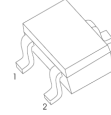


## Plastic-Encapsulate Transistors

### SOT-523

#### FEATURES

- Epitaxial Planar Die Construction
- Complementary NPN Type Available
- Also Available in Lead Free Version



1. BASE
2. EMITTER
3. COLLECTOR

#### MARKING:3N

#### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V <sub>CB0</sub>	Collector-Base Voltage	-40	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-40	V
V <sub>EBO</sub>	Emitter-Base Voltage	-5.0	V
I <sub>C</sub>	Collector Current -Continuous	-200	mA
P <sub>C</sub>	Collector Power Dissipation	150	mW
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	833	°C/W
T <sub>J</sub>	Operating Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C

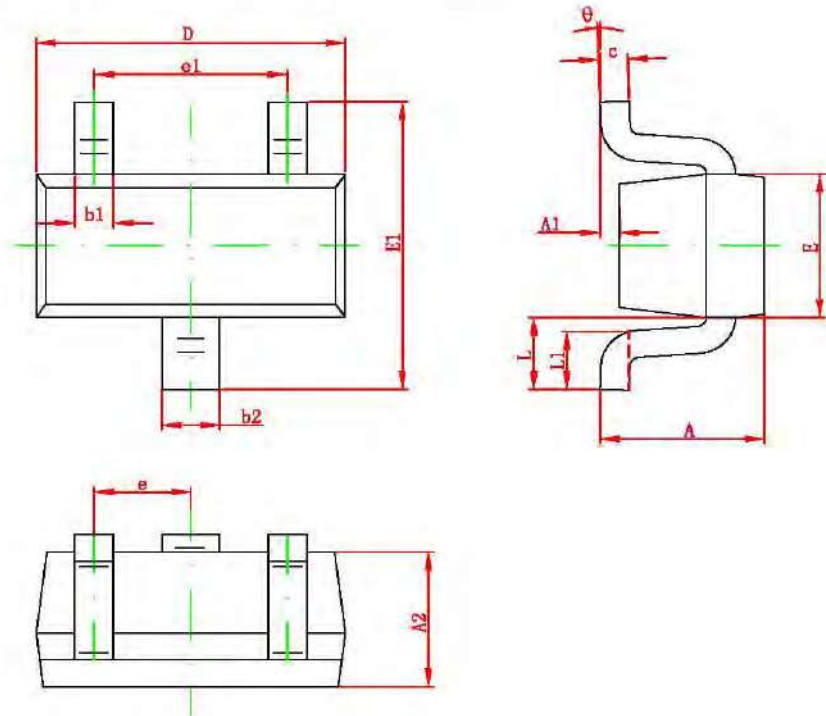
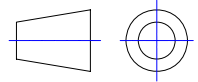
#### ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-10μA, I <sub>E</sub> =0	-40			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-1mA, I <sub>B</sub> =0	-40			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =-30V, I <sub>E</sub> =0			-0.1	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =-5V, I <sub>C</sub> =0			-0.1	μA
Collector cut-off current	I <sub>CEX</sub>	V <sub>CB</sub> =-30V, V <sub>BE(off)</sub> =-3V			-0.05	μA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-0.1mA	60			
	h <sub>FE(2)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-1mA	80			
	h <sub>FE(3)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-10mA	100		300	
	h <sub>FE(4)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-50mA	60			
	h <sub>FE(5)</sub>	V <sub>CE</sub> =-1V, I <sub>C</sub> =-100mA	30			
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA			-0.25	V
	V <sub>CE(sat)2</sub>	I <sub>C</sub> =-50mA, I <sub>B</sub> =-5mA			-0.4	V
Base-emitter saturation voltage	V <sub>BE(sat)1</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =-1mA	-0.65		-0.85	V
	V <sub>BE(sat)2</sub>	I <sub>C</sub> =-50mA, I <sub>B</sub> =-5mA			-0.95	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =-20V, I <sub>C</sub> =-10mA, f=100MHz	250			MHz
Collector output capacitance	C <sub>obo</sub>	V <sub>CB</sub> =-5V, I <sub>E</sub> =0, f=1MHz			4.5	pF
Input capacitance	C <sub>iob</sub>	V <sub>EB</sub> =-0.5V, I <sub>E</sub> =0, f=1MHz			10	pF
Noise figure	NF	V <sub>CE</sub> =-5V, I <sub>C</sub> =0.1mA,			4	dB
Delay time	t <sub>d</sub>	f <sub>T</sub> Ω V <sub>CC</sub> =-3V, V <sub>BE(OFF)</sub> =-0.5V			35	ns
Rise time	t <sub>r</sub>	I <sub>C</sub> =-10mA, I <sub>B1</sub> =-1mA			35	ns
Storage time	t <sub>s</sub>	V <sub>CC</sub> =-3V, I <sub>C</sub> =-10mA			225	ns
Fall time	t <sub>f</sub>	I <sub>B1</sub> = I <sub>B2</sub> =-1mA			75	ns

## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-523



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
theta	0°	8°	0°	8°