MMBT5401

HIGH VOLTAGE TRANSISTOR
PNP Silicon

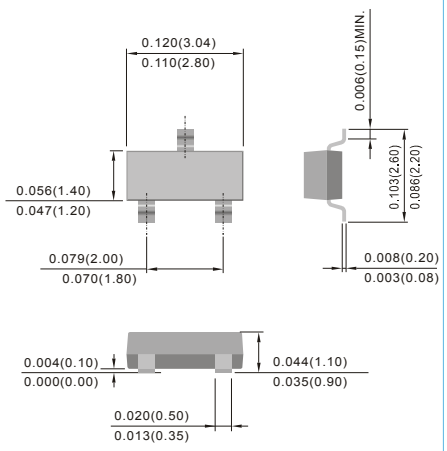
FEATURES

- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

MECHANICAL DATA

- Case : SOT-23 plastic case.
- Terminals : Solderable per MIL-STD-750,Method 2026
- Standard packaging : 8mm tape
- Approx. Weight : 0.0003 ounces, 0.008 grams
- Marking : M5A

SOT-23 Unit : inch(mm)



MAXIMUM RATINGS

RATING	SYMBOL	VALUE	UNITS
Collector-Emitter Voltage	V_{CEO}	-150	Vdc
Collector-Base Voltage	V_{CBO}	-160	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current-Continuous	I_C	-600	mAdc

Maximum ratings are those values beyound which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously.If these limits are exceeded, device functional operational is not implied, damage may occur and reliability may be affected.

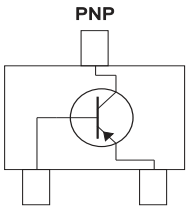


Fig.35

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THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX	UNITS
Total Device Dissipation FR-4 Board (Note 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 (Note 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

1.FR-4 = 70 X 60 X 1mm

2.Alumina = 0.4 X 0.3 X 0.024 in 99.5% alumina

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

CHARACTERISTIC	SYMBOL	MIN	MAX	UNITS
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I_C=-1.0mAdc,I_B=0)	$V_{(BR)CEO}$	-150	-	Vdc
Collector-Base Breakdown Voltage (I_C=-100μAdc,I_E=0)	$V_{(BR)CBO}$	-160	-	Vdc
Emitter-Base Breakdown Voltage (I_E=-10μAdc,I_C=0)	$V_{(BR)EBO}$	-5.0	-	Vdc
Collector Cutoff Current (V_{CB}=-120Vdc, I_E=0) (V_{CB}=-120Vdc, I_E=0, T_A=100°C)	I_{CBO}	- -	-50 -50	nAdc μAdc
ON CHARACTERISTICS				
DC Current Gain (I_C=-1.0mAdc, V_{CE}=-5.0Vdc) (I_C=-10mAdc, V_{CE}=-5.0Vdc) (I_C=-50mAdc, V_{CE}=-5.0Vdc)	h_{FE}	50 60 50	- 240 -	-
Collector-Emitter Saturation Voltage (I_C=-10mAdc, I_B=-1.0mAdc) (I_C=-50mAdc, I_B=-5.0mAdc)	$V_{CE(SAT)}$	- -	-0.2 -0.5	Vdc
Base-Emitter Saturation Voltage (I_C=-10mAdc, I_B=-1.0mAdc) (I_C=-50mAdc, I_B=-5.0mAdc)	$V_{BE(SAT)}$	- -	-1.0 -1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain-Bandwidth Product (I_C=-10mAdc, V_{CE}=-10Vdc, f=100MHz)	f_T	100	300	MHz
Output Capacitance (V_{CB}=-10Vdc, I_E=0, f=1.0MHz)	C_{OBO}	-	6.0	pF
Small Signal Current Gain (I_C=-1.0mAdc, V_{CE}=-10Vdc, f=1.0kHz)	h_{FE}	40	200	-
Noise Figure (I_C=-200μAdc, V_{CE}=-5.0Vdc, Rs=10Ω, f=1.0kHz)	NF	-	8.0	dB

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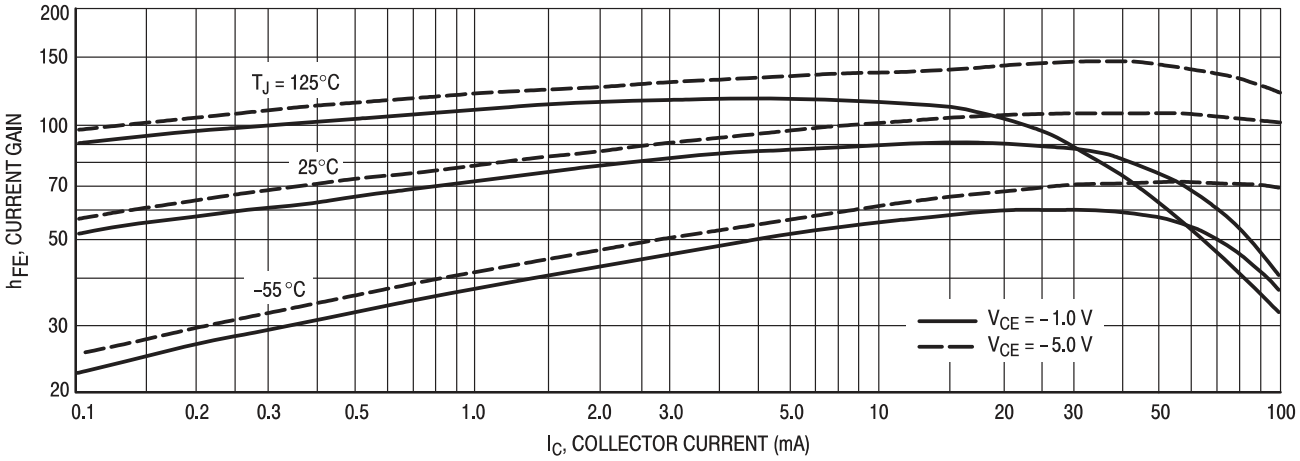

Figure 1. DC Current Gain

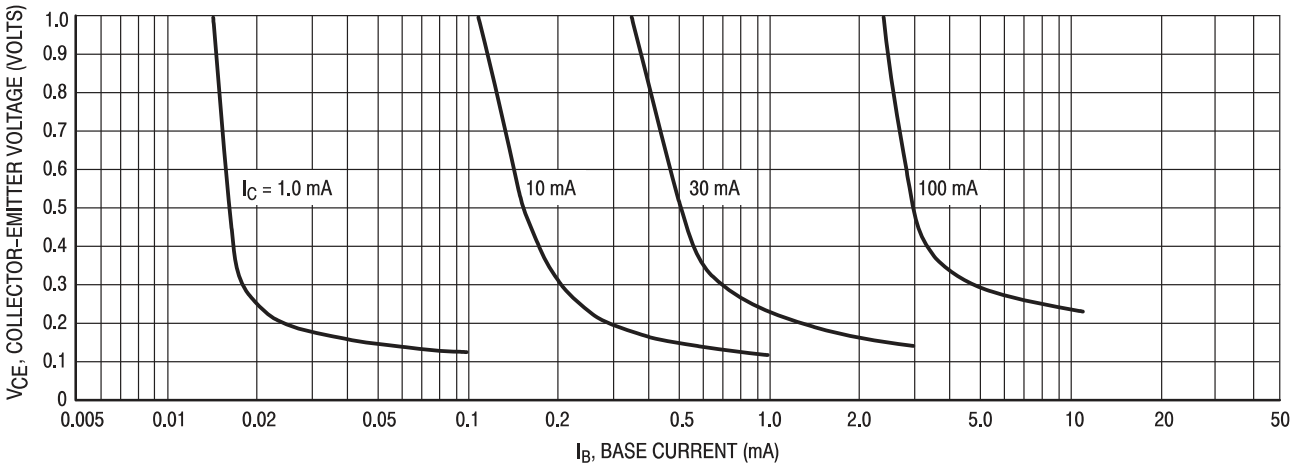

Figure 2. Collector Saturation Region

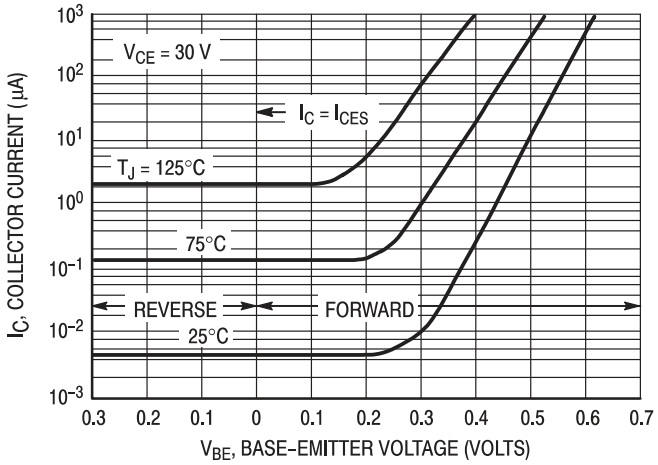

Figure 3. Collector Cut–Off Region

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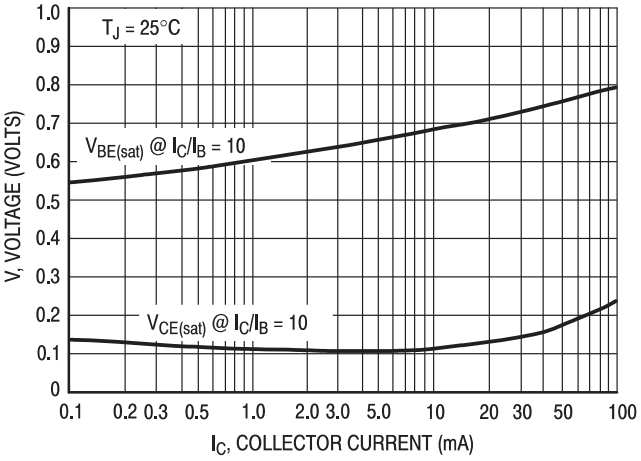

Figure 4. "On" Voltages

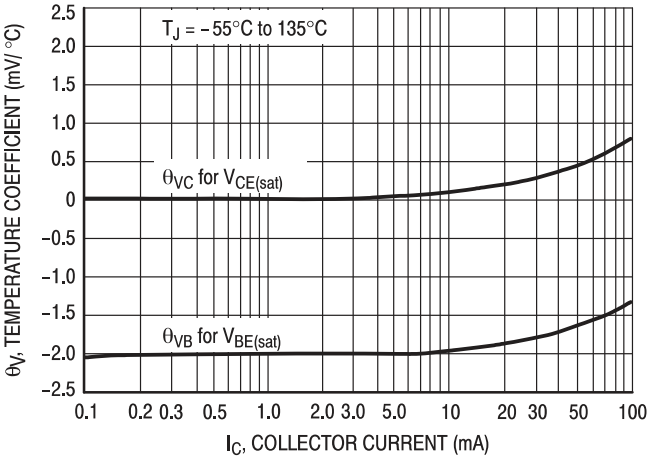

Figure 5. Temperature Coefficients

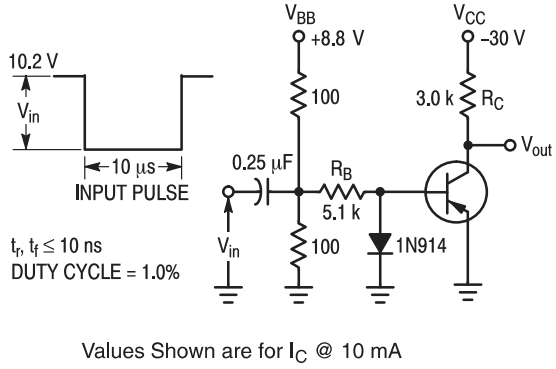

Figure 6. Switching Time Test Circuit

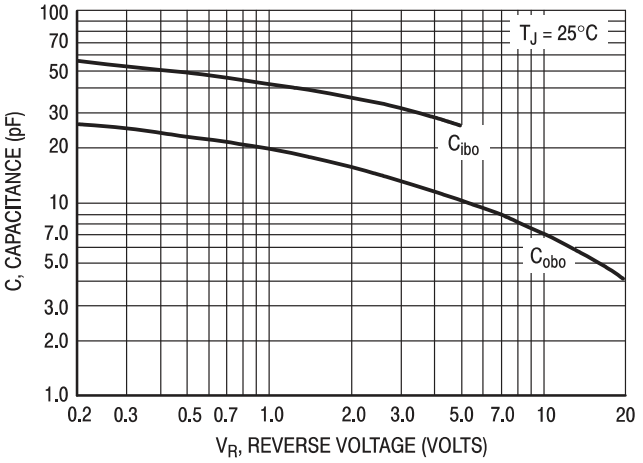

Figure 7. Capacitances

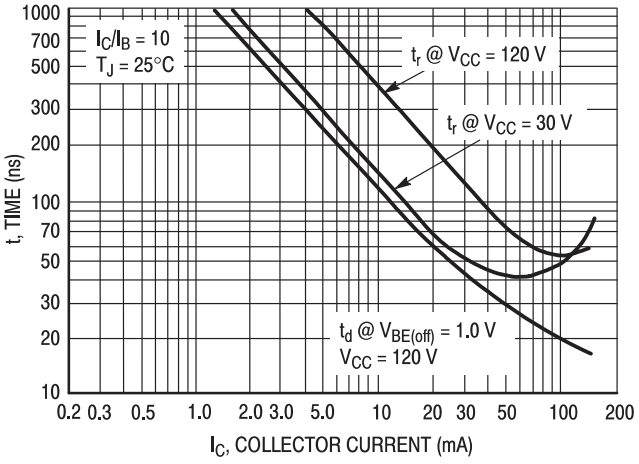

Figure 8. Turn–On Time

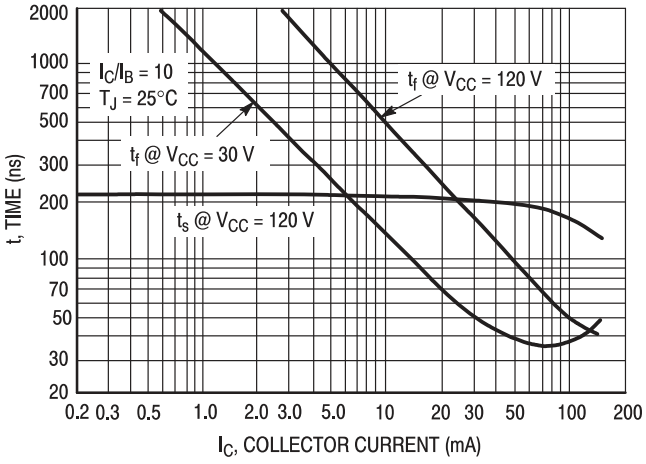

Figure 9. Turn–Off Time

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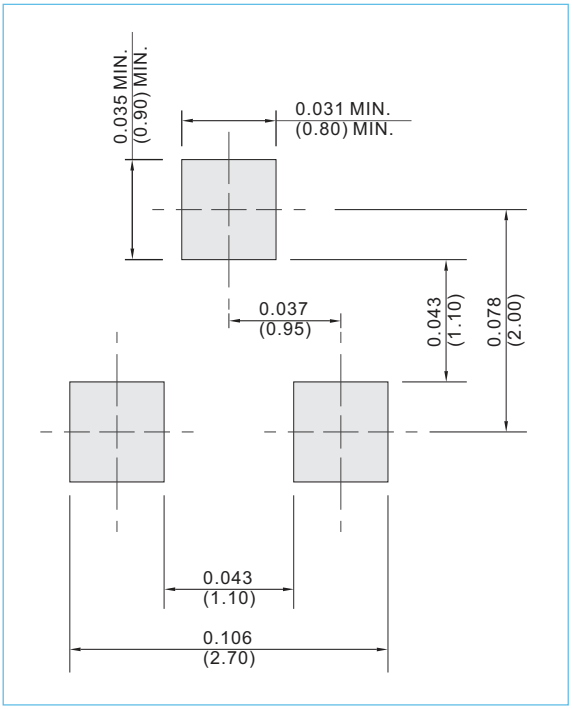
MOUNTING PAD LAYOUT

SOT-23 Unit : inch(mm)



ORDER INFORMATION

- Packing information

  T/R - 12K per 13" plastic Reel

  T/R - 3K per 7" plastic Reel

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Part No_packing code_Version

MMBT5401_R1_00001
MMBT5401_R2_00001

For example :

RB500V-40_R2_00001

- Part No.
- Serial number
- Version code means HF
- Packing size code means 13"
- Packing type means T/R

Packing Code XX				Version Code XXXXX		
Packing type	1st Code	Packing size code	2nd Code	HF or RoHS	1st Code	2nd~5th Code
Tape and Ammunition Box (T/B)	A	N/A	0	HF	0	serial number
Tape and Reel (T/R)	R	7"	1	RoHS	1	serial number
Bulk Packing (B/P)	B	13"	2			
Tube Packing (T/P)	T	26mm	X			
Tape and Reel (Right Oriented) (TRR)	S	52mm	Y			
Tape and Reel (Left Oriented) (TRL)	L	PANASERT T/B CATHODE UP (PBCU)	U			
FORMING	F	PANASERT T/B CATHODE DOWN (PBCD)	D			

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