

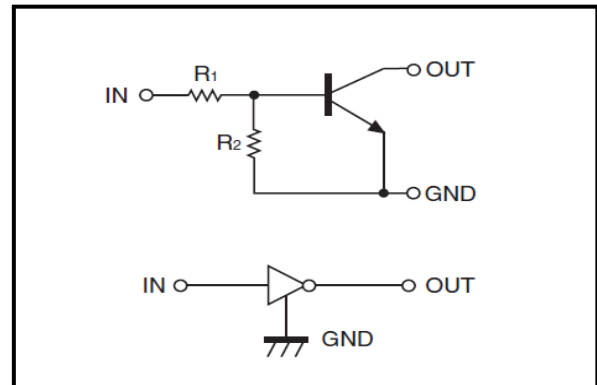
DTC143E Series

NPN Digital Transistor

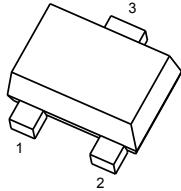
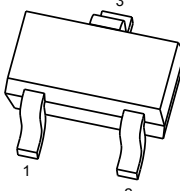
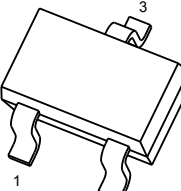
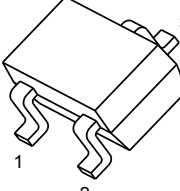
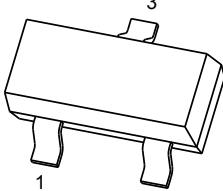
Features

- 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



PIN Configuration and Marking Code

DTC143EM 	SOT-723 1. IN 2. GND 3. OUT	DTC143EE 	SOT-523 1. IN 2. GND 3. OUT
DTC143EUA 	SOT-323 1. IN 2. GND 3. OUT	DTC143EKA 	SOT-23-3L 1. IN 2. GND 3. OUT
DTC143ECA 	SOT-23 1. IN 2. GND 3. OUT		



DTC143E Series

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Ordering information

Part Number	MARKING	Package	Packing Method	Pack Quantity
DTC143EM	23	SOT-723	Reel	8000pcs/Reel
DTC143EE	23	SOT-523	Reel	3000pcs/Reel
DTC143EUA	23	SOT-323	Reel	3000pcs/Reel
DTC143EKA	23	SOT-23-3L	Reel	3000pcs/Reel
DTC143ECA	23	SOT-23	Reel	3000pcs/Reel

Absolute Maximum Ratings (@T_A=25°C unless otherwise noted)

Symbol	Parameter	DTC143					Unit
		EM	EE	EUA	EKA	ECA	
V _{CC}	Supply Voltage	50					V
V _{IN}	Input Voltage	-10~+30					V
I _O	Output Current	100					mA
P _D	Power Dissipation	100	150	200	200	200	mW
T _J , T _{stg}	Operation Junction and Storage Temperature Range	-55~+150					°C

Electrical Characteristics @T_A=25°C unless otherwise noted

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 =20mA			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	20			
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



Typical Characteristics

Figure 1: ON Characteristics

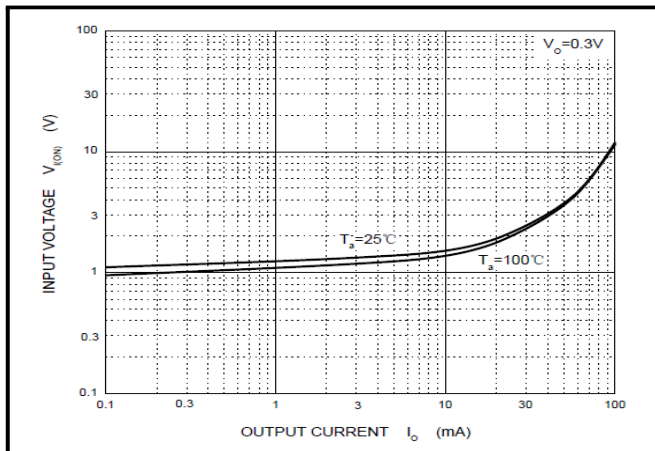


Figure 2: OFF Characteristics

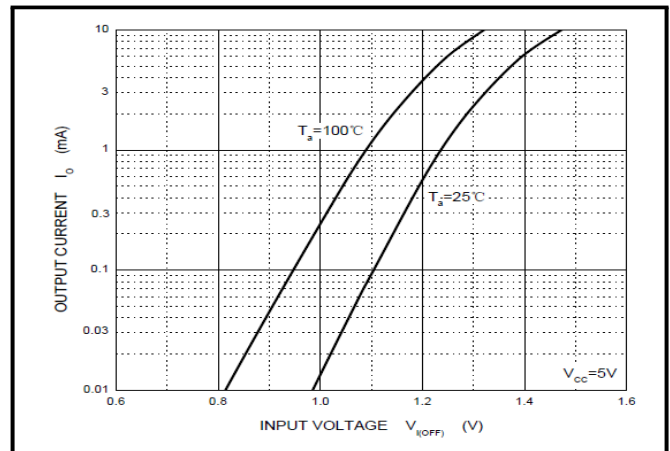


Figure 3: $V_{O(ON)}$ — I_O

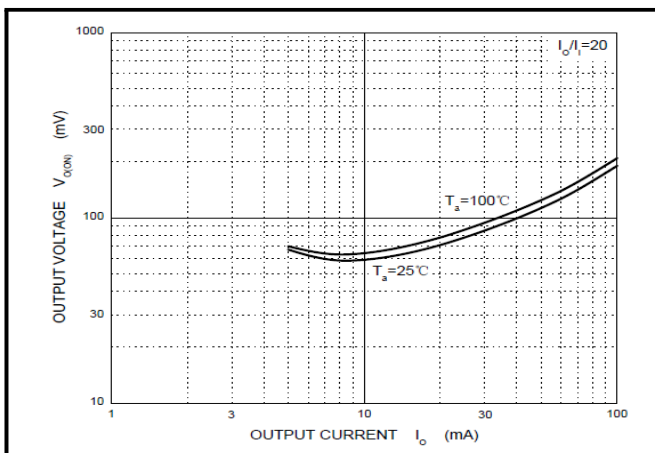


Figure 4: G_I — I_O

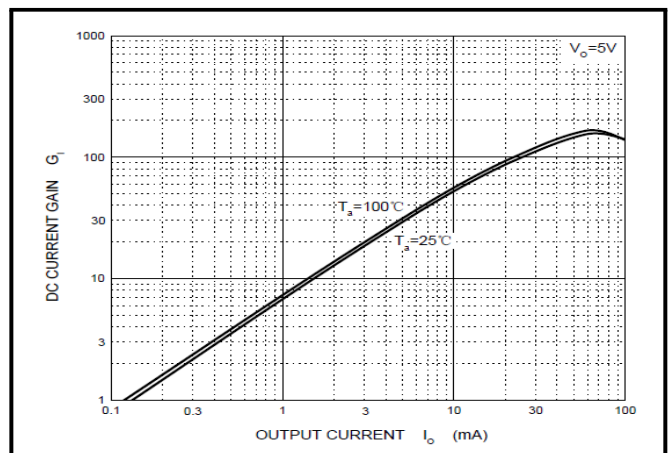


Figure 5: C_o — V_R

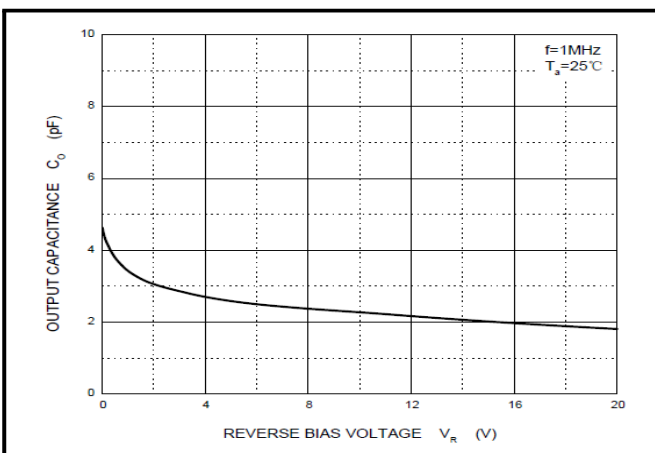
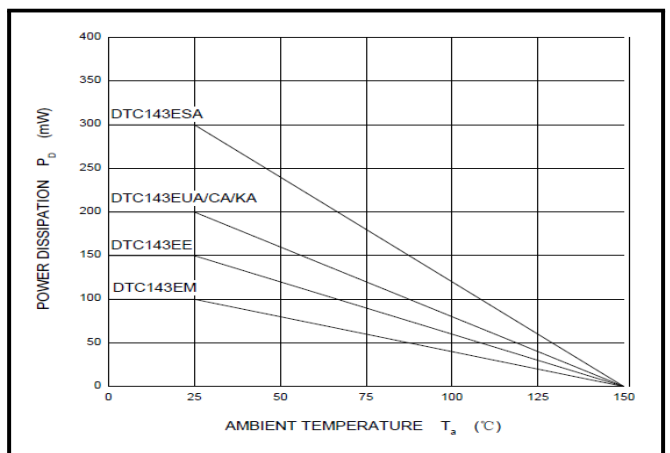


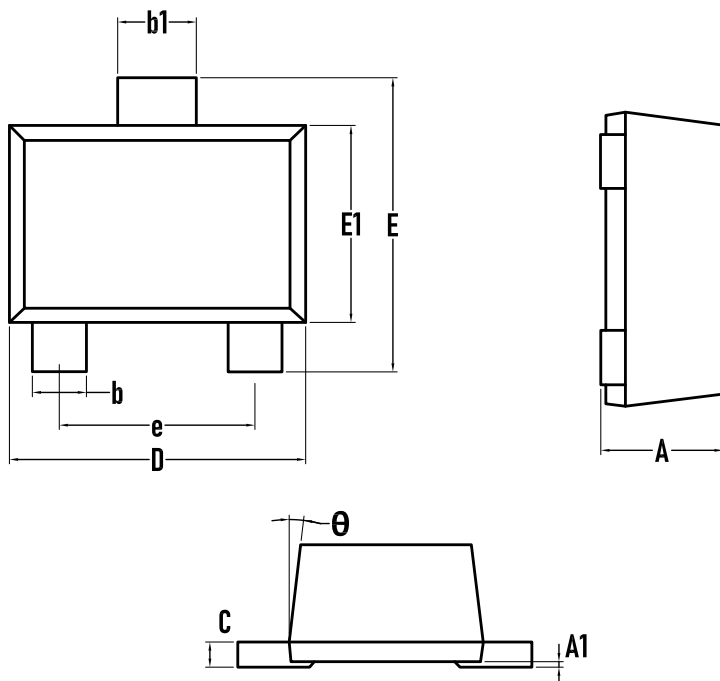
Figure 6: P_D — T_a



DTC143E Series

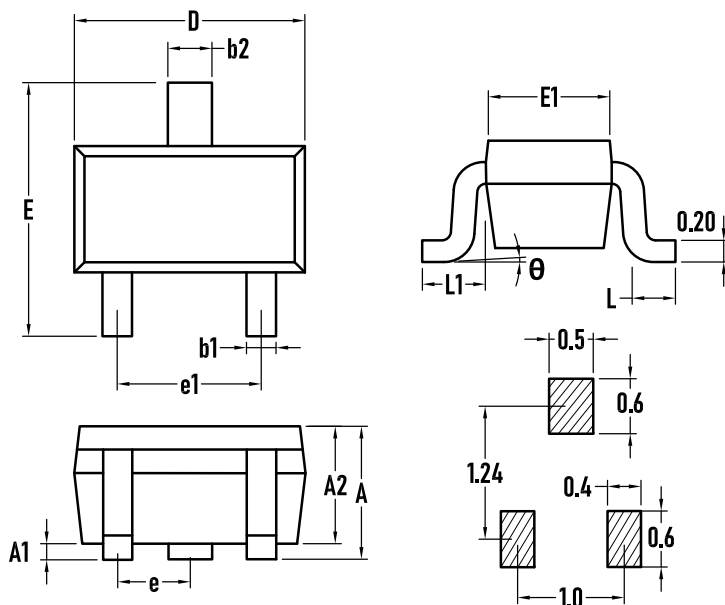
NPN Digital Transistor

Outline Drawing – SOT-723



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.350	–	0.490
A1	0.000	–	0.100
b	0.170	0.220	0.270
b1	0.225	–	0.370
C	0.080	0.110	0.150
D	1.150	1.200	1.250
E	1.150	1.200	1.250
E1	0.750	–	0.850
e	0.800TYP.		
θ	0°	–	7°

Outline Drawing – SOT-523



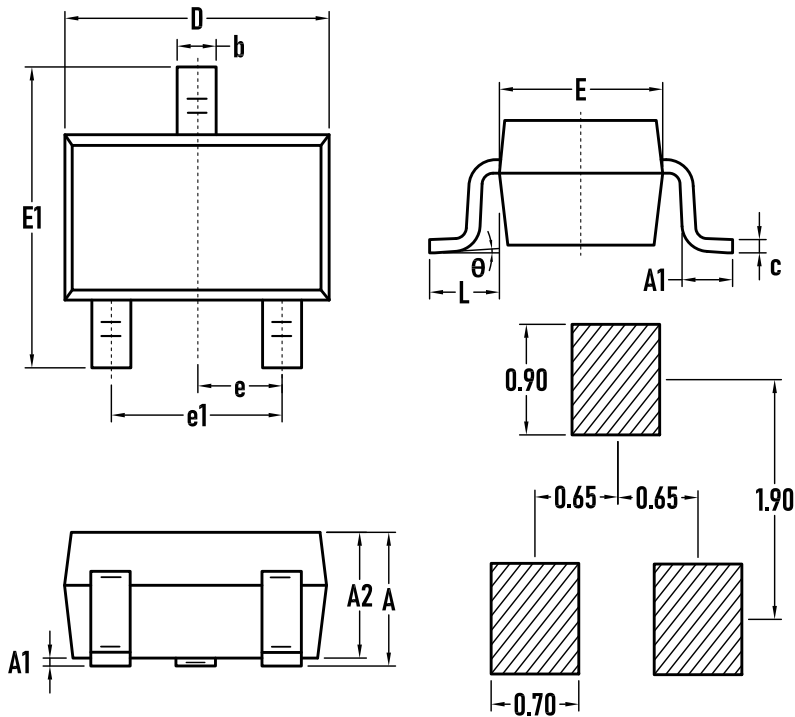
SYMBOL	MILLIMETER		
	MIN	TYP	MAX
A	0.70	0.80	0.90
A1	0.00	0.05	0.10
A2	0.70	0.75	0.80
b1	0.15	0.22	0.29
b2	0.25	0.32	0.39
D	1.50	1.60	1.70
E	1.45	1.60	1.75
E1	0.70	0.80	0.90
e	0.50(TPY.)		
e1	0.90	1.00	1.10
L	0.26	0.36	0.46
L1	0.40(REF)		
θ	0°	4°	8°



DTC143E Series

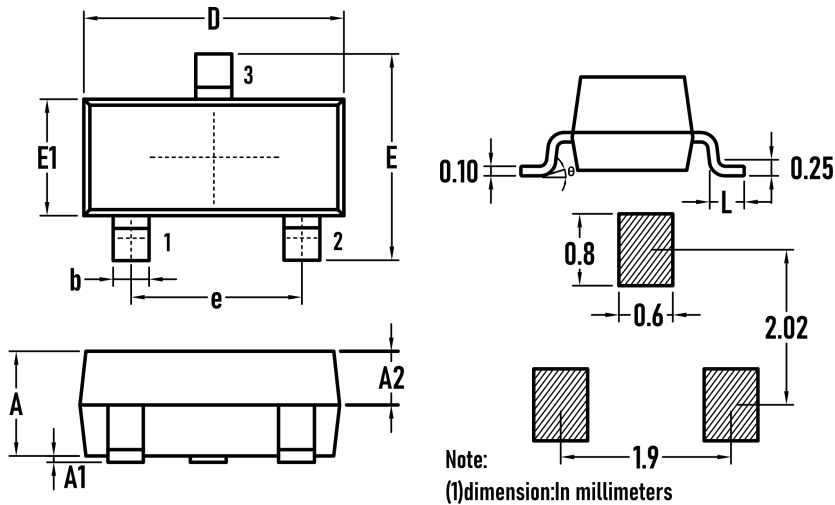
NPN Digital Transistor

Outline Drawing - SOT-323



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.20	0.30	0.40
c	0.08	0.12	0.15
D	2.00	2.10	2.20
E	2.15	2.30	2.45
E1	1.15	1.25	1.35
e	0.650Typ.		
e1	1.20	1.30	1.40
L	0.26	0.36	0.46
θ	0	4°	8°

Outline Drawing – SOT-23



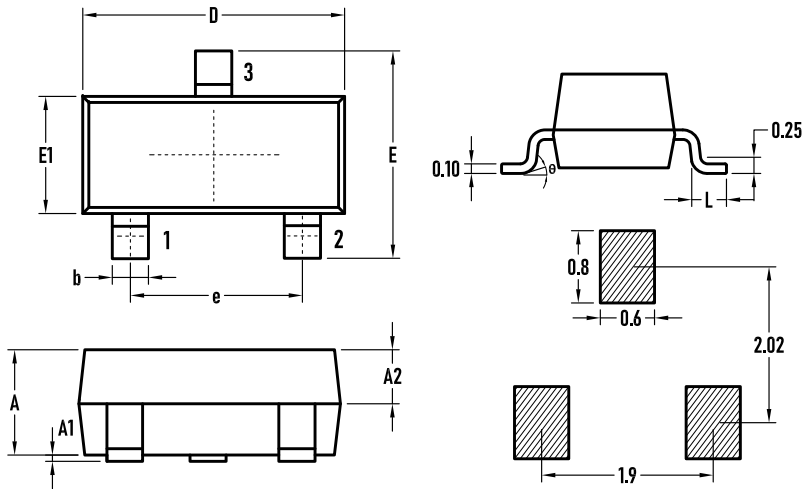
SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.95	1.00	—
A1	0.02	0.06	0.10
A2	—	0.60	—
D	2.85	2.90	2.95
b	0.37	0.40	0.43
E	2.35	2.40	2.45
E1	1.25	1.30	1.35
e	1.85	1.90	1.95
L	0.35	0.40	0.48
θ	0	—	6°



DTC143E Series

NPN Digital Transistor

Outline Drawing - SOT-23-3L



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	1.05	1.15	1.25
A1	0.02	0.06	0.10
A2	1.05	1.10	1.15
D	2.80	2.90	3.00
b	0.30	0.40	0.50
E	2.65	2.80	2.95
E1	1.50	1.60	1.70
e	1.80	1.90	2.00
L	0.30	0.45	0.60
θ	0	—	8°

