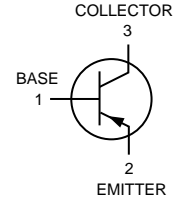
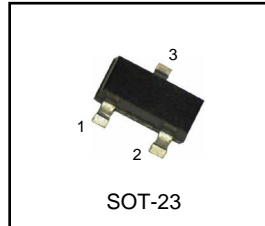


High Voltage Transistor

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
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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
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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 $\leq 2.0\%$.

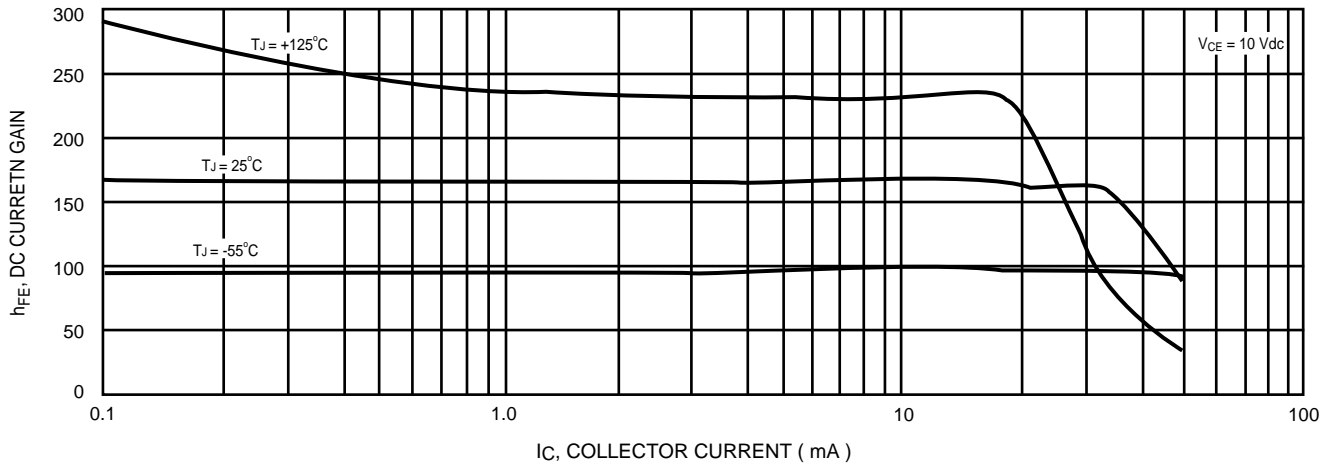


Figure 1. DC Current Gain

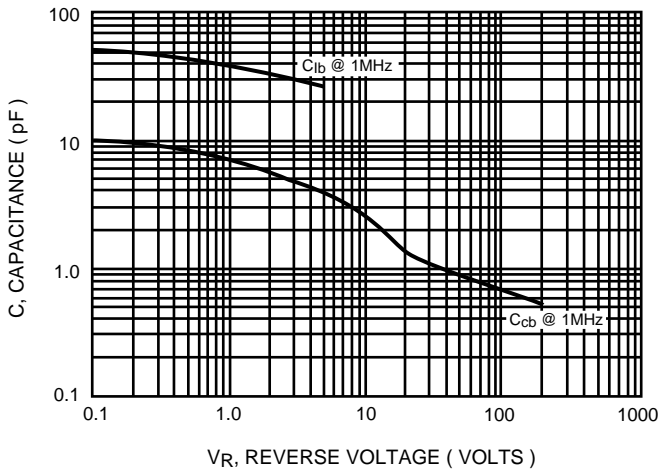


Figure 2. Capacitance

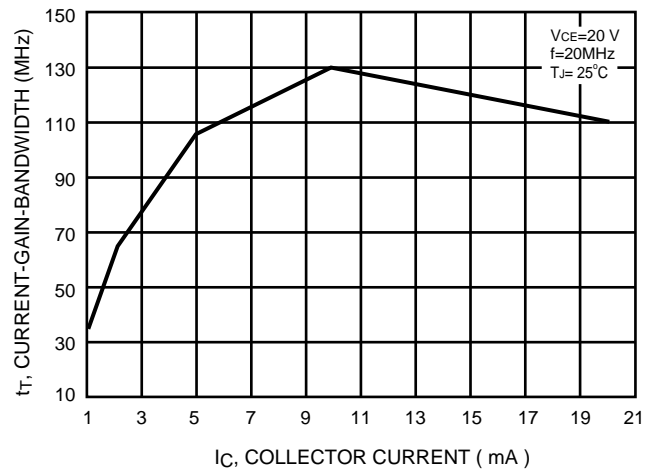


Figure 3. Current-Gain-Bandwidth

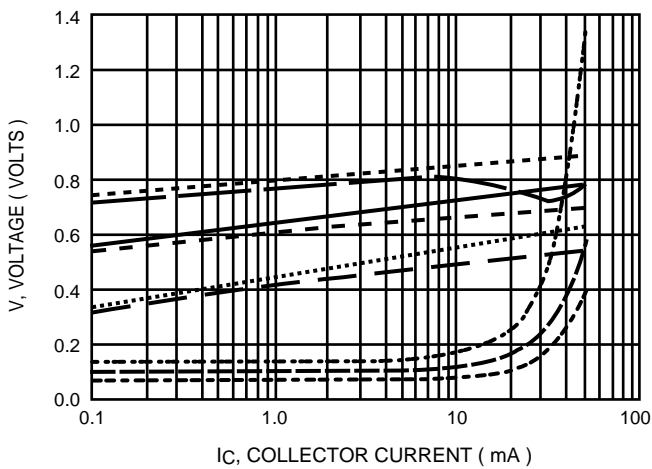


Figure 4. "On" Voltages

- $V_{CE}(\text{sat}) @ 25^\circ\text{C}, I_C/I_B = 10$
- $V_{CE}(\text{sat}) @ 125^\circ\text{C}, I_C/I_B = 10$
- $V_{CE}(\text{sat}) @ -55^\circ\text{C}, I_C/I_B = 10$
- $V_{BE}(\text{sat}) @ 25^\circ\text{C}, I_C/I_B = 10$
- $V_{BE}(\text{sat}) @ 125^\circ\text{C}, I_C/I_B = 10$
- $V_{BE}(\text{sat}) @ -55^\circ\text{C}, I_C/I_B = 10$
- $V_{BE}(\text{on}) @ 25^\circ\text{C}, V_{CE} = 10 \text{ V}$
- $V_{BE}(\text{on}) @ 125^\circ\text{C}, V_{CE} = 10 \text{ V}$
- $V_{BE}(\text{on}) @ -55^\circ\text{C}, V_{CE} = 10 \text{ V}$