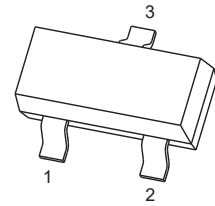


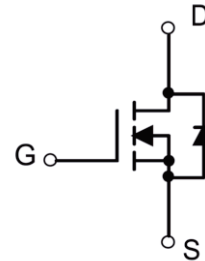
## Features

- 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 almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy



1. GATE
2. SOURCE
3. DRAIN

Schematic diagram



## Absolute Maximum Ratings( $T_A=25^{\circ}\text{C}$ )

Symbol	Parameter	Limits	Unit
$V_{CC}$	Supply Voltage	50	V
$V_{IN}$	Input Voltage	-5 ~ +12	V
$I_o$	Output Current	100	mA
$P_d$	Power Dissipation	200	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)

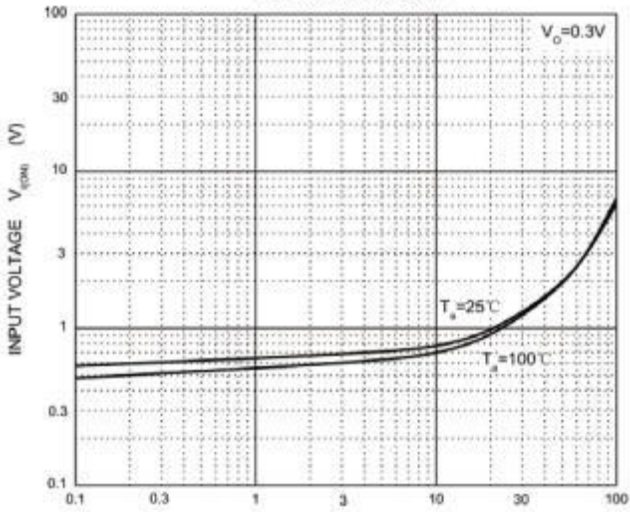
Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$V_{I(off)}$	Input voltage	$V_{CC}=5V, I_o=100\mu\text{A}$	0.5			V
$V_{I(on)}$		$V_o=0.3V, I_o=5\text{mA}$			1.1	V
$V_{O(on)}$	Output voltage	$I_o/I_i=5\text{mA}/0.25\text{mA}$		0.1	0.3	V
$I_i$	Input current	$V_i=5V$			3.6	mA
$I_{o(off)}$	Output current	$V_{CC}=50V, V_i=0$			0.5	$\mu\text{A}$
$G$	DC current gain	$V_o=5V, I_o=10\text{mA}$	80			
$R_i$	Input resistance		1.54	2.2	2.86	$\text{k}\Omega$
$R_2/R_1$	Resistance ratio		17	21	26	
$f_T$	Transition frequency	$V_o=10V, I_o=5\text{mA}, f=100\text{MHz}$		250		MHz

## Ordering information

Product ID	Marking	Pack	Qty(PCS)
DTC123JCA	E42	SOT-23	3000

## Typical Characteristics

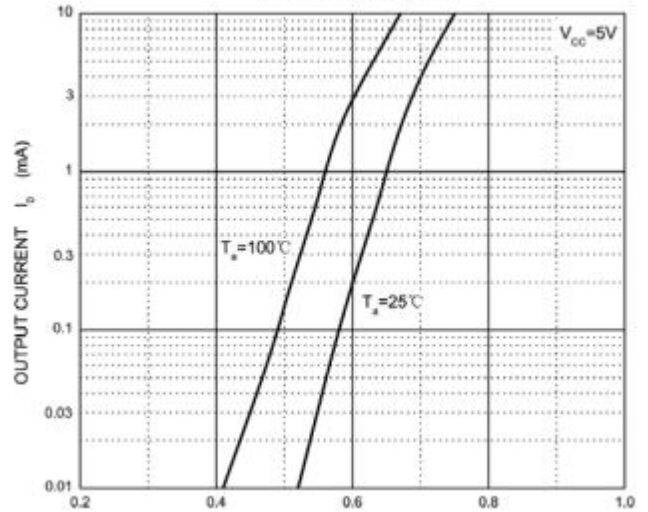
ON Characteristics



OUTPUT CURRENT  $I_o$  (mA)

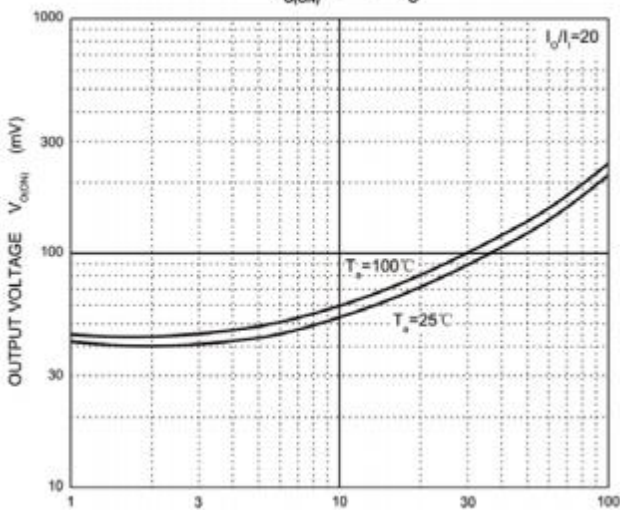
$V_{O(ON)}$  —  $I_o$

OFF Characteristics



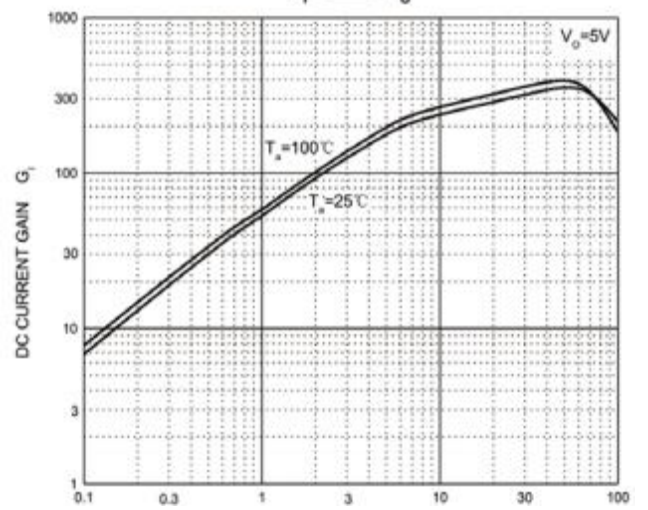
INPUT VOLTAGE  $V_{i(OFF)}$  (V)

$G_i$  —  $I_o$



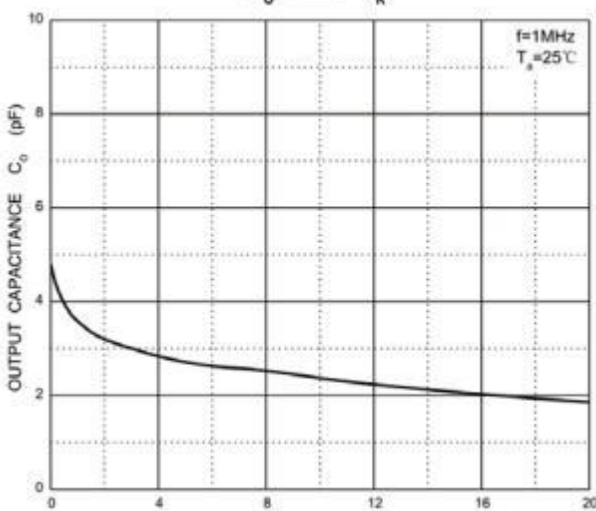
OUTPUT CURRENT  $I_o$  (mA)

$C_o$  —  $V_R$

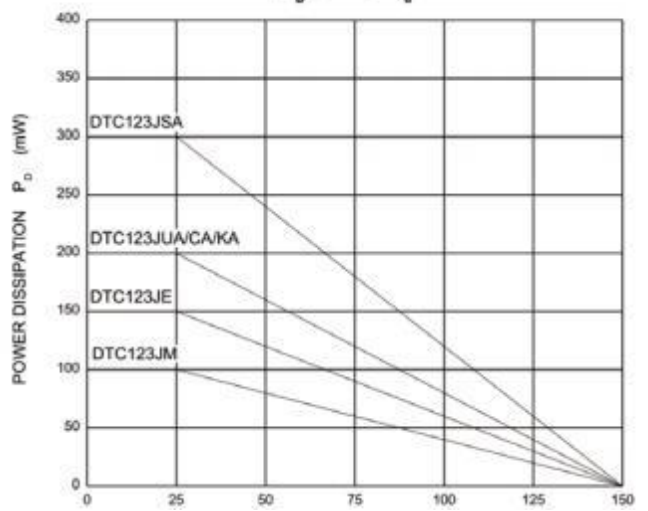


OUTPUT CURRENT  $I_o$  (mA)

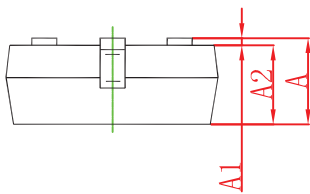
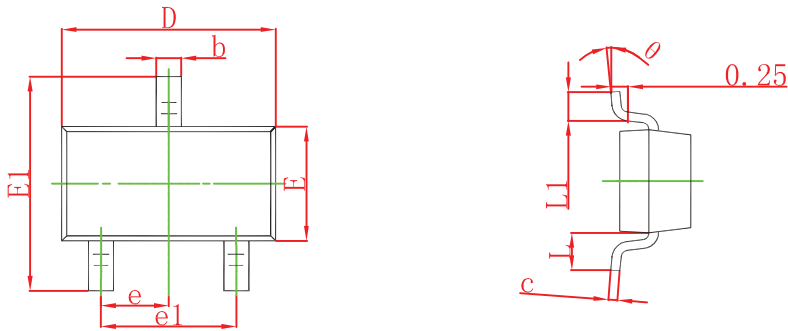
$P_D$  —  $T_a$



REVERSE VOLTAGE  $V_R$  (V)

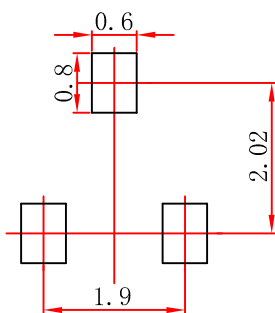


AMBIENT TEMPERATURE  $T_a$  ( $^\circ C$ )



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

### SOT-23 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.