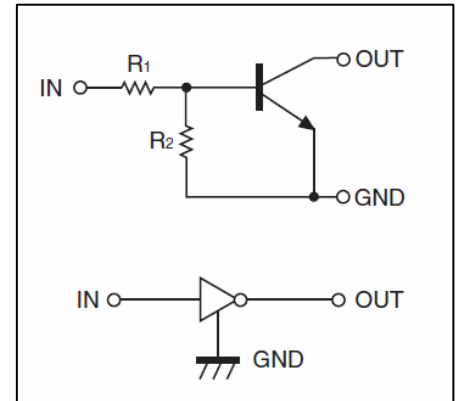


Digital Transistors (Built-in Resistors)

• 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

DTC123EE SOT-523 1. IN 2. GND 3. OUT	DTC123EUA SOT-323 1. IN 2. GND 3. OUT
DTC123EKA SOT-23-3L 1. IN 2. GND 3. OUT	DTC123ECA SOT-23 1. IN 2. GND 3. OUT

ORDERING INFORMATION

Part Number	MARKING	Package	Packing Method	Pack Quantity
DTC123EE	22	SOT-523	Reel	3000pcs/Reel
DTC123EUA	22	SOT-323	Reel	3000pcs/Reel
DTC123EKA	22	SOT-23-3L	Reel	3000pcs/Reel
DTC123ECA	22	SOT-23	Reel	3000pcs/Reel

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

Symbol	Parameter	Limits(DTC123E□)				Unit
		E	UA	CA	KA	
V _{CC}	Supply Voltage	50				V
V _{IN}	Input Voltage	-10~+12				V
I _O	Output Current	100				mA
P _D	Power Dissipation	150	200	200	200	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 =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			3.8	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 =20mA	20			
Input resistance	R ₁		1.54	2.2	2.86	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

Fig. 1 - DC Current Gain Characteristics

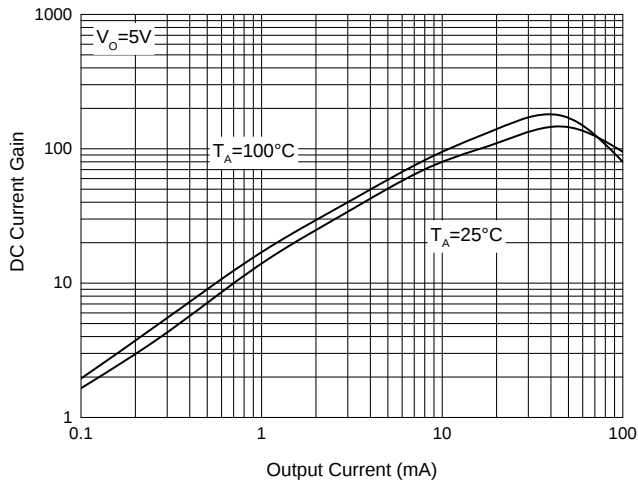


Fig. 2 - Input Voltage (on) Characteristics

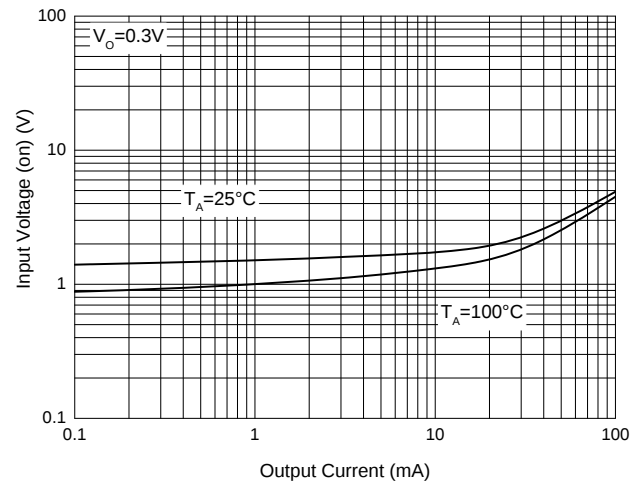


Fig. 3 - Input Voltage (off) Characteristics

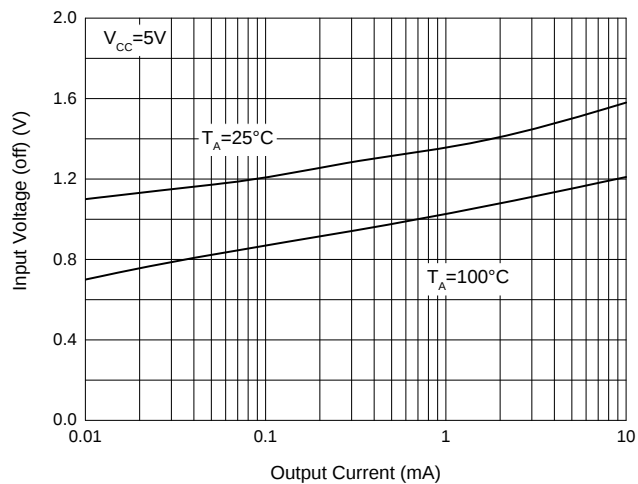


Fig. 4 - Output Voltage Characteristics

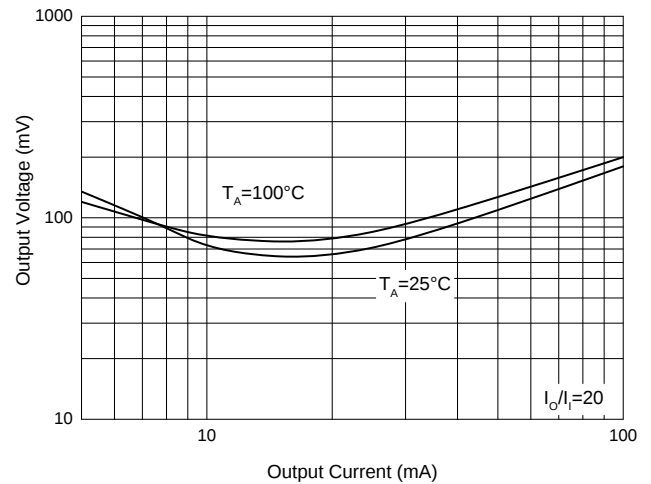
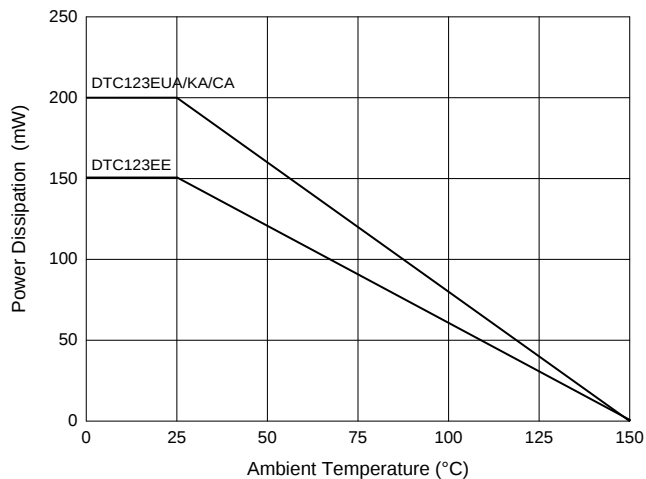


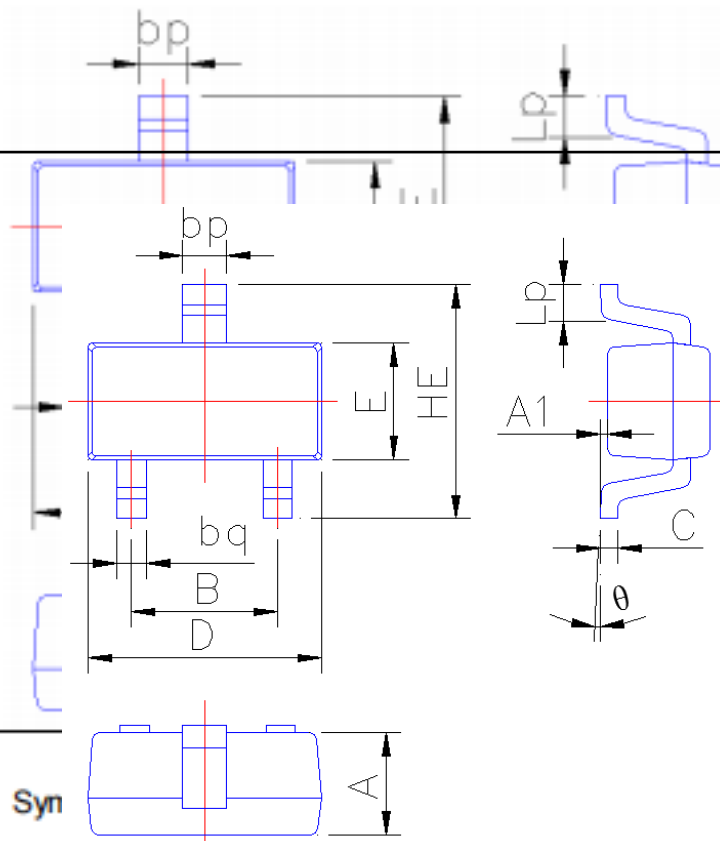
Fig. 5 - Power Derating Curve



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-523

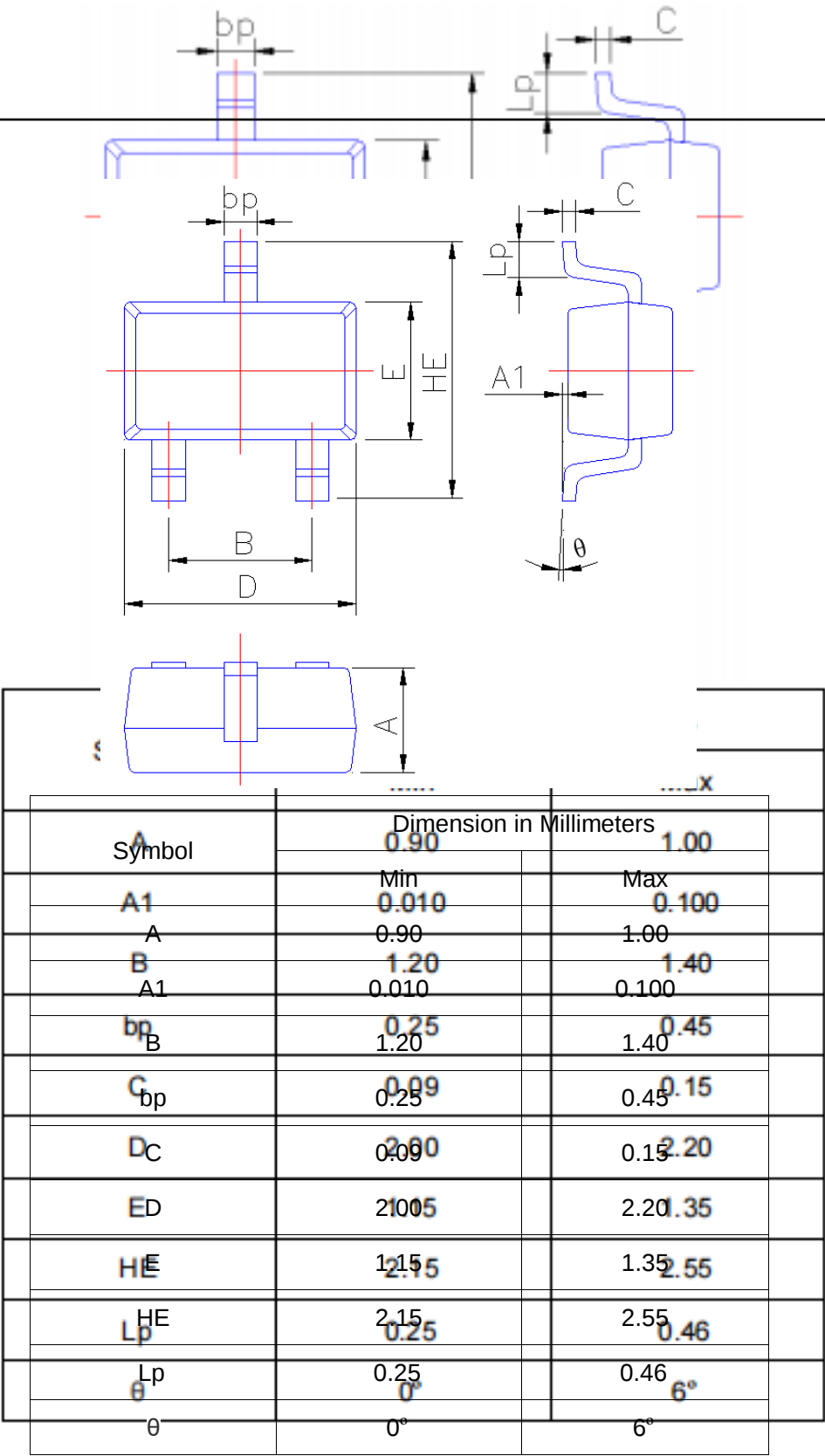


Dimension in Millimeters			
Symbol	Min	Max	
A	0.60	0.80	
A1	0.010	0.100	
A	0.60	0.80	
B	0.95	1.05	
A1	0.010	0.100	
bp	0.26	0.40	
B	0.95	1.05	
bq	0.16	0.30	
bp	0.26	0.40	
C	0.16	0.30	
bq	0.16	0.30	
D	1.09	1.50	
C	1.09	1.50	
E	1.50	1.75	
D	1.50	1.75	
HE	0.70	0.85	
E	1.45	1.75	
HE	1.45	1.75	
Lp	0.16	0.36	
HE	1.45	1.75	
Lp	0.16	0.36	
theta	0°	5°	
theta	0°	5°	

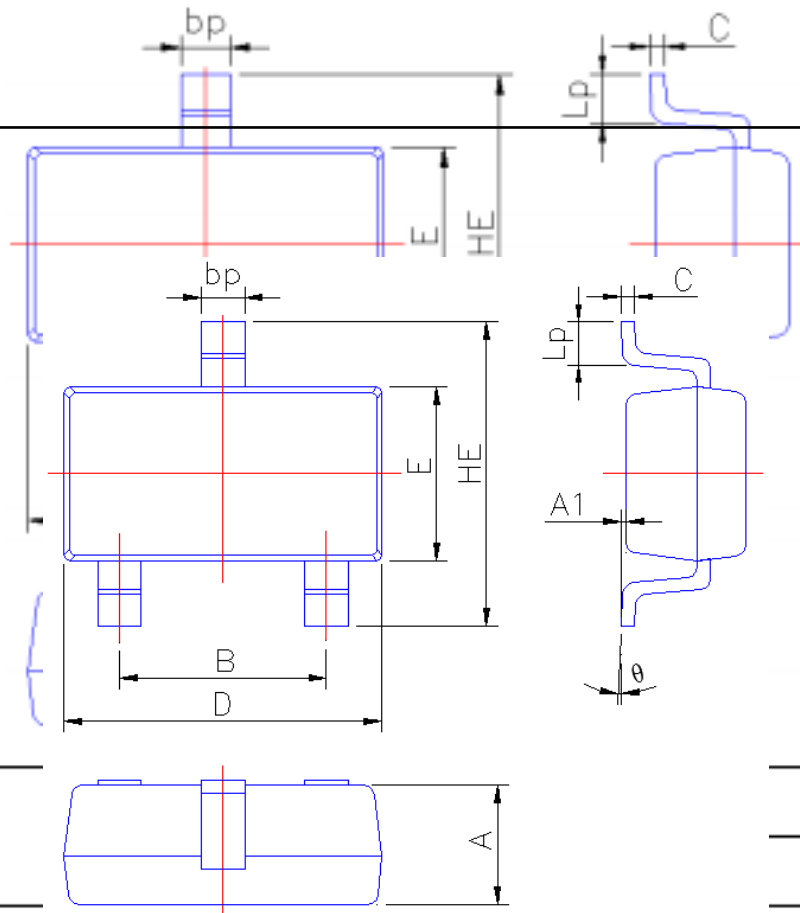
PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-323



Package outline dimensions SOT23-3L

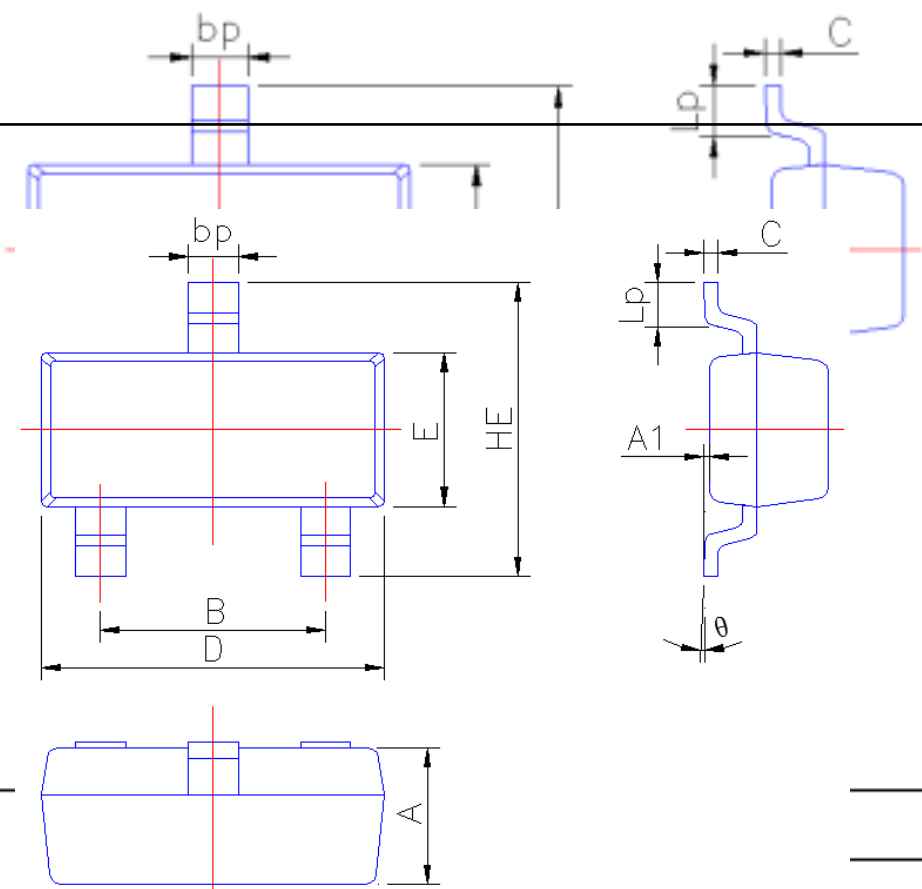


Symbol		Dimension in Millimeters	
Symbol		Min	Max
A		1.05	1.20
B		1.80	2.00
bp		0.35	0.50
C		0.09	0.15
D		2.80	3.00
E		0.09	0.15
HE		2.60	3.00
Lp		1.50	1.70
theta		2°	6°
		0.25	0.55
		0.25	0.55
		2°	6°

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Dimension in Millimeters		
Symbol	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
HE	1.20	1.40
Lp	0.20	0.50
theta	0°	5°