

# MMBTA42

## NPN Silicon High Voltage Transistor

### Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Capable of 300mWatts of Power Dissipation
- Continuous Collector Current : 300mA
- Marking:1D

### Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
<b>OFF CHARACTERISTICS</b>				
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage* ( $I_C=1.0\text{mAdc}$ , $I_B=0$ )	300		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C=100\mu\text{Adc}$ , $I_E=0$ )	300		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_E=100\mu\text{Adc}$ , $I_C=0$ )	6.0		Vdc
$I_{CBO}$	Collector Cutoff Current ( $V_{CB}=200\text{Vdc}$ , $I_E=0$ )		0.1	$\mu\text{Adc}$
$I_{EBO}$	Emitter Cutoff Current ( $V_{EB}=6.0\text{Vdc}$ , $I_C=0$ )		0.1	$\mu\text{Adc}$

### ON CHARACTERISTICS

$h_{FE}$	DC Current Gain*  ( $I_C=1.0\text{mAdc}$ , $V_{CE}=10\text{Vdc}$ ) ( $I_C=10\text{mAdc}$ , $V_{CE}=10\text{Vdc}$ ) ( $I_C=30\text{mAdc}$ , $V_{CE}=10\text{Vdc}$ )	25 40 40	----	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=20\text{mAdc}$ , $I_B=2.0\text{mAdc}$ )		0.5	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ( $I_C=20\text{mAdc}$ , $I_B=2.0\text{mAdc}$ )		0.9	Vdc

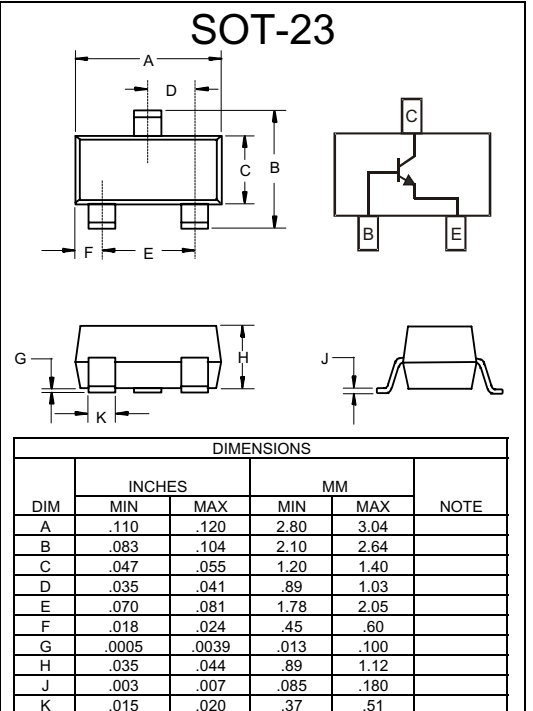
### SMALL-SIGNAL CHARACTERISTICS

$f_T$	Current Gain-Bandwidth Product ( $I_C=10\text{mAdc}$ , $V_{CE}=20\text{Vdc}$ , $f=100\text{MHz}$ )	50		MHz
$C_{cb}$	Collector-Emitter Capacitance ( $V_{CB}=20\text{Vdc}$ , $I_E=0$ , $f=1.0\text{MHz}$ )		3.0	pF

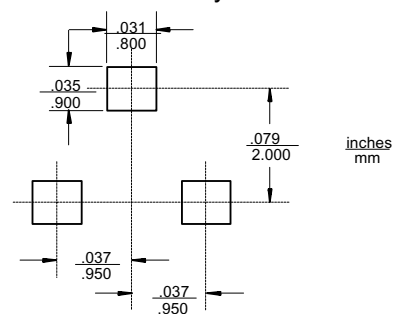
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, <sup>(1)</sup> $T_A = 25^\circ\text{C}$ Derate above 25°C	$P_D$	225	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate, <sup>(2)</sup> $T_A = 25^\circ\text{C}$ Derate above 25°C	$P_D$	300	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

\*Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$



### Suggested Solder Pad Layout



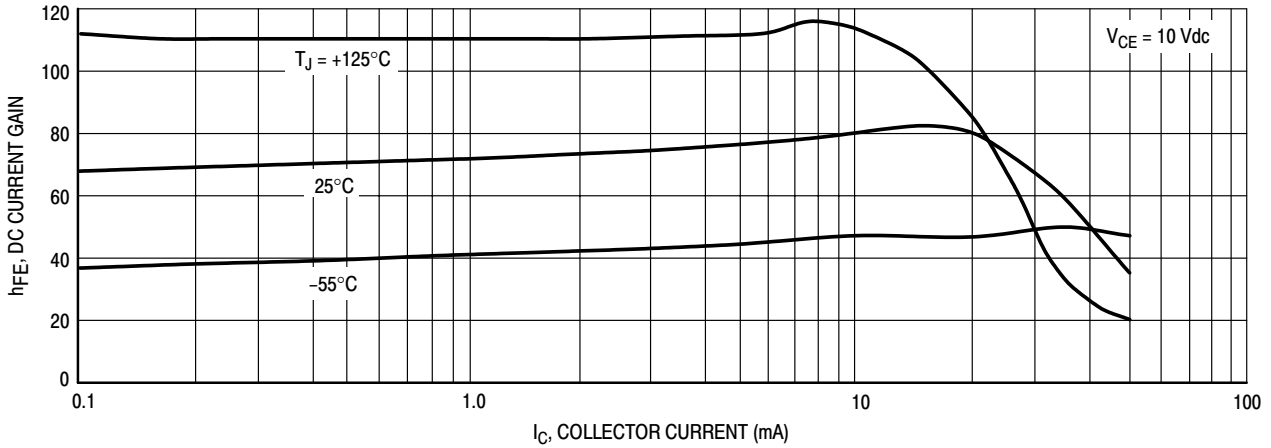


Figure 1. DC Current Gain

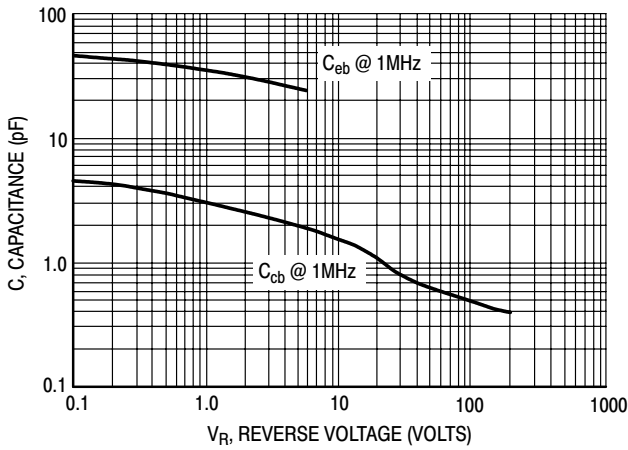


Figure 2. Capacitance

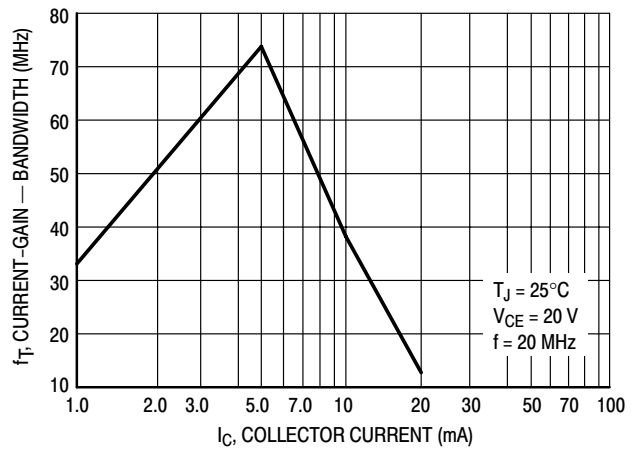


Figure 3. Current-Gain - Bandwidth

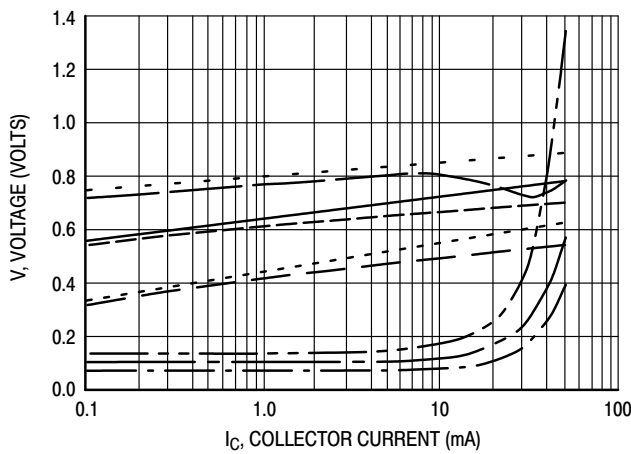


Figure 4. "ON" Voltages

- $V_{CE(sat)}$  @ 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



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### Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel; 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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