

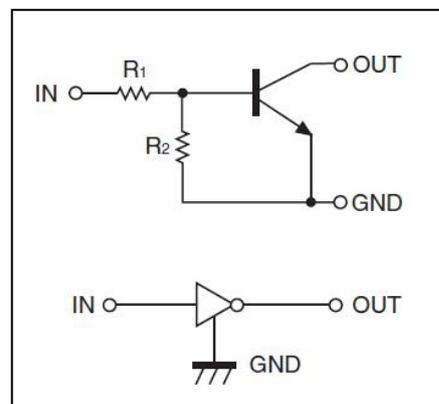
Digital Transistors (Built-in Resistors)

• Equivalent Circuit

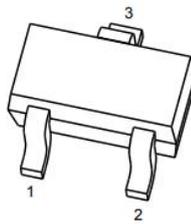
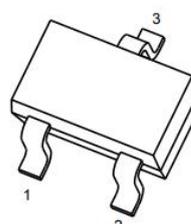
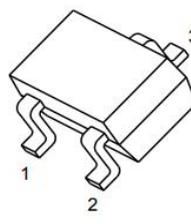
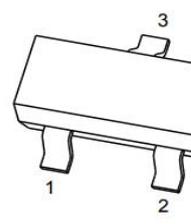
DIGITAL TRANSISTOR (NPN)

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



PIN CONNENCTIONS and MARKING

DTC123JE  1. IN 2. GND 3. OUT	SOT-523 1. IN 2. GND 3. OUT	DTC123JUA  1. IN 2. GND 3. OUT	SOT-323 1. IN 2. GND 3. OUT
DTC123JKA  1. IN 2. GND 3. OUT	SOT-23-3L 1. IN 2. GND 3. OUT	DTC123JCA  1. IN 2. GND 3. OUT	SOT-23 1. IN 2. GND 3. OUT

ORDERING INFORMATION

Part Number	MARKING	Package	Packing Method	Pack Quantity
DTC123JE	E42	SOT-523	Reel	3000pcs/Reel
DTC123JUA	E42	SOT-323	Reel	3000pcs/Reel
DTC123JKA	E42	SOT-23-3L	Reel	3000pcs/Reel
DTC123JCA	E42	SOT-23	Reel	3000pcs/Reel

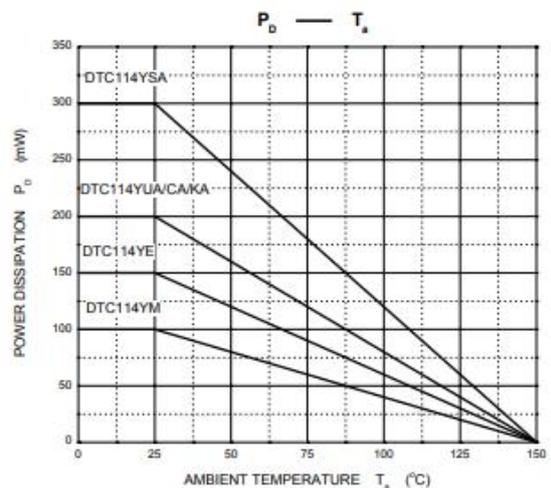
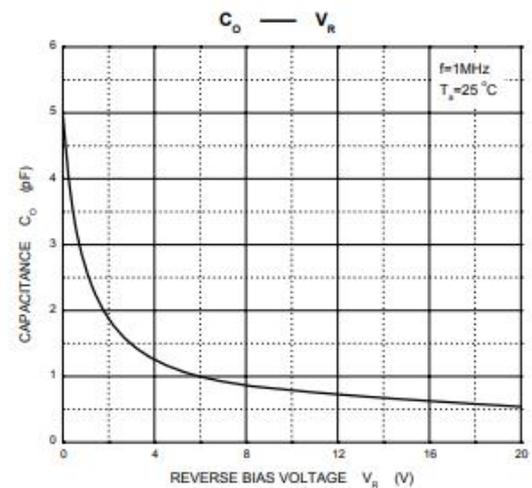
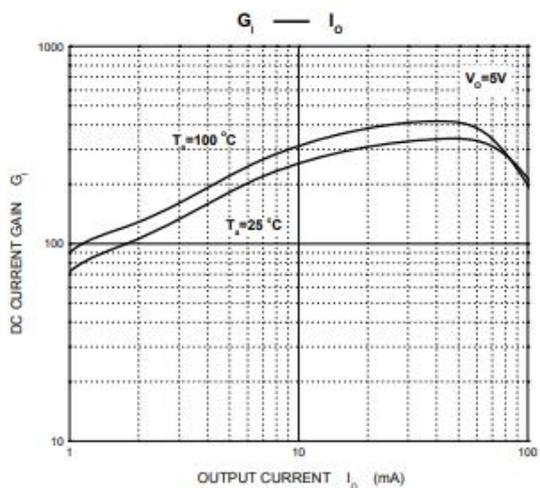
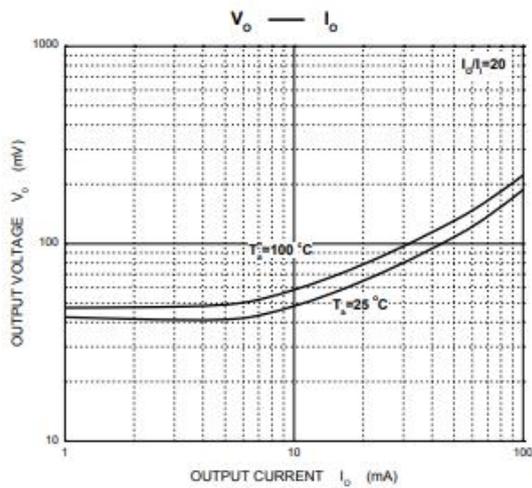
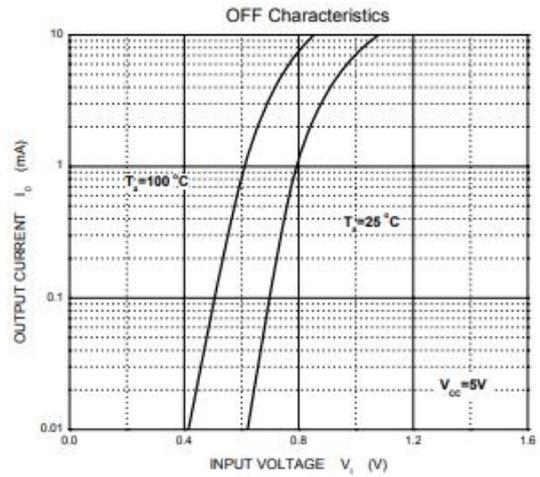
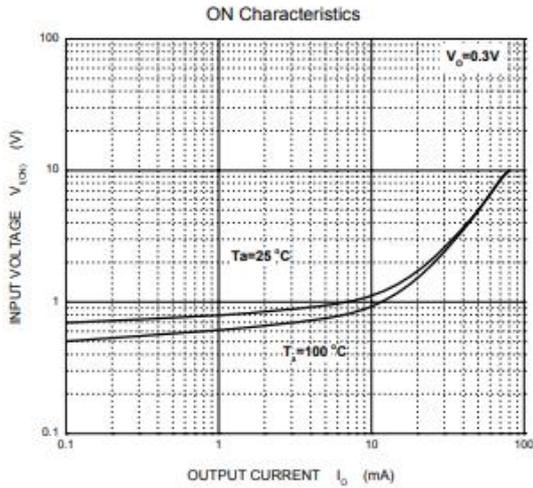
MAXIMUM RATINGS(Ta=25°C unless otherwise noted)

Symbol	Parameter	Limits(DTC123J□)						Unit
		M	E	UA	KA	CA	SA	
V _{CC}	Supply Voltage	50						V
V _{IN}	Input Voltage	-5~+12						V
I _o	Output Current	100						mA
P _D	Power Dissipation	100	150	200	200	200	300	mW
T _J , T _{stg}	Operation Junction and Storage Temperature Range	-55~+150						°C

ELECTRICAL CHARACTERISTICS (Ta=25°C 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 =5mA			1.1	V
Output voltage	V _{O(on)}	I _o /I _i =5mA/0.25mA		0.1	0.3	V
Input current	I _i	V _i =5V			3.6	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 =10mA	80			
Input resistance	R ₁		1.54	2.2	2.86	kΩ
Resistance ratio	R ₂ /R ₁		17	21	26	
Transition frequency	f _r	V _O =10V, I _o =5mA, f=100MHz		250		MHz

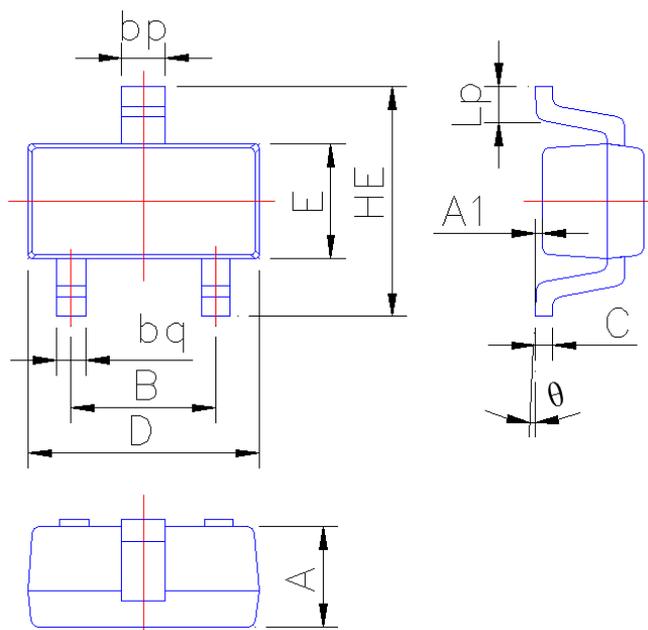
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-523

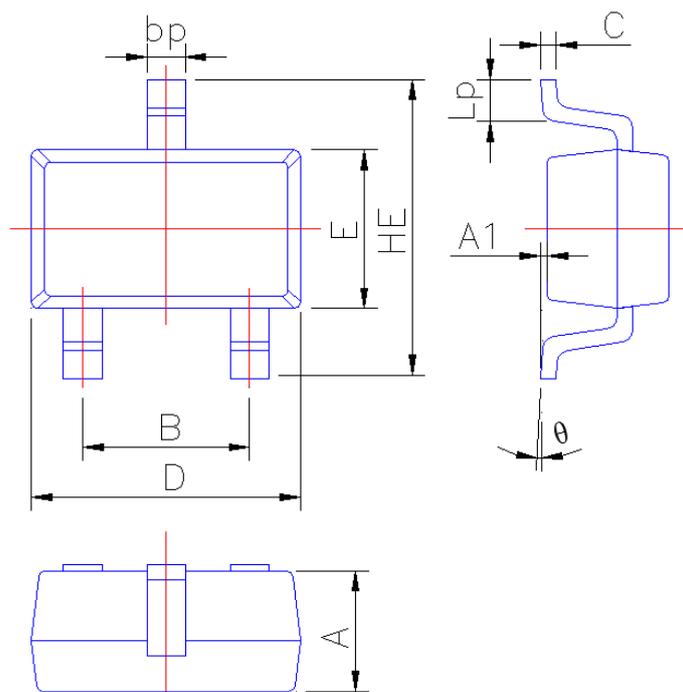


Symbol	Dimension in Millimeters	
	Min	Max
A	0.60	0.80
A1	0.010	0.100
B	0.95	1.05
bp	0.26	0.40
bq	0.16	0.30
C	0.09	0.15
D	1.50	1.70
E	0.70	0.85
HE	1.45	1.75
Lp	0.16	0.36
theta	0°	5°

PACKAGE OUTLINE

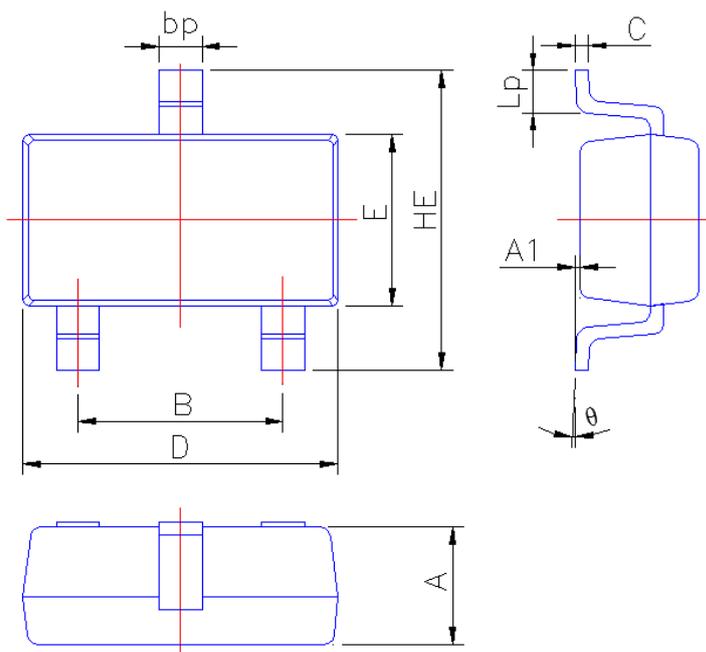
Plastic surface mounted package; 3 leads

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°

Package outline dimensions SOT23-3L

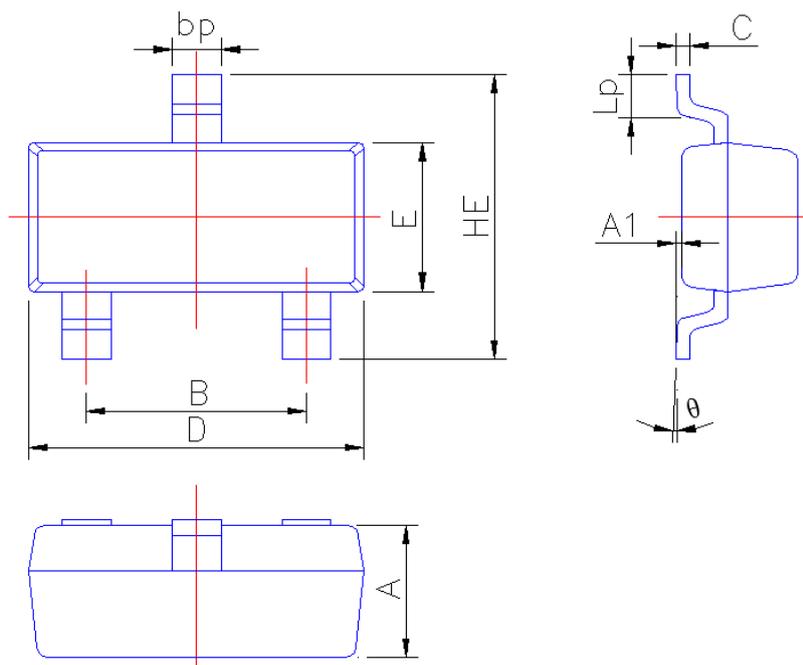


Symbol	Dimension in Millimeters	
	Min	Max
A	1.05	1.20
A1	0.010	0.100
B	1.80	2.00
bp	0.35	0.50
C	0.09	0.15
D	2.80	3.00
E	1.50	1.70
HE	2.60	3.00
Lp	0.25	0.55
θ	2°	6°

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

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°