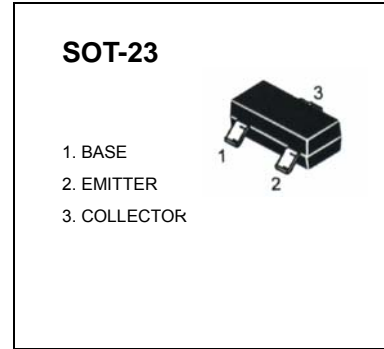


## SOT-23 Plastic-Encapsulate Transistors

### S9013 TRANSISTOR (NPN)

**FEATURES**

- Complementary to S9012
- Excellent  $h_{FE}$  linearity

**MARKING: J3**
**MAXIMUM RATINGS** ( $T_A=25^\circ\text{C}$  unless otherwise noted)


Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	40	V
$V_{CEO}$	Collector-Emitter Voltage	25	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current -Continuous	500	mA
$P_C$	Collector Power Dissipation	300	mW
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_{amb}=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
<b>Collector-base breakdown voltage</b>	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	40			V
<b>Collector-emitter breakdown voltage</b>	$V_{(BR)CEO}$	$I_C = 1\text{mA}, I_B = 0$	25			V
<b>Emitter-base breakdown voltage</b>	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	5			V
<b>Collector cut-off current</b>	$I_{CBO}$	$V_{CB} = 40\text{V}, I_E = 0$			0.1	$\mu\text{A}$
<b>Collector cut-off current</b>	$I_{CEO}$	$V_{CE} = 20\text{V}, I_B = 0$			1.0	$\mu\text{A}$
<b>Emitter cut-off current</b>	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$			0.1	$\mu\text{A}$
<b>DC current gain</b>	$h_{FE(1)}$	$V_{CE} = 1\text{V}, I_C = 50\text{mA}$	200		350	
	$h_{FE(2)}$	$V_{CE} = 1\text{V}, I_C = 500\text{mA}$	40			
<b>Collector-emitter saturation voltage</b>	$V_{CE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$			0.6	V
<b>Base-emitter saturation voltage</b>	$V_{BE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$			1.2	V
<b>Transition frequency</b>	$f_T$	$V_{CE} = 6\text{V}, I_C = 20\text{mA}$ $f = 30\text{MHz}$	150			MHz

**CLASSIFICATION OF  $h_{FE(1)}$** 

<b>Rank</b>	H		
<b>Range</b>	200-350		