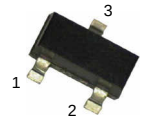
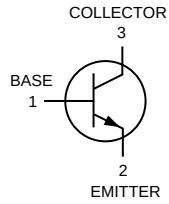
High Voltage Transistor

NPN Silicon

MMBTA43



SOT-23



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	200	Vdc
Collector-Base Voltage	V_{CBO}	200	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Collector Current-Continuous	I_C	500	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	$R_{\theta JA}$	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	$R_{\theta JA}$	417	°C / W
Junction and Storage Temperature	T_J,T_{STG}	-55 to +150	°C

DEVICE MARKING

MMBTA43=M1E

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

Characteristic	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdowe Voltage(3) (I_C= 1.0mAdc, $I_{B=0}$)	$V_{(BR)CEO}$	200	-	Vdc
Collector-Base Breakdowe Voltage (I_C= 100uAdc, $I_{E=0}$)	$V_{(BR)CBO}$	200	-	Vdc
Emitter - Base Breakdowe Voltage (I_E= 100 uAdc, I_C=0)	$V_{(BR)EBO}$	6.0	-	Vdc
Collector Cutoff Current (V_{CE}= 160 Vdc, I_E = 0)	I_{CBO}	-	0.1	uAdc
Emitter Cutoff Curretn (V_{EB}= 4.0 Vdc, I_C=0)	I_{EBO}	-	0.1	uAdc

(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°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)				
DC Current Gain (I_C= 1.0 mAdc, V_{CE}= 10 Vdc) (I_C= 10 mAdc, V_{CE}= 10 Vdc) (I_C= 30 mAdc, V_{CE}= 10 Vdc)	H_{FE}	25 40 40	- - -	-
Collector-Emitter Saturation Voltage (I_C= 20 mAdc, I_B= 2.0 mAdc)	V_{CE}(sat)	-	0.5	Vdc
Base-Emitter Saturation Voltage (I_C= 20 mAdc, I_B= 2.0 mAdc)	V_{BE}(sat)	-	0.9	Vdc
SMALL-SIGNAL CHARACTERISTIC				
Current-Gain-Bandwidth Product (I_C= 10 mAdc, V_{CE}= 20 Vdc, f=100 MHz)	f_T	50	-	MHz
Collector-Base Capacitance (V_{CB}= 20 Vdc, I_E=0, f=1.0 MHz)	Ccb	-	4.0	pF

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

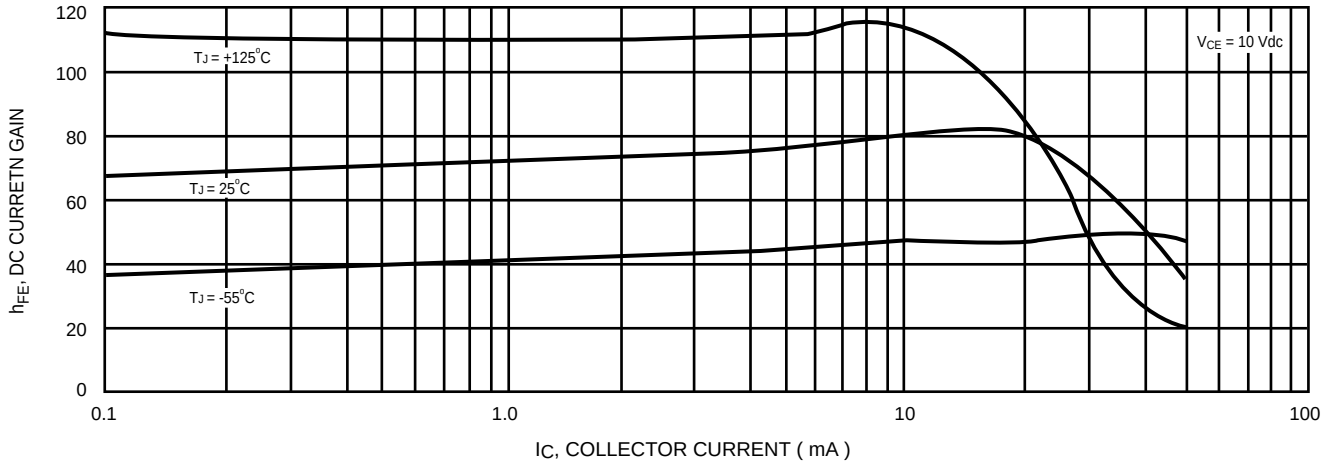


Figure 1. DC Current Gain

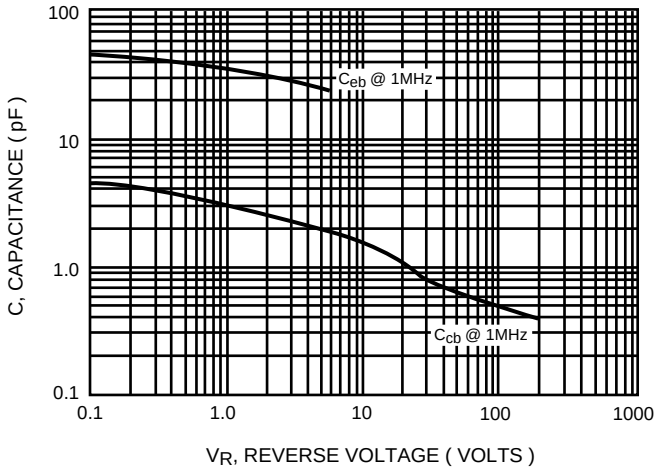


Figure 2. Capacitance

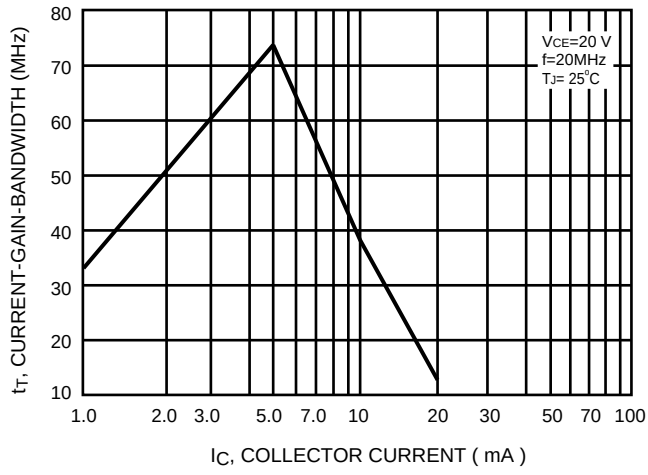


Figure 3. Current-Gain-Bandwidth

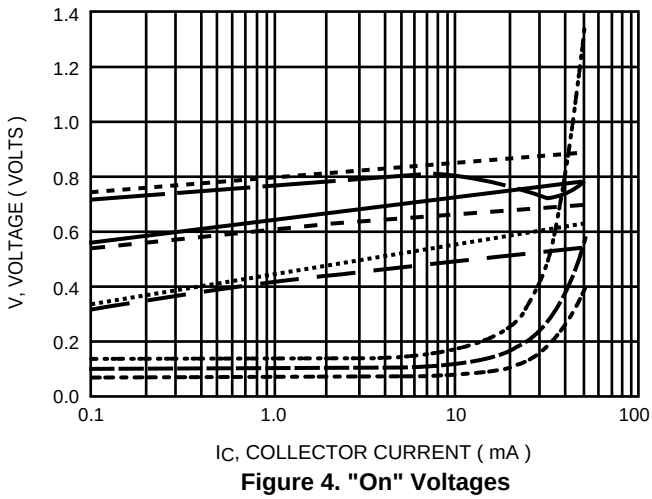


Figure 4. "On" Voltages