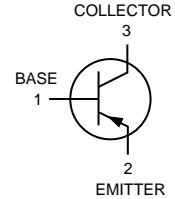
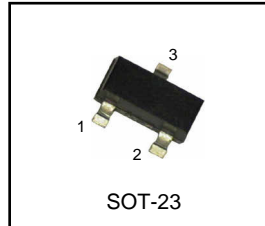


High Voltage Transistor

PNP Silicon

MMBTA93



MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|------------------------------|------------------|-------|-------------------|
| Collector-Emitter Voltage | V _{CEO} | -200 | V _d c |
| Collector-Base Voltage | V _{CBO} | -200 | V _d c |
| Emitter-Base Voltage | V _{EBO} | -5.0 | V _d c |
| Collector Current-Continuous | I _C | -500 | mA _d c |

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

MMBTA92=2D

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

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

OFF CHARACTERISTICS

| | | | | |
|---|----------------------|------|-------|-------------------|
| Collector-Emitter Breakdowe Voltage ⁽³⁾ (I _C = -1.0mA _d c, I _B =0) | V _{(BR)CEO} | -200 | - | V _d c |
| Collector-Base Breakdowe Voltage (I _C = -100uA _d c, I _E =0) | V _{(BR)CBO} | -200 | - | V _d c |
| Emitter - Base Breakdowe Voltage (I _E = -100 uA _d c, I _C =0) | V _{(BR)EBO} | -5.0 | - | V _d c |
| Collector Cutoff Current (V _{CE} = -160 V _d c, I _E = 0) | I _{CBO} | - | -0.25 | uA _d c |
| Emitter Cutoff Curretrn (V _{EB} = -3.0 V _d c, I _C =0) | I _{EBO} | - | -0.1 | uA _d c |

(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 ⁽³⁾

| | | | | |
|---|---------------|----------------|-------------|-----|
| DC Current Gain ($I_C = -1.0 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) ($I_C = -10 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) ($I_C = -30 \text{ mA}_{dc}$, $V_{CE} = -10 \text{ V}_{dc}$) | HFE | 25 40 25 | - - - | - |
| Collector-Emitter Saturation Voltage ($I_C = -20 \text{ mA}_{dc}$, $I_B = -2.0 \text{ mA}_{dc}$) | $V_{CE(sat)}$ | - | -0.5 | Vdc |
| Base-Emitter Saturation Voltage ($I_C = -20 \text{ mA}_{dc}$, $I_B = -2.0 \text{ mA}_{dc}$) | $V_{BE(sat)}$ | - | -0.9 | Vdc |

SMALL-SIGNAL CHARACTERISTIC

| | | | | |
|---|----------|----|-----|-----|
| Current-Gain-Bandwidth Product ($I_C = -10 \text{ mA}_{dc}$, $V_{CE} = -20 \text{ V}_{dc}$, $f = 100 \text{ MHz}$) | f_T | 50 | - | MHz |
| Collector-Base Capacitance ($V_{CB} = -20 \text{ V}_{dc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$) | C_{cb} | - | 8.0 | pF |

(3) Pulse Test : Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

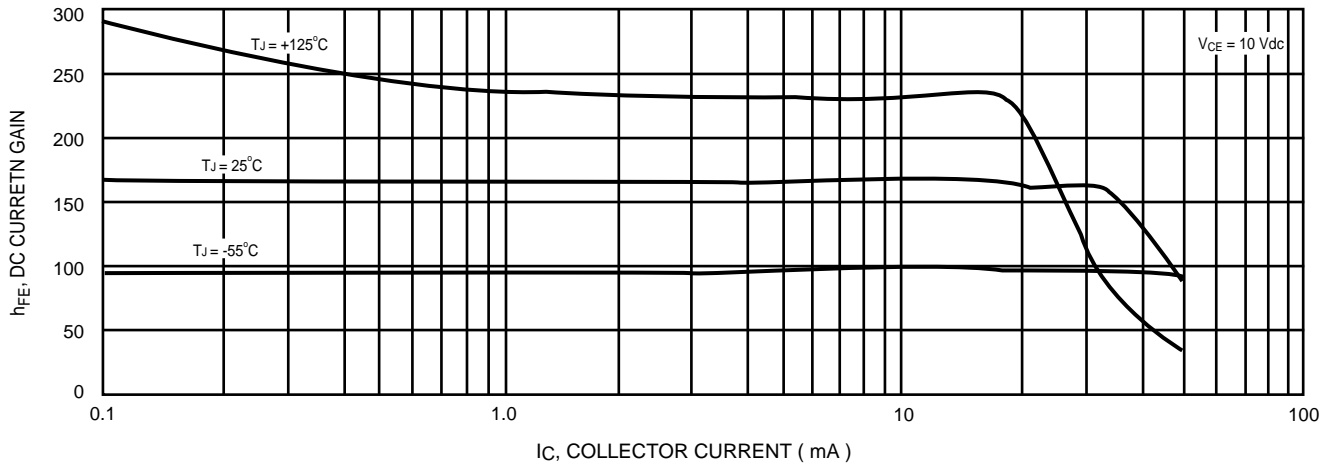


Figure 1. DC Current Gain

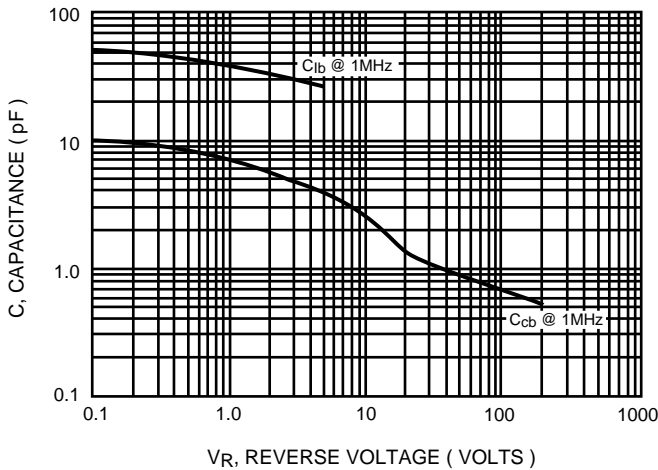


Figure 2. Capacitance

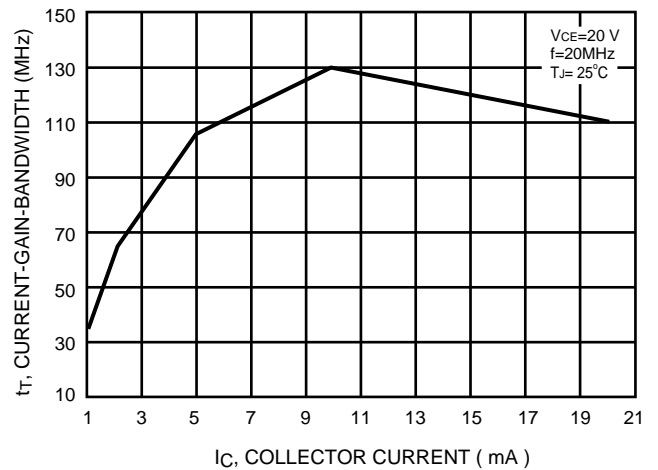


Figure 3. Current-Gain-Bandwidth

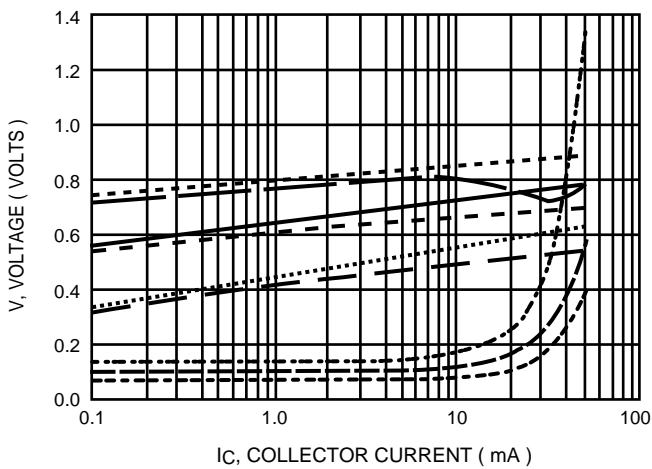


Figure 4. "On" Voltages