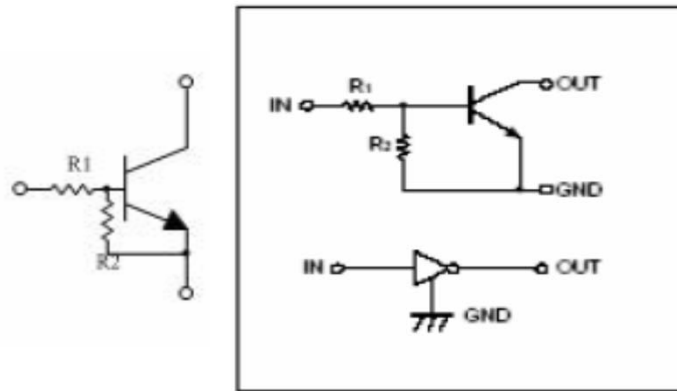


Small Signal Product

**NPN Small Signal Transistor**

FEATURES

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistor (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, marking device design easy.
- Molding compound, UL flammability classification rating 94V-0
- Packing code with suffix "G" means green compound (halogen-free)



Equivalent Circuit



**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)**

PARAMETER	SYMBOL	VALUE			UNIT
		JE	JUA / JCA	JSA	
Power Dissipation	P <sub>D</sub>	150	200	300	mW
Supply Voltage	V <sub>CC</sub>	50			V
Input Voltage	V <sub>IN</sub>	-5 ~ +12			V
Output Current	I <sub>O</sub>	100			mA
	I <sub>C(MAX)</sub>	100			
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150			°C

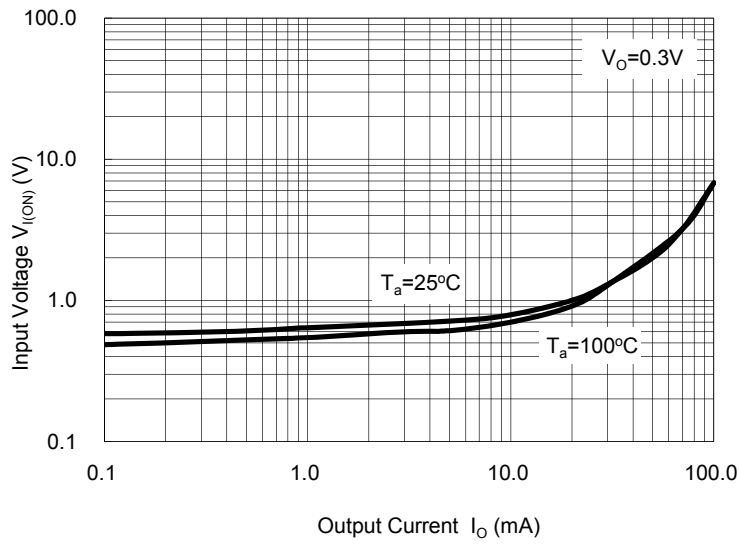
PARAMETER	SYMBOL	MIN	TYP	MAX	CONDITION	UNIT
Input Voltage	V <sub>I(off)</sub>	0.5	-	-	V <sub>CC</sub> =5V, I <sub>O</sub> =100μA	V
	V <sub>I(on)</sub>	-	-	1.1	V <sub>O</sub> =0.3V, I <sub>O</sub> =5mA	
Output Voltage	V <sub>O(on)</sub>	-	0.1	0.3	I <sub>O</sub> /I <sub>I</sub> =5mA/0.25mA	V
Input Current	I <sub>I</sub>	-	-	3.6	V <sub>I</sub> =5V	mA
Output Current	I <sub>O (off)</sub>	-	-	0.5	V <sub>CC</sub> =50V, V <sub>I</sub> =0	μA
DC Current Gain	G <sub>I</sub>	80	-	-	V <sub>O</sub> =5V, I <sub>O</sub> =10mA	
Input Resistance	R <sub>1</sub>	1.54	2.2	2.86	-	KΩ
Resistance Ratio	R <sub>2</sub> /R <sub>1</sub>	17	21	26	-	
Transition Frequency	f <sub>T</sub>	-	250	-	V <sub>O</sub> =10V, I <sub>O</sub> =5mA, f=100MHz	MHz

Small Signal Product

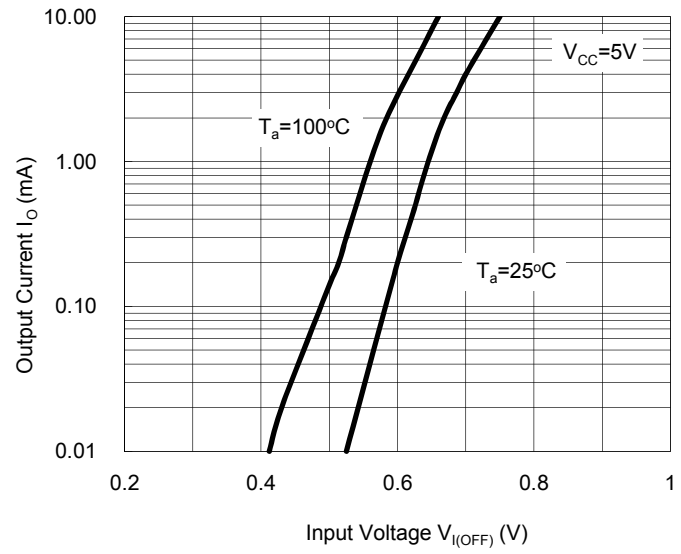
RATINGS AND CHARACTERISTICS CURVES

( $T_A=25^\circ\text{C}$  unless otherwise noted)

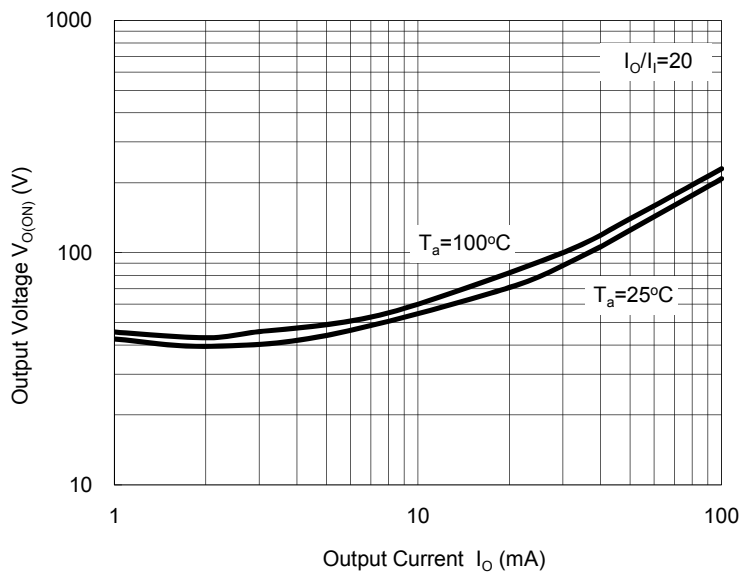
On Characteristics



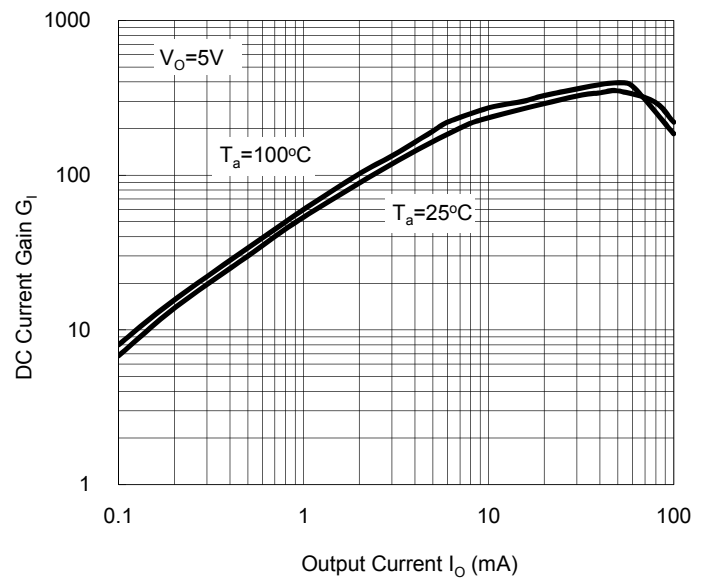
Off Characteristics



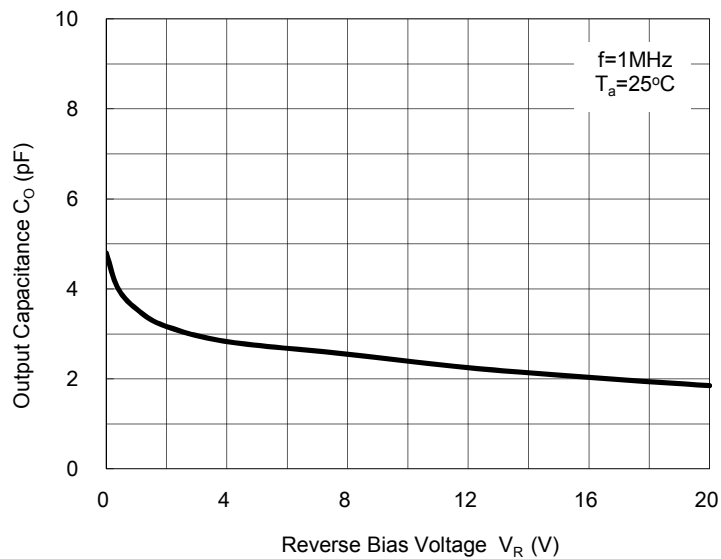
$V_{O(ON)} - I_O$



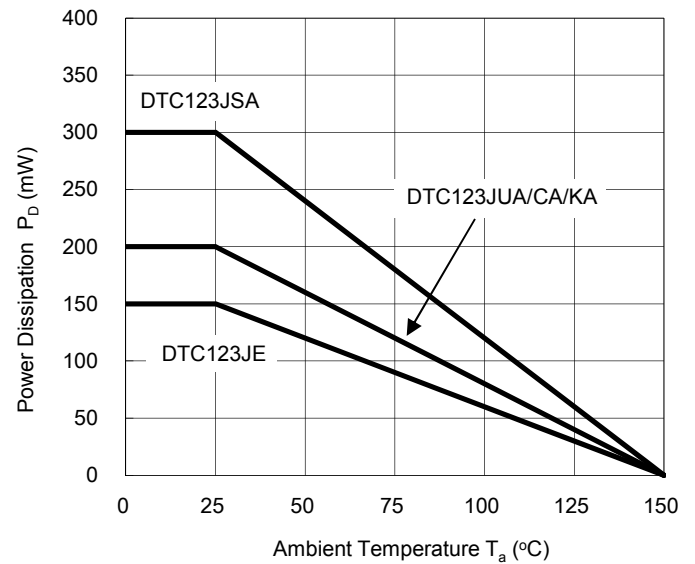
$G_I - I_O$



$C_O - V_R$



$P_D - T_a$







Small Signal Product

ORDERING INFORMATION					
PART NO.	PART NO. SUFFIX (Note 1)	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
DTC123JE	-xx	RS	G	SOT-523	3K / 7" Reel
DTC123JUA		RV		SOT-323	3K / 7" Reel
DTC123JCA		RU		SOT-23	3K / 7" Reel
DTC123JSA		A3		TO-92S	3K / Box ( Ammo)
		B3			10K / Box (Bulk)

Note 1: Part No. Suffix „-xx “ would be used for special requirement

EXAMPLE					
PREFERRED PART NO.	PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
DTC123JE RS	DTC123JE		RS		Multiple manufacture source
DTC123JE RSG	DTC123JE		RS	G	Multiple manufacture source Green compound
DTC123JE-M0 RSG	DTC123JE	M0	RS	G	Define manufacture source Green compound

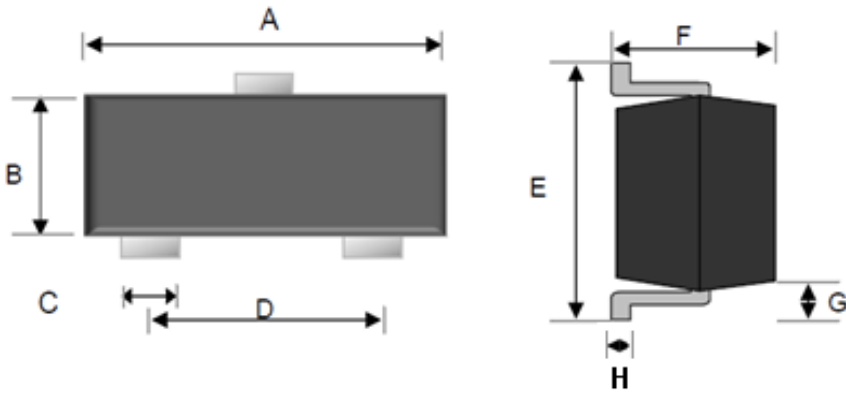
PIN CONNENCTIONS AND MARKING

		<p><b>DTC123JE</b></p>  <p><b>SOT-523</b></p> <p>1. IN 2. GND 3. OUT</p> <p><b>MARKING: E42</b></p>
<p><b>DTC123JUA</b></p>  <p><b>SOT-323</b></p> <p>1. IN 2. GND 3. OUT</p> <p><b>MARKING: E42</b></p>		
<p><b>DTC123JCA</b></p>  <p><b>SOT-23</b></p> <p>1. IN 2. GND 3. OUT</p> <p><b>MARKING: E42</b></p>	<p><b>DTC123JSA</b></p>  <p><b>TO-92S</b></p> <p>1. GND 2. OUT 3. IN</p> <p><b>MARKING: C123 J041</b></p>	

Small Signal Product

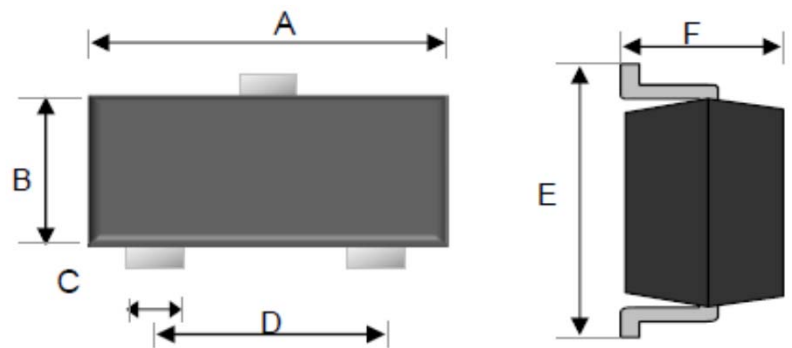
PACKAGE OUTLINE DIMENSION

**SOT-23**



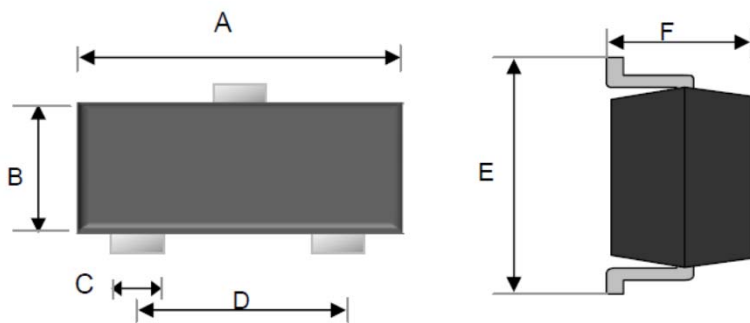
DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.70	3.10	0.106	0.122
B	1.10	1.50	0.043	0.059
C	0.30	0.51	0.012	0.020
D	1.78	2.04	0.070	0.080
E	2.10	2.64	0.083	0.104
F	0.89	1.30	0.035	0.051
G	0.55 REF		0.022 REF	
H	0.10 REF		0.004 REF	

**SOT-323**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.80	2.20	0.071	0.087
B	1.15	1.35	0.045	0.053
C	0.15	0.40	0.006	0.016
D	1.20	1.40	0.047	0.055
E	2.00	2.45	0.079	0.096
F	0.80	1.10	0.031	0.043

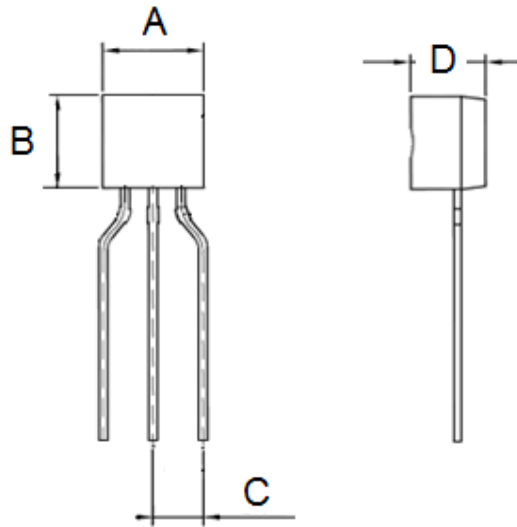
**SOT-523**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.50	1.70	0.059	0.067
B	0.70	0.90	0.028	0.035
C	0.15	0.35	0.006	0.014
D	0.90	1.10	0.035	0.043
E	1.45	1.75	0.057	0.069
F	0.62	0.95	0.024	0.037

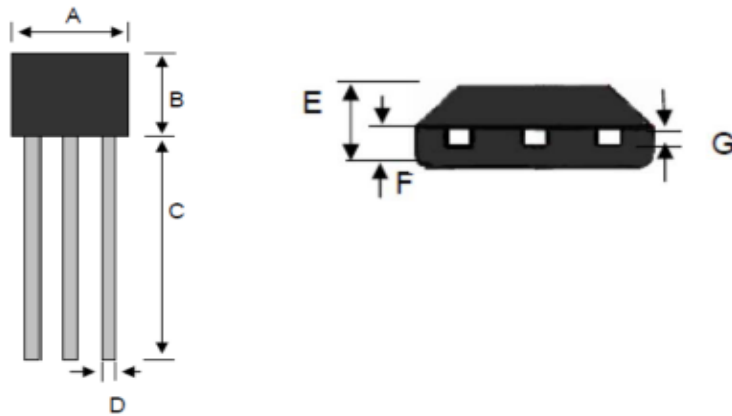
Small Signal Product

**TO-92S ( Ammo )**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	3.90	4.10	0.154	0.161
B	3.25	3.05	0.128	0.120
C	2.20	2.80	0.087	0.110
D	1.62	1.42	0.064	0.056

**TO-92S ( Bulk )**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	3.90	4.10	0.15	0.16
B	3.05	3.25	0.12	0.13
C	15.10	15.50	0.59	0.61
D	0.35	0.48	0.01	0.02
E	1.42	1.62	0.06	0.06
F	0.66	0.86	0.03	0.03
G	0.36	0.51	0.01	0.02

Small Signal Product

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