

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 350mWatts of Power Dissipation
- Continuous Collector Current : 500mA
- Marking:1D

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	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	μAdc
I_{EBO}	Emitter Cutoff Current ($V_{EB}=6.0\text{Vdc}$, $I_C=0$)		0.1	μAdc

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

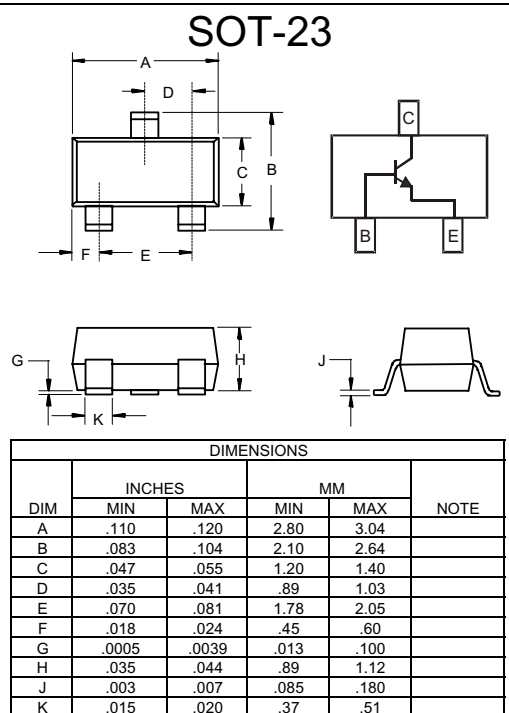
SMALL-SIGNAL CHARACTERISTICS

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

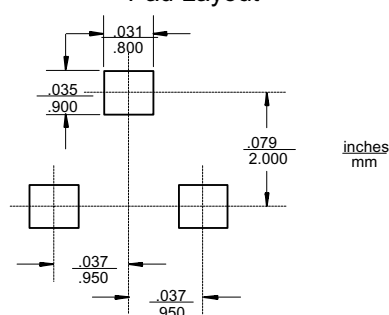
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, ⁽¹⁾ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	225	mW
		1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, ⁽²⁾ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350	mW
		2.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	°C/W
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	°C

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



Suggested Solder Pad Layout



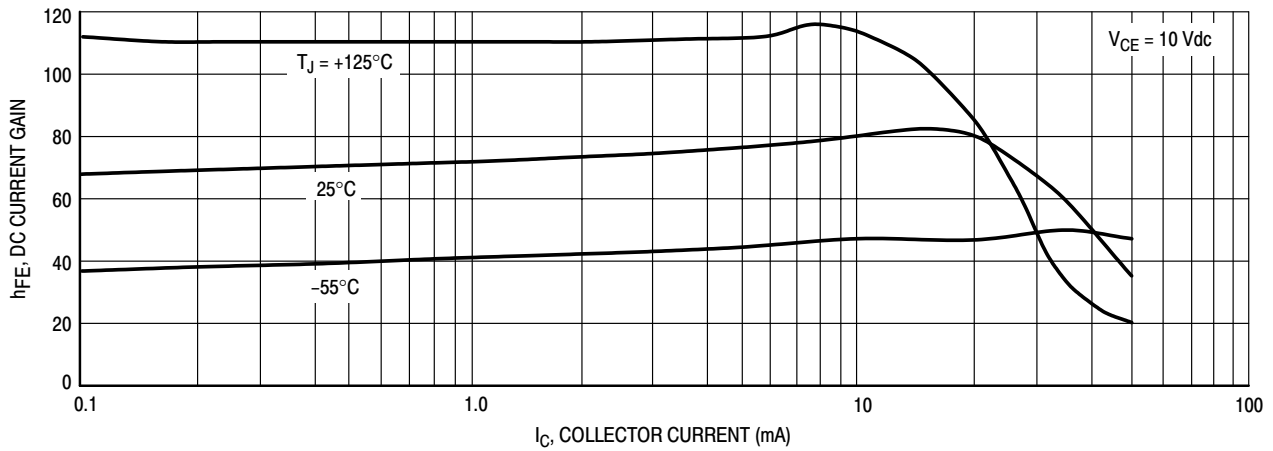


Figure 1. DC Current Gain

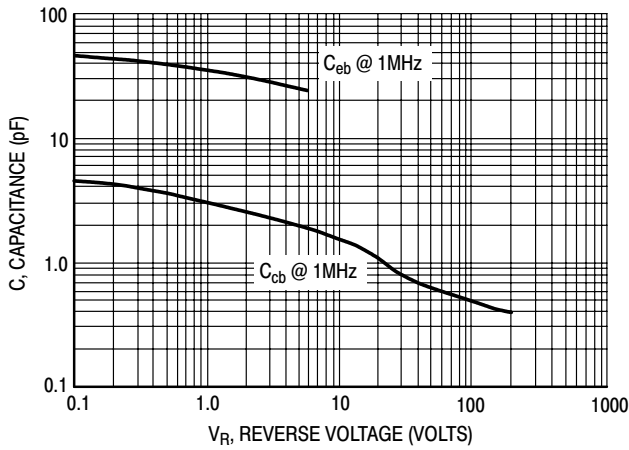


Figure 2. Capacitance

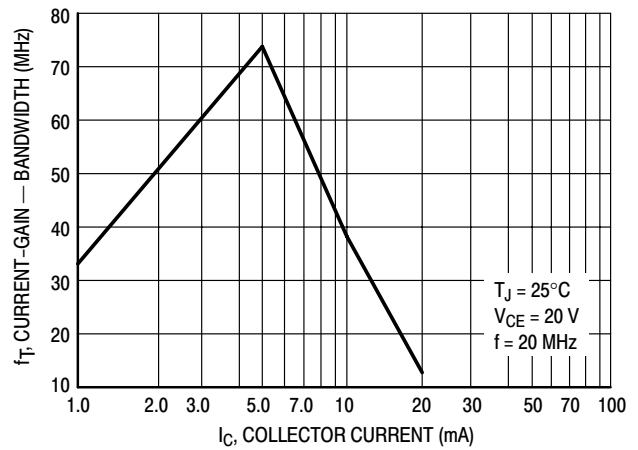


Figure 3. Current-Gain - Bandwidth

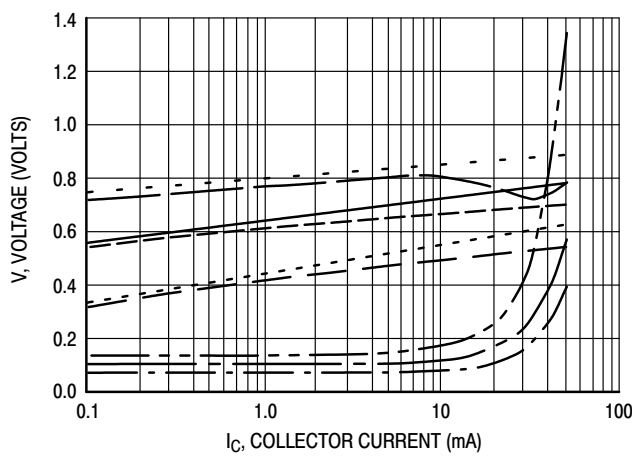


Figure 4. "ON" Voltages

- $V_{CE(sat)}$ @ 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 , $V_{CE} = 10 \text{ V}$
- $V_{BE(on)}$ @ 125°C , $V_{CE} = 10 \text{ V}$
- $V_{BE(on)}$ @ -55°C , $V_{CE} = 10 \text{ V}$



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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