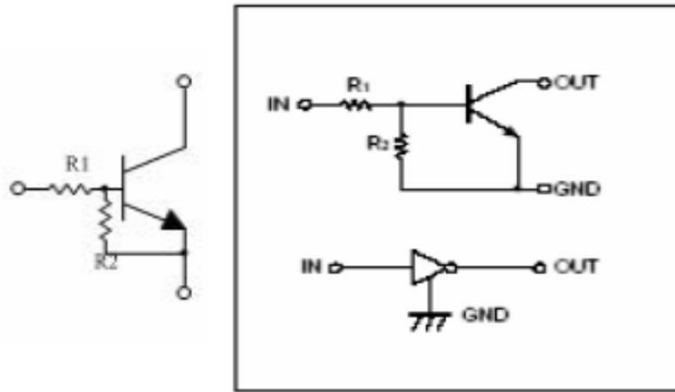


Small Signal Product

**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.
- 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
		EM	EE	EUA / ECA	ESA	
Power Dissipation	P <sub>D</sub>	100	150	200	300	mW
Supply Voltage	V <sub>CC</sub>	50				V
Input Voltage	V <sub>IN</sub>	-10 ~ +40				V
Output Current	I <sub>O</sub>	50				mA
	I <sub>C(MAX)</sub>	100				
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150				°C

Notes: 1. Valid provided that electrodes are kept at ambient temperature

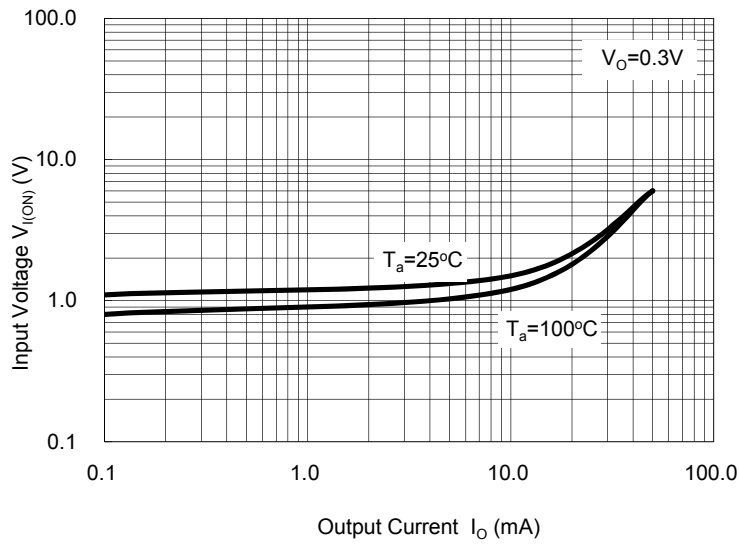
PARAMETER	SYMBOL	MIN	TYP	MAX	CONDITION	UNIT
Input Voltage	V <sub>I(on)</sub>	-	-	3	V <sub>CC</sub> =5V, I <sub>O</sub> =100μA	V
	V <sub>I(off)</sub>	0.5	-	-	V <sub>O</sub> =0.3V, I <sub>O</sub> =10mA	
Output Voltage	V <sub>O(on)</sub>	-	-	0.3	I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA	V
Input Current	I <sub>I</sub>	-	-	0.88	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>	30	-	-	V <sub>O</sub> =5V, I <sub>O</sub> =5mA	
Input Resistance	R <sub>1</sub>	7	10	13		KΩ
Resistance Ratio	R <sub>2</sub> /R <sub>1</sub>	0.8	1	1.2		
Transition Frequency	f <sub>T</sub>	-	250	-	V <sub>O</sub> =10V, I <sub>O</sub> =5mA, f=100MHz	MHz

Small Signal Product

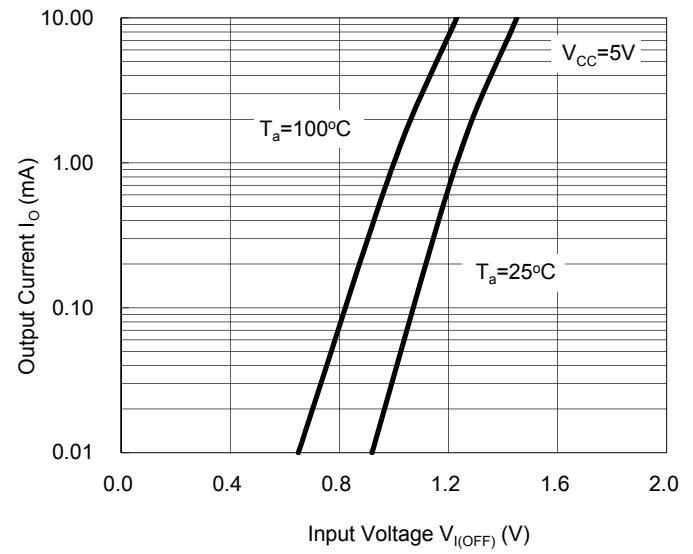
RATINGS AND CHARACTERISTICS CURVES

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

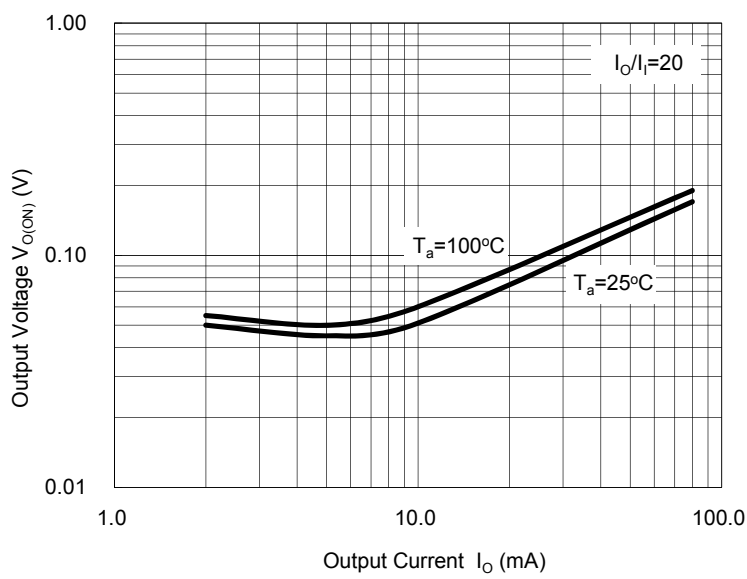
On Characteristics



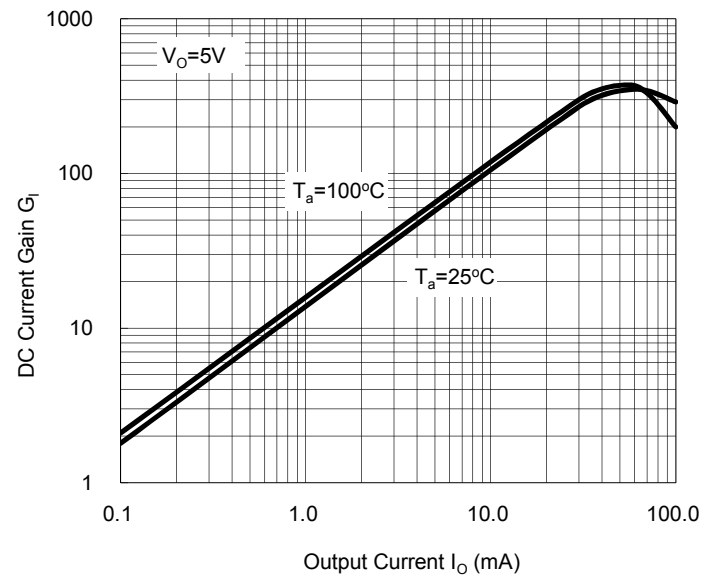
Off Characteristics



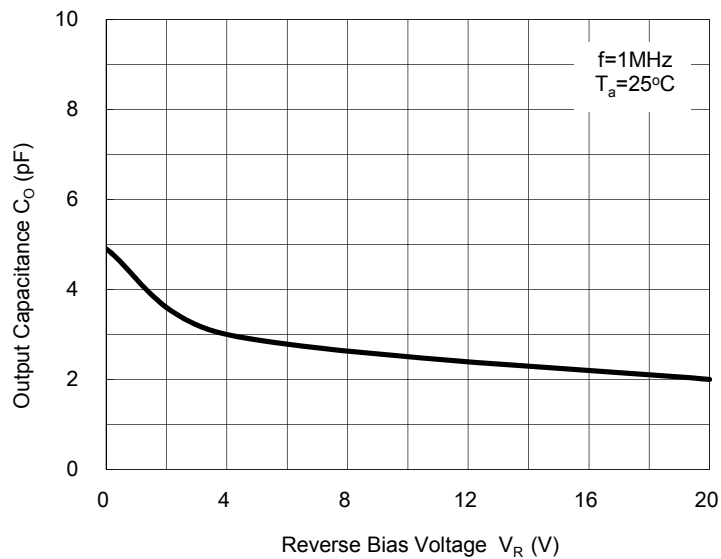
$V_{o(ON)} - I_o$



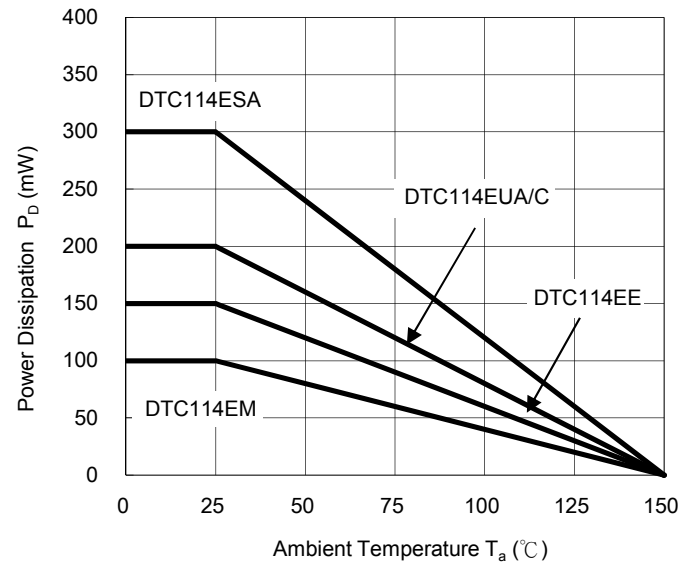
$G_i - I_o$



$C_o - V_R$



$P_D - T_a$



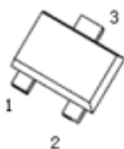
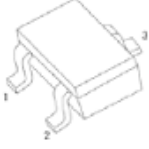
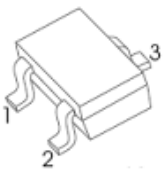
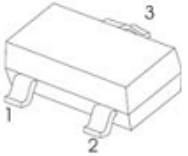

Small Signal Product

ORDERING INFORMATION					
PART NO.	PART NO. SUFFIX (Note 1)	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
DTC114EM	-xx	RM	G	SOT-723	8K / 7" Reel
DTC114EE		RS		SOT-523	3K / 7" Reel
DTC114EUA		RV		SOT-323	3K / 7" Reel
DTC114ECA		RU		SOT-23	3K / 7" Reel
DTC114ESA		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
DTC114EE RS	DTC114EE		RS		Multiple manufacture source
DTC114EE RSG	DTC114EE		RS	G	Multiple manufacture source Green compound
DTC114EE-M0 RSG	DTC114EE	M0	RS	G	Defined manufacture source Green compound

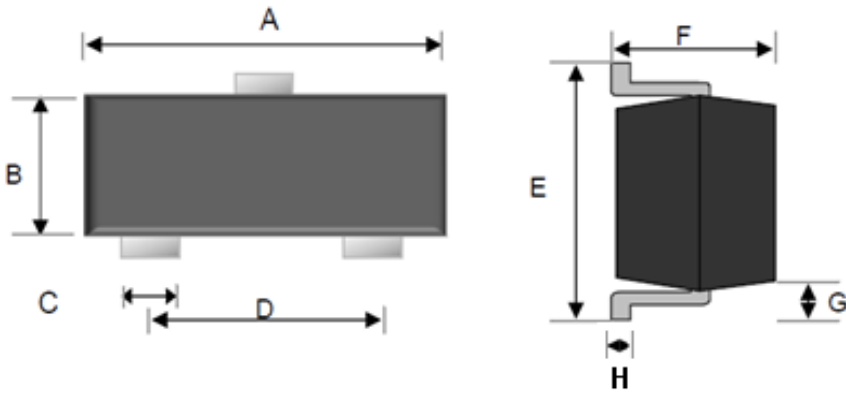
PIN CONNENCTIONS AND MARKING

<p><b>DTC114EM</b></p>  <p><b>SOT-723</b></p> <p>1. IN 2. GND 3. OUT</p> <p><b>MARKING:24</b></p>	<p><b>DTC114EE</b></p>  <p><b>SOT-523</b></p> <p>1. IN 2. GND 3. OUT</p> <p><b>MARKING:24</b></p>
<p><b>DTC114EUA</b></p>  <p><b>SOT-323</b></p> <p>1. IN 2. GND 3. OUT</p> <p><b>MARKING:24</b></p>	
<p><b>DTC114ECA</b></p>  <p><b>SOT-23</b></p> <p>1. IN 2. GND 3. OUT</p> <p><b>MARKING:24</b></p>	<p><b>DTC114ESA</b></p> <p><b>MARKING:</b> C114 E041</p> <p><b>MARKING(HF):</b> C114 E-041</p>  <p><b>TO-92S</b></p> <p>1. GND 2. OUT 3. IN</p>

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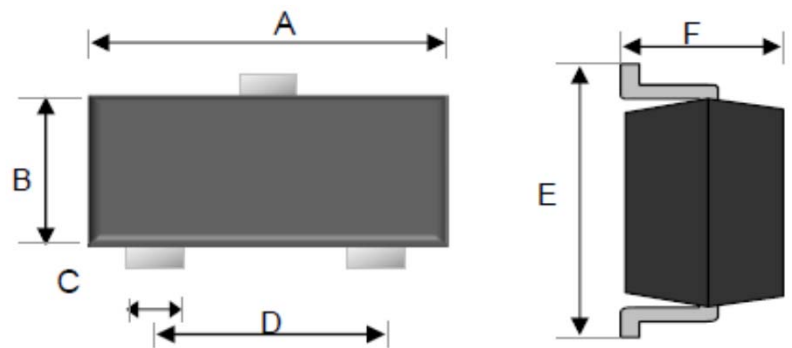
PACKAGE OUTLINE DIMENSION

**SOT-23**



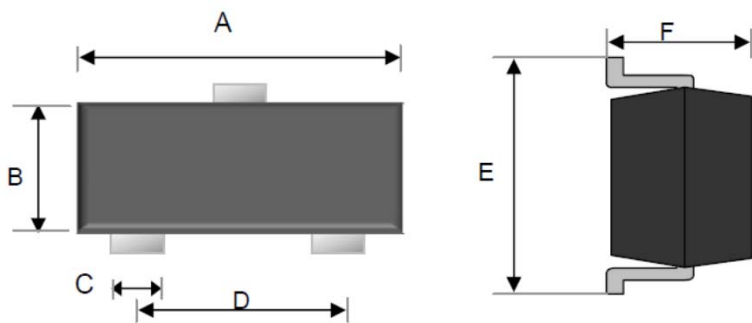
DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	2.70	3.10	0.106	0.122
B	1.10	1.50	0.043	0.059
C	0.30	0.51	0.012	0.020
D	1.78	2.04	0.070	0.080
E	2.10	2.64	0.083	0.104
F	0.89	1.30	0.035	0.051
G	0.55 REF		0.022 REF	
H	0.10 REF		0.004 REF	

**SOT-323**



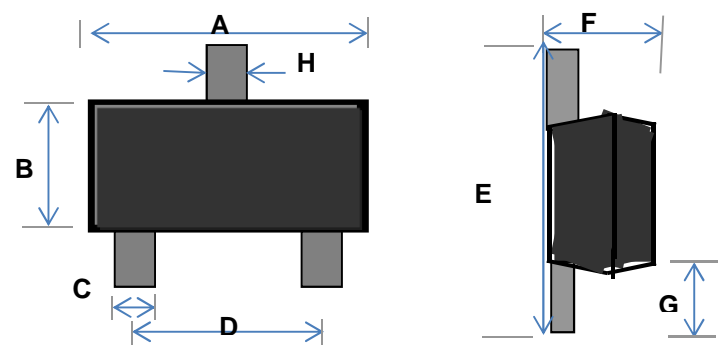
DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.80	2.20	0.071	0.087
B	1.15	1.35	0.045	0.053
C	0.15	0.40	0.006	0.016
D	1.20	1.40	0.047	0.055
E	2.00	2.45	0.079	0.096
F	0.80	1.10	0.031	0.043

**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

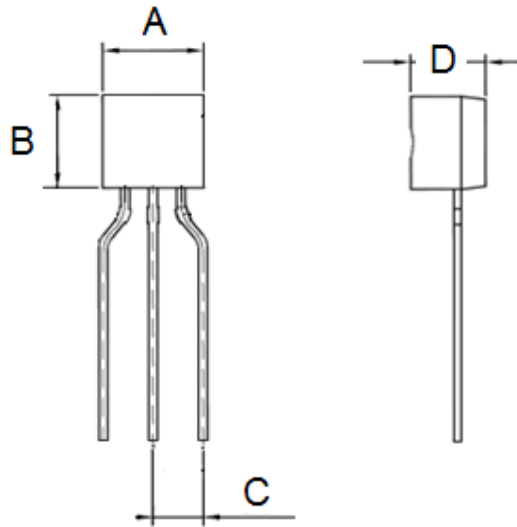
**SOT-723**



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.15	1.25	0.045	0.049
B	0.75	0.85	0.030	0.033
C	0.15	0.27	0.006	0.011
D	0.80 TYP.		0.031 TYP.	
E	1.15	1.25	0.045	0.049
F	0.43	0.55	0.017	0.022
G	0.15	0.25	0.006	0.010
H	0.25	0.37	0.010	0.015

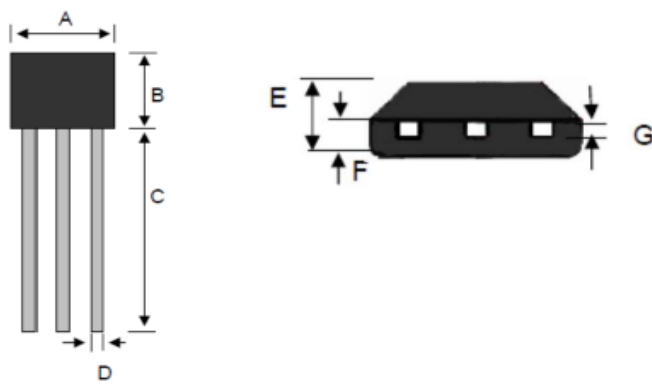
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**TO-92S ( Ammo )**



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	0.154	0.161
B	3.05	3.25	0.120	0.128
C	15.10	15.50	0.594	0.610
D	0.35	0.48	0.014	0.019
E	1.42	1.62	0.056	0.064
F	0.66	0.86	0.026	0.034
G	0.36	0.51	0.014	0.020

Small Signal Product

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