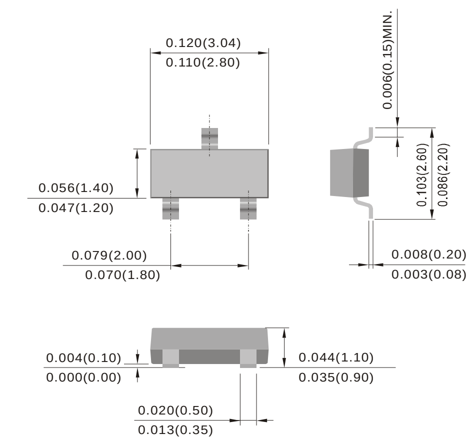
MMBT3906

PNP GENERAL PURPOSE SWITCHING TRANSISTOR

VOLTAGE	40 Volt	POWER	225 mWatt

SOT-23 Unit : inch(mm)



FEATURES

- PNP epitaxial silicon, planar design
- Collector-emitter voltage VCE = -40V
- Collector current IC = -200mA
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. . (Halogen Free)

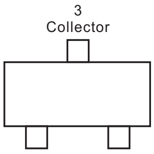
MECHANICAL DATA

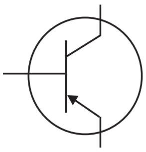
Case: SOT-23, Plastic

Terminals: Solderable per MIL-STD-750, Method 2026

Approx. Weight: 0.0003 ounces, 0.0084 grams

Marking: S2A





ABSOLUTE RATINGS

Parameter	Symbol	Value	Units
Collector - Emitter Voltage	V_{CEO}	-40	V
Collector - Base Voltage	V_{CBO}	-40	V
Emitter - Base Voltage	V_{EBO}	-5	V
Collector Current - Continuous	I_C	-200	mA

THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Units
Max Power Dissipation (Note 1)	P_{TOT}	330	mW
Thermal Resistance , Junction to Ambient	$R_{\theta JA}$	375	^{o}C/W
Operating Junction Temperature and Storage Temperature Range	T_J,T_{STG}	-55 to 150	^{o}C

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

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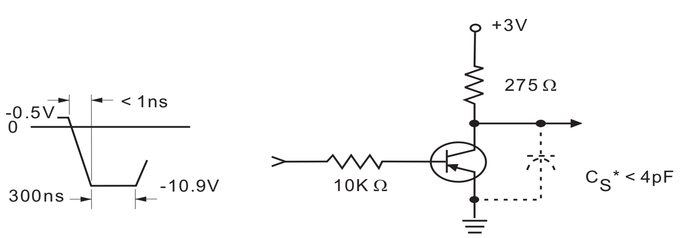
ELECTRICAL CHARACTERISTICS

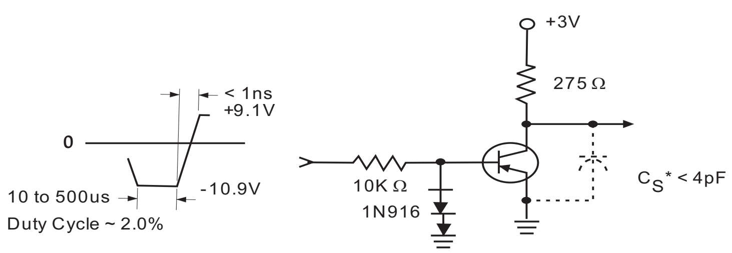
Parameter	Symbol	Test Condition	MIN.	TYP.	MAX.	Units
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	IC=-1mA, IB=0	-40	-	-	V
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	IC=-10uA, IE=0	-40	-	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	IE=-10uA, IC=0	-5	-	-	V
Base Cutoff Current	I_{BL}	VCE=-30V, VEB=-3V	-	-	-50	nA
Collector Cutoff Current	I_{CEX}	VCE=-30V, VEB=-3V	-	-	-50	nA
DC Current Gain (Note 2)	h_{FE}	IC=-0.1mA, VCE=-1V IC=-1mA, VCE=-1V IC=-10mA, VCE=-1V IC=-50mA, VCE=-1V IC=-100mA, VCE=-1V	60 80 100 60 30	- - - - -	- - 300 - -	-
Collector - Emitter Saturation Voltage (Note 2)	$V_{CE(SAT)}$	IC=-10mA, IB=-1mA IC=-50mA, IB=-5mA	-	-	-0.25 -0.4	V
Base - Emitter Saturation Voltage (Note 2)	$V_{BE(SAT)}$	IC=-10mA, IB=-1mA IC=-50mA, IB=-5mA	-0.65 -	- -	-0.85 -0.95	V
Collector - Base Capacitance	C_{CBO}	VCB=-5V, IE=0, f=1MHz	-	-	4.5	pF
Emitter - Base Capacitance	C_{EBO}	VEB=-0.5V, IC=0, f=1MHz	-	-	10	pF
Delay Time	td	V_{CC}=-3V, V_{BE}=-0.5V, I_C=-10mA, I_B=-1mA	-	-	35	ns
Rise Time	tr	V_{CC}=-3V, V_{BE}=-0.5V, I_C=-10mA, I_B=-1mA	-	-	35	ns
Storage Time	ts	VCC=-3V, IC=-10mA IB1=IB2=-1mA	-	-	225	ns
Fall Time	tf	VCC=-3V, IC=-10mA IB1=IB2=-1mA	-	-	75	ns
Current Gain-Bandwidth Product	f_T	I_C=-10mA, V_{CE}=-20V, f=100MHz	250	-	-	MHz

Note 2: Pulse Test: Pulse Width $\leq$ 300 us, Duty Cycle $\leq$ 2.0%.

SWITCHING TIME EQUIVALENT TEST CIRCUITS



Delay and Rise Time Equivalent Test Circuit



Storage and Fall Time Equivalent Test Circuit

ELECTRICAL CHARACTERISTICS CURVE

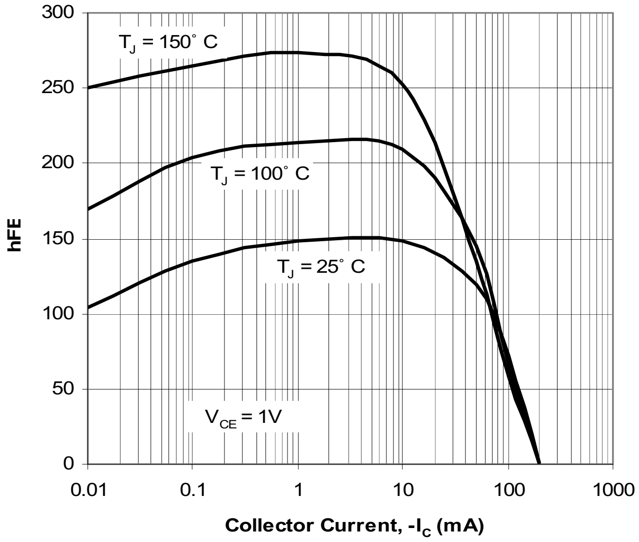


Fig. 1. Typical h_{FE} vs. Collector Current

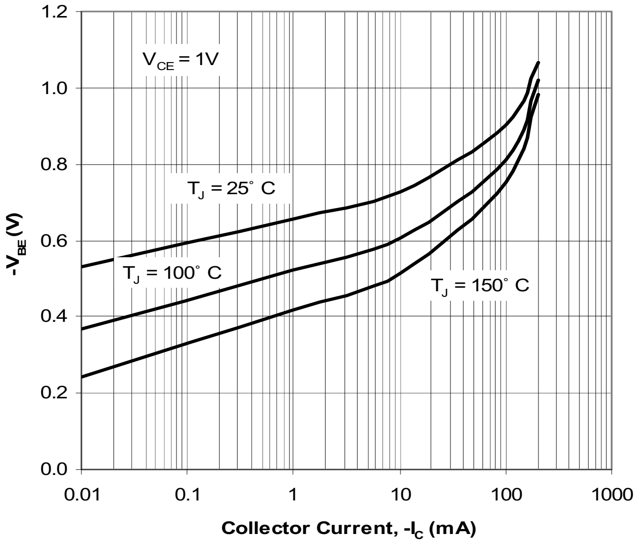


Fig. 2. Typical V_{BE} vs. Collector Current

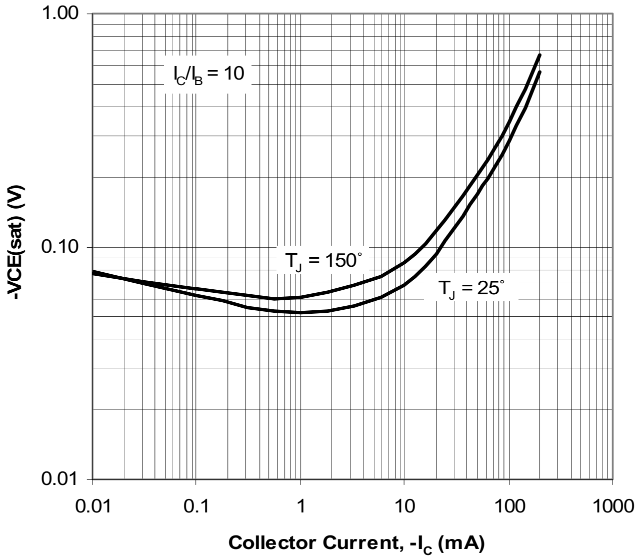


Fig. 3. Typical $V_{CE\ (sat)}$ vs. Collector Current

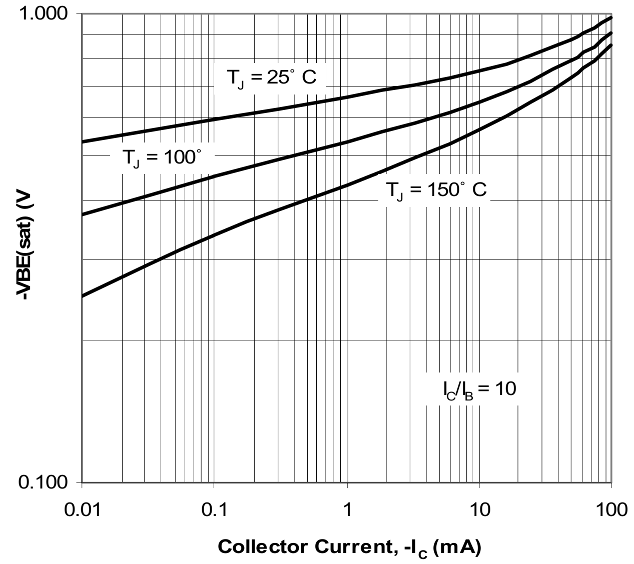


Fig. 4. Typical $V_{BE\ (sat)}$ vs. Collector Current

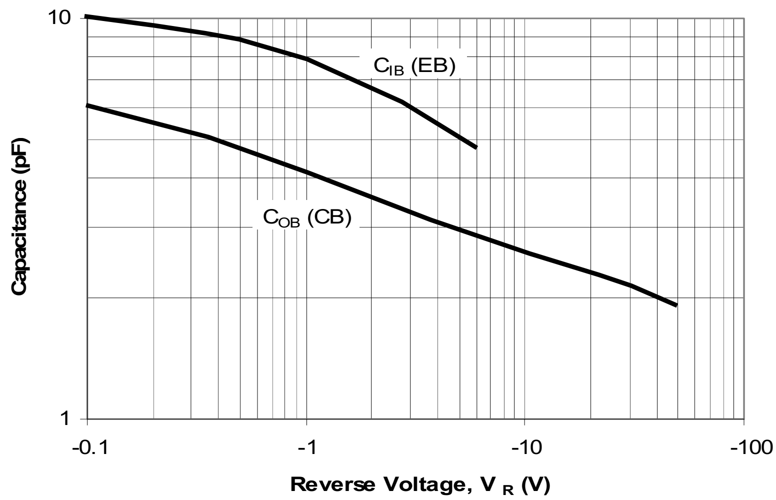


Fig. 5. Typical Capacitances vs. Reverse Voltage

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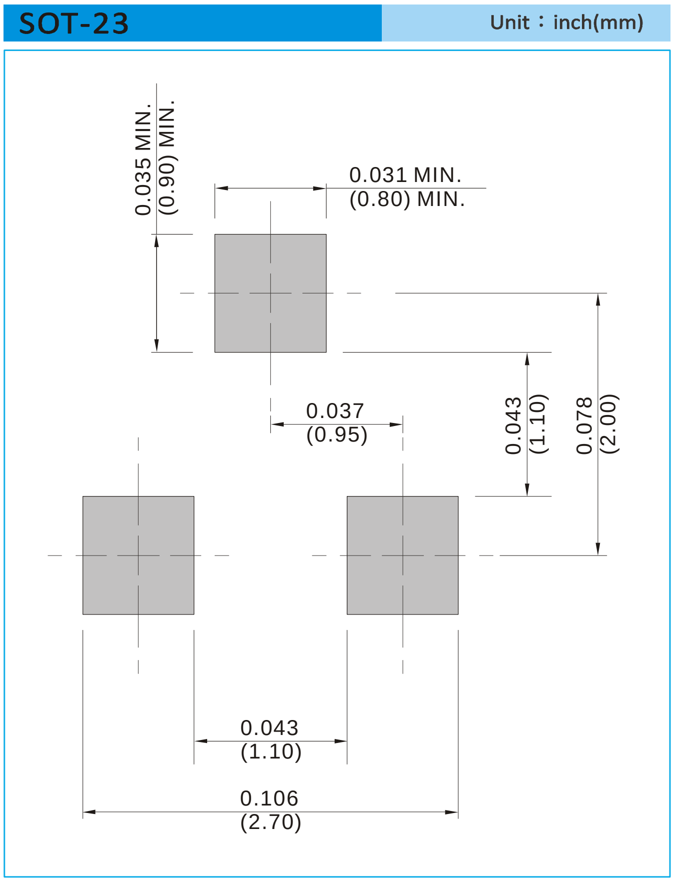
MOUNTING PAD LAYOUT



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

MMBT3906_R1_00001
MMBT3906_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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