

## Digital Transistor(built-in resistors)

### General description

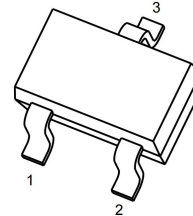
NPN epitaxial planar silicon transistor (Resistor built-in type)

### 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 Only the on/off conditions need to be set for operation, making the device design easy

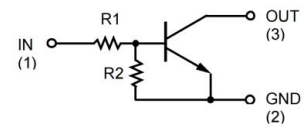
**MARKING : E23**

### SOT-23 Package



- 1. IN
- 2. GND
- 3. OUT

### Electrical Symbol:



## Maximum Ratings And Electrical Characteristics (Ta=25 °C unless otherwise specified)

Parameter	Symbol	Value	Units
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-5 to +30	V
Output current	$I_o$	100	mA
Power dissipation	$P_d$	200	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

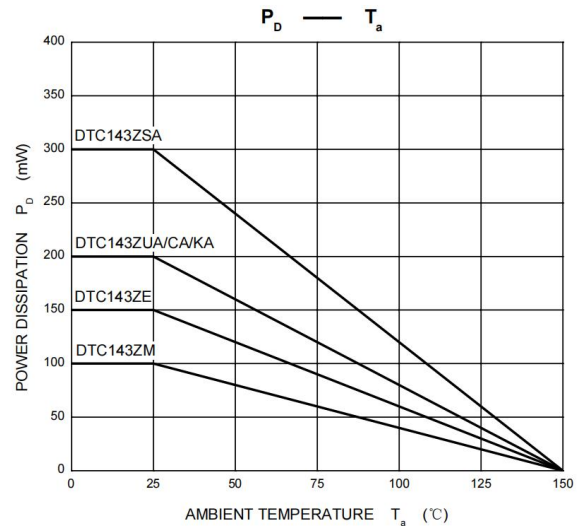
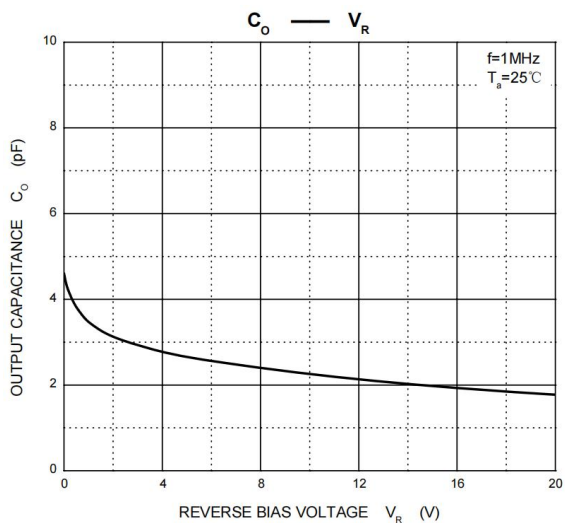
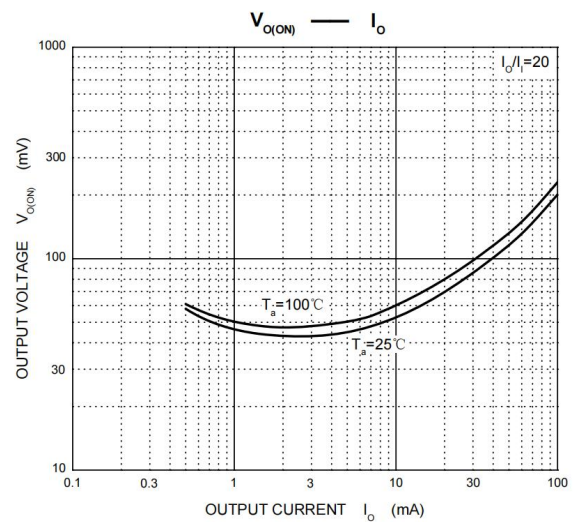
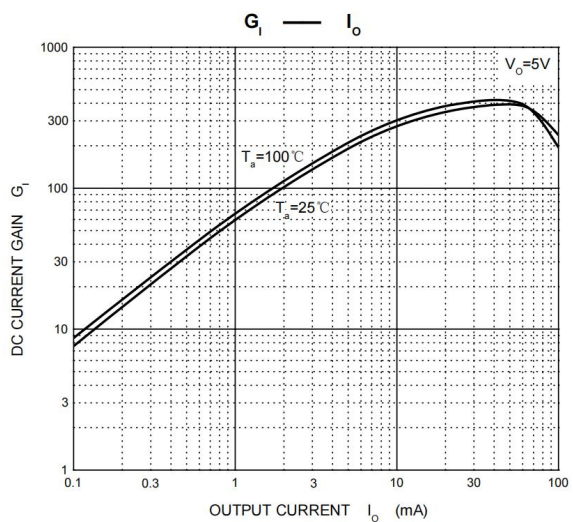
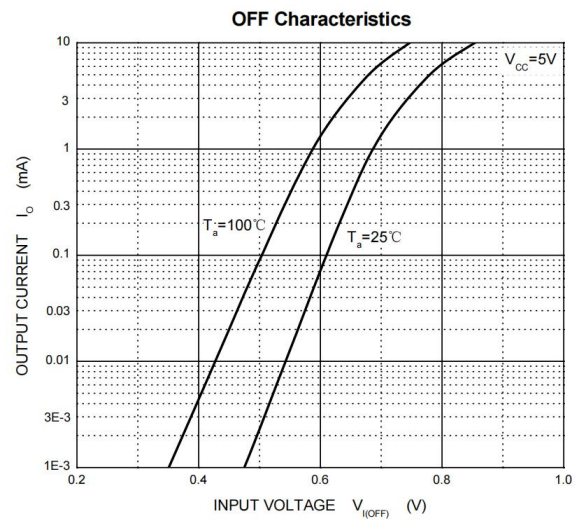
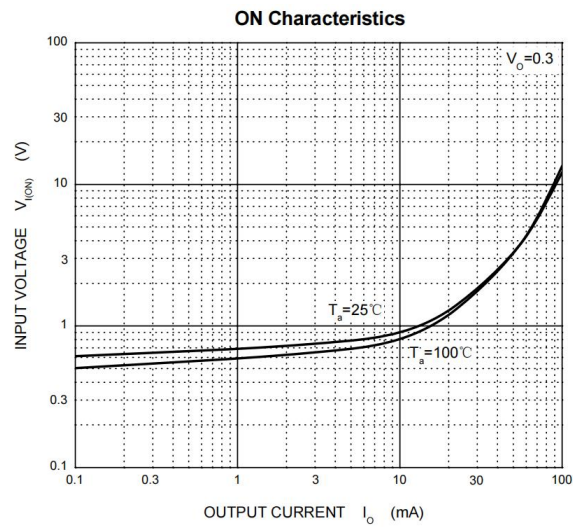
## Electrical Characteristics (Ta=25 °C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_o=100\mu A$	-	-	0.5	V
Input voltage	$V_{I(on)}$	$V_o=0.3V, I_o=5mA$	-	-	1.3	V
Output voltage	$V_{O(off)}$	$I_o/I_i=5mA/0.25mA$	-	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	$\mu A$
DC current gain	$G_I$	$V_o=5V, I_o=10mA$	80	-	-	-
Input resistance	$R_1$	-	3.29	4.7	6.11	K $\Omega$
Resistance ration	$R_2/R_1$	-	8	10	12	-
Transition frequency	$f_T$	$V_o=10V, I_o=5mA, f=100MHz$	-	250	-	MHz

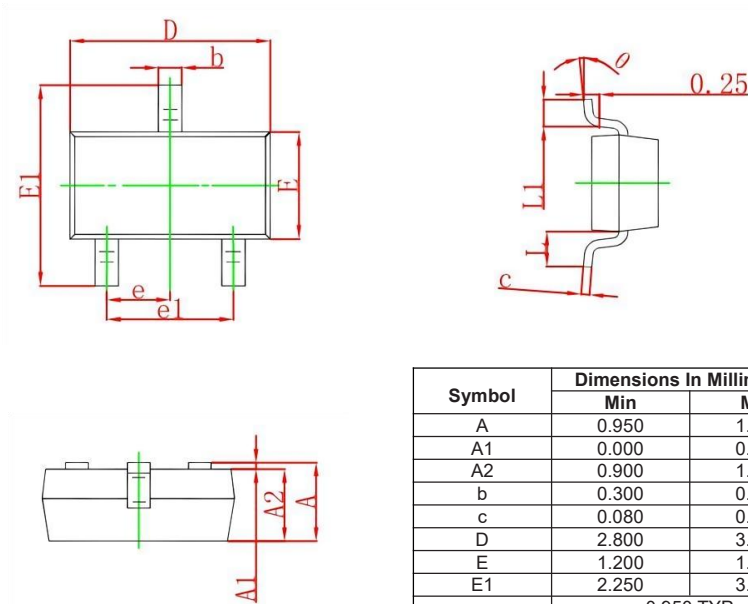


# DTC143ZCA

## Typical Characteristics

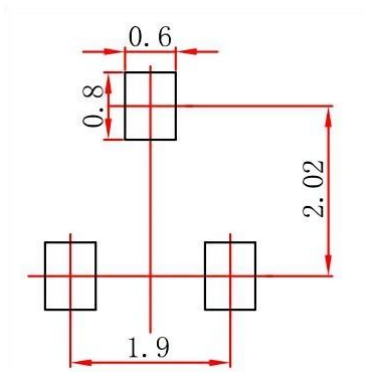


## SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.950	1.400
A1	0.000	0.130
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.100
E	1.200	1.650
E1	2.250	3.000
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
$\theta$	0°	8°

## Suggested Pad Layout



### NOTE:

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

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