

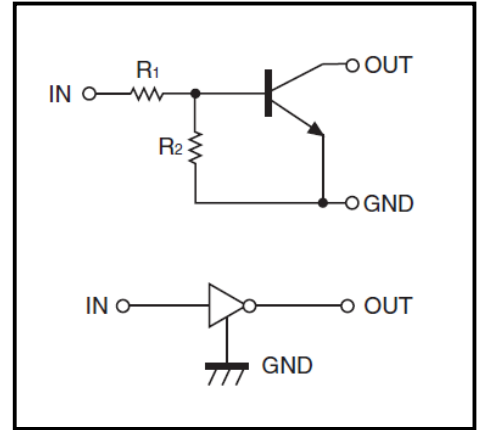
Digital Transistors (Built-in Resistors)

DIGITAL TRANSISTOR (NPN)

FEATURES

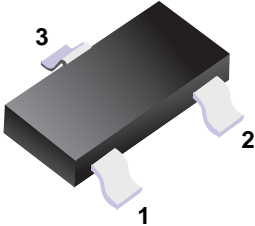
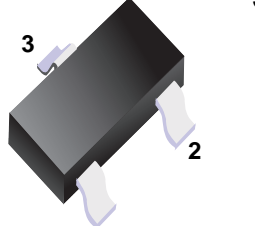
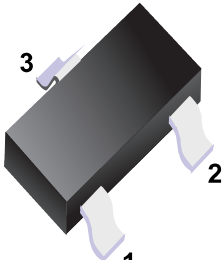
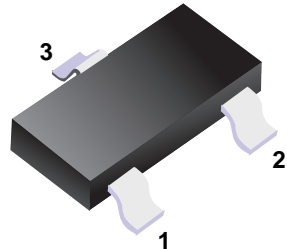
- ◆ Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- ◆ The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input.They also have the advantage of almost completely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

Equivalent Circuit



MARKING: 24

PIN CONNENCTIONS and MARKING

<p>DTC114ECA</p>  <p>SOT-23</p> <p>1. IN 2. GND 3. OUT</p>	<p>DTC114EE</p>  <p>SOT-523</p> <p>1. IN 2. GND 3. OUT</p>
<p>DTC114EUA</p>  <p>SOT-323</p> <p>1. IN 2. GND 3. OUT</p>	<p>DTC114EKA</p>  <p>SOT-23-3L</p> <p>1. IN 2. GND 3. OUT</p>

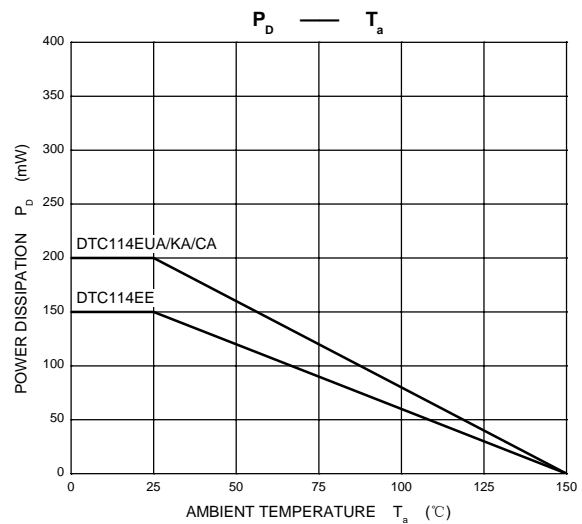
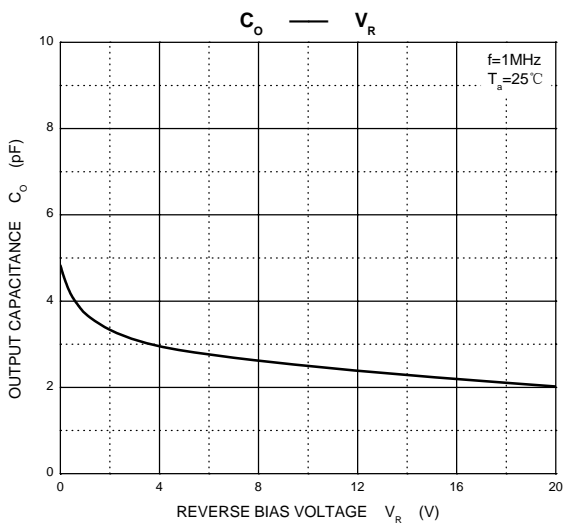
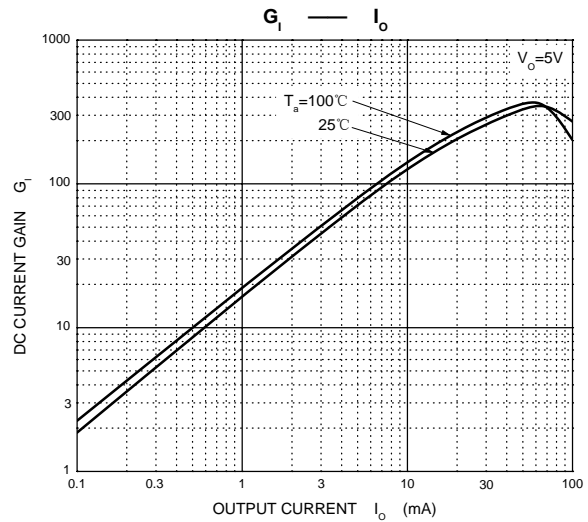
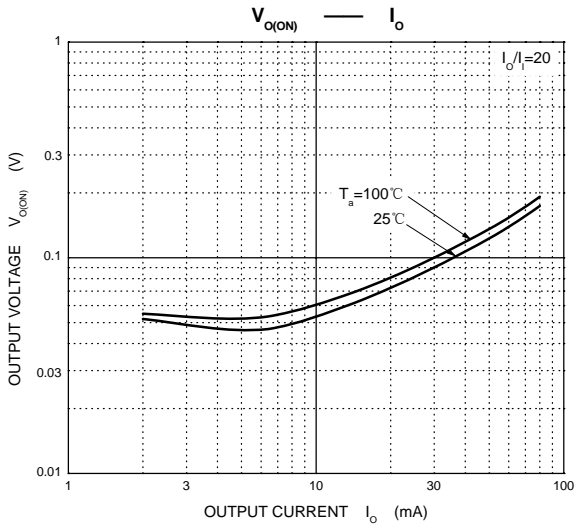
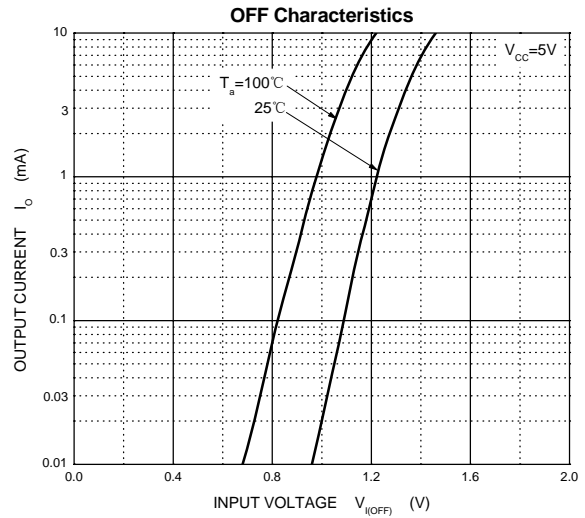
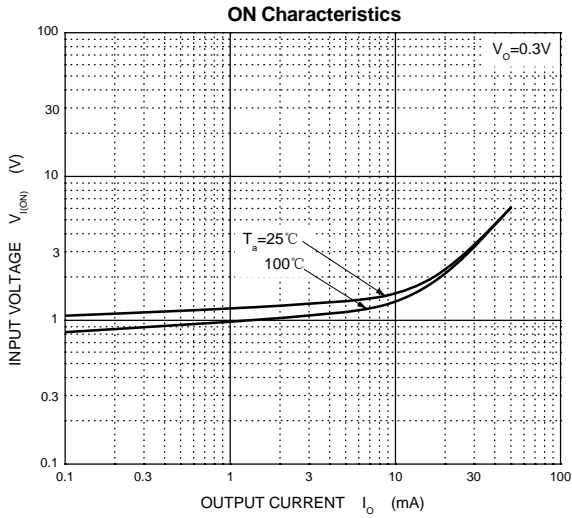
MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Limits(DTC114E□)					Unit
			E	UA	CA	KA	
V_{CC}	Supply Voltage	50					V
V_{IN}	Input Voltage	-10~+40					V
I_O	Output Current	50					mA
I_{CM}	Peak Collector Current	100					mA
P_D	Power Dissipation		150	200	200	200	mW
T_j	Junction Temperature	150					$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55~+150					$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

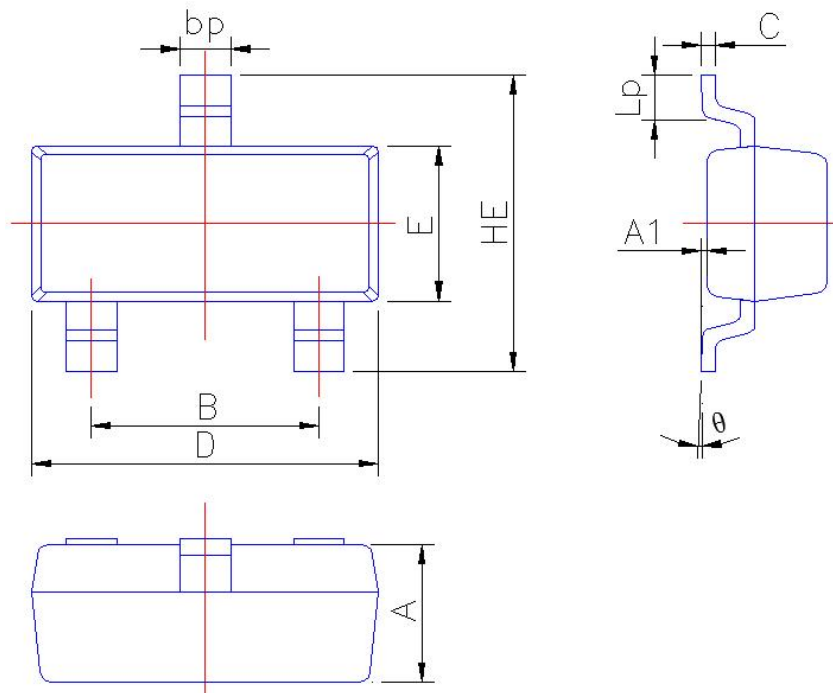
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_O=100\mu\text{A}$	0.5			V
	$V_{I(on)}$	$V_O=0.3V, I_O=10\text{mA}$			3	V
Output voltage	$V_{O(on)}$	$I_O/I_I=10\text{mA}/0.5\text{mA}$			0.3	V
Input current	I_I	$V_I=5V$			0.88	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_I=0$			0.5	μA
DC current gain	G_1	$V_O=5V, I_O=5\text{mA}$	30			
Input resistance	R_1		7	10	13	k Ω
Resistance ratio	R_2/R_1		0.8	1	1.2	
Transition frequency	f_T	$V_O=10V, I_O=5\text{mA}, f=100\text{MHz}$		250		MHz

Typical Characteristics



Package Outline

SOT-23



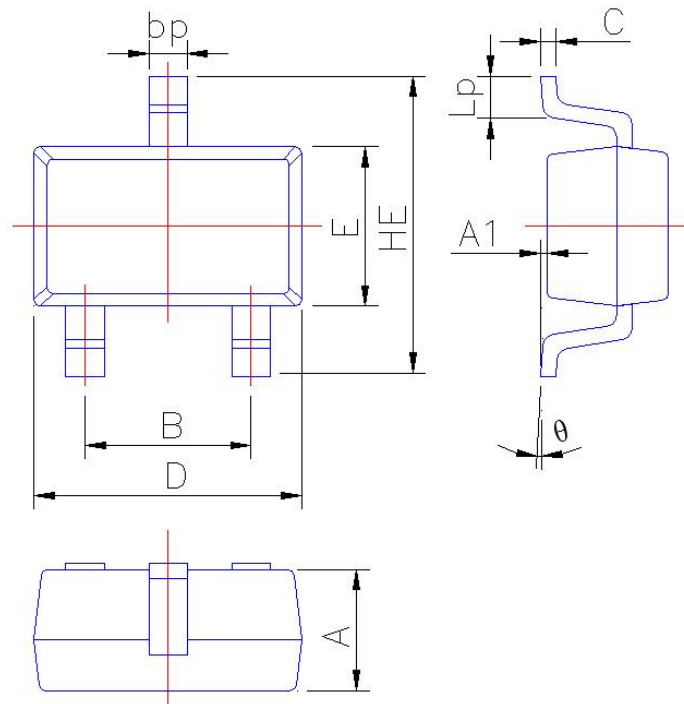
Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.10
A1	0.013	0.100
B	1.80	2.00
bp	0.35	0.50
C	0.09	0.150
D	2.80	3.00
E	1.20	1.40
HE	2.20	2.80
Lp	0.20	0.50
θ	0°	5°

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1

Package Outline

SOT-323



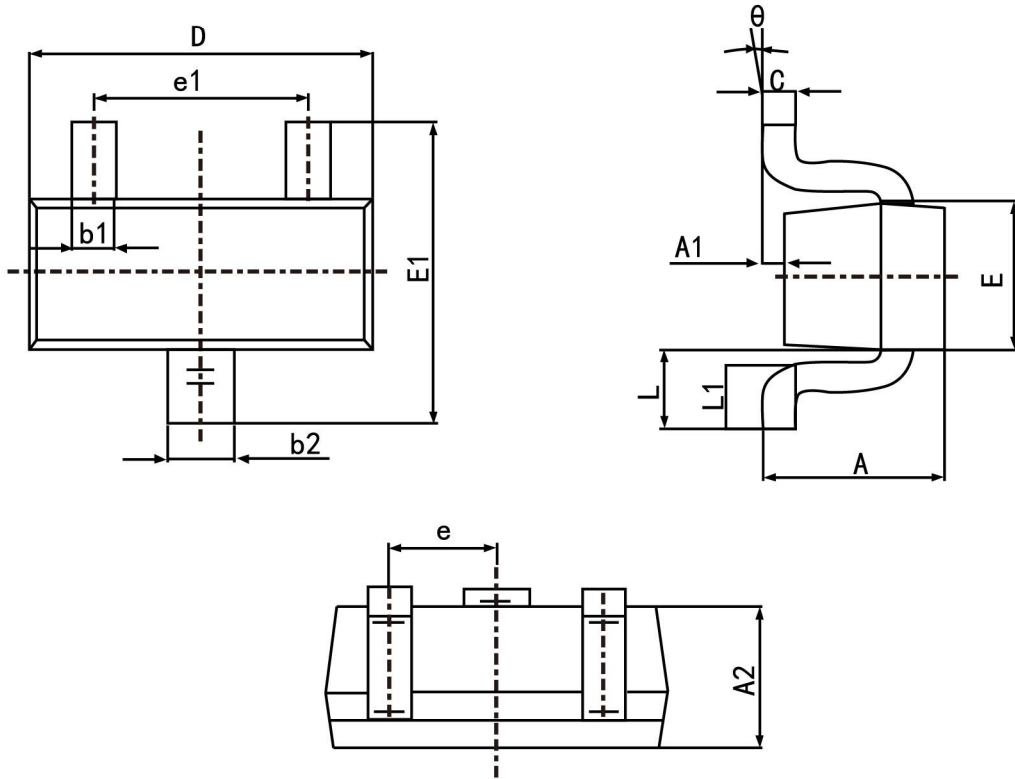
Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.00
A1	0.010	0.100
B	1.20	1.40
bp	0.25	0.45
C	0.09	0.15
D	2.00	2.20
E	1.15	1.35
HE	2.15	2.55
Lp	0.25	0.46
θ	0°	6°

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT-323	Tape/Reel,7"reel	3000	EIA-481-1

Package Outline

SOT-523



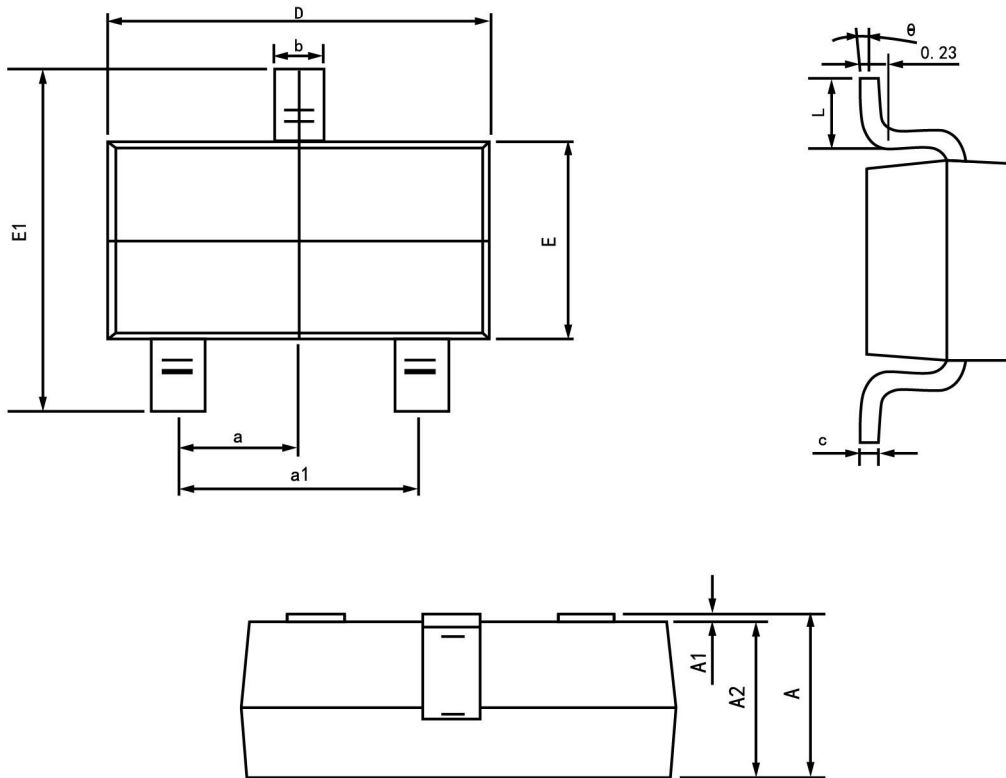
Symbol	Dimension in Millimeters	
	Min	Max
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b1	0.150	0.250
b2	0.250	0.350
c	0.100	0.200
D	1.500	1.700
E	0.700	0.900
E1	1.450	1.750
e	0.500	TYP.
e1	0.900	1.100
L	0.400 REF.	
L1	0.260	0.460
θ	0°	8°

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-523	Tape/Reel, 7" reel	3000	EIA-481-1

Package Outline

SOT23-3L



Symbol	Dimension in Millimeters	
	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950 (Basic)	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT23-3L	Tape/Reel, 7" reel	3000	EIA-481-1

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