

SOT -89 Plastic-Encapsulate NPN Transistors

FEATURES

Power dissipation 0.5W

MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

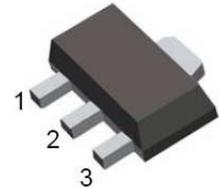
| Symbol | Parameter | Value | Units |
|------------------|-------------------------------|---------|-------|
| V _{CB0} | Collector-Base Voltage | 40 | V |
| V _{CEO} | Collector-Emitter Voltage | 30 | V |
| V _{EBO} | Emitter-Base Voltage | 6 | V |
| I _C | Collector Current -Continuous | 3 | A |
| P _C | Collector Power Dissipation | 0.5 | W |
| T _J | Junction Temperature | 150 | °C |
| T _{stg} | Storage Temperature | -55-150 | °C |

SOT-89

1. BASE

2. COLLECTOR

3. EMITTER



ELECTRICAL CHARACTERISTICS(T_{amb}=25°C unless otherwise specified)

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|--------------------------------------|----------------------|---|-----|-----|-----|------|
| Collector-base breakdown voltage | V _{(BR)CBO} | I _C = 100μA, I _E =0 | 40 | | | V |
| Collector-emitter breakdown voltage | V _{(BR)CEO} | I _C = 10mA, I _B =0 | 30 | | | V |
| Emitter-base breakdown voltage | V _{(BR)EBO} | I _E = 100μA, I _C =0 | 6 | | | V |
| Collector cut-off current | I _{CBO} | V _{CB} = 40V, I _E =0 | | | 1 | μA |
| Collector cut-off current | I _{CEO} | V _{CE} = 30V, I _B =0 | | | 10 | μA |
| Emitter cut-off current | I _{EBO} | V _{EB} = 6V, I _C =0 | | | 1 | μA |
| DC current gain | h _{FE(1)} | V _{CE} =2V, I _C = 1A | 60 | | 400 | |
| | h _{FE(2)} | V _{CE} =2V, I _C = 100mA | 32 | | | |
| Collector-emitter saturation voltage | V _{CE(sat)} | I _C = 2A, I _B = 0.2 A | | | 0.5 | V |
| Base-emitter saturation voltage | V _{BE(sat)} | I _C = 2A, I _B = 0.2 A | | | 1.5 | V |
| Transition frequency | f _T | V _{CE} = 5V, I _C =0.1A f=10MHz | 50 | | | MHz |

CLASSIFICATION OF h_{FE(1)}

| Rank | R | O | Y | GR |
|-------|--------|---------|---------|---------|
| Range | 60-120 | 100-200 | 160-320 | 200-400 |

Typical characteristics

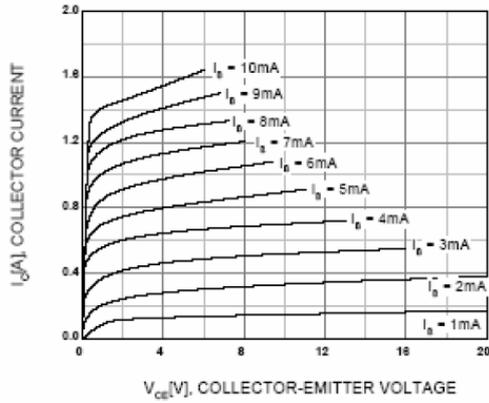


Figure 1. Static Characteristic

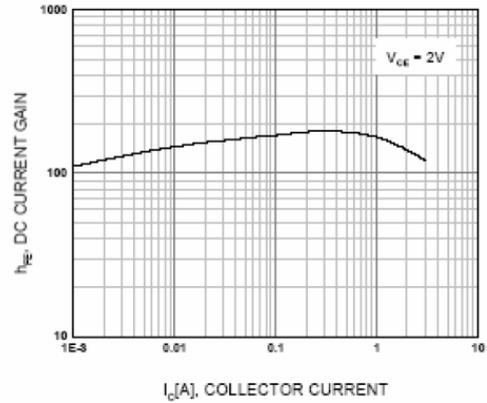


Figure 2. DC current Gain

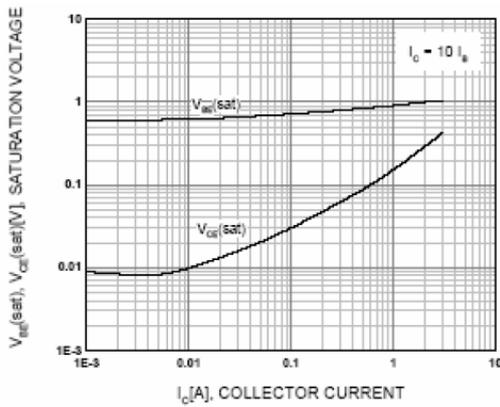


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

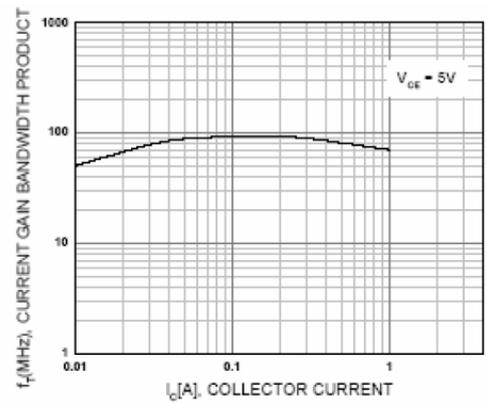


Figure 4. Current Gain Bandwidth Product

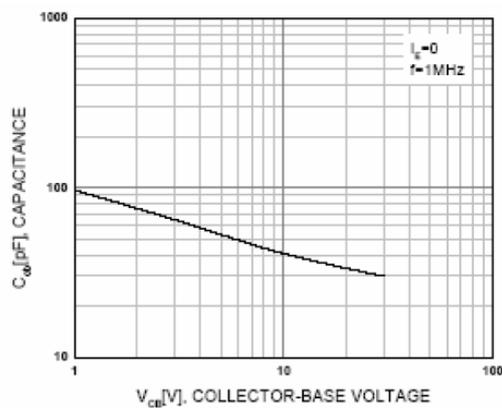
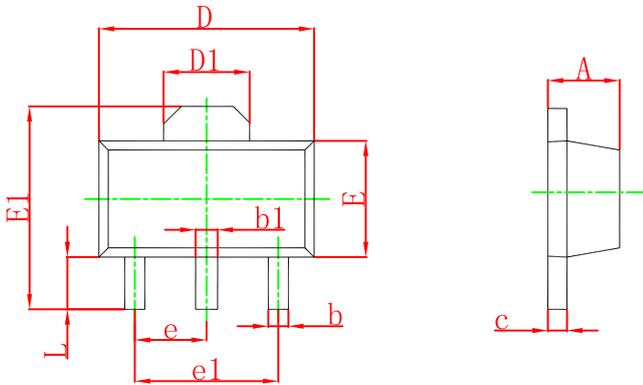


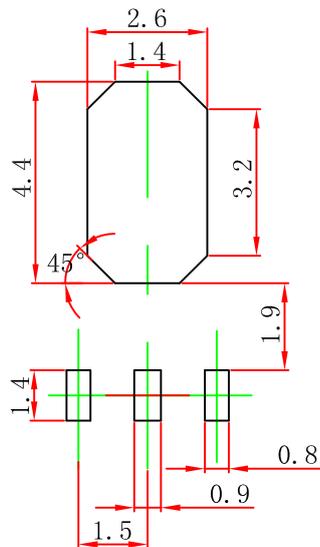
Figure 5. Collector Output Capacitance

SOT-89 Package Outline Dimensions



| 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 |

SOT-89 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.