Digital Transistors (Built-in Resistors)

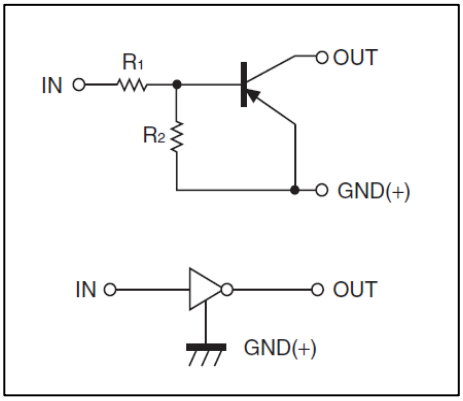
DIGITAL TRANSISTOR (PNP)

MARKING: 13

FEATURES

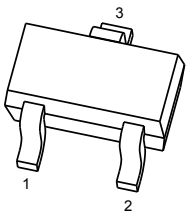
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input.They also have the advantage of almost completely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

• **Equivalent Circuit**



PIN CONNENCTIONS and MARKING

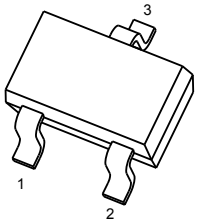
DTA143EE



SOT-523

1. IN
2. GND
3. OUT

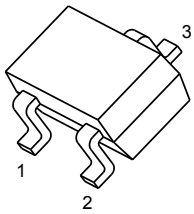
DTA143EUA



SOT-323

1. IN
2. GND
3. OUT

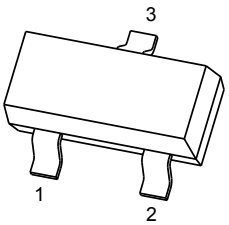
DTA143EKA



SOT-23-3L

1. IN
2. GND
3. OUT

DTA143ECA



SOT-23

1. IN
2. GND
3. OUT

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MAXIMUM RATINGS(Ta=25℃ unless otherwise noted)

Symbol	Parameter	Limits(DTA143E□)				Unit
		E	UA	KA	CA	
V_{CC}	Supply Voltage	-50				V
V_{IN}	Input Voltage	-30～+10				V
I_O	Output 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=-20 mA			-3	V
Output voltage	$V_{O(on)}$	I_O/I_I=-10mA/-0.5mA			-0.3	V
Input current	I_I	V_I=-5V			-1.8	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	30			
Input resistance	R_1		3.29	4.7	6.11	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

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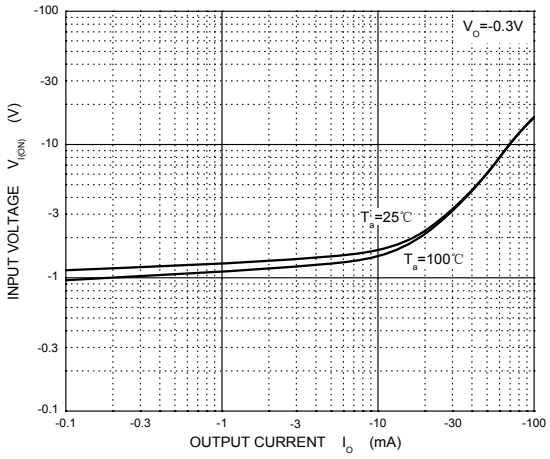
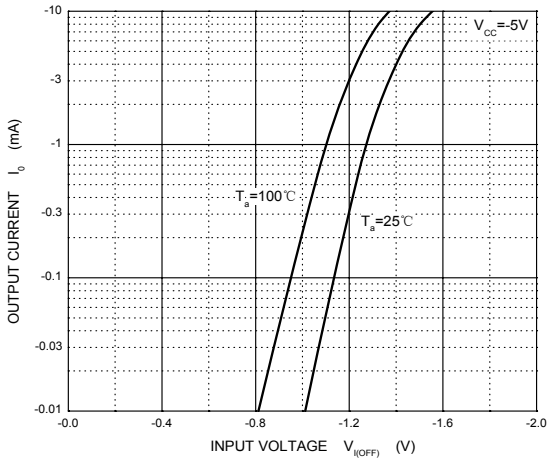
Typical Characteristics

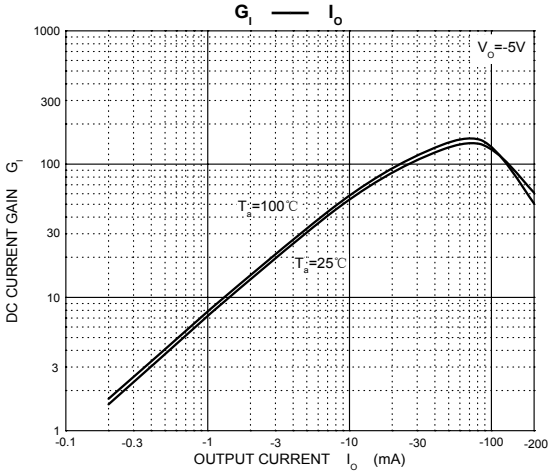
ON Characteristics



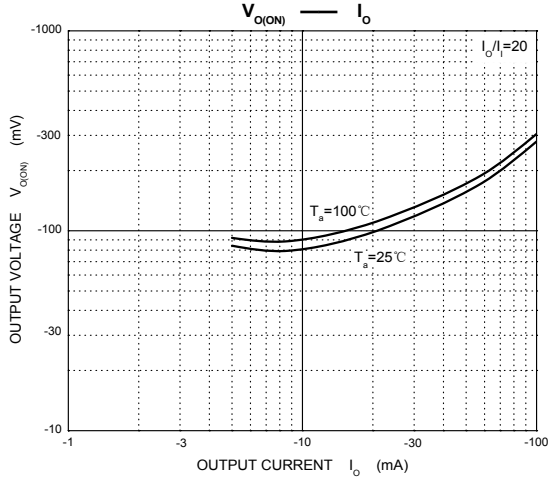
OFF Characteristics



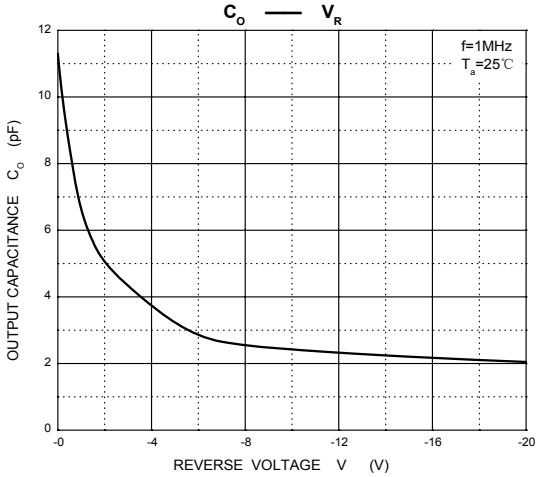
G_I —— I_O



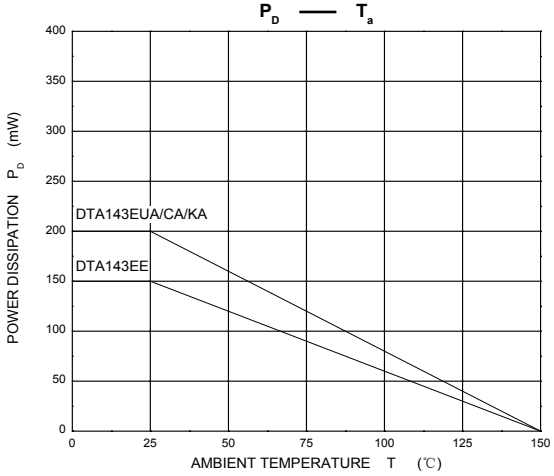
$V_{O(ON)}$ —— I_O



C_O —— V_R



P_D —— T_a



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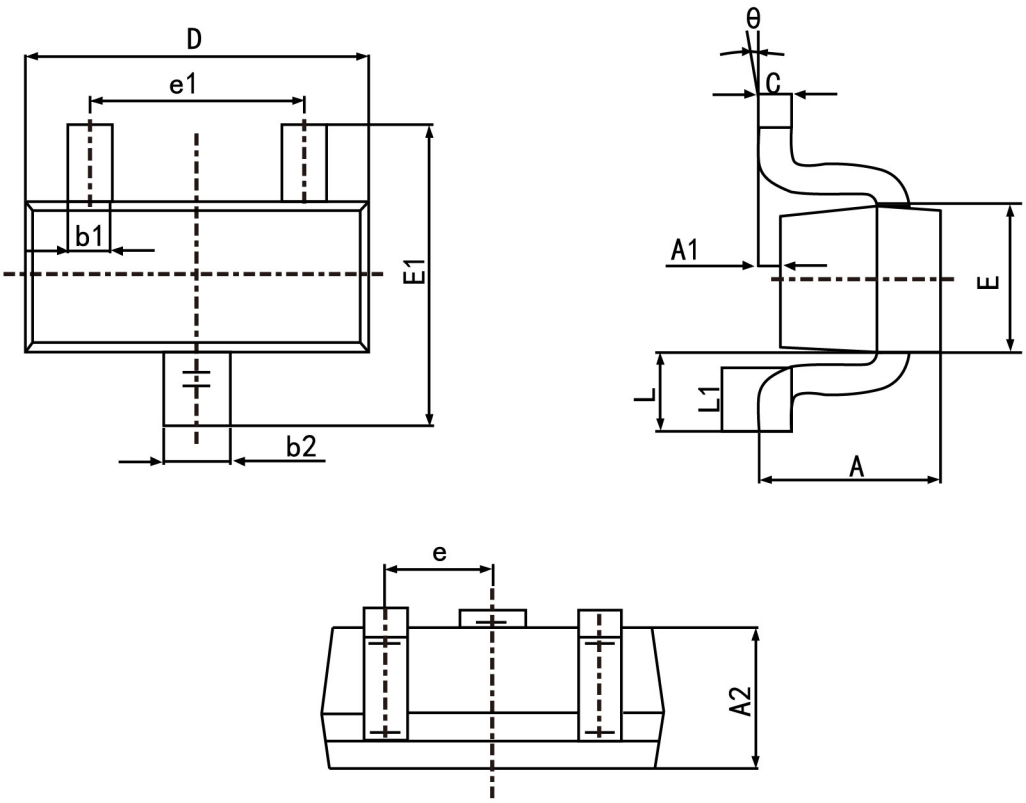
PACKAGE OUTLINE

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°

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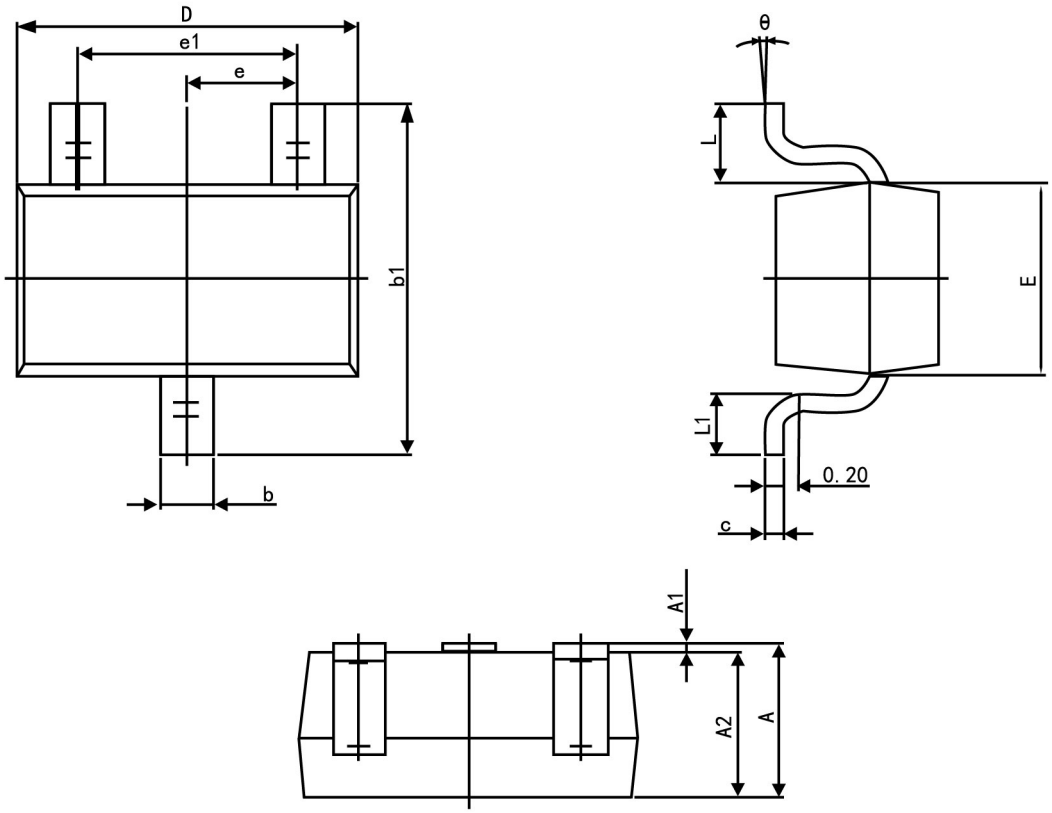
SOT-323 Package Outline Dimensions



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°

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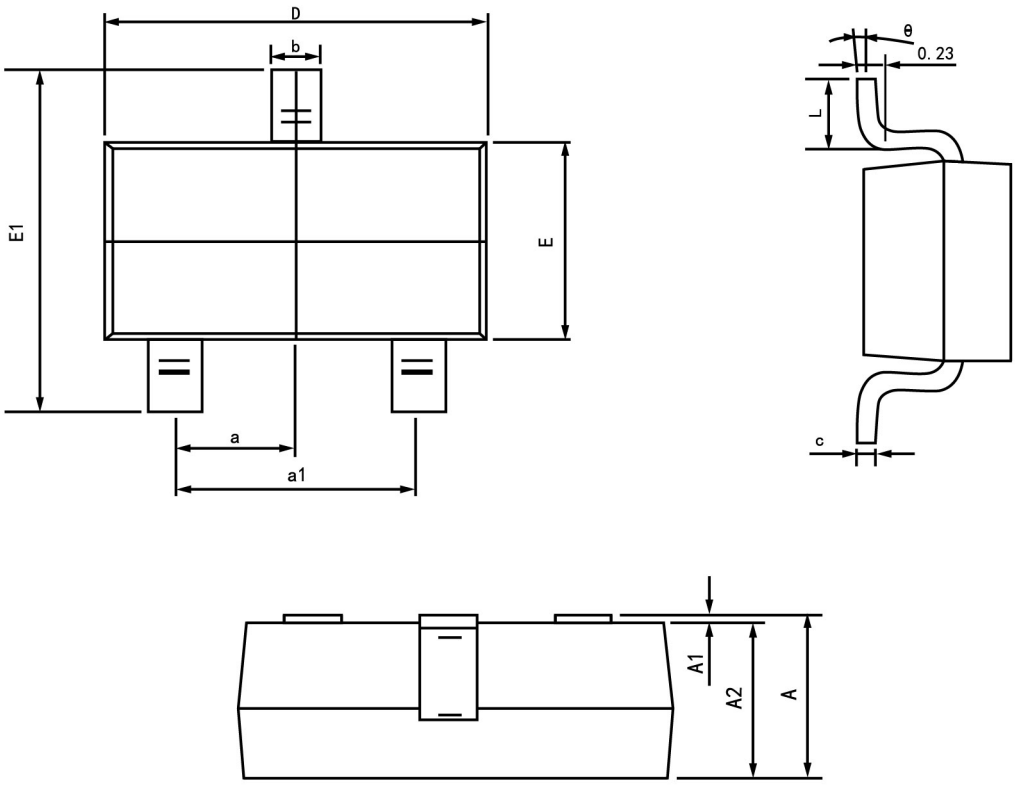
SOT-23-3L Package Outline Dimensions



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°

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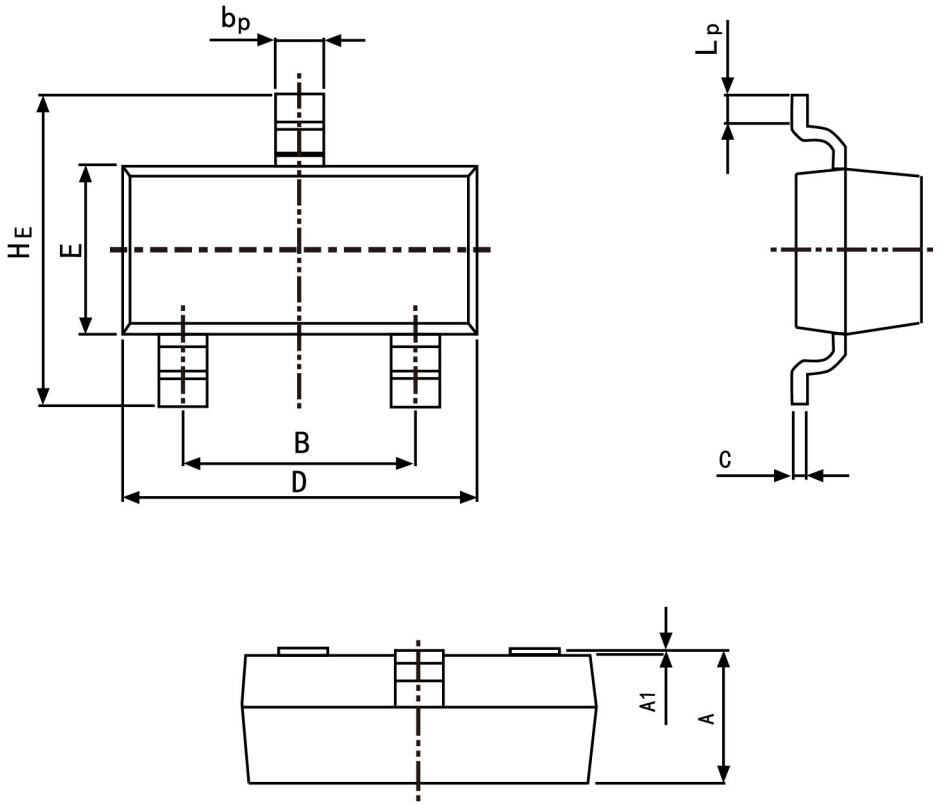
PACKAGE OUTLINE

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

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