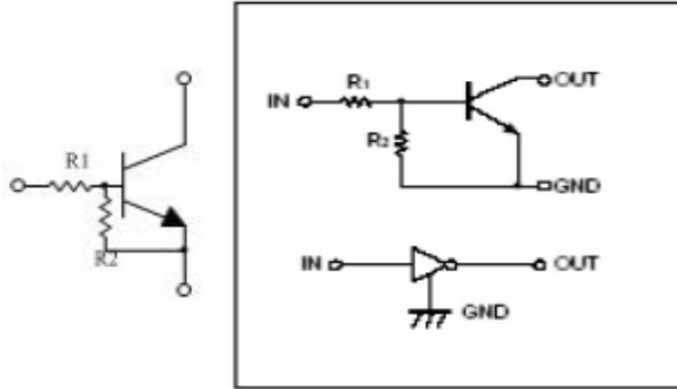


Small Signal Product

**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	ESA	
Power Dissipation	P <sub>D</sub>	100	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

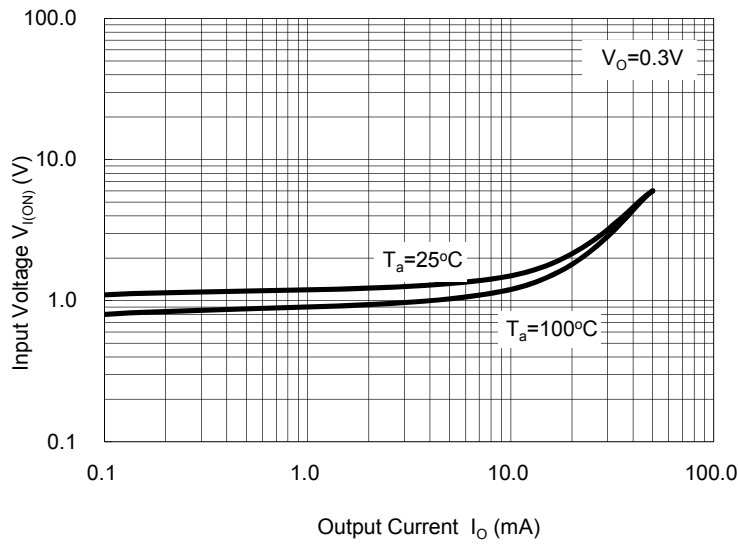
PARAMETER	SYMBOL	MIN	TYP	MAX	CONDITION	UNIT
Input Voltage	V <sub>I(on)</sub>	-	-	3	V <sub>CC</sub> =5V, I <sub>O</sub> =100μA	V
	V <sub>I(off)</sub>	0.5	-	-	V <sub>O</sub> =0.3V, I <sub>O</sub> =10mA	
Output Voltage	V <sub>O(on)</sub>	-	-	0.3	I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA	V
Input Current	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

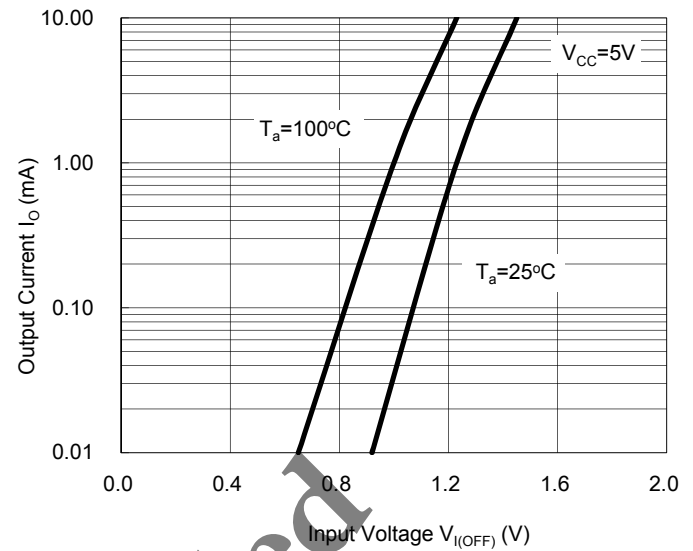
RATINGS AND CHARACTERISTICS CURVES

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

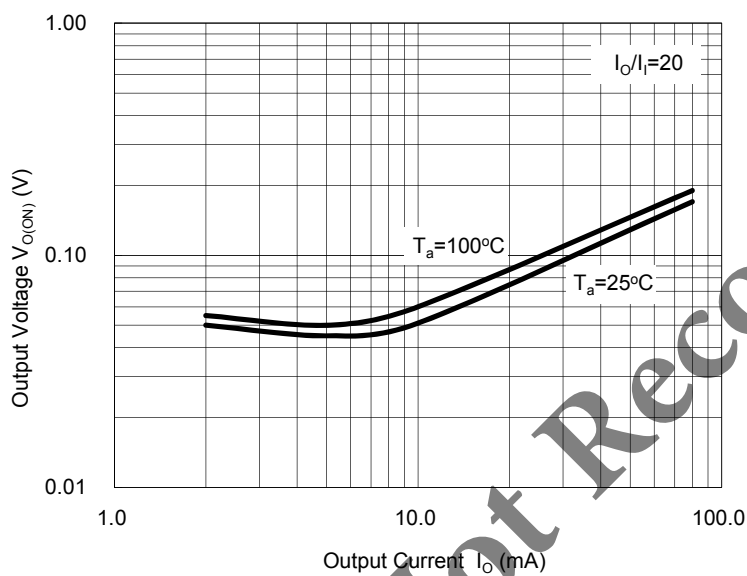
On Characteristics



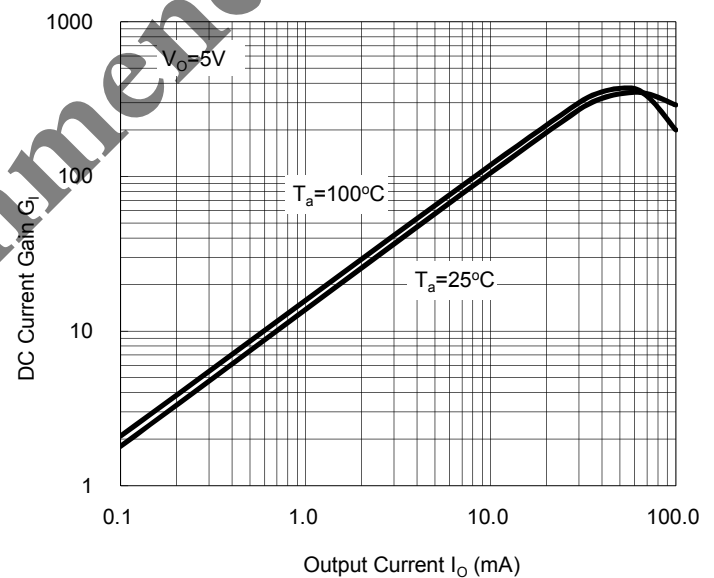
Off Characteristics



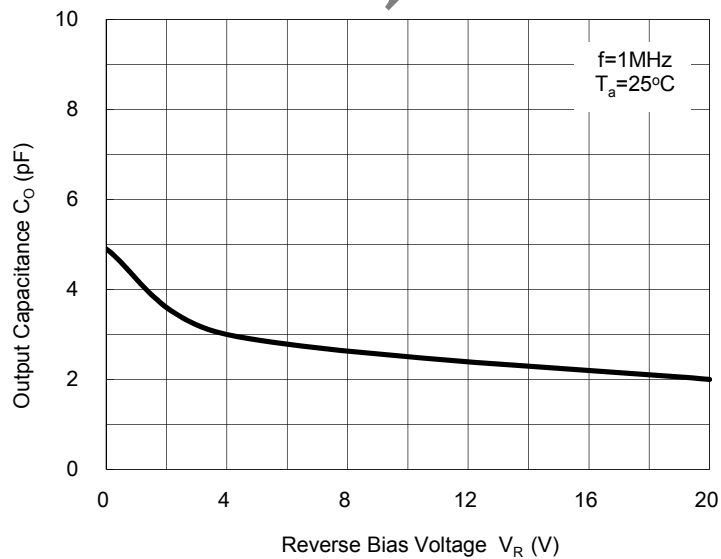
$V_{o(ON)} - I_o$



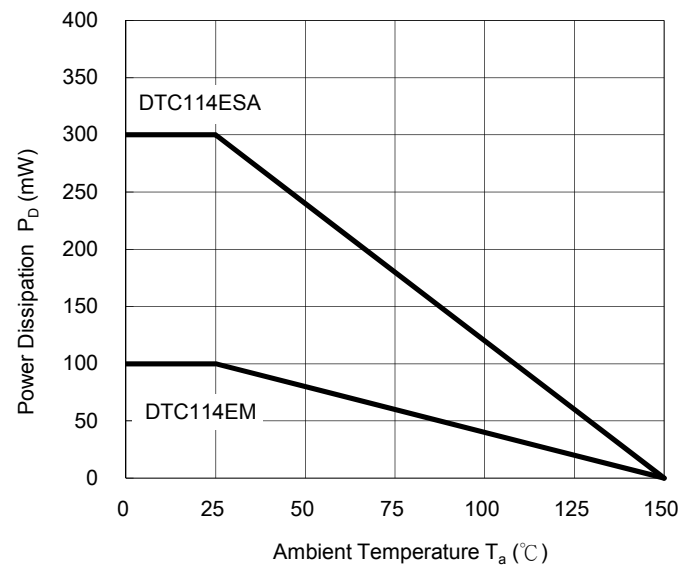
$G_i - I_o$



$C_o - V_R$



$P_D - T_a$



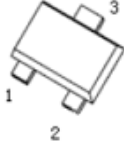

Small Signal Product

ORDERING INFORMATION				
PART NO.	PACKING CODE	PACKING CODE SUFFIX (*)	PACKAGE	PACKING
DTC114EM	RM	G	SOT-723	8K / 7" Reel
DTC114ESA	A3		TO-92S	3K / Box (Ammo)
	B3			10K / Box (Bulk)

\*: Optional available

EXAMPLE				
PREFERRED P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
DTC114EM RMG	DTC114EM	RM	G	Green compound

PIN CONNENCTIONS AND MARKING

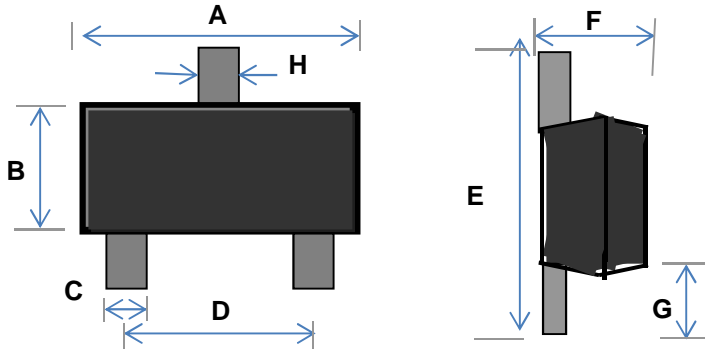
DTC114EM	SOT-723	DTC114ESA	TO-92S
 <p><b>MARKING: 24</b></p>	<p>1. IN 2. GND 3. OUT</p>	 <p><b>MARKING:</b> C114 E041 <b>MARKING(HF):</b> C114 E-041</p>	<p>1. GND 2. OUT 3. IN</p>

Not Recommended

Small Signal Product

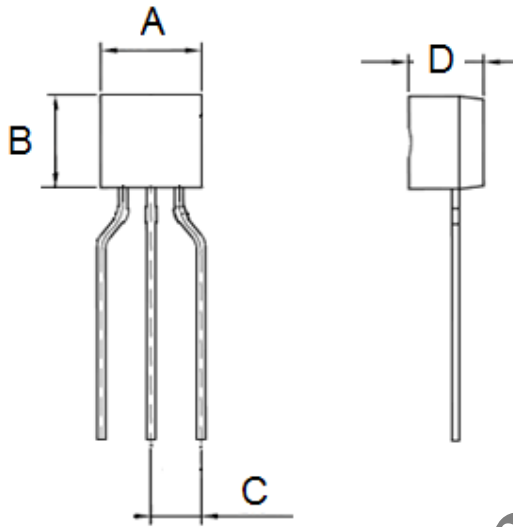
PACKAGE OUTLINE DIMENSION

**SOT-723**



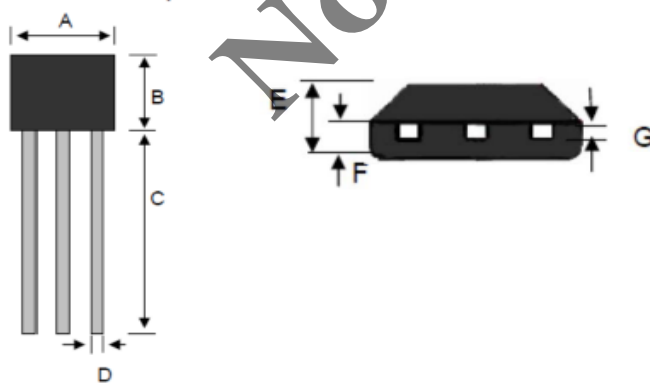
DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.15	1.25	0.045	0.049
B	0.75	0.85	0.030	0.033
C	0.15	0.27	0.006	0.011
D	0.80 TYP.		0.031 TYP.	
E	1.15	1.25	0.045	0.049
F	0.43	0.55	0.017	0.022
G	0.15	0.25	0.006	0.010
H	0.25	0.37	0.010	0.015

**TO-92S (Ammo)**



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	2.20	2.80	0.087	0.110
D	1.42	1.62	0.056	0.064

**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

**Not Recommended**

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