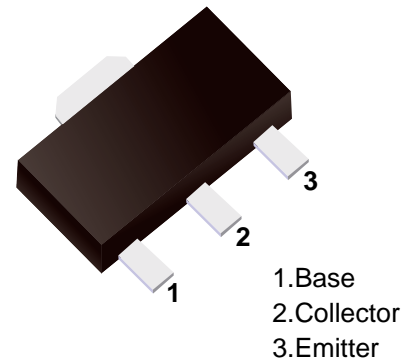


■ PNP Transistors



■ Features

- High voltage
- Large continuous collector current capability

■ Simplified outline(SOT-89)

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	-160	V
Collector - Emitter Voltage	$V_{CEO}$	-160	
Emitter - Base Voltage	$V_{EBO}$	-6	
Collector Current - Continuous	$I_C$	-1	A
Collector Power Dissipation	$P_C$	0.5	W
T hermal Resistance from Junction to Ambient	$R_{\theta JA}$	250	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature range	$T_{stg}$	-55 to 150	

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$

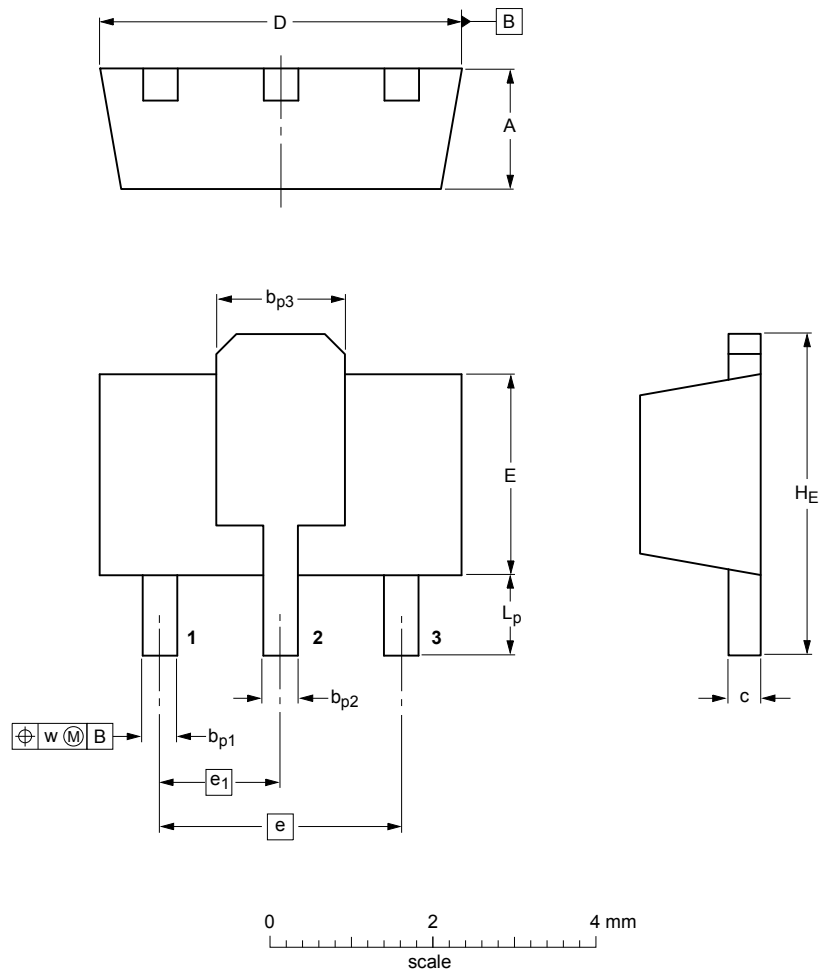
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_C = -100\ \mu\text{A}, I_E = 0$	-160			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_C = -1\ \text{mA}, I_B = 0$	-160			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = -100\ \mu\text{A}, I_C = 0$	-6			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = -150\ \text{V}, I_E = 0$			-1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -6\ \text{V}, I_C = 0$			-1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -500\ \text{mA}, I_B = -50\ \text{mA}$			-1.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = -500\ \text{mA}, I_B = -50\ \text{mA}$			-1.2	
Base - emitter voltage	$V_{BE}$	$V_{CE} = -5\ \text{V}, I_C = -5\ \text{mA}$			-0.75	
DC current gain	$h_{FE}$	$V_{CE} = -5\ \text{V}, I_C = -200\ \text{mA}$	60		320	
Transition frequency	$f_T$	$V_{CE} = -5\ \text{V}, I_C = -200\ \text{mA}$	15			MHz

■ Classification of  $h_{FE}$

Type	2SA1013-R	2SA1013-O	2SA1013-Y
Range	60-120	100-200	160-320
Marking	1013R	1013O	1013Y

**Package Outline**

**SOT-89**



**DIMENSIONS** (mm are the original dimensions)

UNIT	A	b <sub>p1</sub>	b <sub>p2</sub>	b <sub>p3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

**Summary of Packing Options**

Package	Package Description	Packing Quantity	Industry Standard
SOT-89	Tape/Reel, 7" reel	1000	EIA-481-1