PANJIT SEMI CONDUCTOR

MMBT4401

NPN GENERAL PURPOSE SWITCHING TRANSISTOR

VOLTAGE 40 Volts **POWER** 225 mWatts

FEATURES

- NPN epitaxial silicon, planar design
- Collector-emitter voltage V_{CE} = 40V
- Collector current I_C = 600mA
- Lead free in comply with EU RoHS 2011/65/EU 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: 0.008 gram
- Marking: M4A

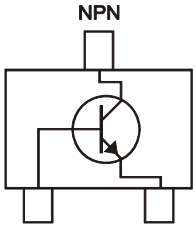
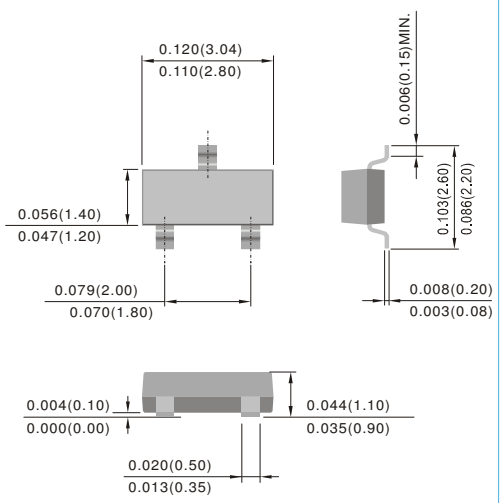


Fig.34(TOP VIEW)

SOT-23 Unit : inch(mm)



ABSOLUTE RATINGS

PARAMETER	Symbol	Value	Units
Collector - Emitter Voltage	V_{CEO}	40	V
Collector - Base Voltage	V_{CBO}	60	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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ELECTRICAL CHARACTERISTICS

PARAMETER	Symbol	Test Condition	MIN.	TYP.	MAX.	Units
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1.0mA, I_B=0	40	-	-	V
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=100uA, I_E=0	60	-	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=100uA, I_C=0	6.0	-	-	V
Base Cutoff Current	I_{BL}	V_{CE}=35V, V_{EB}=0.4V	-	-	100	nA
Collector Cutoff Current	I_{CEX}	V_{CE}=35V, V_{EB}=0.4V	-	-	100	nA
DC Current Gain (Note 2)	h_{FE}	I_C=0.1mA, V_{CE}=1.0V I_C=1.0mA, V_{CE}=1.0V I_C=10mA, V_{CE}=1.0V I_C=150mA, V_{CE}=1.0V I_C=500mA, V_{CE}=2.0V	20 40 80 100 40	- - - - -	- - - 300 -	-
Collector - Emitter Saturation Voltage (Note 2)	$V_{CE(SAT)}$	I_C=150mA, I_B=15mA I_C=500mA, I_B=50mA	-	-	0.40 0.75	V
Base - Emitter Saturation Voltage (Note 2)	$V_{BE(SAT)}$	I_C=150mA, I_B=15mA I_C=500mA, I_B=50mA	0.75 -	- -	0.95 1.20	V
Collector - Base Capacitance	C_{CBO}	V_{CB}=5V, I_E=0, f=1MHz	-	-	6.5	pF
Emitter - Base Capacitance	C_{EBO}	V_{CB}=0.5V, I_C=0, f=1MHz	-	-	30	pF
Current Gain - Bandwidth Product	F_T	V_{CE}=10V, I_C=20mA, f=100MHz	250	-	-	MHz
Delay Time	td	V_{CC}=30V,V_{BE}=2.0V, I_C=150mA,I_{B1}=15mA	-	-	15	ns
Rise Time	tr	V_{CC}=30V,V_{BE}=2.0V, I_C=150mA,I_{B1}=15mA	-	-	20	ns
Storage Time	ts	V_{CC}=30V,I_C=150mA I_{B1}=I_{B2}=15mA	-	-	225	ns
Fall Time	tf	V_{CC}=30V,I_C=150mA I_{B1}=I_{B2}=15mA	-	-	30	ns

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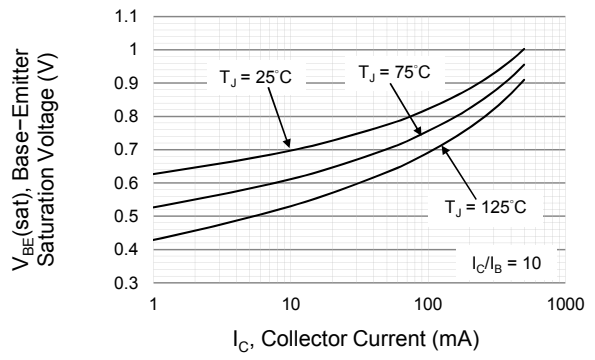


Fig.1 Base Emitter Saturation Voltage vs. Collector Current

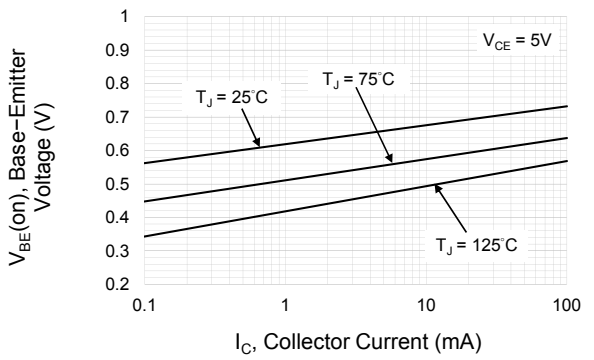


Fig.2 Base Emitter Voltage vs. Collector Current

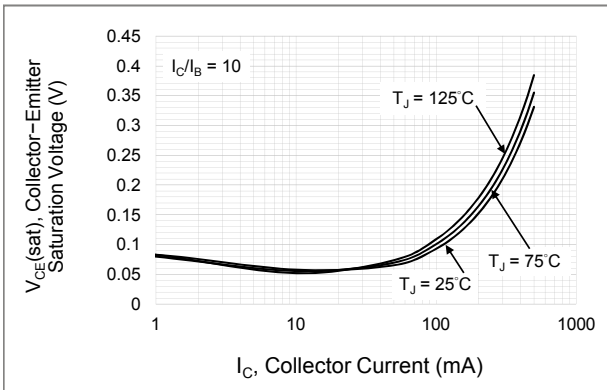


Fig.3 Collector Emitter Saturation Voltage vs. Collector Current

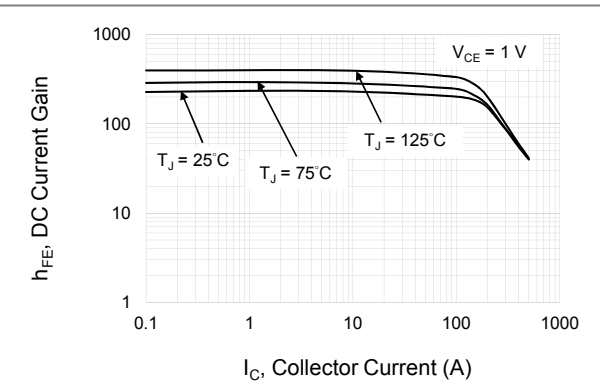


Fig.4 DC Current Gain vs. Collector Current

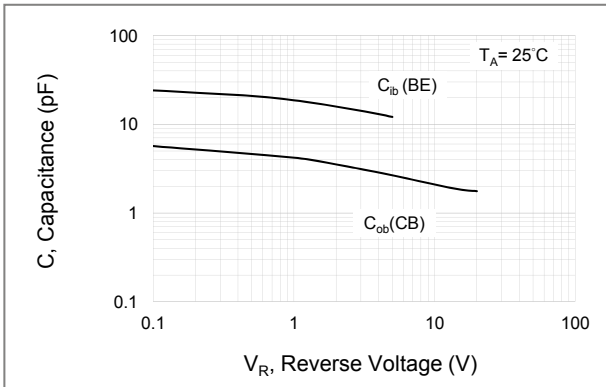
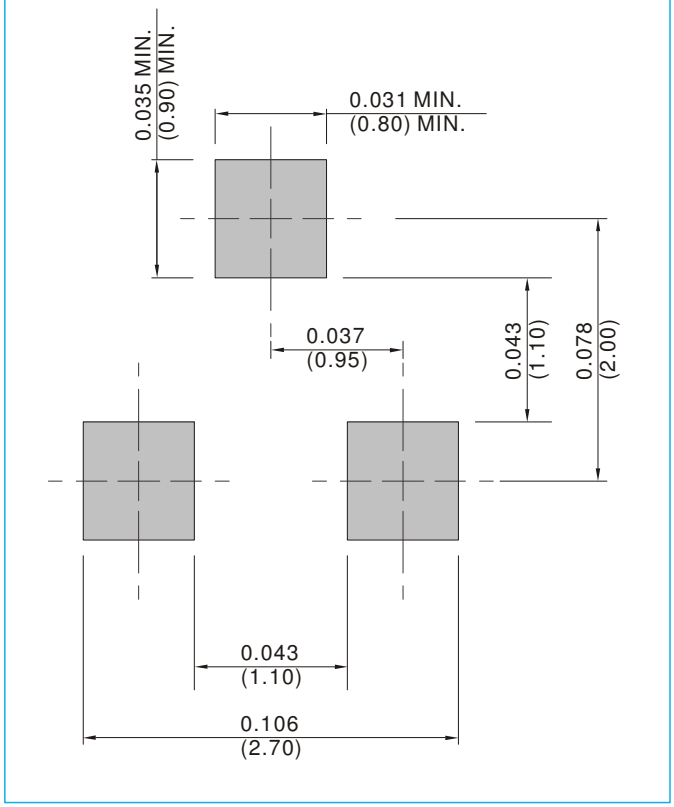


Fig.5 Typical Capacitance

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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

MMBT4401_R1_00001
MMBT4401_R2_00001

For example :

RB500V-40_R2_00001

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

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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