

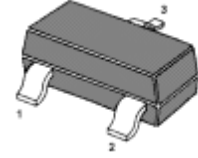
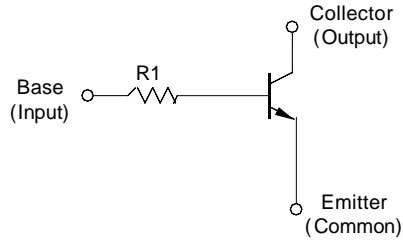


### NPN Silicon Epitaxial Planar Transistor

for switching and interface circuit  
and drive circuit applications

#### Features

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process



1.Base 2.Emitter 3.Collector  
SOT-23 Plastic Package

#### Resistor Values

Type	R1 (KΩ)			Marking Code
	Min.	Typ.	Max.	
MMBTRC110SS	3.29	4.7	6.11	XD
MMBTRC111SS	7	10	13	XE
MMBTRC112SS	70	100	130	XF
MMBTRC113SS	15.4	22	28.6	XH
MMBTRC114SS	32.9	47	61.1	XJ

#### Absolute Maximum Ratings (T<sub>a</sub> = 25 °C)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V <sub>CBO</sub>	50	V
Collector Emitter Voltage	V <sub>CEO</sub>	50	V
Emitter Base Voltage	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C</sub>	100	mA
Power Dissipation	P <sub>tot</sub>	200	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>s</sub>	- 55 to + 150	°C

#### Characteristics at T<sub>a</sub> = 25 °C

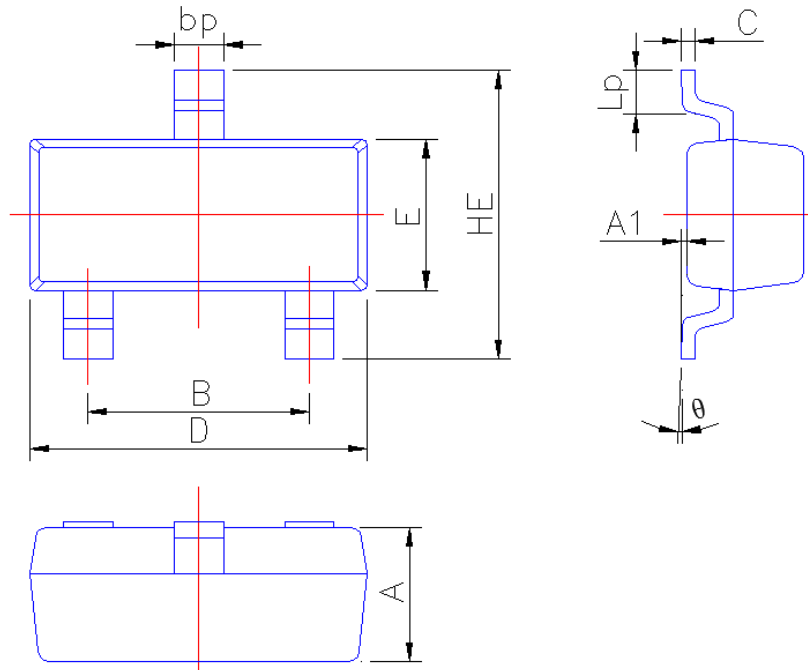
Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V <sub>CE</sub> = 5 V, I <sub>C</sub> = 1 mA	h <sub>FE</sub>	120	-	-	-
Collector Cutoff Current at V <sub>CB</sub> = 50 V	I <sub>CBO</sub>	-	-	100	nA
Emitter Cutoff Current at V <sub>EB</sub> = 5 V	I <sub>EBO</sub>	-	-	100	nA
Collector Emitter Saturation Voltage at I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0.5 mA	V <sub>CE(sat)</sub>	-	-	0.3	V
Transition Frequency at V <sub>CE</sub> = 10 V, I <sub>C</sub> = 5 mA	f <sub>T</sub>	-	250	-	MHz



### PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Symbol	Dimension in Millimeters	
	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
E	1.20	1.40
HE	2.20	2.80
Lp	0.20	0.50
theta	0°	5°