

SOT-89 Plastic-Encapsulate Transistors

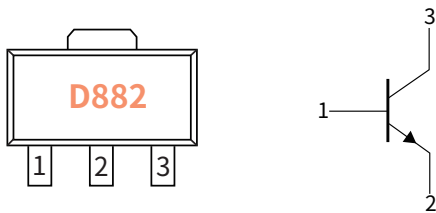
Features

- Power dissipation of 500mW
- High stability and high reliability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C

Mechanical Data

- Case: SOT-89
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026

Function Diagram



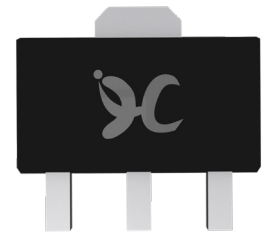
Collector-Base Voltage

VCBO 40V

Collector Current

3.0 Ampere

SOT-89



Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | VALUE |
|-----------------------------|------------------|-------|-----------|
| Collector-Base Voltage | V_{CB0} | V | 40 |
| Collector-Emitter Voltage | V_{CE0} | | 30 |
| Emitter-Base Voltage | V_{EB0} | | 6.0 |
| Collector Current | I_C | A | 3.0 |
| Collector Power Dissipation | P_C | mW | 500 |
| Storage temperature | T_{stg} | °C | -55 ~+150 |
| Junction temperature | T_j | °C | -55 ~+150 |
| Typical Thermal Resistance | $R_{\theta J-A}$ | °C /W | 417 |

Electrical Characteristics (Ta=25°C Unless otherwise noted)

| PARAMETER | SYMBOL | UNIT | Condition | Min | Max |
|--------------------------------------|---------------|---------|------------------------|-----|-----|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | V | $I_C=100\mu A, I_E=0$ | 40 | — |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | | $I_C=10mA, I_B=0$ | 30 | — |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | | $I_E=100\mu A, I_C=0$ | 6.0 | — |
| Collector-Emitter cut-off current | I_{CEO} | μA | $V_{CE}=30V, I_B=0$ | — | 10 |
| Collector-Base cut-off current | I_{CBO} | | $V_{CB}=40V, I_E=0$ | — | 1.0 |
| Emitter-Base cut-off current | I_{EBO} | | $V_{EB}=6.0V, I_C=0$ | — | 1.0 |
| DC Current Gain | $h_{FE(1)}$ | — | $I_C=1.0A, V_{CE}=2V$ | 60 | 400 |
| | $h_{FE(2)}$ | | $I_C=100mA, V_{CE}=2V$ | 32 | — |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | V | $I_C=2.0A, I_B=0.2A$ | — | 0.5 |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | V | $I_C=2.0A, I_B=0.2A$ | — | 1.5 |

● Classification Of h_{FE}

| RANK | R | Q | P | E |
|-------|--------|---------|---------|---------|
| Range | 60-120 | 100-200 | 160-320 | 200-400 |

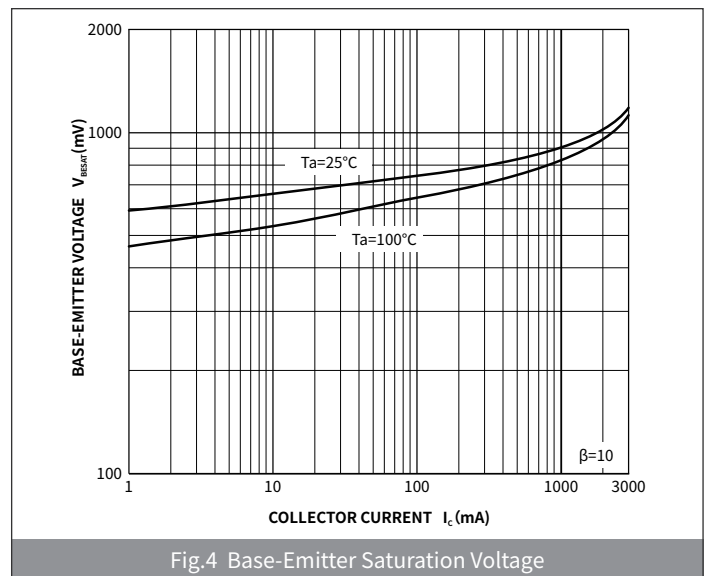
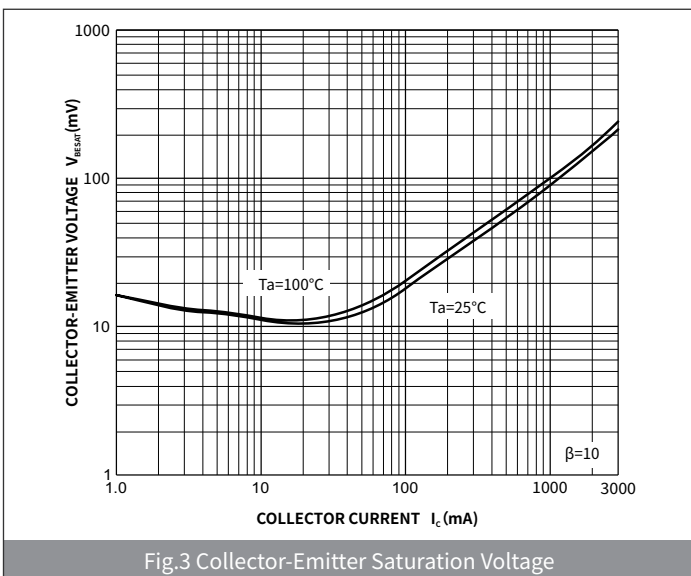
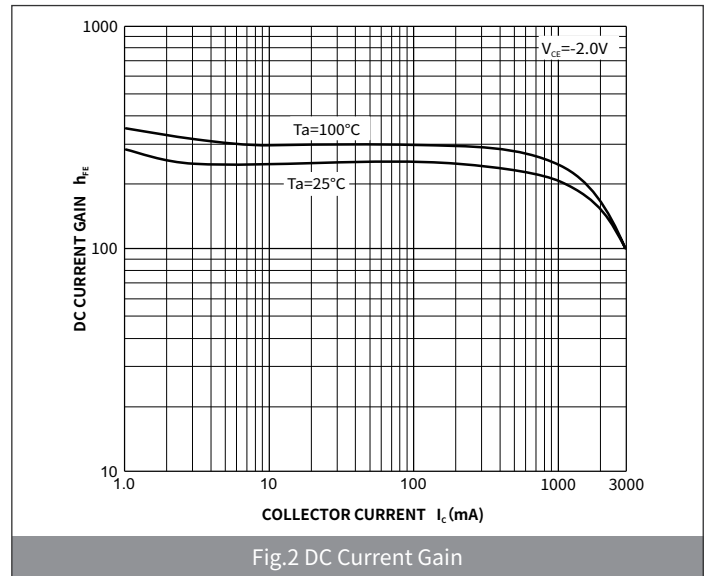
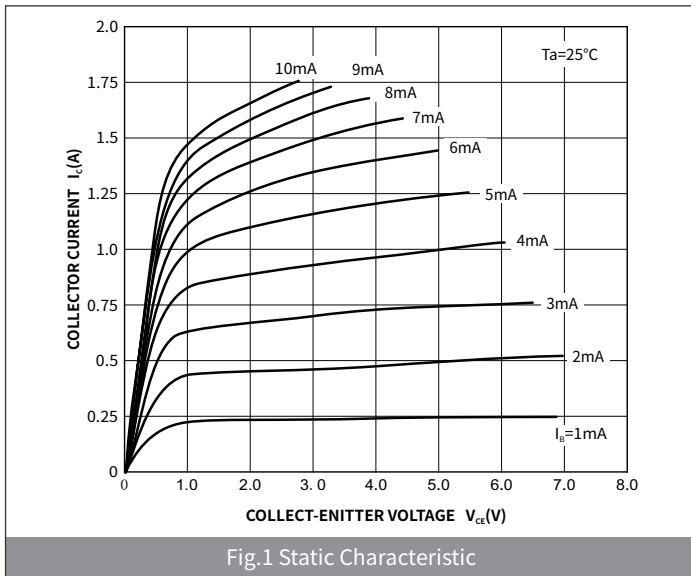
● Small-signal Characteristics

| ITEM | SYMBOL | Condition | UNIT | Min | Typ | Max |
|----------------------|--------|---|------|-----|-----|-----|
| Transition frequency | f_T | $I_C = 0.1mA, V_{CE} = 5.0V, f = 10MHz$ | MHz | 50 | — | — |

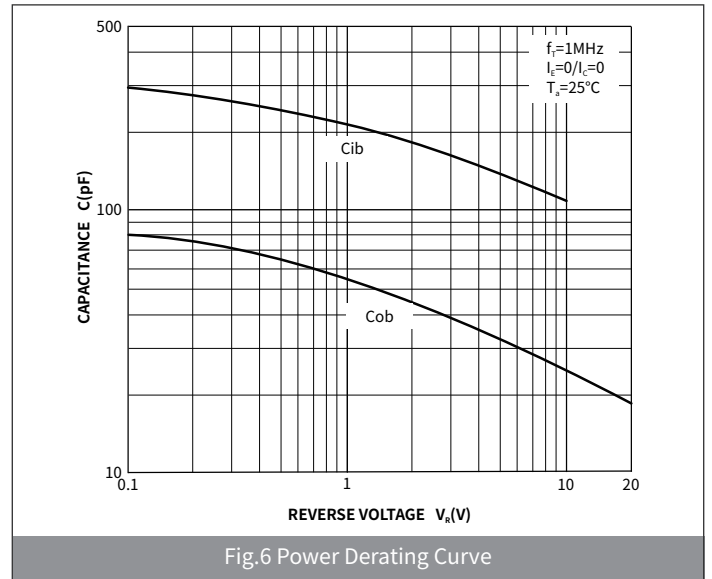
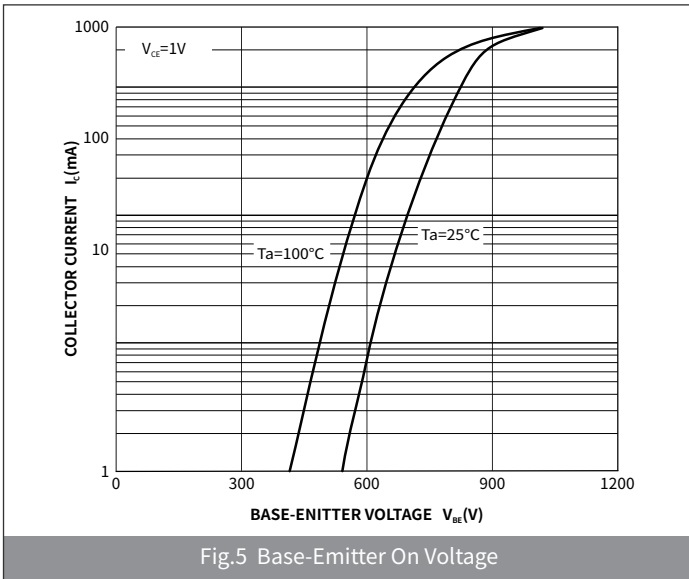
● Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOT-89 | R1 | 0.055 | 1000 | 7000 | 21000 | 7" |

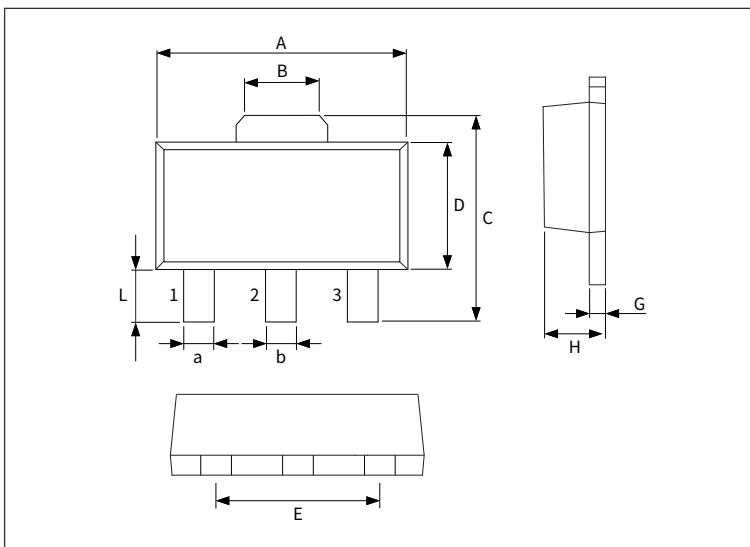
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



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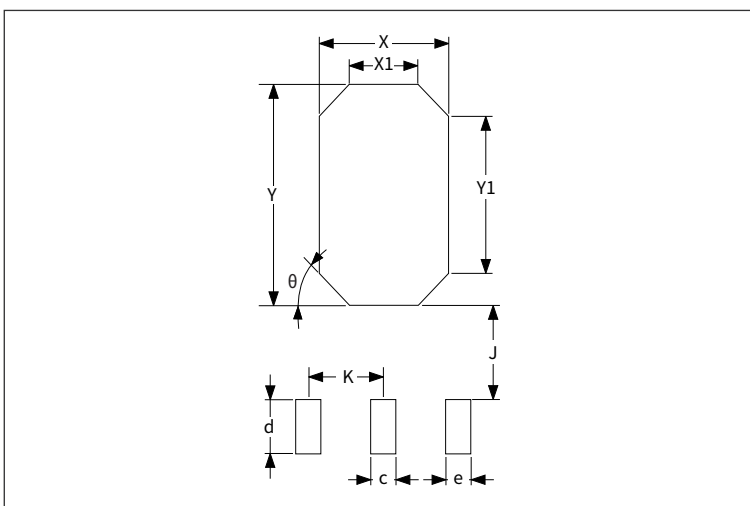


● Package Outline Dimensions (SOT-89)



| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.4 | 4.6 | 0.176 | 0.184 |
| B | 1.6 | 1.8 | 0.064 | 0.072 |
| C | 3.9 | 4.1 | 0.156 | 0.164 |
| D | 2.4 | 2.6 | 0.096 | 0.104 |
| E | 2.9 | 3.1 | 0.116 | 0.124 |
| a | 0.41 | 0.43 | 0.0164 | 0.018 |
| b | 0.35 | 0.45 | 0.014 | 0.018 |
| L | 0.95 | 1.05 | 0.037 | 0.041 |
| G | 0.3 | 0.5 | 0.012 | 0.020 |
| H | 1.4 | 1.5 | 0.055 | 0.059 |

● Suggested Pad Layout



| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| c | 0.80 | 1.00 | 0.032 | 0.04 |
| d | 1.30 | 1.50 | 0.052 | 0.060 |
| e | 0.70 | 0.90 | 0.028 | 0.036 |
| J | 1.80 | 2.00 | 0.072 | 0.080 |
| K | 1.40 | 1.60 | 0.056 | 0.064 |
| X | 2.50 | 2.70 | 0.100 | 0.108 |
| X1 | 1.30 | 1.50 | 0.052 | 0.060 |
| Y | 4.30 | 4.50 | 0.172 | 0.180 |
| Y1 | 3.10 | 3.30 | 0.124 | 0.132 |
| θ | - | 45° | - | 45° |

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