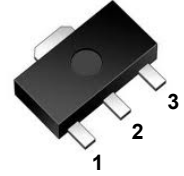


Features

- High power dissipation
- Complementary NPN available

1. BASE
2. COLLECTOR
3. EMITTER



SOT-89-3L

Absolute Maximum Ratings (T_A=25°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	500	mW
Junction Temperature	T _J	-55 to +150	°C
Storage Temperature	T _{STG}	-55 to +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C =-10μA, I _E =0	-60	-	-	V
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =-2mA, I _B =0	-50	-	-	V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E =-10μA, I _C =0	-5	-	-	V
Collector Cut-Off Current	I _{CBO}	V _{CB} =-20V, I _E =0	-	-	-0.1	μA
Emitter Cut-Off Current	I _{EBO}	V _{EB} =-4V, I _C =0	-	-	-0.1	μA
DC Current Gain	h _{FE(1)}	V _{CE} =-10V, I _C =-500mA	85	-	340	-
	h _{FE(2)}	V _{CE} =-5V, I _C =-1A	50	-	-	-
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =-500mA, I _B =-50mA	-	-0.2	-0.4	V
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C =-500mA, I _B =-50mA	-	-0.85	-1.2	
Transition Frequency	f _T	V _{CE} =-10V, I _C =-50mA, f=200MHz	-	200	-	MHz
Collector Output Capacitance	C _{ob}	V _{CB} =-10V, I _E =0, f=1MHz	-	20	30	pF

hFE Range and Classification

Rank	Q	R	S
Range	85-170	120-240	170-340
Marking	BQ	BR	BS

Typical Characteristics Curves

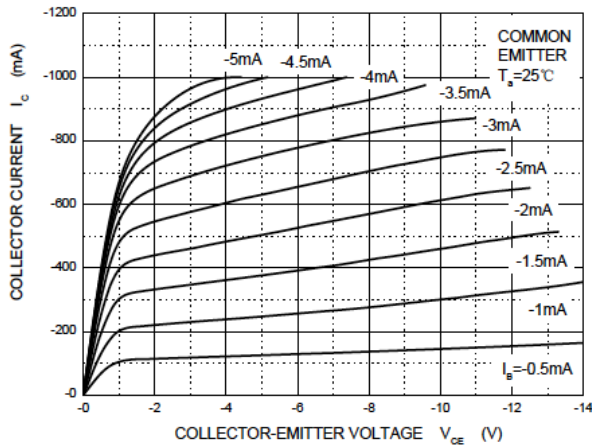


Figure 1. Static Characteristic

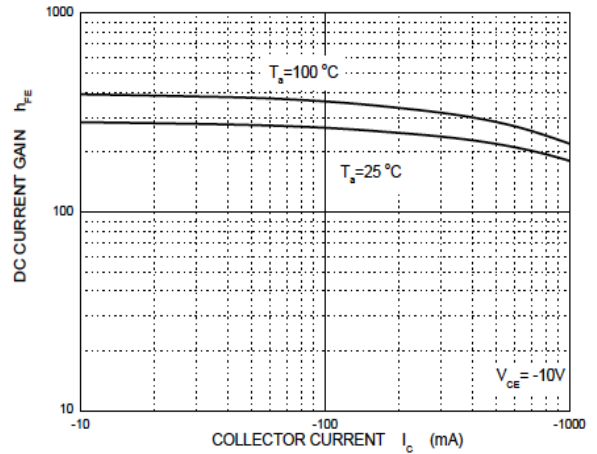


Figure 2. h_{FE} — I_C

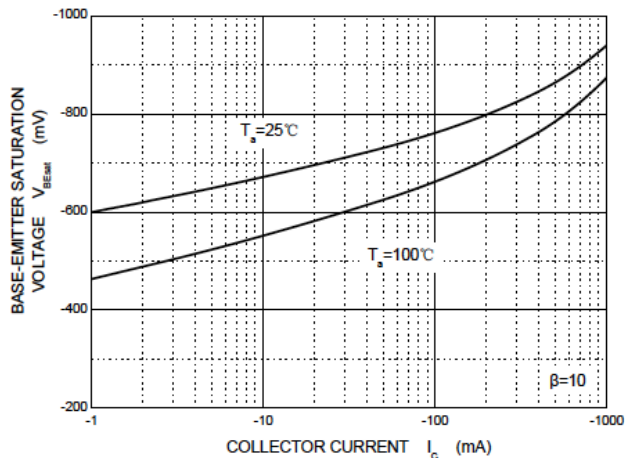


Figure 3. V_{BEsat} — I_C

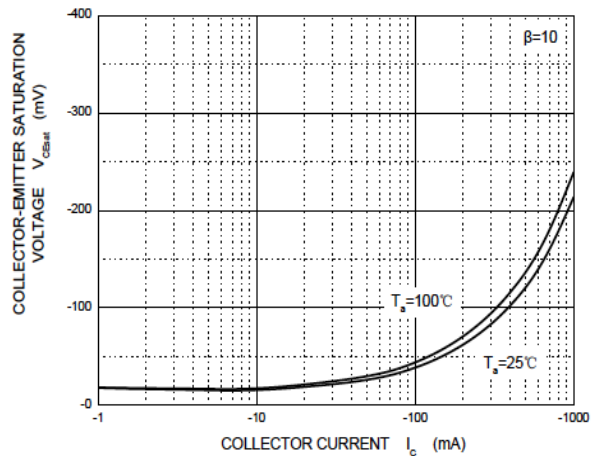


Figure 4. V_{CEsat} — I_C

Typical characteristics Curves

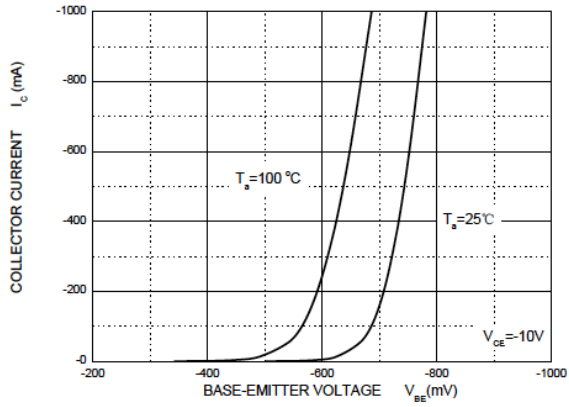


Figure 5. I_c — V_{BE}

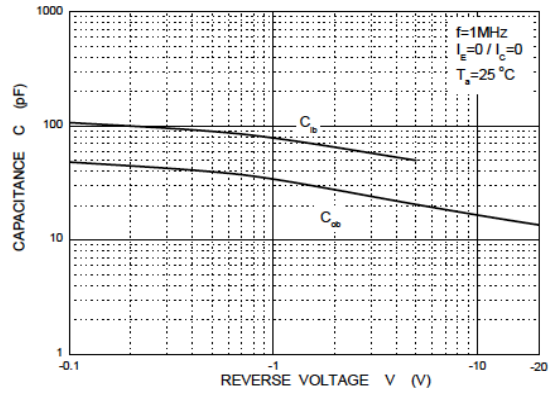


Figure 6. C_{ob} / C_{ib} — V_{CB} / V_{EB}

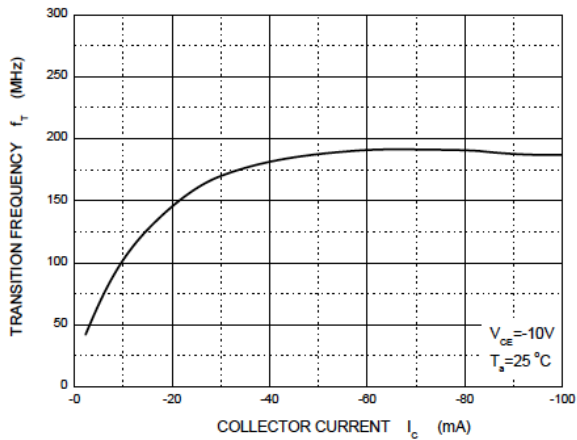


Figure 7. f_T — I_c

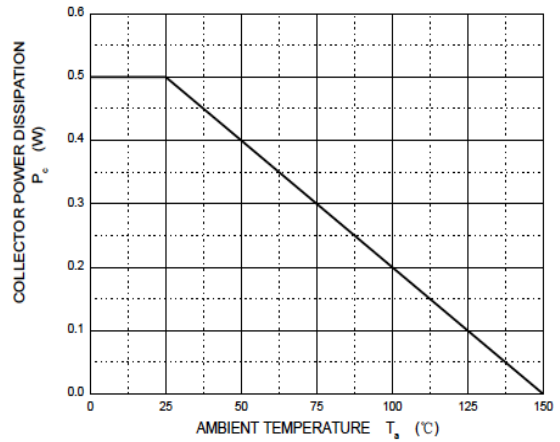
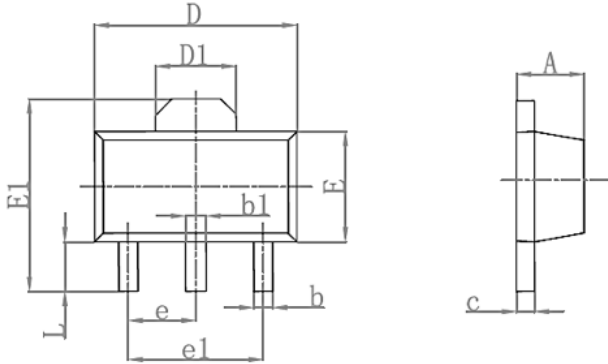


Figure 8. P_c — T_a

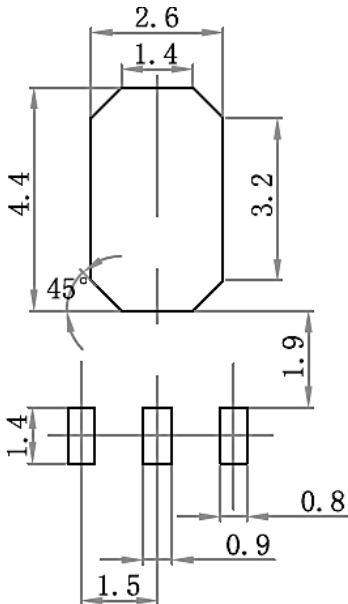
Package Outline Dimensions

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.