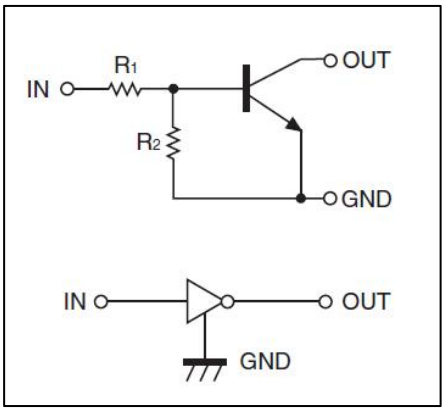
Digital Transistors (Built-in Resistors)

DIGITAL TRANSISTOR (NPN)

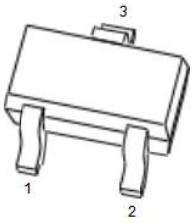
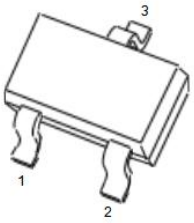
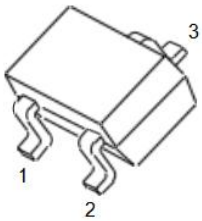
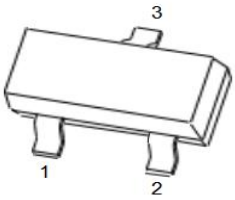
Equivalent Circuit



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

DTC124EE  **SOT-523** 1. IN 2. GND 3.OUT	**DTC124EUA**  **SOT-323** 1. IN 2. GND 3. OUT
DTC124EKA  **SOT-23-3L** 1. IN 2. GND 3.OUT	**DTC124ECA**  **SOT-23** 1.IN 2.GND 3.OUT

ORDERING INFORMATION

Part Number	MARKING (1)	Package	Packing Method	Pack Quantity
DTC124EE	**25**	SOT-523	Reel	3000pcs/Reel
DTC124EUA	**25**	SOT-323	Reel	3000pcs/Reel
DTC124EKA	**25**	SOT-23-3L	Reel	3000pcs/Reel
DTC124ECA	**25**	SOT-23	Reel	3000pcs/Reel

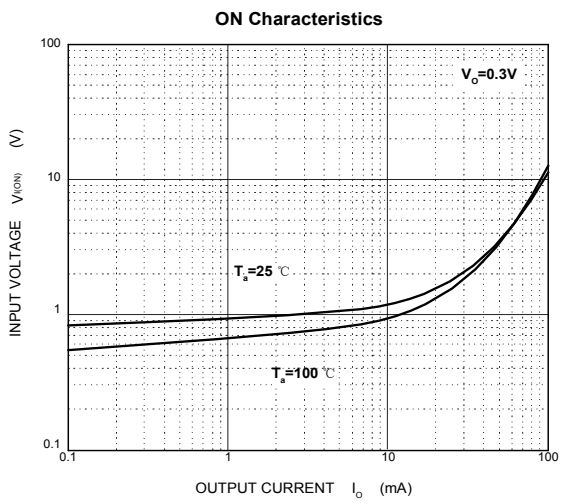
MAXIMUM RATINGS(Ta=25℃ unless otherwise noted)

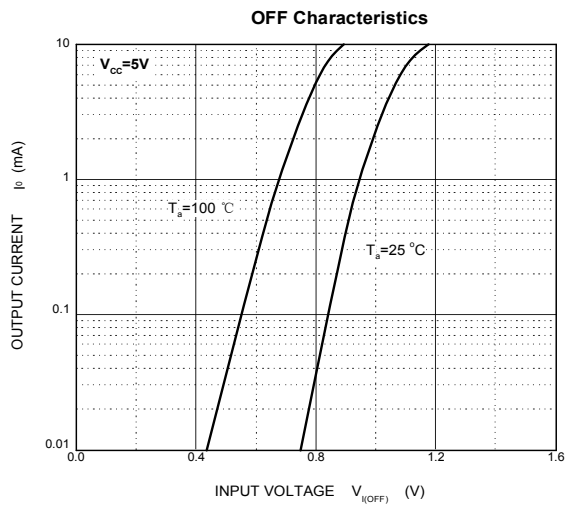
Symbol	Parameter	Limits(DTC124E□)						Unit
		M	E	UA	KA	CA	SA	
V_{CC}	Supply Voltage	50						V
V_{IN}	Input Voltage	-10～+40						V
I_O	Output Current	30						mA
I_{CM}	Peak Collector Current	100						mA
P_D	Power Dissipation	100	150	200	200	200	300	mW
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55～+150						℃

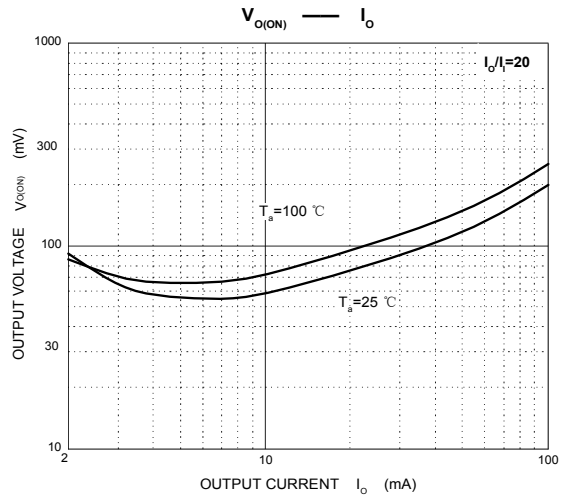
ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

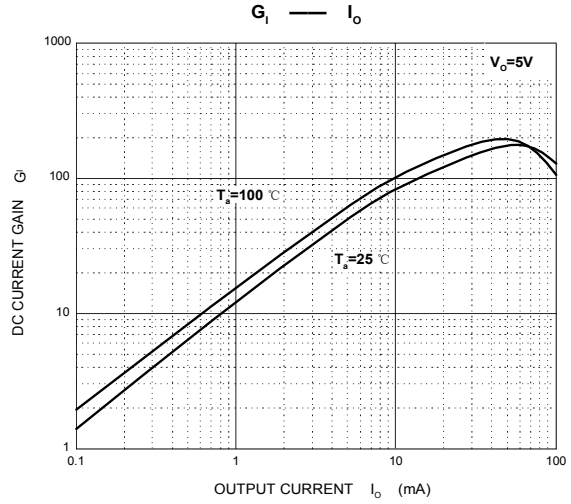
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	V_{CC}=5V,I_O=100μA	0.5			V
	$V_{I(on)}$	V_O=0.2V,I_O=5mA			3	V
Output voltage	$V_{O(on)}$	I_O/I_I=10mA/0.5mA		0.1	0.3	V
Input current	I_I	V_I=5V			0.36	mA
Output current	$I_{O(off)}$	V_{CC}=50V,V_I=0			0.5	μA
DC current gain	G_I	V_O=5V,I_O=5mA	56			
Input resistance	R_1		15.4	22	28.6	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

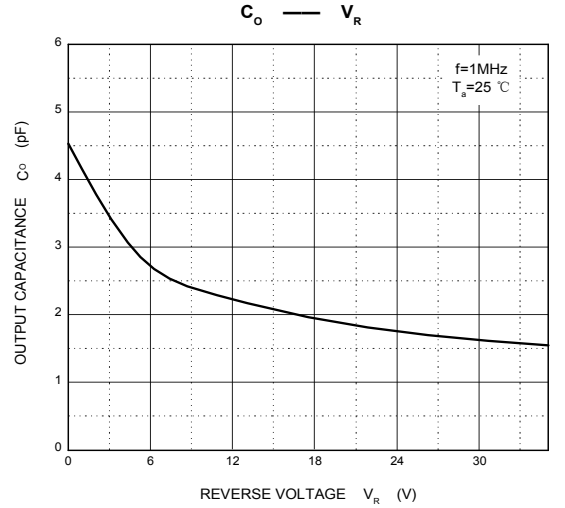
Typical Characteristics

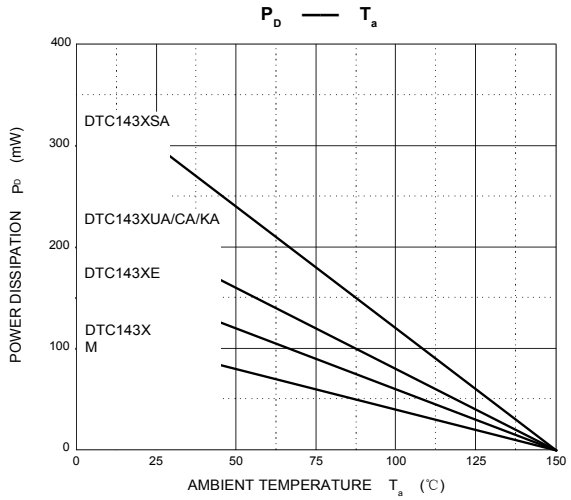






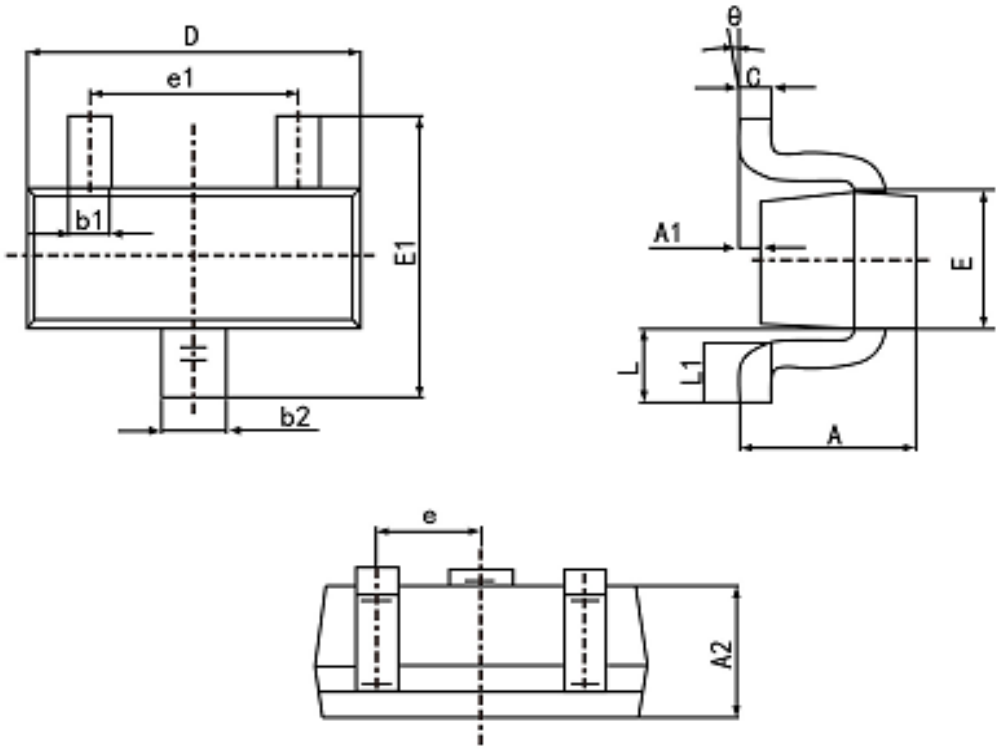






PACKAGE OUTLINE

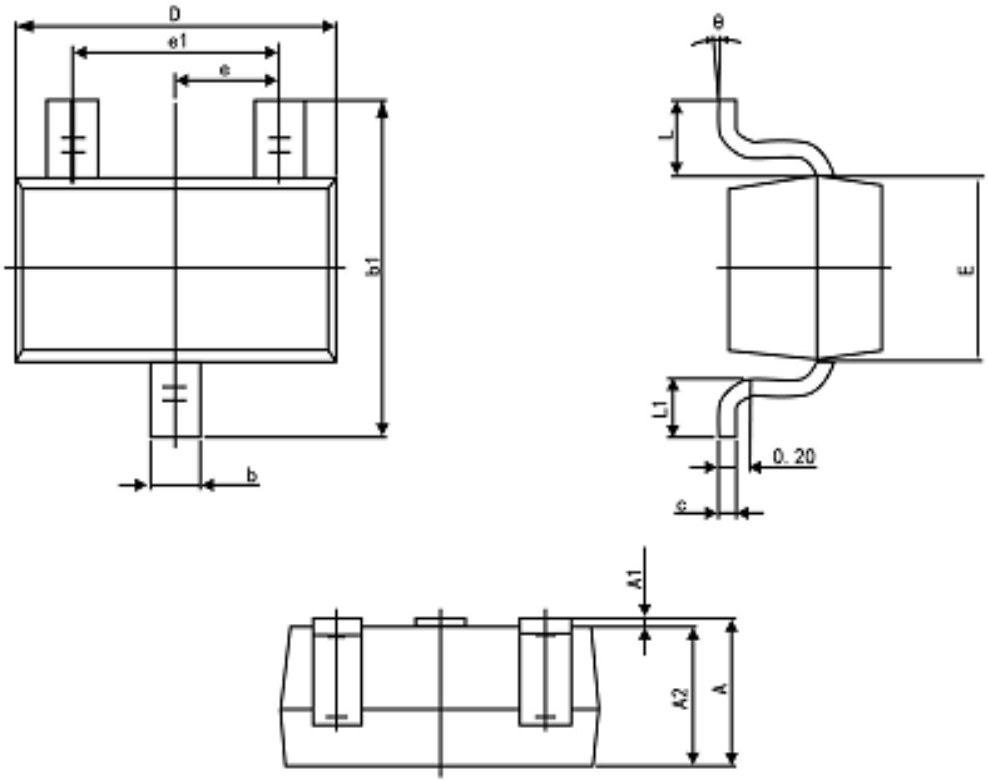
Plastic surface mounted package; 3 leads **SOT-523**



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°

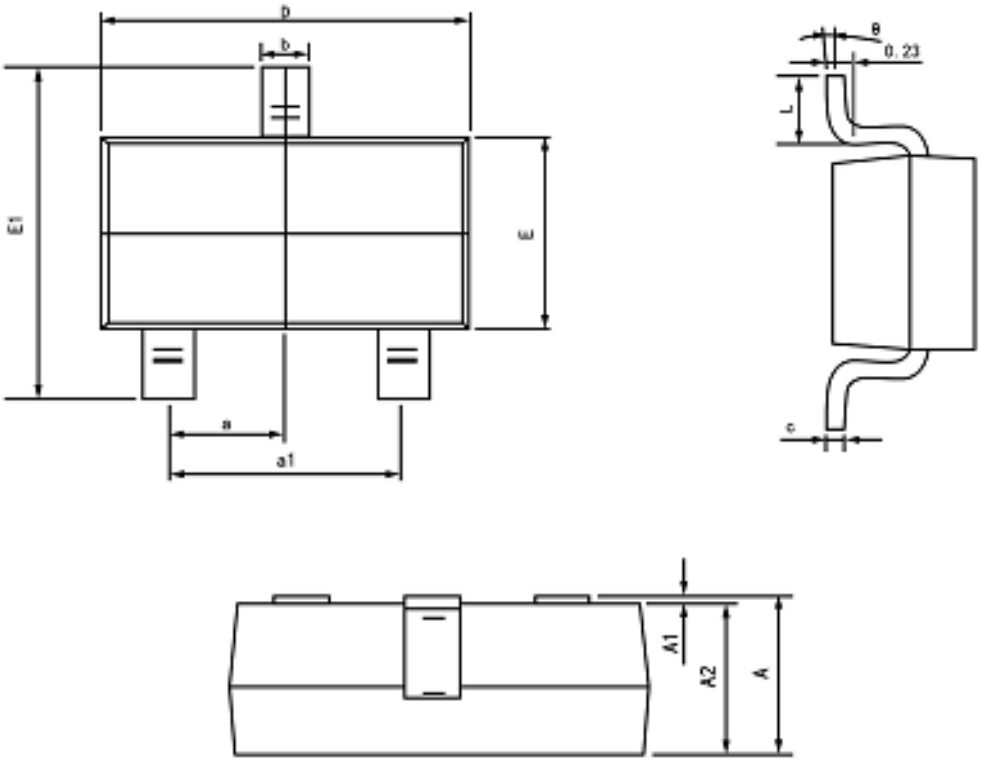
PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT-323**



Symbol	Dimension in Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.200	0.400
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP.	
e1	1.200	1.400
L	0.525 REF.	
L1	0.260	0.460
θ	0°	8°

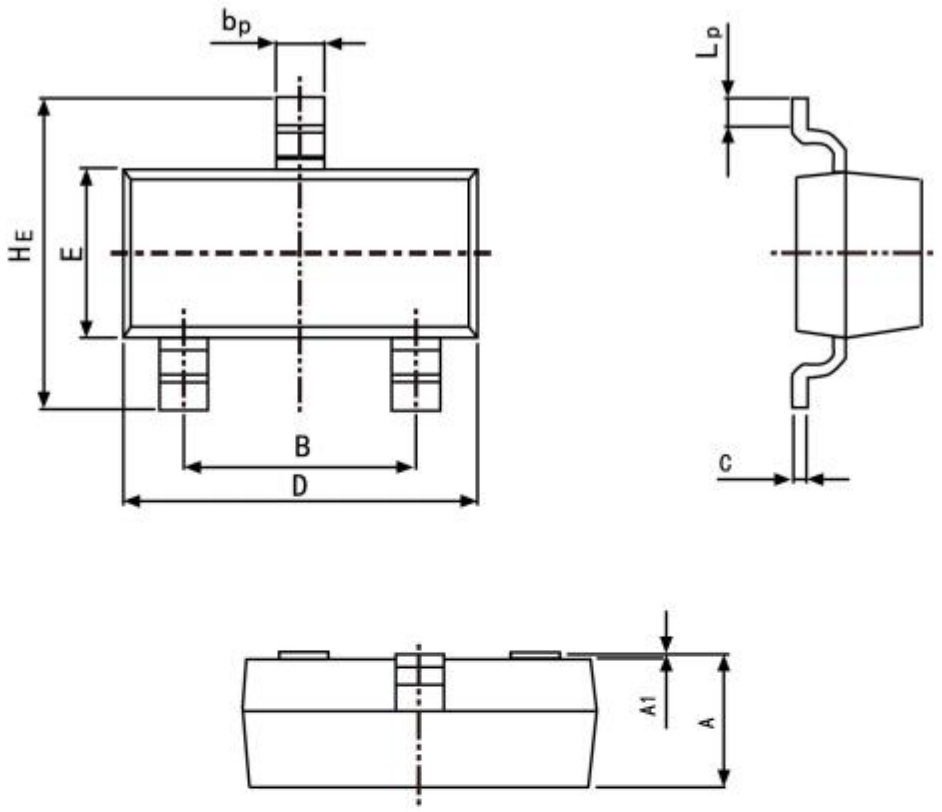
Package outline dimensions SOT23-3L



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°

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT-23**



Symbol	Dimension in Millimeters	
	Min	Max
A	0.95	1.40
B	1.78	2.04
bp	0.35	0.50
C	0.08	0.19
D	2.70	3.10
E	1.20	1.65
HE	2.20	3.00
A1	0.100	0.013
Lp	0.20	0.50