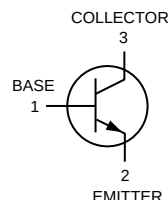
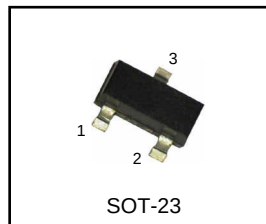


High Voltage Transistor

NPN Silicon

MMBTA43



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⁾ $T_A=25^{\circ}\text{C}$ Derate above 25°C	P_D	225 1.8	mW mW / $^{\circ}\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}\text{C} / \text{W}$
Total Device Dissipation Alumina Substrate, ⁽²⁾ $T_A=25^{\circ}\text{C}$ Derate above 25°C	P_D	300 2.4	mW mW / $^{\circ}\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}\text{C} / \text{W}$
Junction and Storage Temperature	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$

DEVICE MARKING

MMBTA43=M1E

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

Characteristic	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdowe Voltage ⁽³⁾ ($I_C= 1.0\text{mAdc}$, $I_B=0$)	$V_{(BR)CEO}$	200	-	Vdc
Collector-Base Breakdowe Voltage ($I_C= 100\text{uAdc}$, $I_E=0$)	$V_{(BR)CBO}$	200	-	Vdc
Emitter - Base Breakdowe Voltage ($I_E= 100 \text{ uAdc}$, $I_C=0$)	$V_{(BR)EBO}$	6.0	-	Vdc
Collector Cutoff Current ($V_{CE}= 160 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	-	0.1	uAdc
Emitter Cutoff Curretn ($V_{EB}= 4.0 \text{ Vdc}$, $I_C=0$)	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 $\leq 300 \text{ uS}$, Duty Cycle $\leq 2.0\%$.

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min.	Max.	Unit
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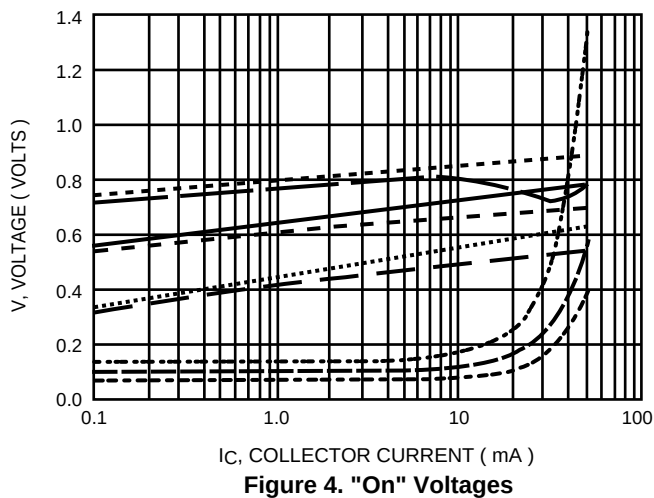
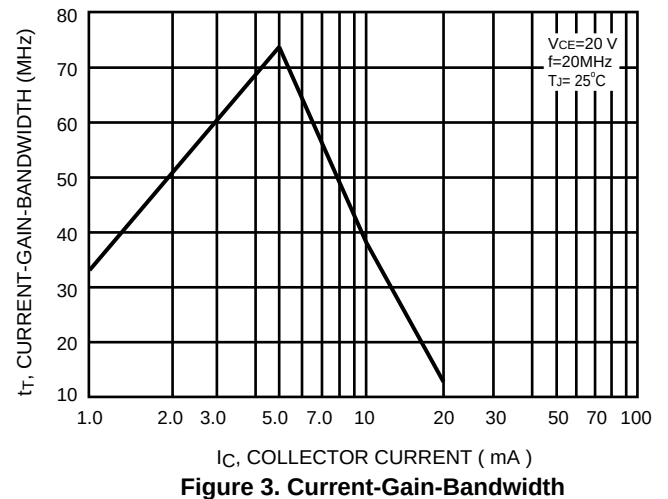
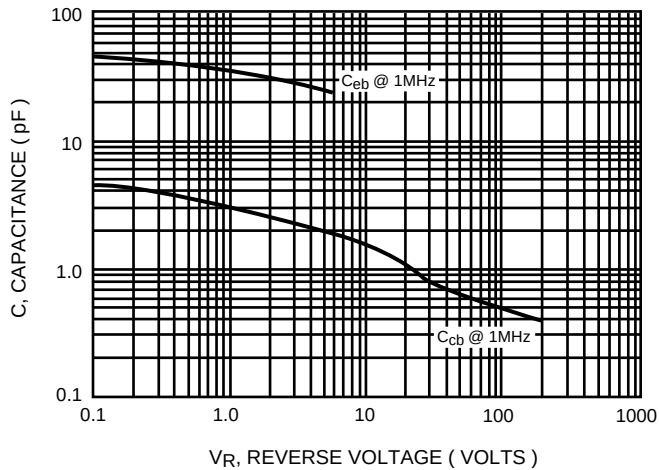
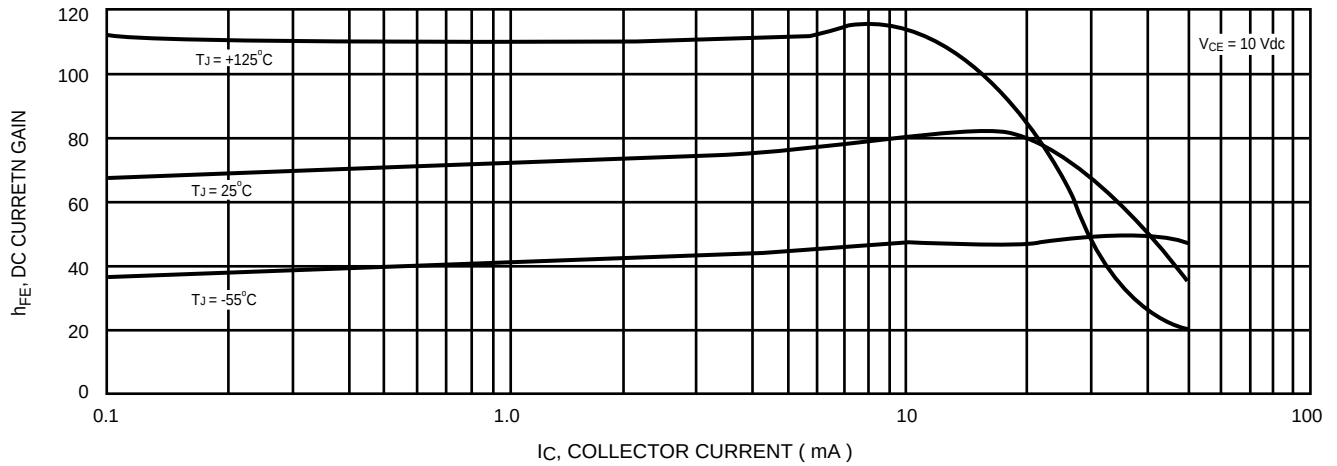
ON CHARACTERISTICS ⁽³⁾

DC Current Gain (IC= 1.0 mA _{dc} , VCE= 10 V _{dc}) (IC= 10 mA _{dc} , VCE= 10 V _{dc}) (IC= 30 mA _{dc} , VCE= 10 V _{dc})	H _{FE}	25 40 40	- - -	-
Collector-Emitter Saturation Voltage (IC= 20 mA _{dc} , I _B = 2.0 mA _{dc})	V _{CE(sat)}	-	0.5	V _{dc}
Base-Emitter Saturation Voltage (IC= 20 mA _{dc} , I _B = 2.0 mA _{dc})	V _{BE(sat)}	-	0.9	V _{dc}

SMALL-SIGNAL CHARACTERISTIC

Current-Gain-Bandwidth Product (IC= 10 mA _{dc} , VCE= 20 V _{dc} , f=100 MHz)	f _T	50	-	MHz
Collector-Base Capacitance (VCB= 20 V _{dc} , I _E =0, f=1.0 MHz)	C _{cb}	-	4.0	pF

(3) Pulse Test : Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.



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