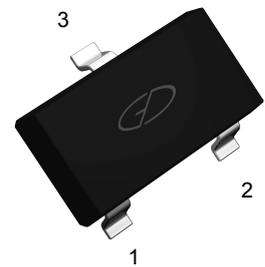


Features

- Low equivalent on-resistance

- 1. BASE
- 2. EMITTER
- 3. COLLECTOR



SOT-23

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

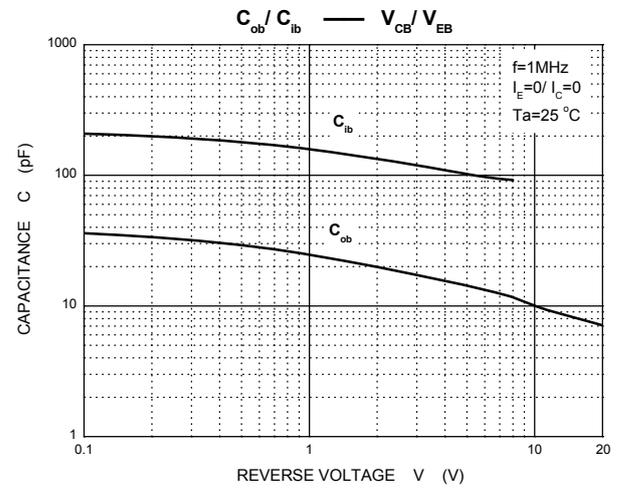
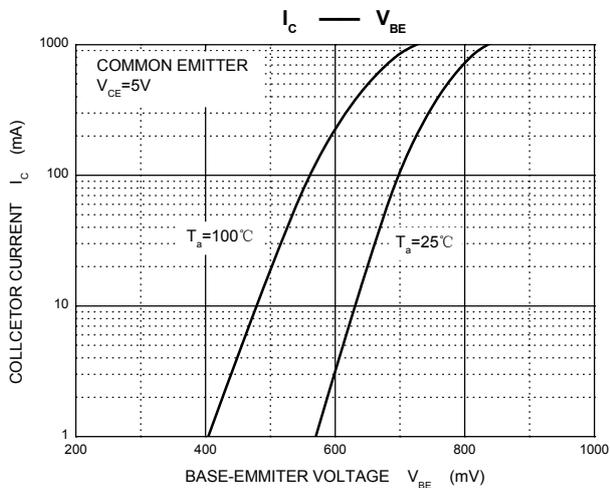
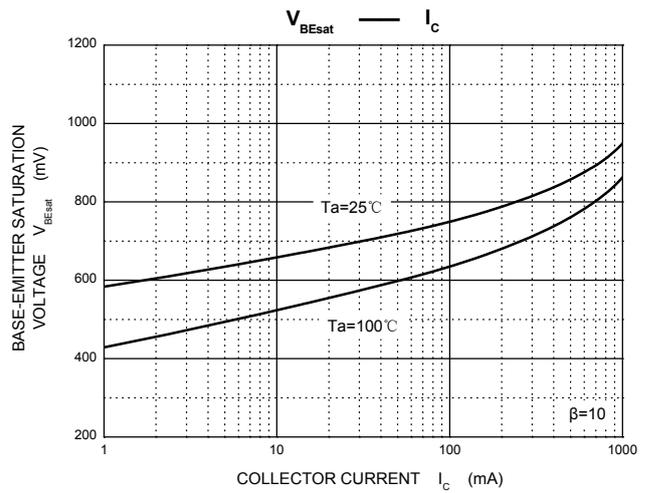
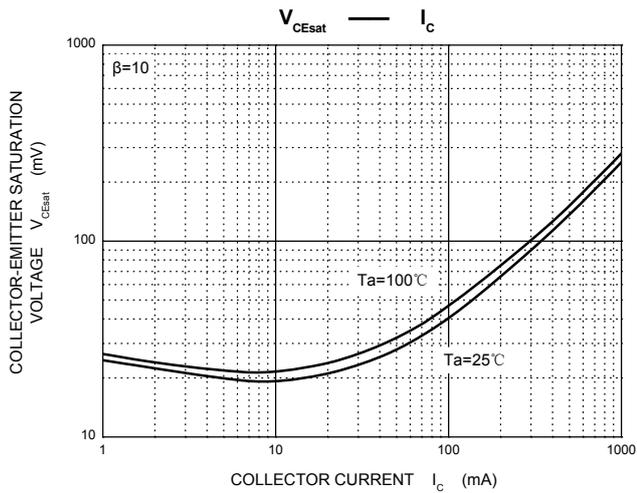
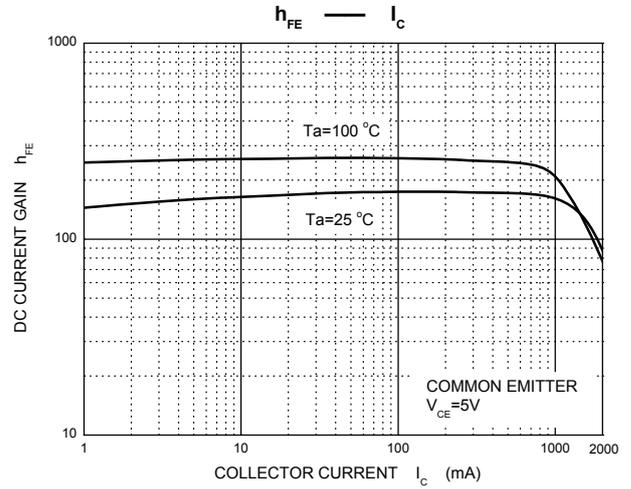
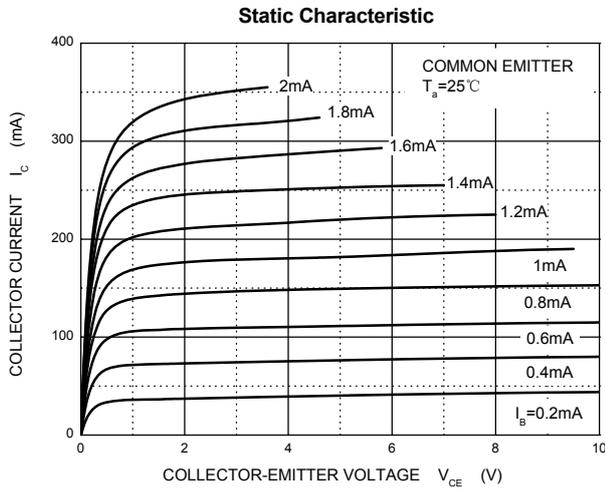
| Parameter | Symbol | Value | Unit |
|---|-----------------------|-------------|-----------------------------|
| Collector-Base Voltage | V_{CBO} | 80 | V |
| Collector-Emitter Voltage | V_{CEO} | 60 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Collector Current | I_{C} | 1 | A |
| Peak Pulse Current | I_{CM} | 2 | A |
| Collector Power Dissipation | P_{C} | 250 | mW |
| Thermal Resistance From Junction To Ambient | $R_{\theta\text{JA}}$ | 500 | $^{\circ}\text{C}/\text{W}$ |
| Junction Temperature | T_{J} | 150 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -55 to +150 | $^{\circ}\text{C}$ |

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

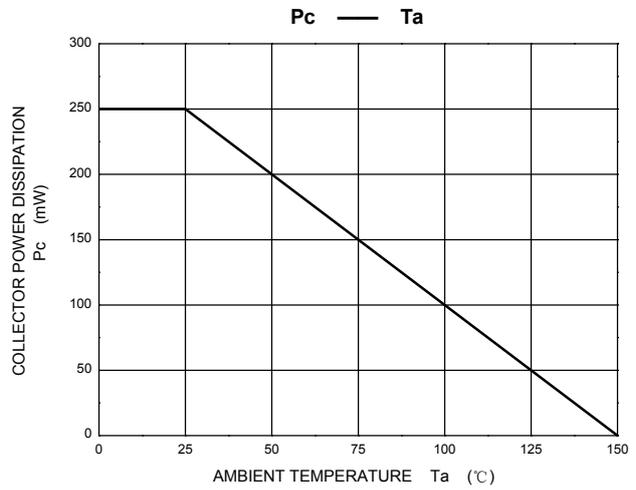
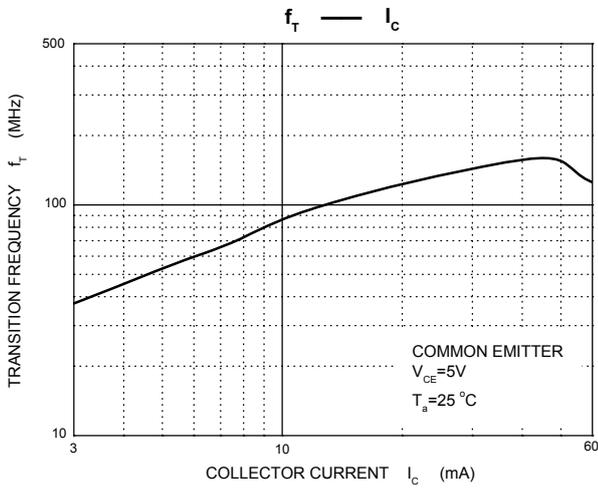
| Parameter | Symbol | Test Conditions | Min | Max | Unit |
|--------------------------------------|-----------------------------|---|-----|------|---------------|
| Collector-Base Breakdown Voltage | $V_{(\text{BR})\text{CBO}}$ | $I_{\text{C}}=100\mu\text{A}, I_{\text{E}}=0$ | 80 | - | V |
| Collector-Emitter Breakdown Voltage | $V_{(\text{BR})\text{CEO}}$ | $I_{\text{C}}=10\text{mA}, I_{\text{B}}=0$ | 60 | - | V |
| Emitter-Base Breakdown Voltage | $V_{(\text{BR})\text{EBO}}$ | $I_{\text{E}}=100\mu\text{A}, I_{\text{C}}=0$ | 5 | - | V |
| Collector Cut-off Current | I_{CBO} | $V_{\text{CB}}=60\text{V}, I_{\text{E}}=0$ | - | 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 | $h_{\text{FE}(1)}^*$ | $V_{\text{CE}}=5\text{V}, I_{\text{C}}=1\text{mA}$ | 100 | - | |
| | $h_{\text{FE}(2)}^*$ | $V_{\text{CE}}=5\text{V}, I_{\text{C}}=500\text{mA}$ | 100 | 300 | |
| | $h_{\text{FE}(3)}^*$ | $V_{\text{CE}}=5\text{V}, I_{\text{C}}=1\text{A}$ | 80 | - | |
| | $h_{\text{FE}(4)}^*$ | $V_{\text{CE}}=5\text{V}, I_{\text{C}}=2\text{A}$ | 30 | - | |
| Collector-Emitter Saturation Voltage | $V_{\text{CE(sat)1}}^*$ | $I_{\text{C}}=500\text{mA}, I_{\text{B}}=50\text{mA}$ | - | 0.25 | V |
| | $V_{\text{CE(sat)2}}^*$ | $I_{\text{C}}=1\text{A}, I_{\text{B}}=100\text{mA}$ | - | 0.5 | V |
| Base-Emitter Saturation Voltage | $V_{\text{BE(sat)}}^*$ | $I_{\text{C}}=1\text{A}, I_{\text{B}}=100\text{mA}$ | - | 1.1 | V |
| Base-Emitter Voltage | V_{BE}^* | $V_{\text{CE}}=5\text{V}, I_{\text{C}}=1\text{A}$ | - | 1 | V |
| Transition Frequency | f_{T} | $V_{\text{CE}}=10\text{V}, I_{\text{C}}=50\text{mA}, f=100\text{MHz}$ | 150 | - | MHz |
| Collector Output Capacitance | C_{ob} | $V_{\text{CB}}=10\text{V}, I_{\text{E}}=0, f=1\text{MHz}$ | - | 10 | pF |

*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2.0\%$.

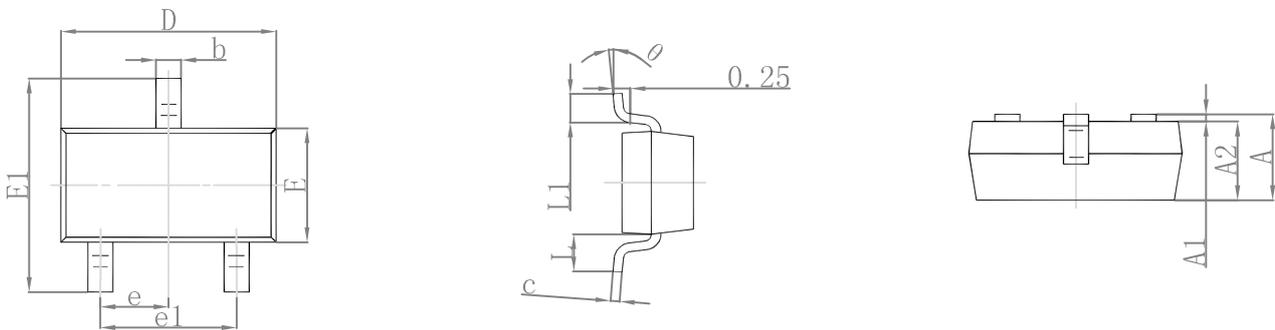
Typical Characteristic Curves



Typical Characteristic Curves

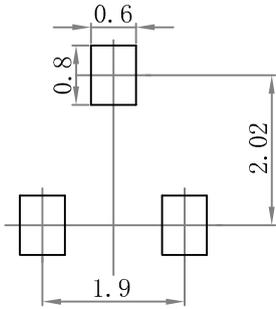


Package Outline Dimensions SOT-23



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|------------|----------------------|------------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0 $^\circ$ | 8 $^\circ$ | 0 $^\circ$ | 8 $^\circ$ |

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.

Marking and Ordering Information

| Device | Package | Marking | Quantity | HSF Status |
|---------|---------|---------|-----------------|----------------|
| MMBT491 | SOT-23 | 491 | 3,000pcs / Reel | RoHS Compliant |