I(off)}$	Input voltage	V_{CC}=5V, I_O=100μA	0.3	—	—	V
$V_{I(on)}$		V_O =0.3V, I_O=20mA	—	—	2.5	V
f_T	Transition frequency	V_O=10V, I_O=5mA , f=100MHz	—	250	—	MHz

4. Pinning information

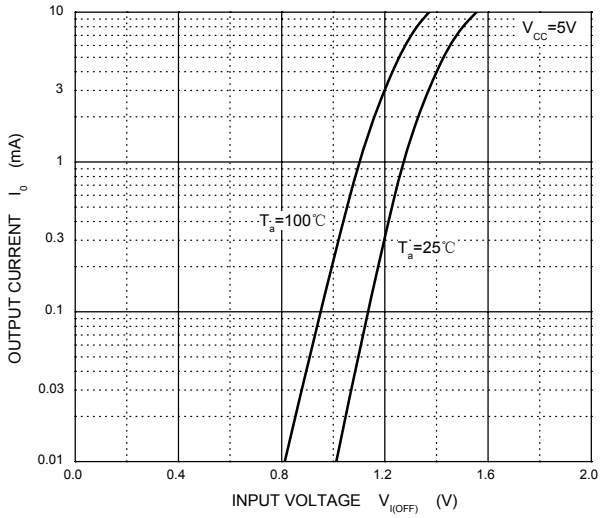
Pin	symbol	Part Number	Simplified outline	Equivalent Circuit	Marking	Package
1	IN	DTC143XCA			43	SOT-23
2	GND					
3	OUT					
1	IN	DTC143XKA			43	SOT-23-3
2	GND					
3	OUT					
1	IN	DTC143XE			43	SOT-523
2	GND					
3	OUT					
1	IN	DTC143XUA			43	SOT-323
2	GND					
3	OUT					

5.Electrical Characteristics Diagrams

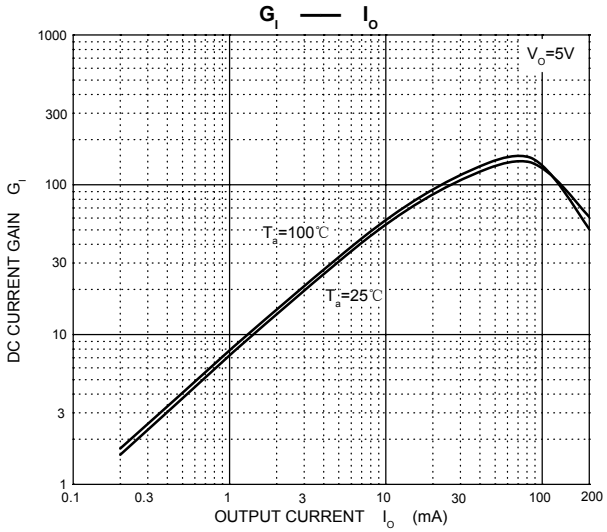
ON Characteristics



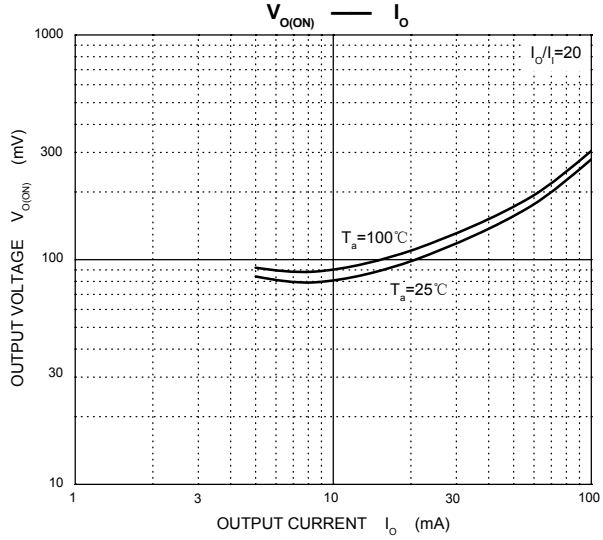
OFF Characteristics



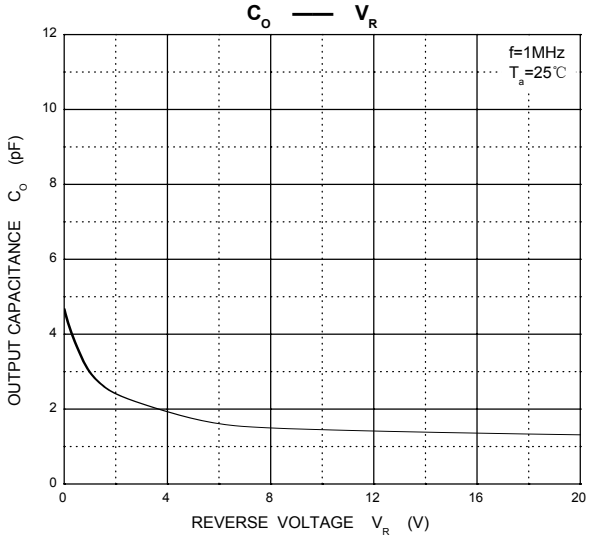
G_I — I_O



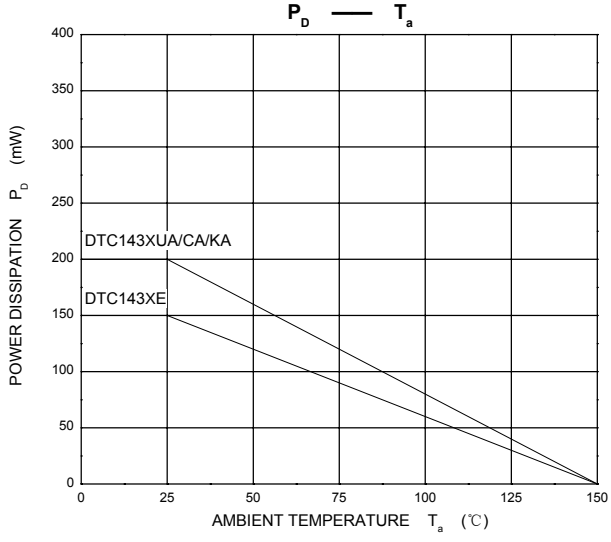
V_O(ON) — I_O



C_O — V_R

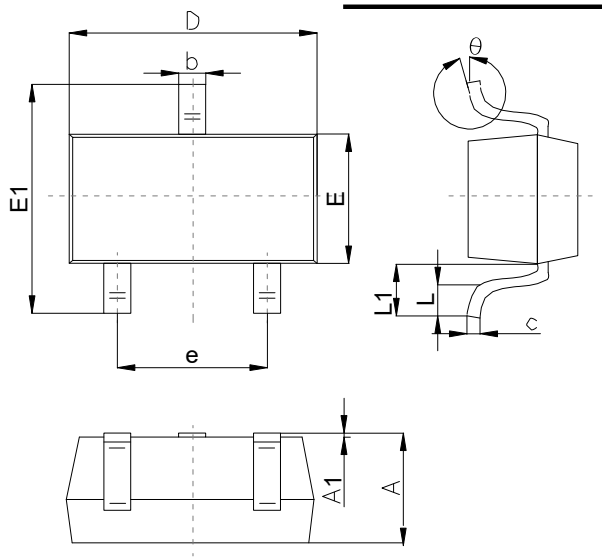


P_D — T_a



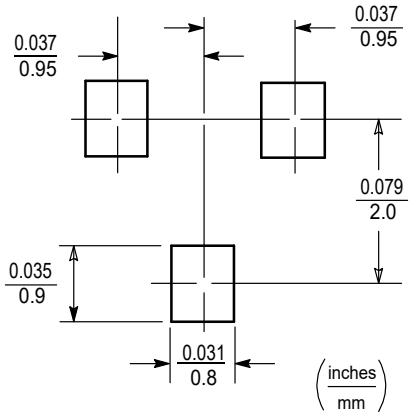
6 . Outline Drawing

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	0.65		1.40
A1	0.00		0.20
b	0.30		0.55
c	0.08		0.20
D	2.70		3.10
E	1.15		1.65
E1	2.10		2.80
e	1.70		2.10
L	0.15		0.50
L1	0.35		0.70
θ	0°		12°

7 . Suggested Pad Layout



Note:
1. Controlling dimension:in/millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

8.Important Notice and Disclaimer

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