

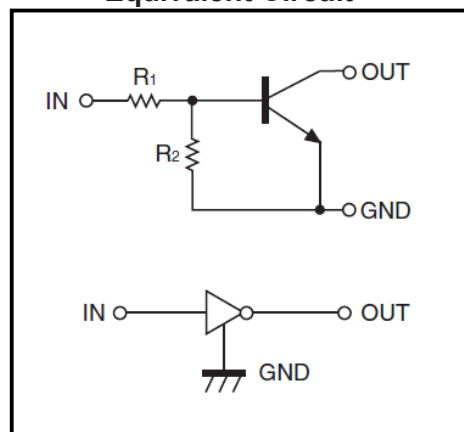
Digital Transistors (Built-in Resistors)

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

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

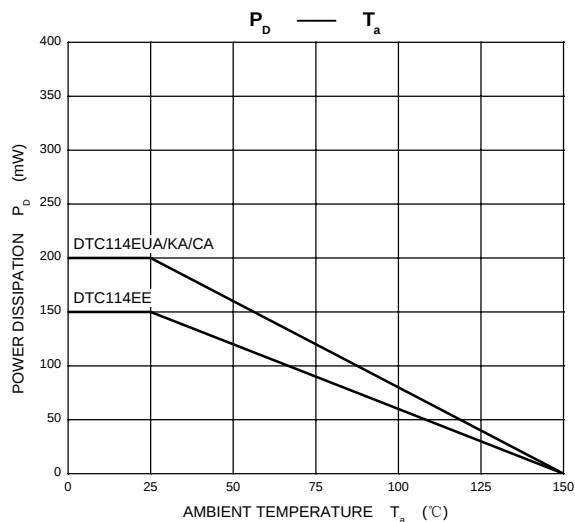
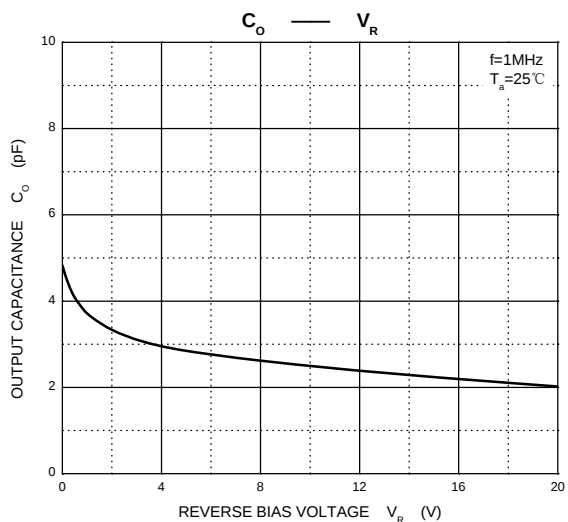
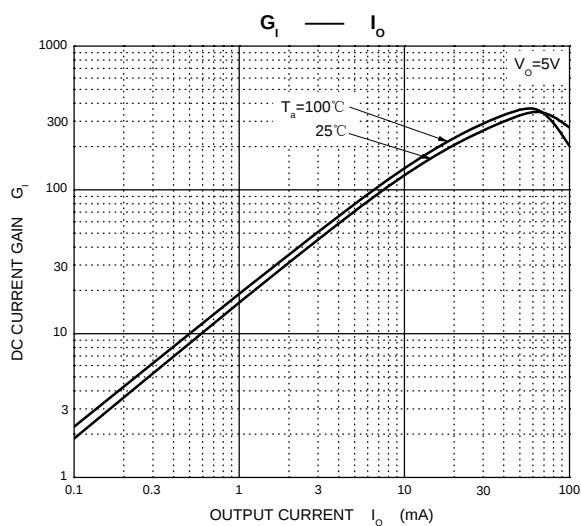
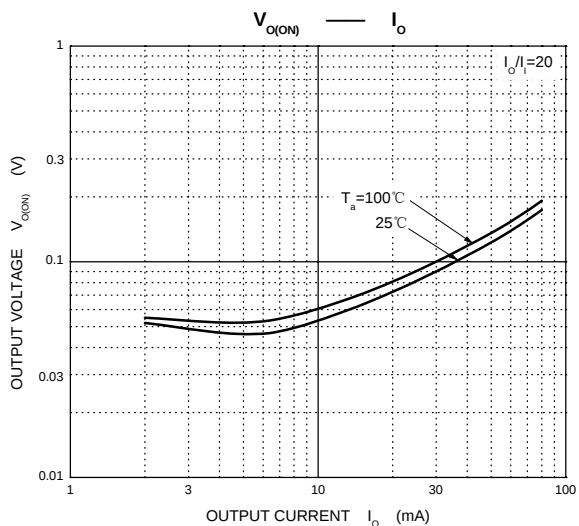
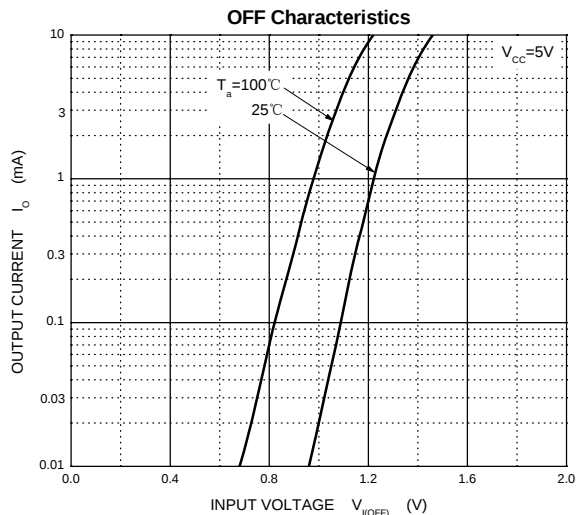
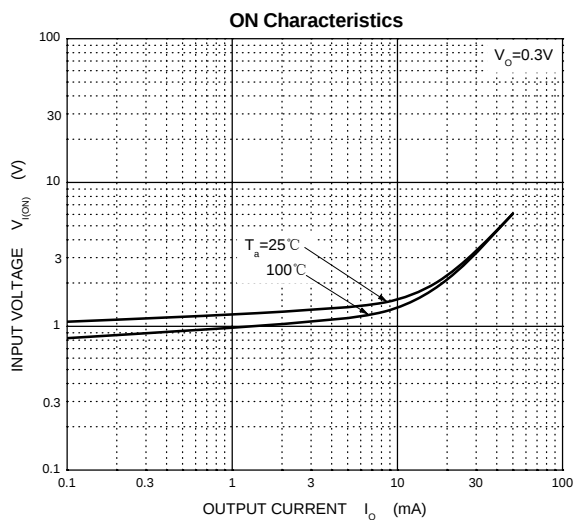
MAXIMUM RATINGS(Ta=25℃ unless otherwise noted)

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						℃
T _{stg}	Storage Temperature	-55~+150						℃

ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

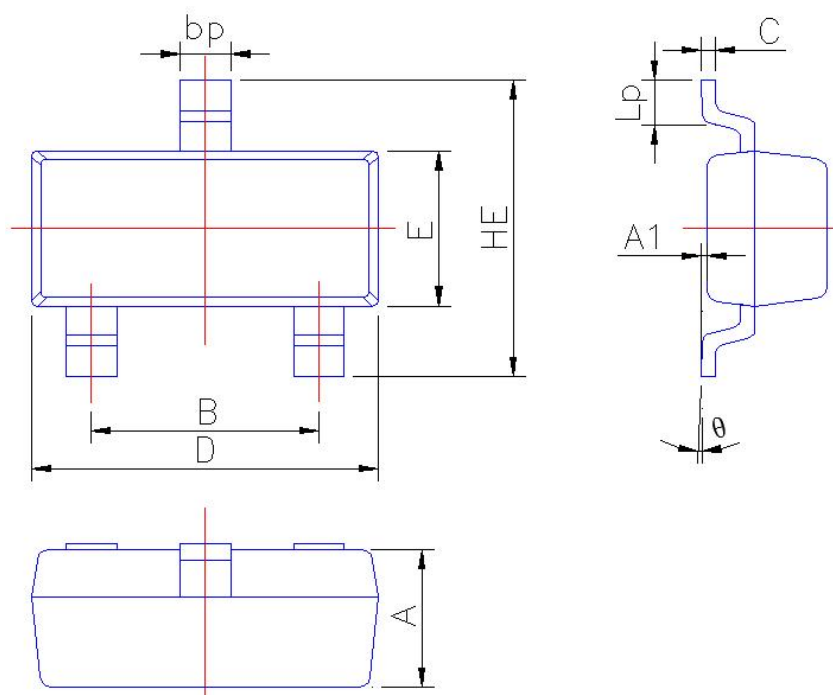
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	V _{I(off)}	V _{CC} =5V, I _O =100μA	0.5			V
	V _{I(on)}	V _O =0.3V, I _O =10mA			3	V
Output voltage	V _{O(on)}	I _O /I _I =10mA/0.5mA			0.3	V
Input current	I _I	V _I =5V			0.88	mA
Output current	I _{O(off)}	V _{CC} =50V, V _I =0			0.5	μA
DC current gain	G _I	V _O =5V, I _O =5mA	30			
Input resistance	R ₁		7	10	13	kΩ
Resistance ratio	R ₂ /R ₁		0.8	1	1.2	
Transition frequency	f _T	V _O =10V, I _O =5mA, f=100MHz		250		MHz

Typical Characteristics



Package Outline

SOT-23



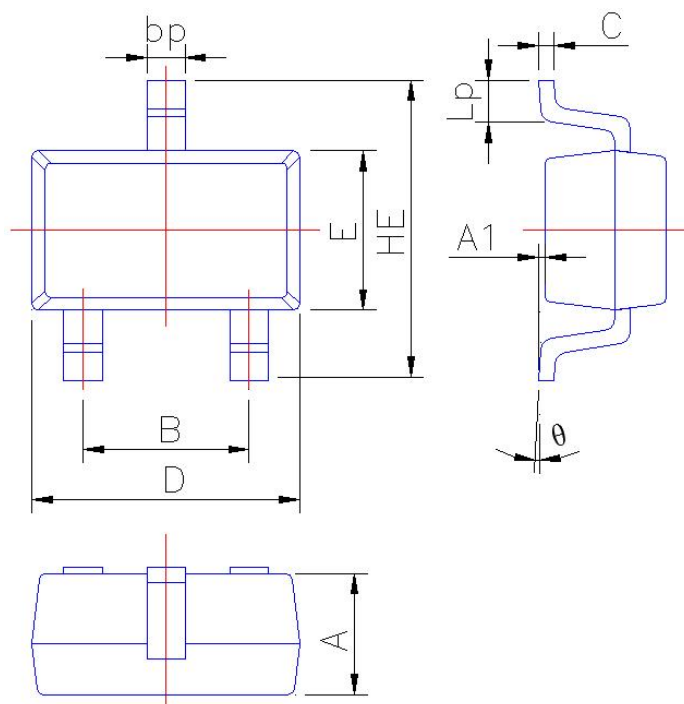
Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.10
A1	0.013	0.100
B	1.80	2.00
bp	0.35	0.50
C	0.09	0.150
D	2.80	3.00
E	1.20	1.40
HE	2.20	2.80
Lp	0.20	0.50
θ	0°	5°

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



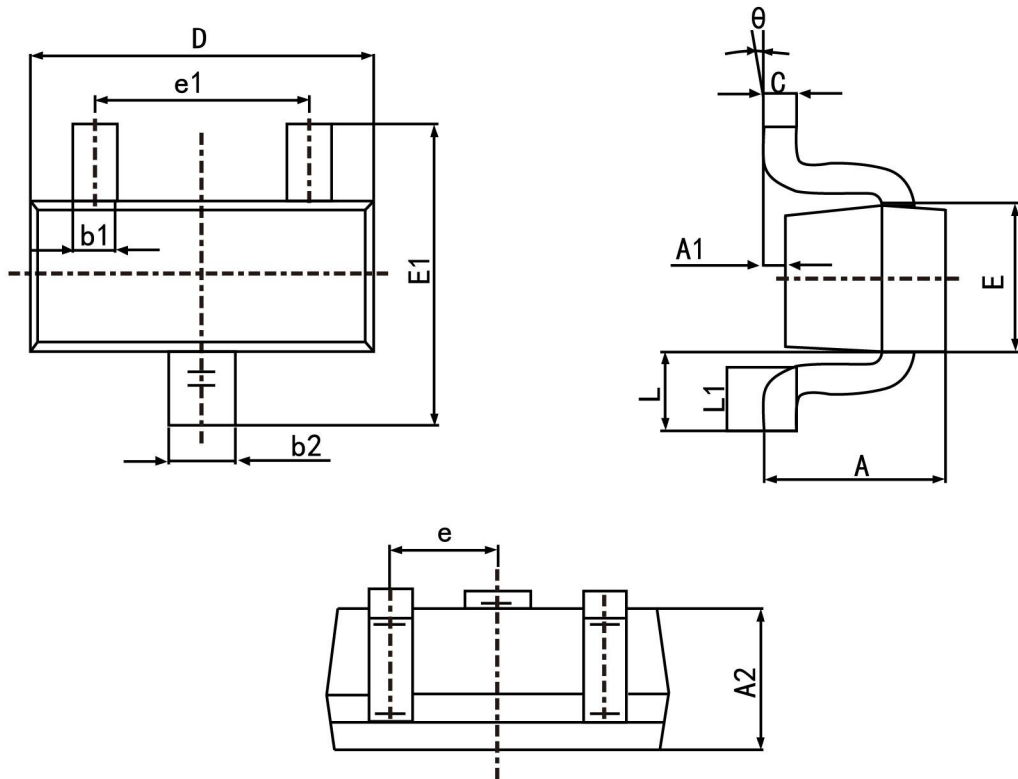
Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.00
A1	0.010	0.100
B	1.20	1.40
bp	0.25	0.45
C	0.09	0.15
D	2.00	2.20
E	1.15	1.35
HE	2.15	2.55
Lp	0.25	0.46
θ	0°	6°

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



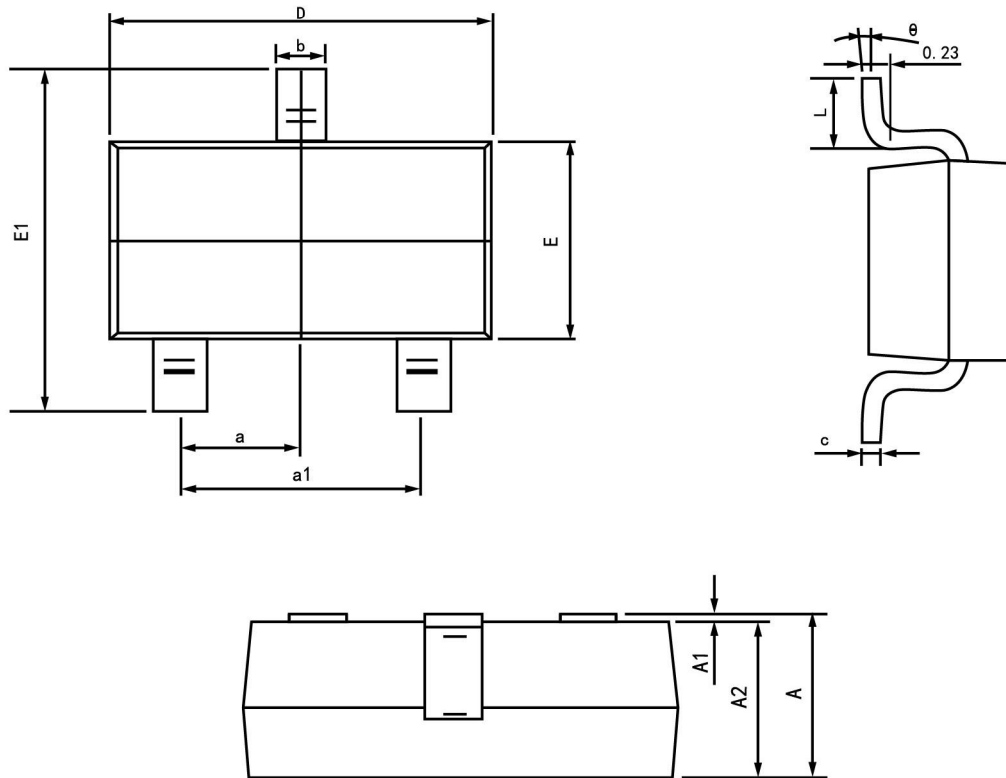
Symbol	Dimension in Millimeters	
	Min	Max
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b1	0.150	0.250
b2	0.250	0.350
c	0.100	0.200
D	1.500	1.700
E	0.700	0.900
E1	1.450	1.750
e	0.500	TYP.
e1	0.900	1.100
L	0.400 REF.	
L1	0.260	0.460
θ	0°	8°

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