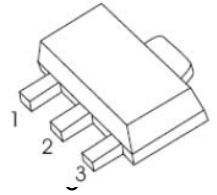


## Features

- Low  $V_{CE(SAT)}$
- Plastic-Encapsulate Transistors

1. BASE
2. COLLECTOR
3. EMITTER



SOT-89-3L

## Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-40	V
Collector-Emitter Voltage	$V_{CEO}$	-32	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current -Continuous	$I_C$	-2	A
Collector Power Dissipation	$P_C$	0.5	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	250	$^{\circ}\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^{\circ}\text{C}$

## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

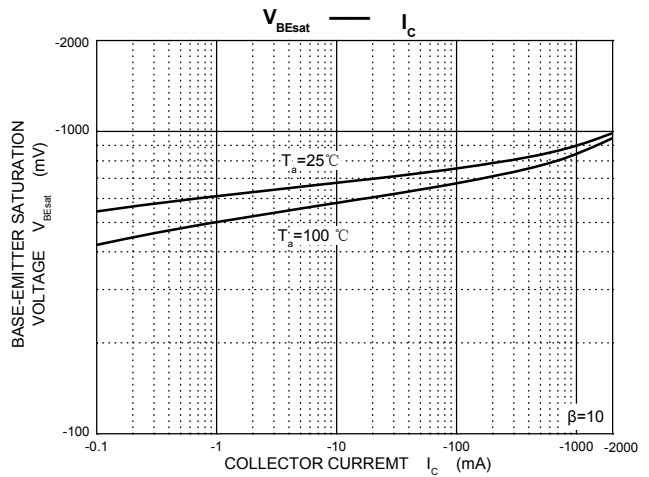
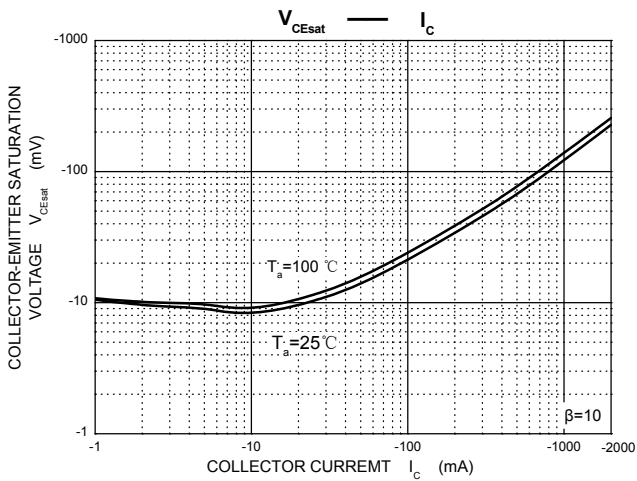
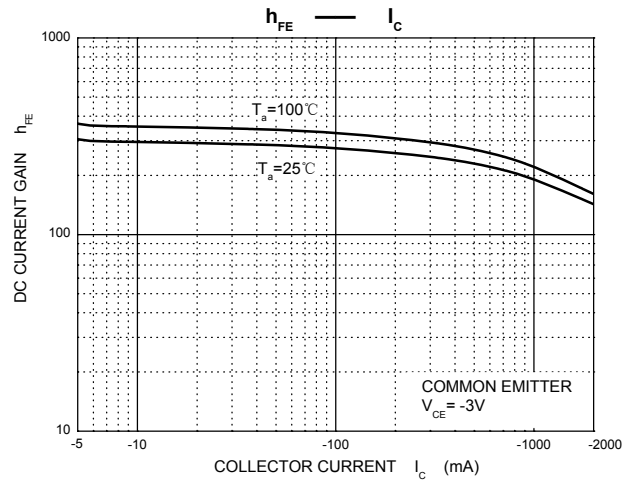
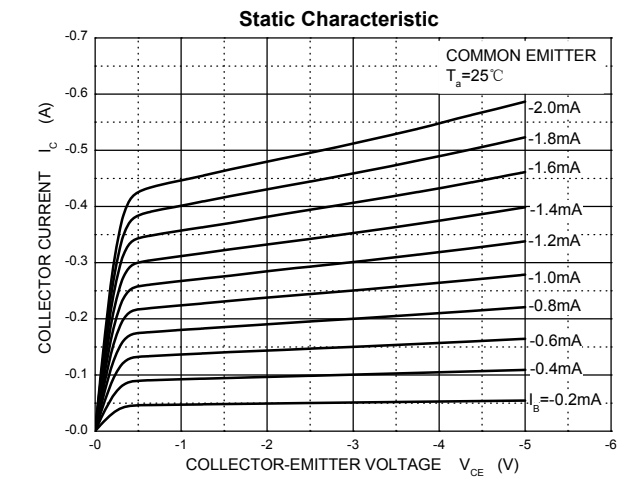
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-50\mu\text{A}, I_E=0$	-40	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-32	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-50\mu\text{A}, I_C=0$	-5	-	-	V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=-20\text{V}, I_E=0$	-	-	-1	$\mu\text{A}$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=-4\text{V}, I_C=0$	-	-	-1	$\mu\text{A}$
DC Current Gain <sup>1</sup>	$h_{FE}$	$V_{CE}=-3\text{V}, I_C=-0.5\text{A}$	82	-	390	
Collector-Emitter Saturation Voltage <sup>1</sup>	$V_{CE(sat)}$	$I_C=-2\text{A}, I_B=-0.2\text{A}$	-	-	-0.8	V
Transition Frequency	$f_T$	$V_{CE}=-5\text{V}, I_C=-0.5\text{A}, f=30\text{MHz}$	-	100	-	MHz
Output Capacitance	$C_{OB}$	$V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$	-	50	-	pF

Note 1: Measured using pulse current.

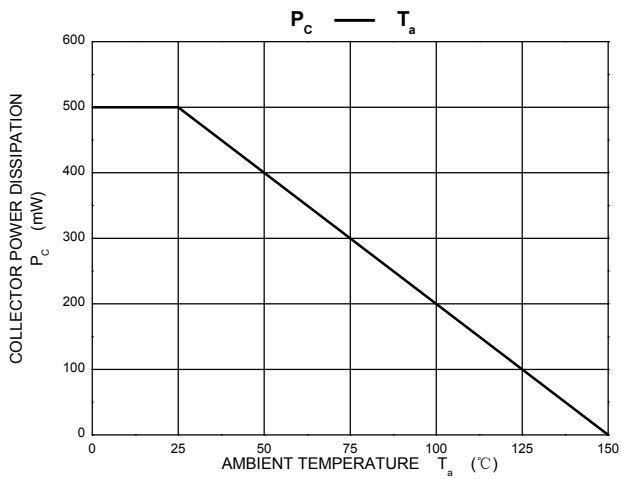
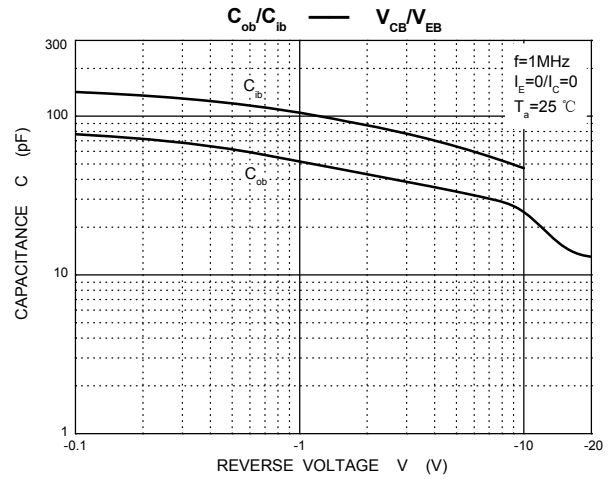
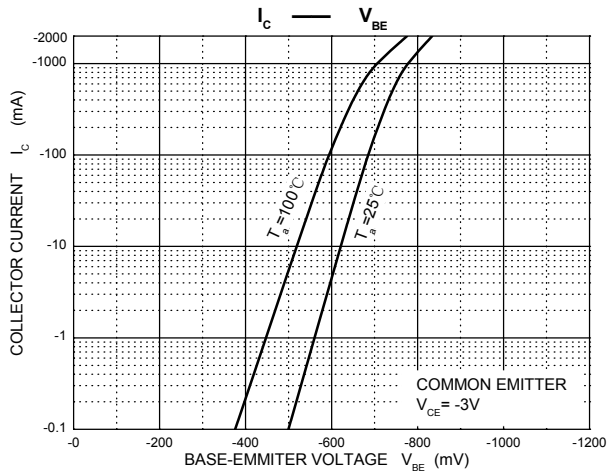
**Classification of  $h_{FE}$**

Rank	P	Q	R
Range	82-180	120-270	180-390
Marking	BCP	BCQ	BCR

**Typical Characteristic Curves** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

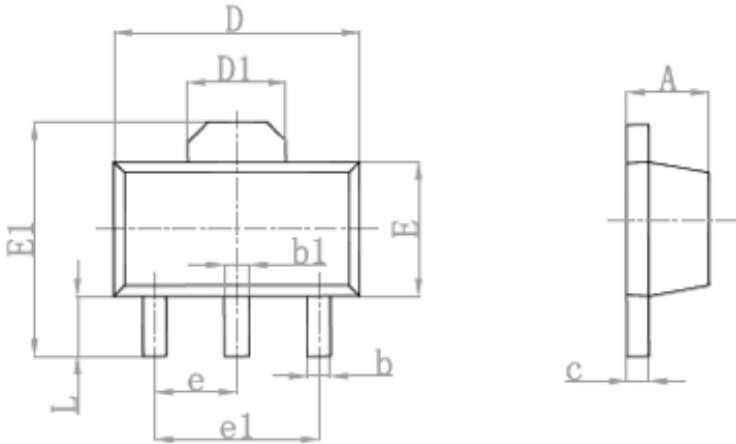


**Typical Characteristic Curves** ( $T_A=25^\circ\text{C}$  unless otherwise specified)



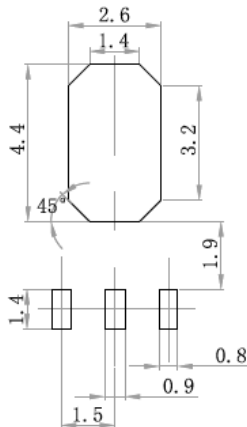
**Package Outline Dimensions**

**SOT-89-3L**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

**Suggested Pad Layout**



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.