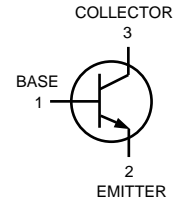
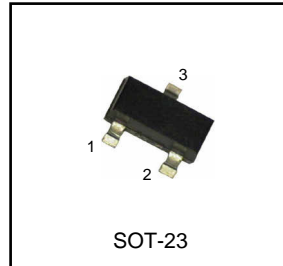


High Voltage Transistor

NPN Silicon

MMBT5550



MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|------------------------------|------------------|-------|-----------------|
| Collector-Emitter Voltage | V _{CEO} | 140 | V _{dc} |
| Collector-Base Voltage | V _{CBO} | 160 | V _{dc} |
| Emitter-Base Voltage | V _{EBO} | 6.0 | V _{dc} |
| Collector Current-Continuous | I _C | 600 | mAdc |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max. | Unit |
|--|----------------------------------|-------------|---------------|
| Total Device Dissipation FR-5 Board ⁽¹⁾ T _A =25°C Derate above 25°C | P _D | 225 1.8 | mW mW / °C |
| Thermal Resistance Junction to Ambient | R _{θJA} | 556 | °C / W |
| Total Device Dissipation Alumina Substrate, ⁽²⁾ T _A =25°C Derate above 25°C | P _D | 300 2.4 | mW mW / °C |
| Thermal Resistance Junction to Ambient | R _{θJA} | 417 | °C / W |
| Junction and Storage Temperature | T _J ,T _{STG} | -55 to +150 | °C |

DEVICE MARKING

MMBT5550=M1F

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

| Characteristic | Symbol | Min. | Max. | Unit |
|----------------|--------|------|------|------|
|----------------|--------|------|------|------|

OFF CHARACTERISTICS

| | | | | |
|---|----------------------|-----|------------|-----------------|
| Collector-Emitter Breakdown Voltage ⁽³⁾ (I _C =1.0mAdc, I _B =0) | V _{(BR)CEO} | 140 | - | V _{dc} |
| Collector-Base Breakdown Voltage (I _C =100 uAdc, I _E =0) | V _{(BR)CBO} | 160 | - | V _{dc} |
| Emitter-Base Breakdown Voltage (I _E =10 uAdc, I _C =0) | V _{(BR)EBO} | 6.0 | - | V _{dc} |
| Base Cutoff Current (V _{CE} =100 Vdc, I _E =0) (V _{CE} =100 Vdc, I _E =0, T _A = 100°C) | I _{CBO} | - | 100 100 | nAdc uAdc |
| Collector Cutoff Current (V _{EB} =4.0 Vdc, I _C =0) | I _{EBO} | - | 50 | nAdc |

(1) FR-5=1.0 x 0.75 x 0.062in.

(2) Alumina=0.4 x 0.3 x 0.024in. 99.5% alumina.

(3) Pulse Test : Pulse Width = 300 uS, Duty Cycle = 2.0%.

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted) (Continued)

| Characteristic | Symbol | Min. | Max. | Unit |
|----------------|--------|------|------|------|
|----------------|--------|------|------|------|

ON CHARACTERISTICS

| | | | | |
|--|----------------------|----------------|---------------|-----|
| DC Current Gain ($I_C= 1.0 \text{ mAdc}$, $V_{CE}= 5.0 \text{ Vdc}$) ($I_C= 10 \text{ mAdc}$, $V_{CE}= 5.0 \text{ Vdc}$) ($I_C= 50 \text{ mAdc}$, $V_{CE}= 5.0 \text{ Vdc}$) | HFE | 60 60 20 | - 250 - | - |
| Collector-Emitter Saturation Voltage ($I_C= 10 \text{ mAdc}$, $I_B= 1.0 \text{ mAdc}$) ($I_C= 50 \text{ mAdc}$, $I_B= 5.0 \text{ mAdc}$) | $V_{CE}(\text{sat})$ | - - | 0.15 0.25 | Vdc |
| Base-Emitter Saturation Voltage ($I_C= 10 \text{ mAdc}$, $I_B= 1.0 \text{ mAdc}$) ($I_C= 50 \text{ mAdc}$, $I_B= 5.0 \text{ mAdc}$) | $V_{BE}(\text{sat})$ | - - | 1.0 1.2 | Vdc |

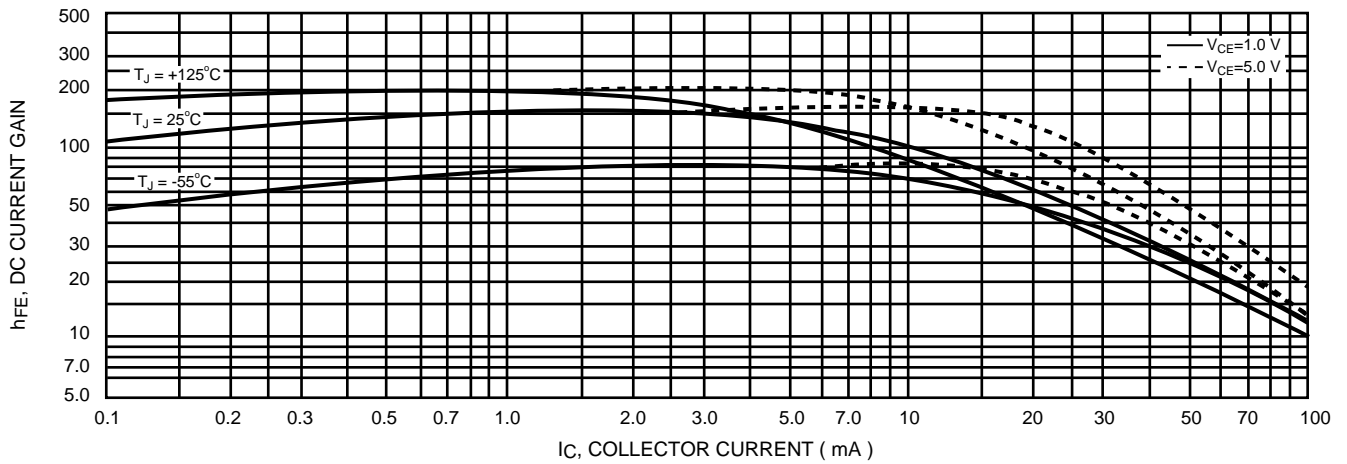


Figure 1. DC Current Gain

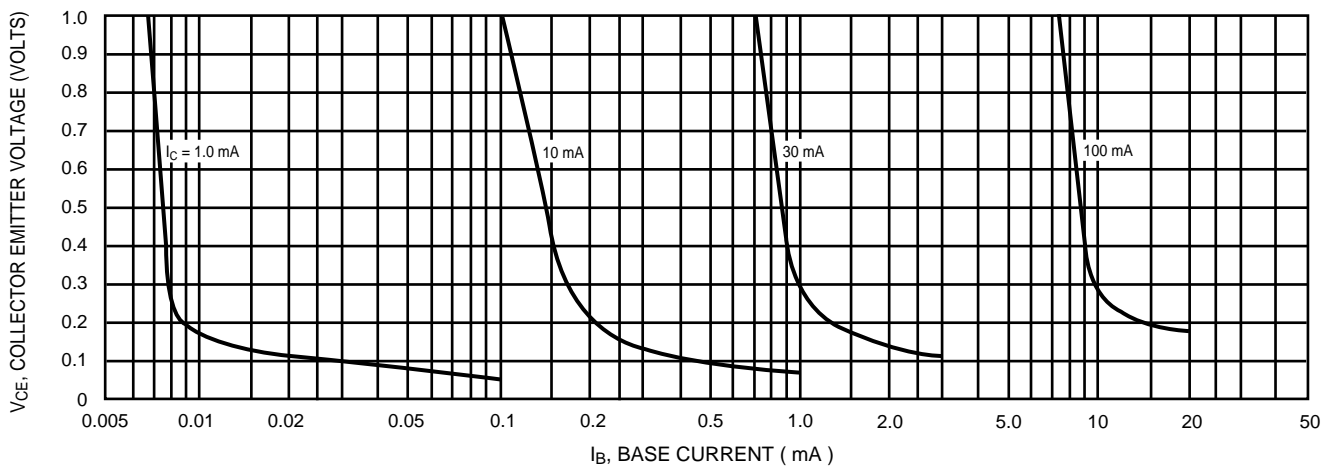


Figure 2. Collector Saturation Region

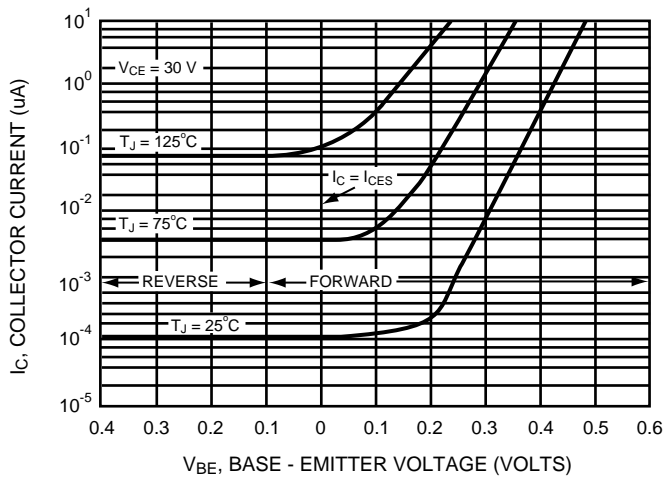


Figure 3. Collector Cut - Off Region

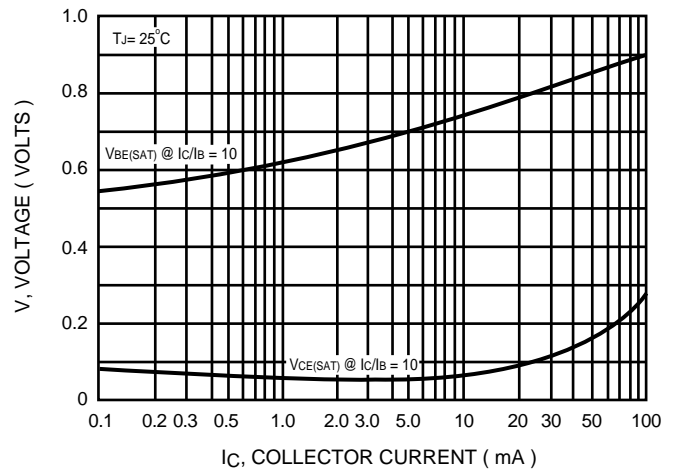


Figure 4. " On " Voltages

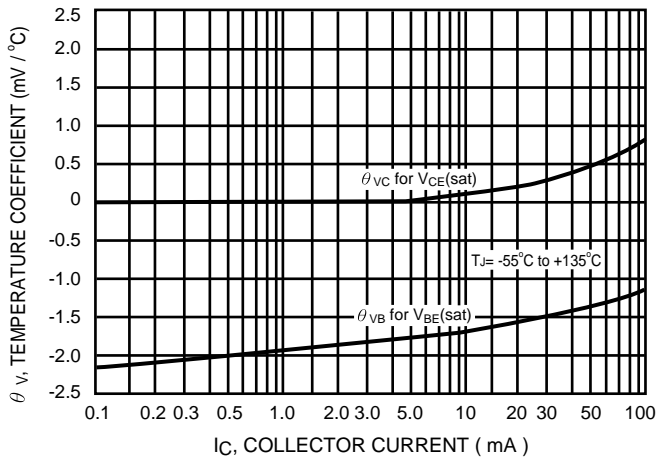
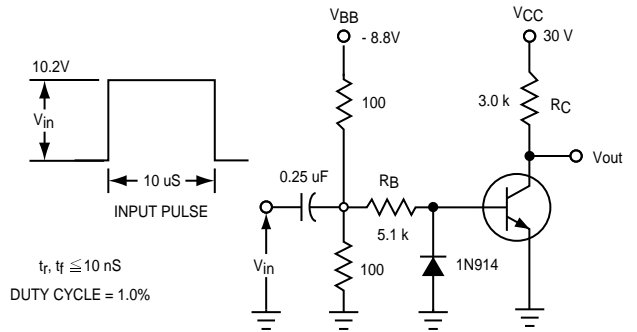


Figure 5. Temperature Coefficients



VALUES SHOWN ARE FOR IC @ 10 mA
Figure 6. Switching Time Test Circuit

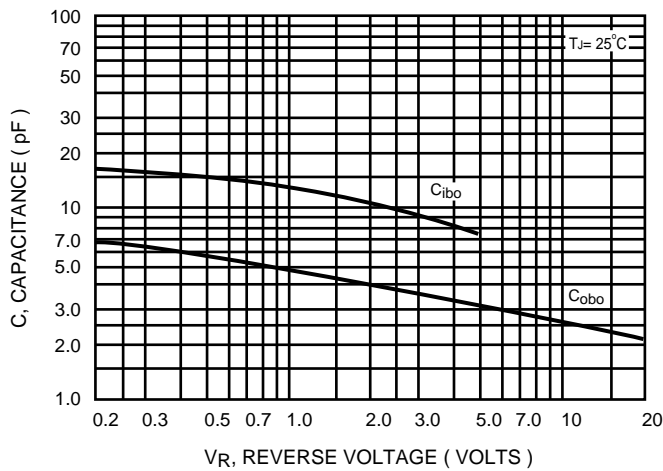


Figure 7. Capacitances

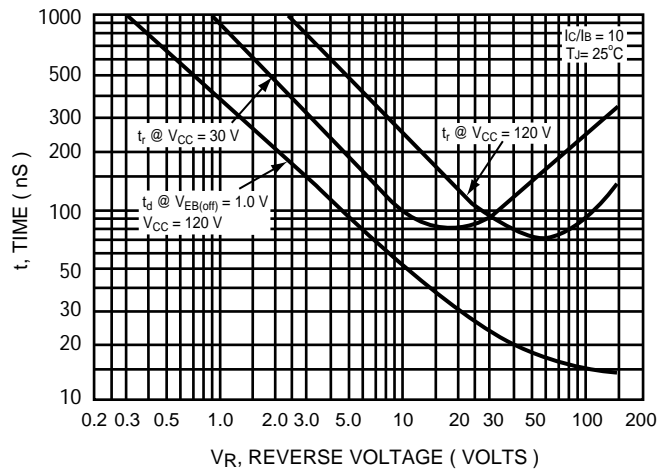


Figure 8. Turn-On Time

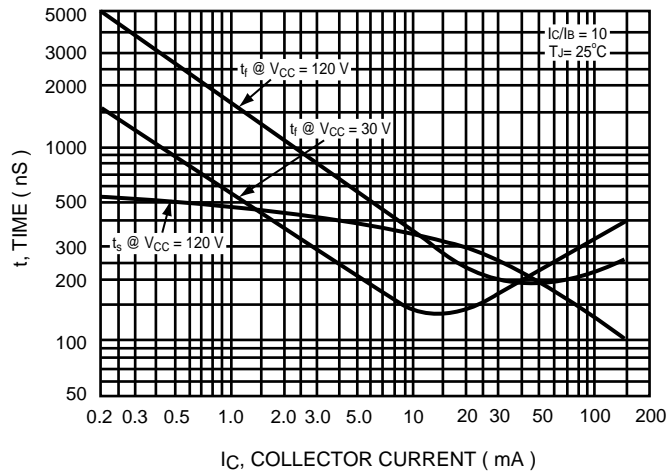


Figure 9. Turn - Off Time