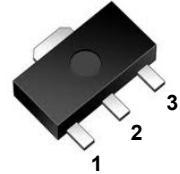


Features

- Low saturation voltage
- High power dissipation
- Complementary PNP available

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}	60	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current -Continuous	I_{C}	1	A
Collector Power Dissipation	P_{C}	0.5	W
Junction Temperature	T_{J}	-55 to +150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(\text{BR})\text{CBO}}$	$I_{\text{C}}=10\mu\text{A}, I_{\text{E}}=0$	60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(\text{BR})\text{CEO}}$	$I_{\text{C}}=2\text{mA}, I_{\text{B}}=0$	50	-	-	V
Emitter-Base Breakdown Voltage	$V_{(\text{BR})\text{EBO}}$	$I_{\text{E}}=10\mu\text{A}, I_{\text{C}}=0$	5	-	-	V
Collector Cut-Off Current	I_{CBO}	$V_{\text{CB}}=20\text{V}, I_{\text{E}}=0$	-	-	0.1	μA
Emitter Cut-Off Current	I_{EBO}	$V_{\text{EB}}=4\text{V}, I_{\text{C}}=0$	-	-	0.1	μA
DC Current Gain	$h_{\text{FE}(1)}$	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=500\text{mA}$	85	-	340	-
	$h_{\text{FE}(2)}$	$V_{\text{CE}}=5\text{V}, I_{\text{C}}=1\text{A}$	50	-	-	-
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{sat})}$	$I_{\text{C}}=500\text{mA}, I_{\text{B}}=50\text{mA}$	-	-	0.4	V
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{sat})}$	$I_{\text{C}}=500\text{mA}, I_{\text{B}}=50\text{mA}$	-	-	1.2	
Transition Frequency	f_{T}	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=50\text{mA}, f=200\text{MHz}$	-	200	-	MHz
Collector Output Capacitance	C_{ob}	$V_{\text{CB}}=10\text{V}, I_{\text{E}}=0, f=1\text{MHz}$	-	20	-	pF

hFE Ranking and Classification

Rank	Q	R	S
Range	85-170	120-240	170-340
Marking	YQ	YR	YS

Typical characteristics

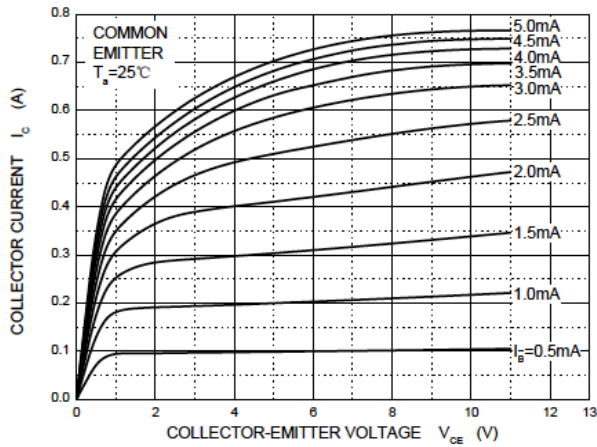


Figure 1. Static Characteristic

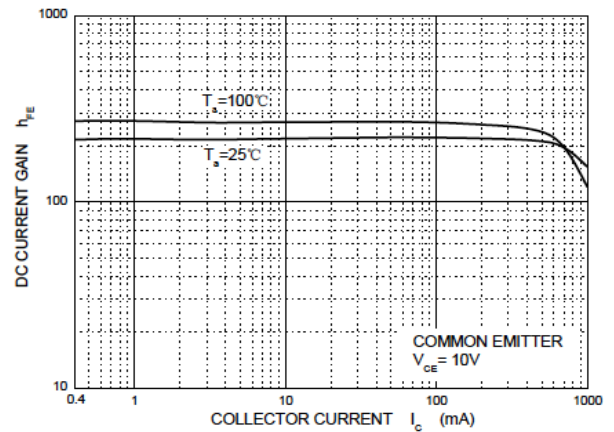


Figure 2. $h_{FE} - I_c$

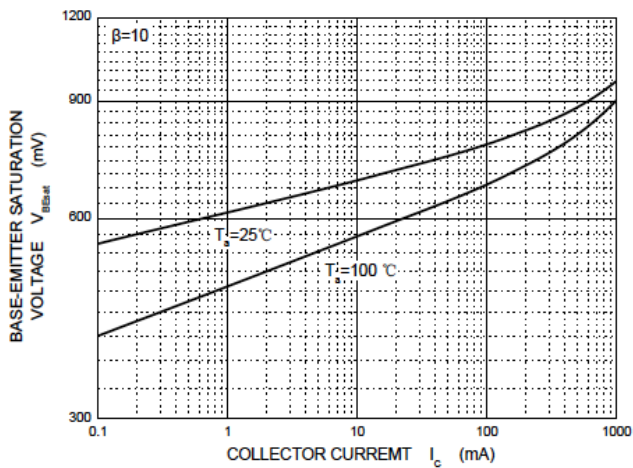


Figure 3. $V_{BEsat} - I_c$

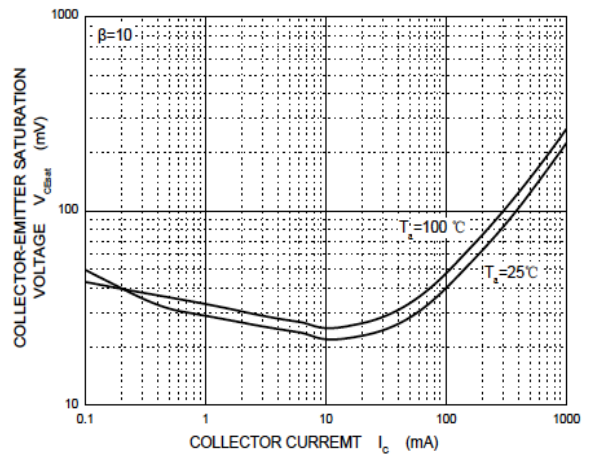


Figure 4. $V_{CEsat} - I_c$

Typical characteristics

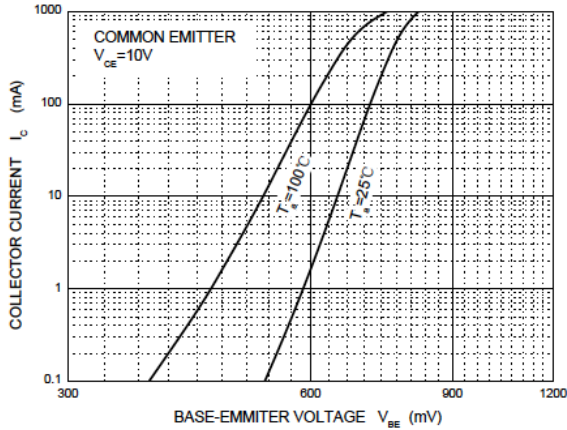


Figure 5. I_C — V_{BE}

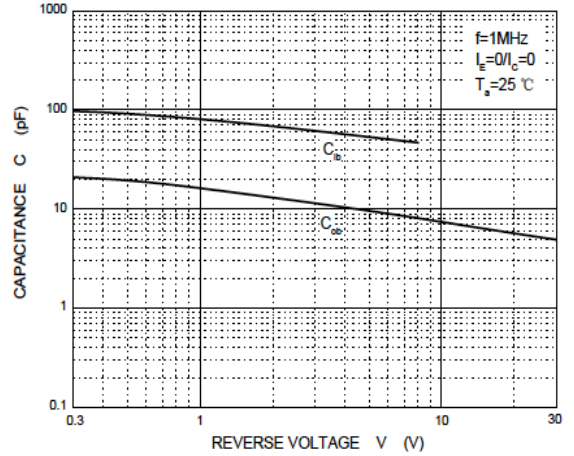


Figure 6. C_{ob} / C_{ib} — V_{CB} / V_{EB}

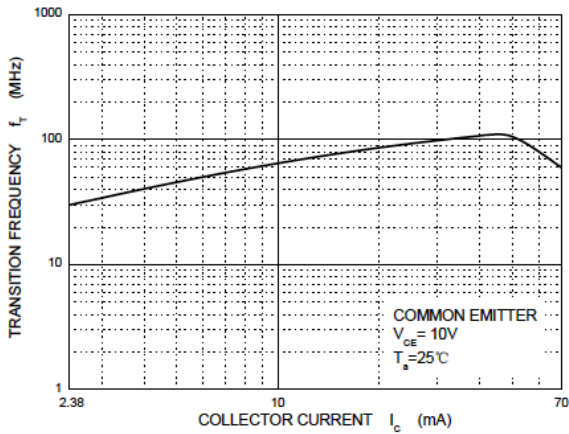


Figure 7. f_T — I_C

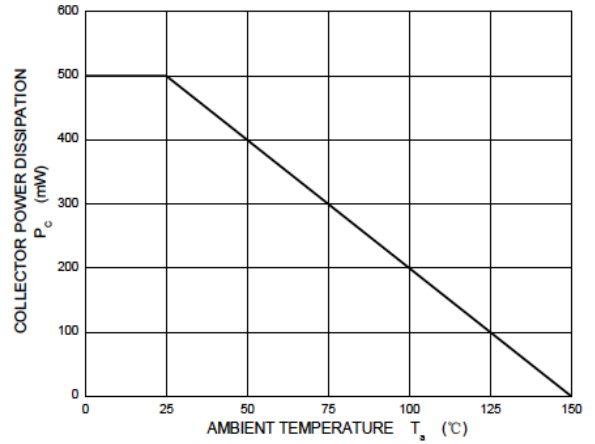
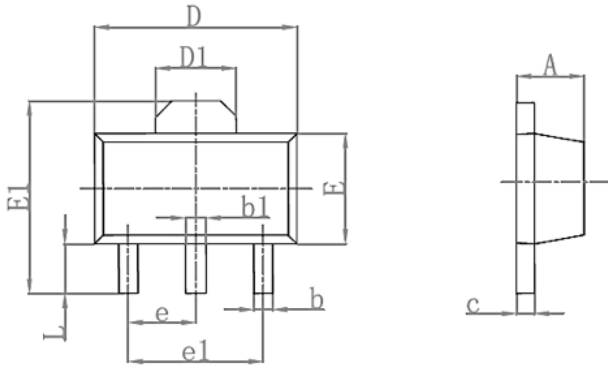


Figure 8. P_C — T_a

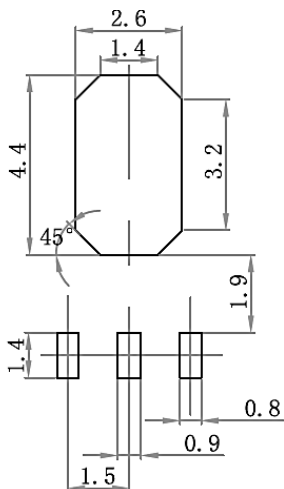
Package Outline Dimensions

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

Recommended 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.