

SOT-23 Plastic-Encapsulate Transistors

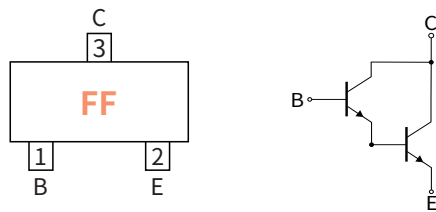
● Features

- High Collector Current
- High Current Gian

● Mechanical Data

- Case: SOT-23
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

● Function Diagram



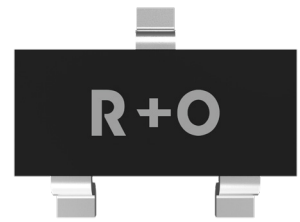
Collector-Emitter Voltage

V_{CEO} 30V

Collector Current

0.5 Ampere

SOT-23



● Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOT-23 | R1 | 0.008 | 3000 | 15000 | 150000 | 7" |

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

| PARAMETER | SYMBOL | UNIT | VALUE |
|-----------------------------|-------------------|-------|-----------|
| Collector-Base Voltage | V _{CBO} | V | 40 |
| Collector-Emitter Voltage | V _{CEO} | | 30 |
| Emitter-Base Voltage | V _{EBO} | | 10 |
| Collector Current | I _C | mA | 500 |
| Collector Power Dissipation | P _C | mW | 300 |
| Storage temperature | T _{stg} | °C | -55 ~+150 |
| Junction temperature | T _j | °C | -55 ~+150 |
| Typical Thermal Resistance | R _{θJ-A} | °C /W | 417 |

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

| PARAMETER | SYMBOL | UNIT | Condition | Min | Typ | Max |
|-------------------------------------|----------------------|------|--|-------|-----|-----|
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | V | I _C =100μA, 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 =10μA, I _C =0 | 10 | — | — |
| Collector-Base cut-off current | I _{CBO} | μA | V _{CB} =30V, I _E =0 | — | — | 0.1 |
| Emitter-Base cut-off current | I _{EBO} | | V _{EB} =4.0V, I _C =0 | — | — | 0.1 |
| DC Current Gain | h _{FE} | — | V _{CE} =1.0V, I _C =0.1mA | 4000 | — | — |
| | | | V _{CE} =5.0V, I _C =10mA | 10000 | — | — |
| | | | V _{CE} =5.0V, I _C =100mA | 20000 | — | — |

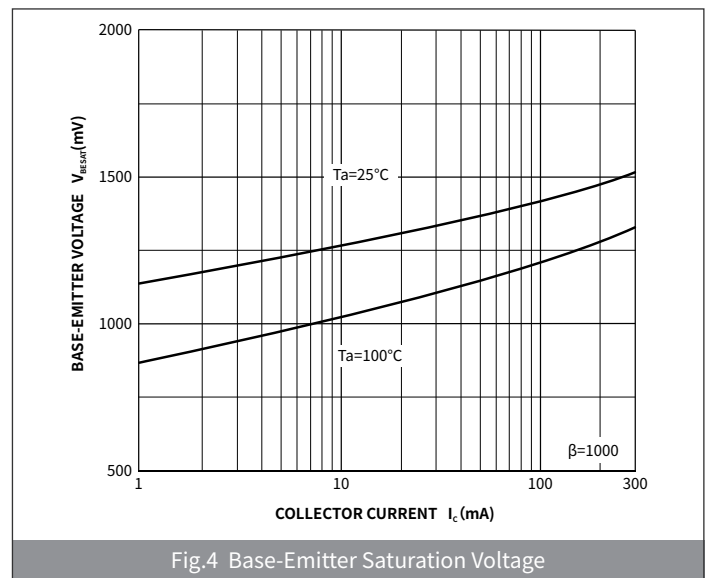
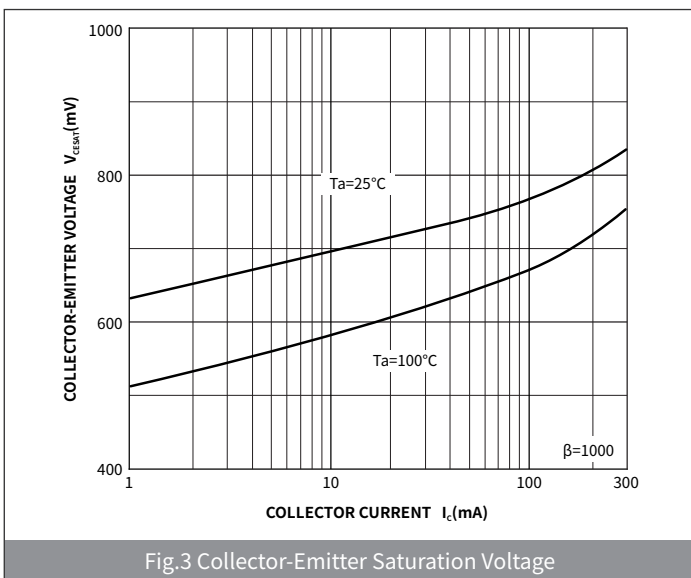
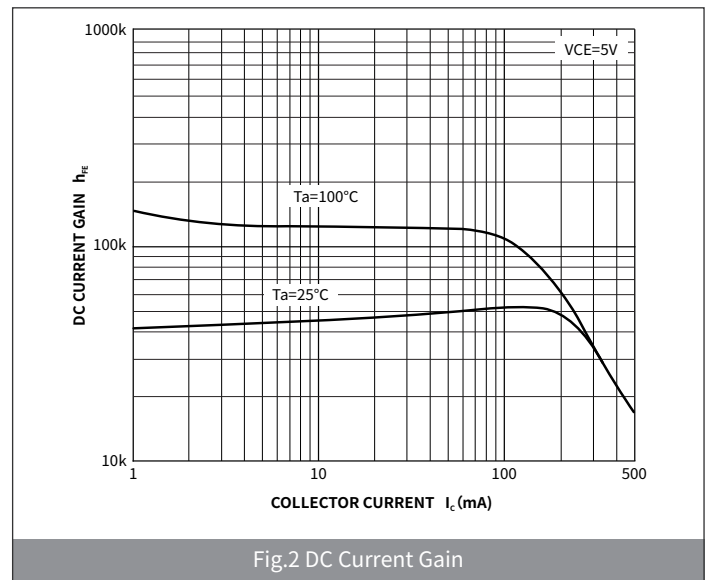
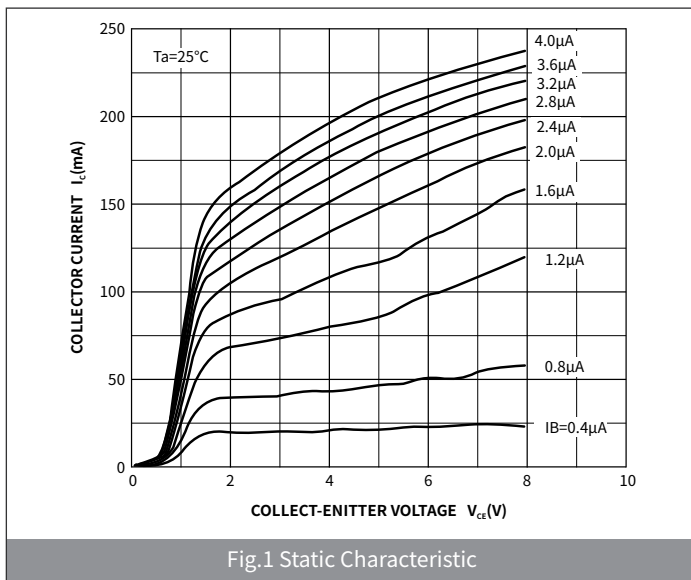
● **Electrical Characteristics** (Ta=25°C Unless otherwise noted)

| PARAMETER | SYMBOL | UNIT | Condition | Min | Typ | Max |
|--------------------------------------|---------------|------|-----------------------------|-----|-----|-----|
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | V | $I_C=100mA, I_B=0.1mA$ | — | — | 1 |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | V | | — | — | 2 |
| Base-Emitter On Voltage | $V_{BE(ON)}$ | V | $V_{CE}=5.0V, I_C=100mA$ | — | — | 2 |
| Output Capacitance | C_{ob} | pF | $V_{CB}=10V, I_E=0, f=1MHz$ | — | 3.5 | — |

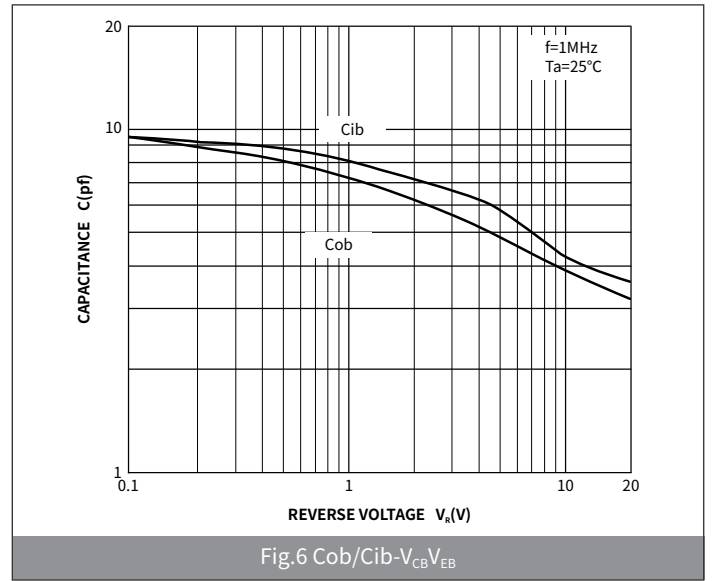
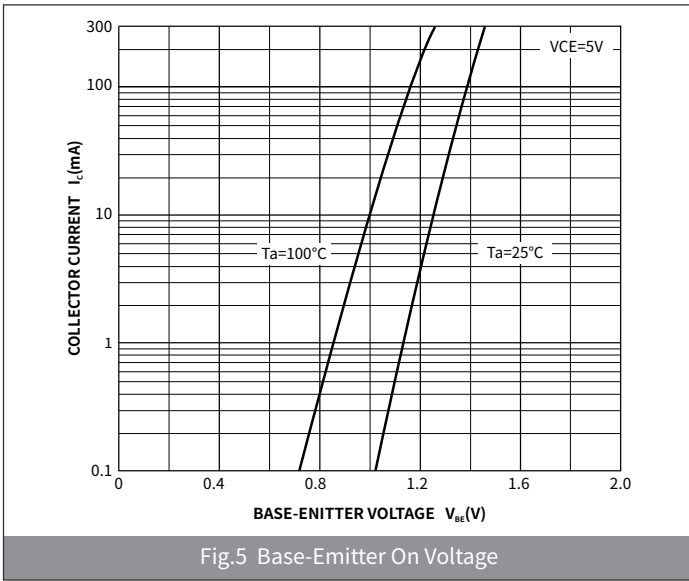
● **Small-signal Characteristics**

| ITEM | SYMBOL | Condition | UNIT | Min | Typ | Max |
|----------------------|--------|-----------------------|------|-----|-----|-----|
| Transition frequency | f_T | $I_C=50mA, V_{CE}=5V$ | MHz | — | 170 | — |

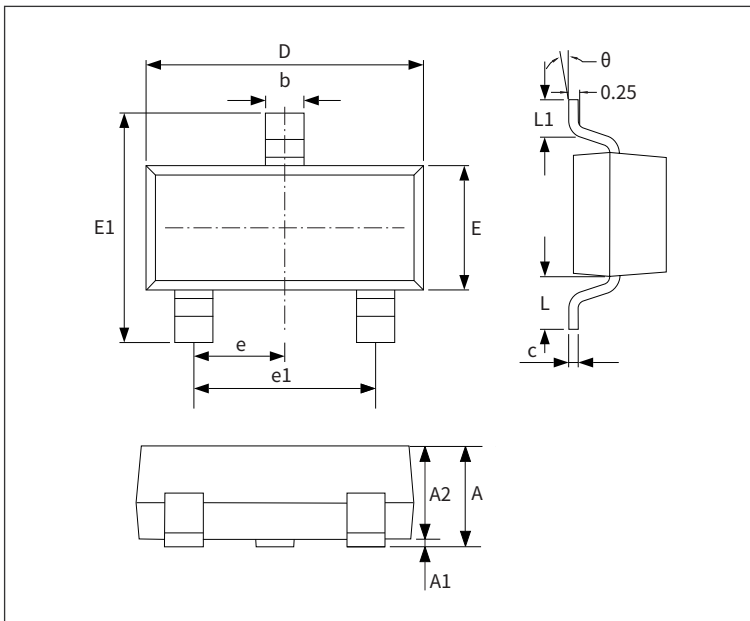
● **Ratings And Characteristics Curves** (Ta=25°C Unless otherwise specified)



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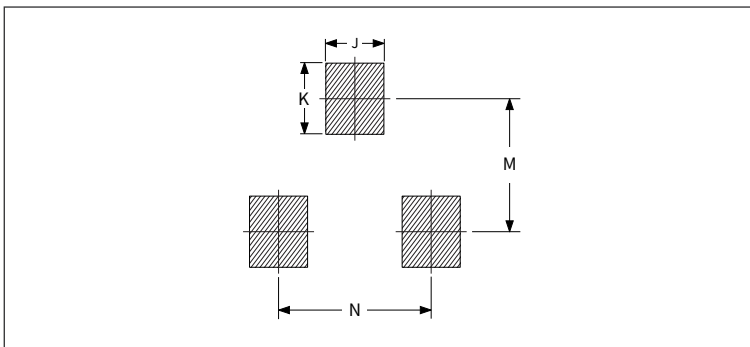


● Package Outline Dimensions (SOT-23)



| Symbol | Dimensions | | | |
|--------|-------------|------|----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 0.90 | 1.15 | 0.035 | 0.045 |
| A1 | - | 0.10 | - | 0.004 |
| A2 | 0.90 | 1.05 | 0.035 | 0.041 |
| b | 0.30 | 0.50 | 0.012 | 0.020 |
| c | 0.10 | 0.20 | 0.004 | 0.008 |
| D | 2.80 | 3.00 | 0.110 | 0.118 |
| E | 1.20 | 1.40 | 0.047 | 0.055 |
| E1 | 2.25 | 2.55 | 0.089 | 0.100 |
| e | 0.950TYP | | 0.037TYP | |
| e1 | 1.80 | 2.00 | 0.071 | 0.079 |
| L | 0.550REF | | 0.022REF | |
| L1 | 0.30 | 0.50 | 0.012 | 0.020 |
| θ | - | 8° | - | 8° |

● Suggested Pad Layout



| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| J | 0.75 | 0.85 | 0.030 | 0.033 |
| K | 0.85 | 0.95 | 0.033 | 0.037 |
| M | 1.95 | 2.05 | 0.077 | 0.081 |
| N | 1.85 | 1.95 | 0.073 | 0.077 |