



# MMBTA42

## Features

- 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-Emmitter Breakdown Voltage* ( $I_C=1.0mA$ , $I_B=0$ )	300		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C=100\mu A$ , $I_E=0$ )	300		Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_E=100\mu A$ , $I_C=0$ )	6.0		Vdc
$I_{CBO}$	Collector Cutoff Current ( $V_{CE}=20V$ , $I_E=0$ )		0.1	$\mu A$
$I_{EBO}$	Emitter Cutoff Current ( $V_{EB}=6.0V$ , $I_C=0$ )		0.1	$\mu A$

<b>ON CHARACTERISTICS</b>				
$h_{FE}$	DC Current Gain*  ( $I_C=1.0mA$ , $V_{CE}=10V$ ) ( $I_C=10mA$ , $V_{CE}=10V$ ) ( $I_C=30mA$ , $V_{CE}=10V$ )	25 40 40	----	
$V_{CE(sat)}$	Collector-Emmitter Saturation Voltage ( $I_C=20mA$ , $I_B=2.0mA$ )		0.5	Vdc
$V_{BE(sat)}$	Base-Emmitter Saturation Voltage ( $I_C=20mA$ , $I_B=2.0mA$ )		0.9	Vdc

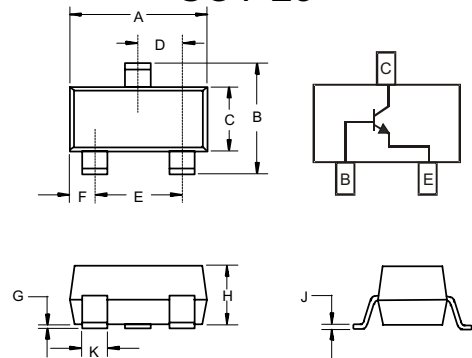
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
$f_T$	Current Gain-Bandwidth Product ( $I_C=10mA$ , $V_{CE}=20V$ , $f=100MHz$ )	50		MHz
$C_{cb}$	Collector-Emmitter Capacitance ( $V_{CE}=20V$ , $I_E=0$ , $f=1.0MHz$ )		3.0	pF

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

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

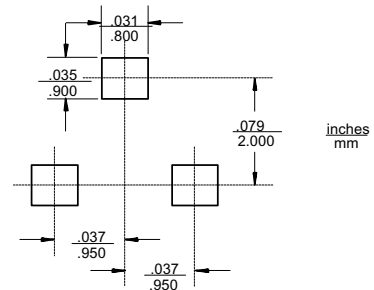
## NPN Silicon High Voltage Transistor

### SOT-23



DIM	DIMENSIONS				NOTE
	INCHES		MM		
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

### Suggested Solder Pad Layout



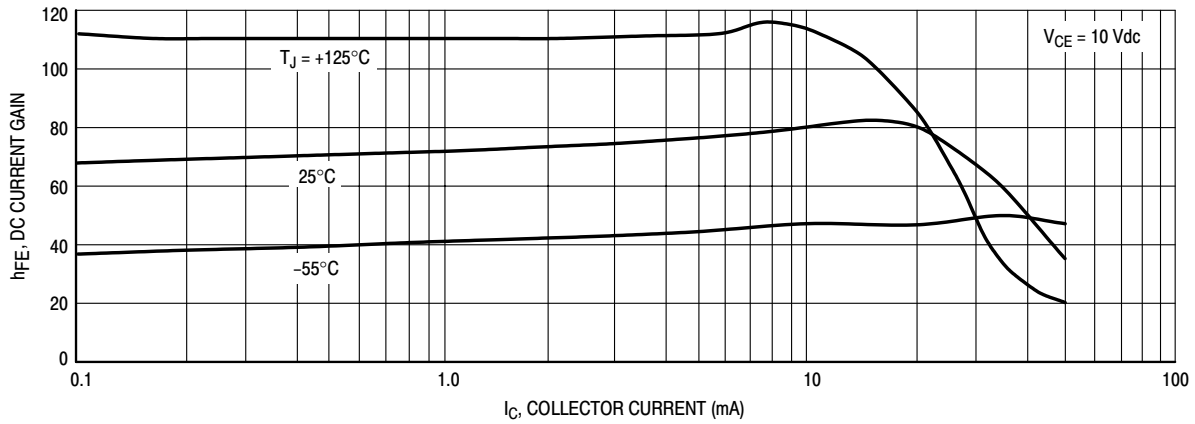


Figure 1. DC Current Gain

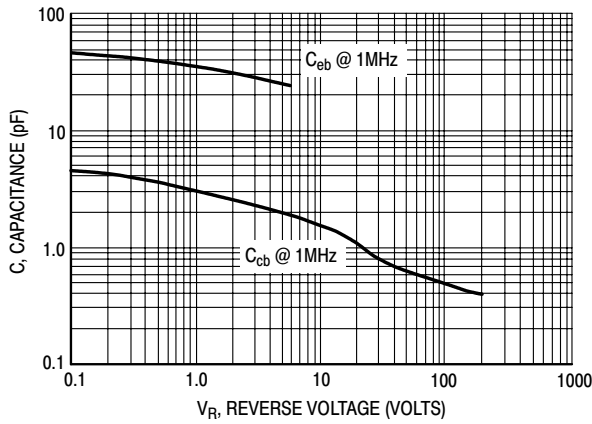


Figure 2. Capacitance

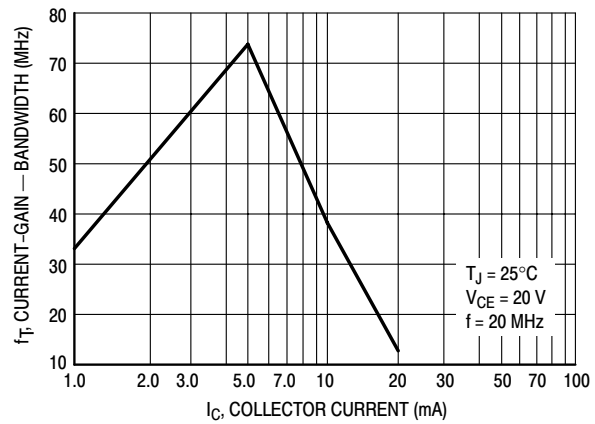


Figure 3. Current-Gain - Bandwidth

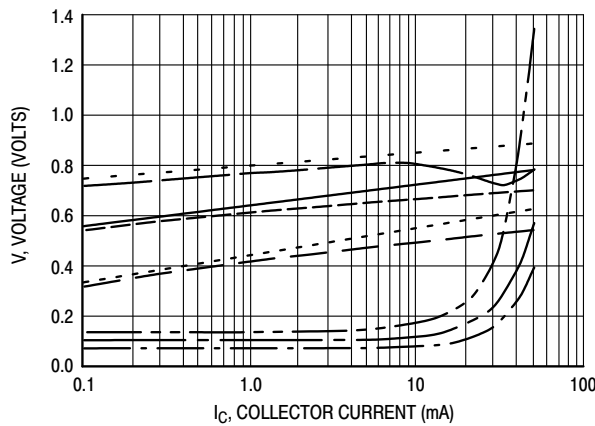


Figure 4. "ON" Voltages

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



Micro Commercial Components

Ordering Information :

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

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