MMBT2222A-AU

NPN GENERAL PURPOSE SWITCHING TRANSISTOR

VOLTAGE 40 Volts **POWER** 225 mWatts

FEATURES

- NPN epitaxial silicon, planar design
- Collector-emitter voltage VCE = 40V
- Collector current IC = 600mA
- Acqire quality system certificate : TS16949
- AEC-Q101 qualified
- Lead free in comply with EU RoHS 2002/95/EC directives.
- Green molding compound as per IEC61249 Std. . (Halogen Free)

MECHANICAL DATA

- Case: SOT-23, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams
- Marking: M2A

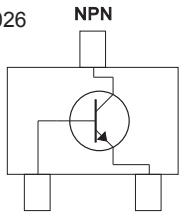
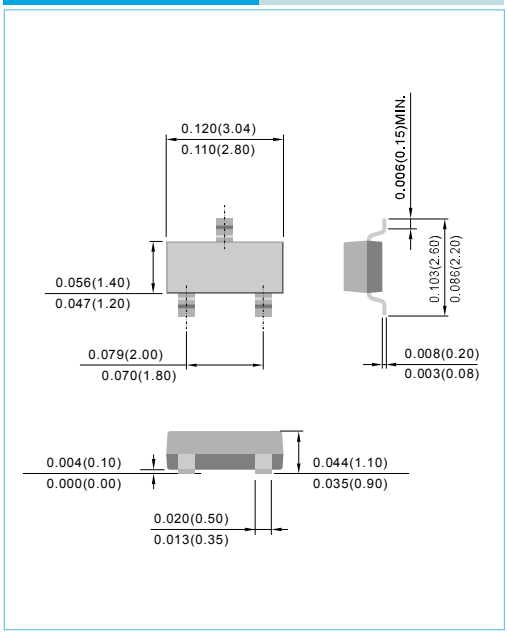


Fig.34

SOT-23 Unit : inch(mm)



ABSOLUTE RATINGS

PARAMETER	Symbol	Value	Units
Collector - Emitter Voltage	V_{CEO}	40	V
Collector - Base Voltage	V_{CBO}	75	V
Emitter - Base Voltage	V_{EBO}	6.0	V
Collector Current - Continuous	I_C	600	mA

THERMAL CHARACTERISTICS

PARAMETER	Symbol	Value	Units
Max Power Dissipation (Note 1)	P_{TOT}	225	mW
Thermal Resistance , Junction to Ambient	$R_{\theta JA}$	556	°C/W
Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

Note 1: Transistor mounted on FR-5 board 1.0 x 0.75 x 0.062 in.

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PARAMETER	Symbol	Test Condition	MIN.	TYP.	MAX.	Units
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	IC=1.0mA, IB=0	40	-	-	V
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	IC=10uA, IE=0	75	-	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	IE=10uA, IC=0	6.0	-	-	V
Base Cutoff Current	I_{BL}	VCE=60V, VEB=3.0V	-	-	20	nA
Collector Cutoff Current	I_{CEX}	VCE=60V, VEB=3.0V	-	-	10	nA
	I_{CBO}	VCE=60V, IE=0, VCE=60V, IE=0,TJ=125°C	-	-	10 10	nA μA
Emitter Cutoff Current	I_{EBO}	VEB=3.0V, IC=0,	-	-	100	nA
DC Current Gain	h_{FE}	IC=0.1mA, VCE=10V IC=1.0mA, VCE=10V IC=10mA, VCE=10V IC=10mA, VCE=10V,TJ=125°C IC=150mA, VCE=10V (Note 2) IC=150mA, VCE=1V (Note 2) IC=500mA, VCE=10V (Note 2)	35 50 75 35 100 50 40	- - - - - - -	- - - - 300 - -	-
Collector - Emitter Saturation Voltage (Note 2)	$V_{CE(SAT)}$	IC=150mA, IB=15mA IC=500mA, IB=50mA	-	-	0.3 1.0	V
Base - Emitter Saturation Voltage (Note 2)	$V_{BE(SAT)}$	IC=150mA, IB=15mA IC=500mA, IB=50mA	0.6 -	- -	1.2 2.0	V
Collector - Base Capacitance	C_{CBO}	VCB=10V, IE=0, f=1MHz	-	-	8.0	pF
Emitter - Base Capacitance	C_{EBO}	VCB=0.5V, IC=0, f=1MHz	-	-	25	pF
Delay Time	td	VCC=3V,VBE=-5V, IC=150mA,IB=15mA	-	-	10	ns
Rise Time	tr	VCC=3V,VBE=-5V, IC=150mA,IB=15mA	-	-	25	ns
Storage Time	ts	VCC=30V,IC=150mA IB1=IB2=15mA	-	-	225	ns
Fall Time	tf	VCC=30V,IC=150mA IB1=IB2=15mA	-	-	60	ns

Note 2: Pulse Test: Pulse Width < 300 us, Duty Cycle < 2.0%.

SWITCHING TIME EQUIVALENT TEST CIRCUITS

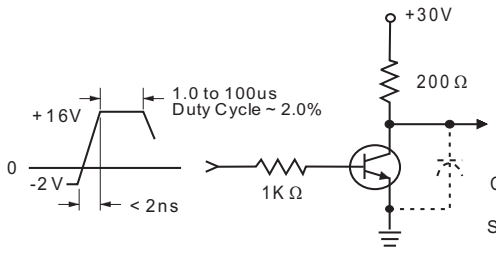
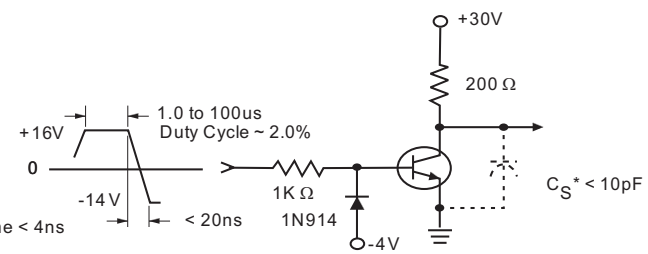


Fig. 1 Turn-On Time



* Total shunt capacitance of test jig, connectors, and oscilloscope

Fig. 2 Turn-Off Time

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ELECTRICAL CHARACTERISTICS CURVE

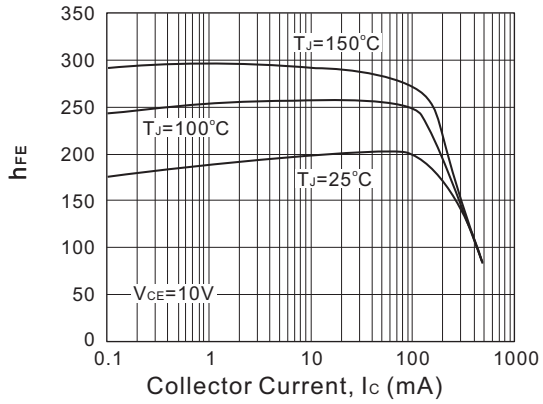

Fig. 3. Typical h_{FE} vs Collector Current

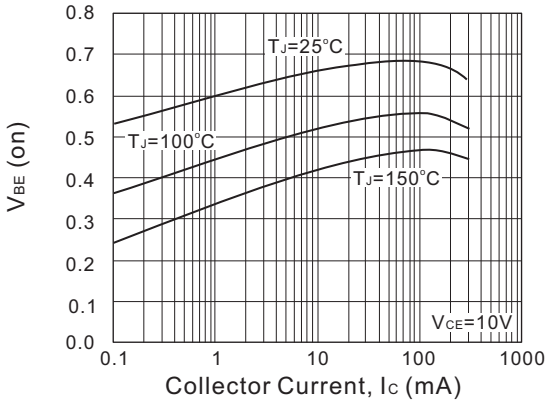

Fig. 4. Typical V_{BE} vs Collector Current

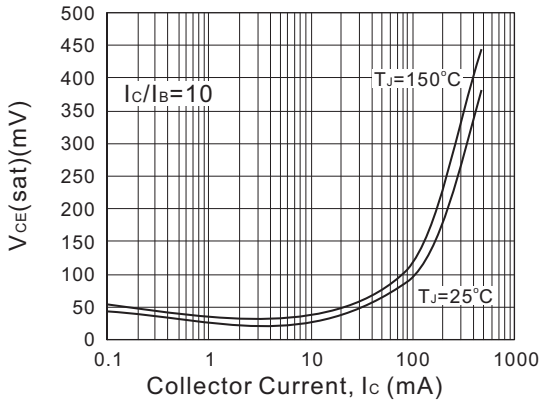

Fig. 5. Typical V_{CE} (sat) vs Collector Current

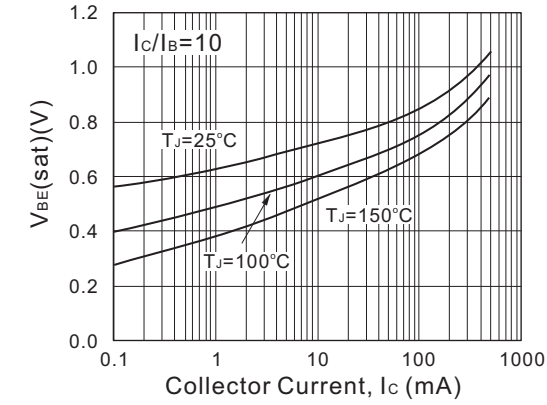

Fig. 6. Typical V_{BE} (sat) vs Collector Current

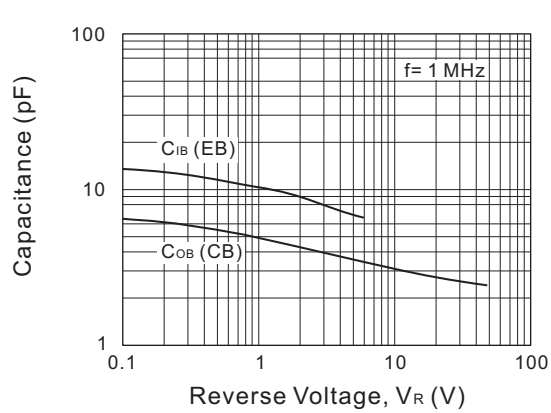

Fig. 7. Typical Capacitances vs Reverse Voltage

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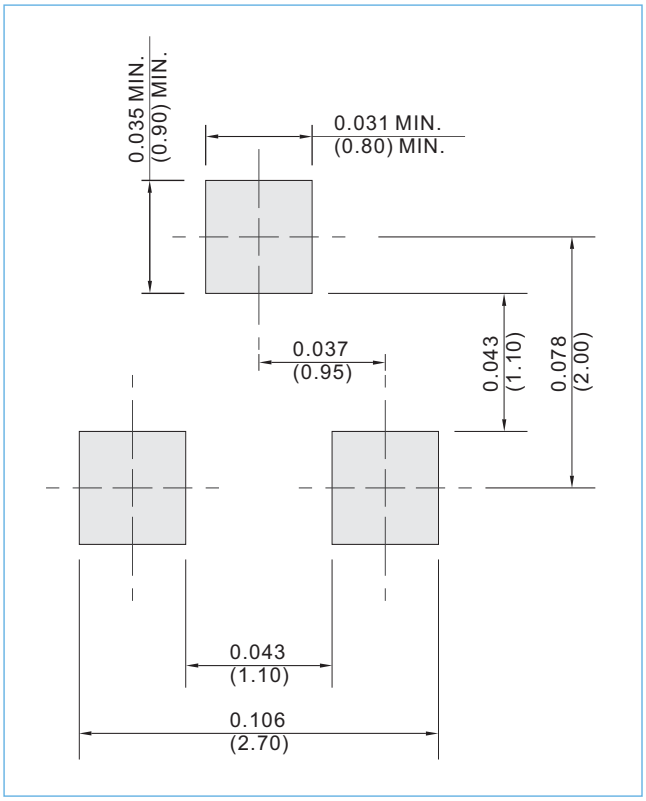
MOUNTING PAD LAYOUT

SOT-23 Unit : inch(mm)



ORDER INFORMATION

- Packing information

  T/R - 12K per 13" plastic Reel

  T/R - 3K per 7" plastic Reel

MMBT2222A-AU

Part No_packing code_Version

MMBT2222A-AU_R1_000A1
MMBT2222A-AU_R2_000A1

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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