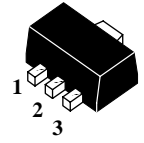


### NPN EPITAXIAL PLANAR TRANSISTOR

 Lead(Pb)-Free

1. BASE  
2. COLLECTOR  
3. EMITTER



**SOT-89**

#### ABSOLUTE MAXIMUM RATINGS( $T_a = 25^\circ\text{C}$ Unless Otherwise Noted)

Rating	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	-50	V
Collector-Emitter Voltage	$V_{CEO}$	-50	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current-Continuous	$I_C$	-2.0	A
Collector Power Dissipation	$P_C$	0.5	W
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to 150	$^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage $I_C = -1\text{mA}, I_E = 0$	$BV_{CBO}$	-50	-	-	V
Collector-Emitter Breakdown Voltage $I_C = -10\text{mA}, I_B = 0$	$BV_{CEO}$	-50	-	-	V
Emitter-Base Breakdown Voltage $I_C = 0, I_E = -1\text{mA}$	$BV_{EBO}$	-5	-	-	V
Collector Cut-Off Current $I_E = 0, V_{CB} = -50\text{V}$	$I_{CBO}$	-	-	-0.1	$\mu\text{A}$
Emitter-Cut-Off Current $I_C = 0, V_{EB} = -5\text{V}$	$I_{EBO}$	-	-	-0.1	$\mu\text{A}$

## ON CHARACTERISTICS

DC Current Gain $I_C = -0.5\text{A}, V_{CE} = -2\text{V}$ $I_C = -1.5\text{A}, V_{CE} = -2\text{V}$	$h_{FE(1)}$ $h_{FE(2)}$	70 40	- -	240 -	-
Collector-Emitter Saturation Voltage $I_C = -1\text{A}, I_B = -50\text{mA}$	$V_{CE(sat)}$	-	-	-0.5	V
Base-Emitter Saturation Voltage $I_C = -1\text{A}, I_B = -50\text{mA}$	$V_{BE(sat)}$	-	-	-1.2	V

## DYNAMIC CHARACTERISTICS

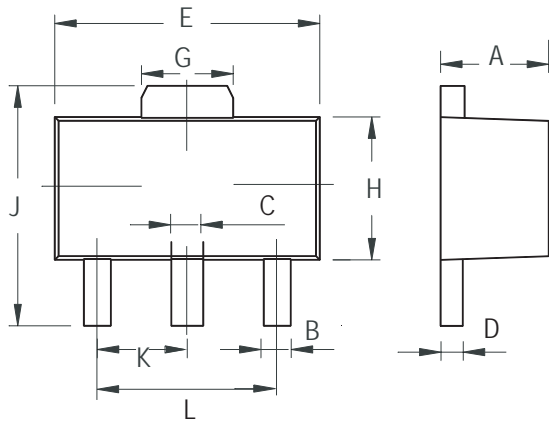
Transition Frequency $I_C = -500\text{mA}, V_{CE} = -2\text{V}$	$f_T$	-	120	-	MHz
Collector Output Capacitance $I_E = 0, V_{CB} = -10\text{V}, f = 1\text{MHz}$	$C_{ob}$	-	40	-	pF
Switching Time $V_{CC} = 30\text{V}, I_C = 1\text{A}, I_{B1} = -I_{B2} = -0.05\text{A}$	Turn on Time $t_{on}$	-	0.1	-	$\mu\text{s}$
Switching Time $V_{CC} = 30\text{V}, I_C = 1\text{A}, I_{B1} = -I_{B2} = -0.05\text{A}$	Storage Time $t_{stg}$	-	1.0	-	$\mu\text{s}$
Switching Time $V_{CC} = 30\text{V}, I_C = 1\text{A}, I_{B1} = -I_{B2} = -0.05\text{A}$	Fall Time $t_f$	-	0.1	-	$\mu\text{s}$

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

Rank	O	Y
Range	70-140	120-240
Marking	WO	WY

**SOT-89 Outline Dimensions**

unit:mm



<b>SOT-89</b>		
<b>Dim</b>	<b>Min</b>	<b>Max</b>
<b>A</b>	1.400	1.600
<b>B</b>	0.320	0.520
<b>C</b>	0.360	0.560
<b>D</b>	0.350	0.440
<b>E</b>	4.400	4.600
<b>G</b>	1.400	1.800
<b>H</b>	2.300	2.600
<b>J</b>	3.940	4.250
<b>K</b>	1.500TYP	
<b>L</b>	2.900	3.100