





#### **Small Signal Diode**

## **Features**

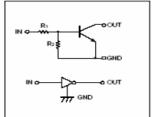
- ♦Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistor (see equivalent circuit).
- The bias resistors consist of thin -film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation,marking device design easy.



## Ordering Information

Package	Part No.	Packing
SOT-723	DTC114 EM	8K / 7" Reel
SOT-523	DTC114 EE	3K / 7" Reel
SOT-323	DTC114 EUA	3K / 7" Reel
SOT-23	DTC114 ECA	3K / 7" Reel
TO-92S	DTC114 ESA	3K / 7" Reel

## Equivalent circuit



#### **Maximum Ratings and Electrical Characteristics**

Rating at 25°C ambient temperature unless otherwise specified.

Torre November	Completed.	Value				Unite
Type Number	Symbol	EM EE EUA ECA		ESA	Units	
Power Dissipation	PD	100	150	200	300	mW
Supply Voltage	$V_{CC}$	50				V
Input Voltage	$V_{IN}$	-10∼40				V
Output Current	l <sub>o</sub>			mA		
Output Current	$I_{C(MAX)}$			IIIA		
Junction and Storage Temperature Range	TJ, T <sub>STG</sub>	-55 to + 150			°C	

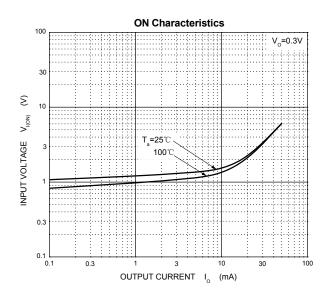
Notes:1. Valid provided that electrodes are kept at ambient temperature

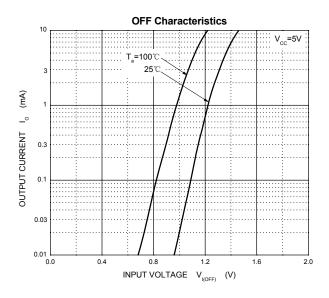
Parameter	Symbol	Min	Тур	Max	Condtion	Unit
	$V_{I(on)}$			3	$V_{CC}$ =5 $V$ , $I_{O}$ =100 $\mu$ A	
Input Voltage	$V_{I(off)}$	0.5			V <sub>O</sub> =0.3V,I <sub>O</sub> =10mA	V
Output Voltage	$V_{O(on)}$			0.3	I <sub>O</sub> /I <sub>i</sub> =10mA/5mA	V
Input Current	l <sub>l</sub>			0.88	V <sub>I</sub> =5V	mA
Output Current	I <sub>O (off)</sub>			0.5	V <sub>CC</sub> =50V,V <sub>I</sub> =0	μΑ
DC Current Gain	Gı	30			V <sub>O</sub> =5V,I <sub>O</sub> =5mA	
Input Resistance	R <sub>1</sub>	7	10	13		ΚΩ
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

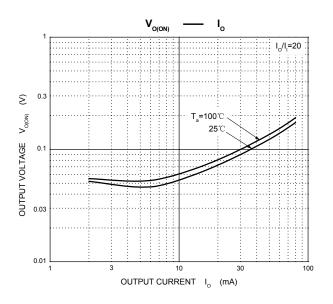


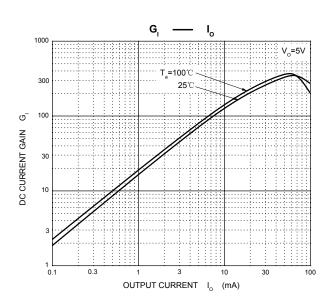
### **Small Signal Diode**

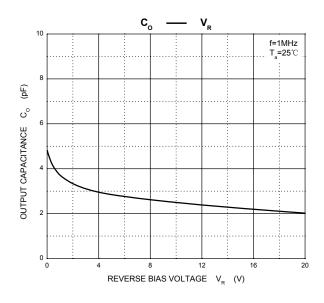
# Typical Characteristics DTC114EUA

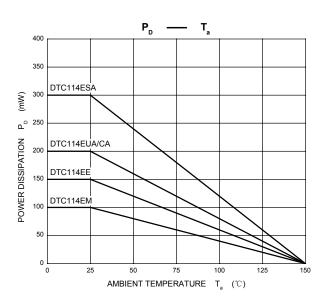










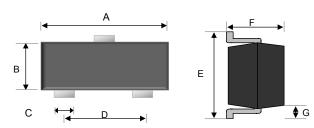




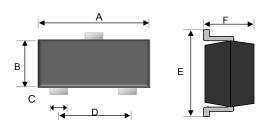
## DTC114 EM/EE/EUA/ECA/ESA **NPN Small Signal Transistor**

SOT-23



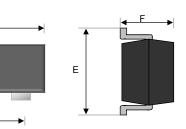


Dimensions	Un	it (mm)	Unit (inch)		
Dillielisions	Min Max		Min	Max	
Α	2.80	3.00	0.11	0.12	
В	1.20	1.40	0.05	0.06	
С	0.30	0.50	0.01	0.02	
D	1.80	2.00	0.07	0.08	
E	2.25	2.55	0.09	0.10	
F	0.90	1.20	0.04	0.04	
G	0.5	50 REF	0.022	REF	

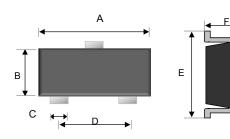


Dimensions	Unit	(mm)	Unit (inch)		
	Min	Max	Min	Max	
Α	1.90	2.10	0.07	0.08	
В	1.15	1.35	0.05	0.05	
С	0.25	0.35	0.01	0.01	
D	1.20	1.40	0.05	0.06	
E	2.00	2.20	0.08	0.09	
F	0.80	1.00	0.03	0.04	

SOT-523



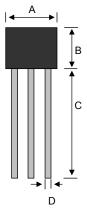




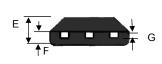
Dimensions	Ur	nit (mm)	Unit (inch)		
	Min	Max	Min	Max	
Α	1.50	1.70	0.06	0.07	
В	0.70	0.80	0.03	0.03	
С	0.25	0.35	0.01	0.01	
D	0.90	1.10	0.04	0.04	
Е	1.50	1.70	0.06	0.07	
F	0.70	0.90	0.03	0.04	

Unit	(mm)	Unit (inch)		
Min	Max	Min	Max	
1.15	1.25	0.05	0.05	
0.75	0.85	0.03	0.03	
0.17	0.27	0.01	0.01	
0.8 TYP		0.31	TYP	
1.15	1.25	0.05	0.05	
	0.50		0.02	
	Min 1.15 0.75 0.17 0.8	1.15 1.25 0.75 0.85 0.17 0.27 0.8 TYP 1.15 1.25	Min Max Min   1.15 1.25 0.05   0.75 0.85 0.03   0.17 0.27 0.01   0.8 TYP 0.31   1.15 1.25 0.05	

TO-92S



В



Dimensions	Unit	(mm)	Unit (inch)		
Difficusions	Min	Max	Min	Max	
Α	3.85	4.15	0.15	0.16	
В	3.01	3.31	0.12	0.13	
С	15.10	15.50	0.59	0.61	
D	0.38	0.55	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	