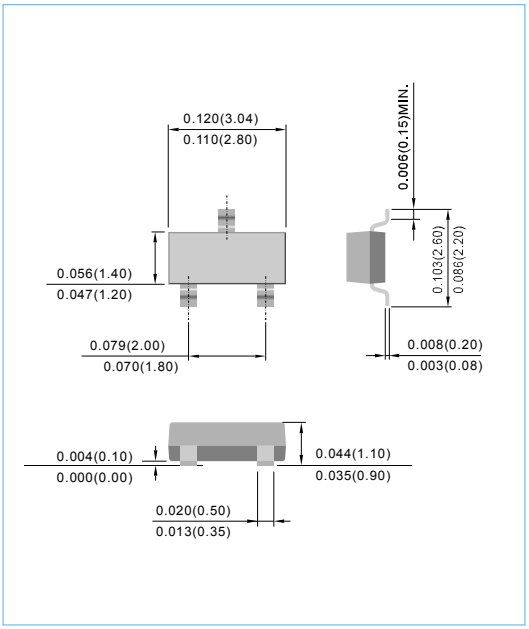
MMBT4403

PNP GENERAL PURPOSE SWITCHING TRANSISTOR

VOLTAGE	40V	POWER	225mW

SOT-23 Unit: inch (mm)



FEATURES

PNP epitaxial silicon, planar design

Collector-emitter voltage V_{CE} = -40V

Collector current I_C =-600mA

Complimentary (NPN) device: MMBT4401

Lead free in compliance with EU RoHS 2011/65/EU directive

Green molding compound as per IEC61249 Std. .

(Halogen Free)

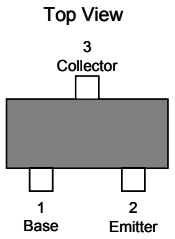
MECHANICAL DATA

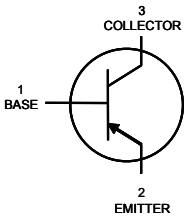
Case: SOT-23

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

Approx Weight: 0.0003 ounces, 0.0084 grams

Marking: M3A





ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Collector - Emitter Voltage	V_{CEO}	-40	V
Collector - Base Voltage	V_{CBO}	-40	V
Emitter – Base Voltage	V_{EBO}	-5.0	V
Collector Current - Continuous	I_C	-600	mA
Max Power Dissipation (Note 1)	P_{TOT}	225	mW
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	℃

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	VALUE	UNIT
Thermal Resistance , Junction to Ambient (Note 1)	$R_{\theta JA}$	556	℃/W

Note 1: Transistor mounted on FR-4 board 70 x 60 x 1mm. using minimum recommended pad.

MMBT4403

ELECTRICAL CHARACTERISTICS (T_J = 25˚C, unless otherwise noted)

PARAMETER	SYMBOL	Test Condition	MIN.	TYP.	MAX.	UNIT
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	-40	-	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)}EBO$	I_E=-100uA, I_C=0	-5.0	-	-	V
Base Cutoff Current	I_{BEV}	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	h_{FE}	I_C=-0.1mA, V_{CE}=-1.0V	30	-	-	-
		I_C=-1.0mA, V_{CE}=-1.0V	60	-	-	
		I_C=-10mA, V_{CE}=-1.0V	100	-	-	
		I_C=-150mA, V_{CE}=-2.0V	100	-	300	
		I_C=-500mA, V_{CE}=-2.0V	20	-	-	
Collector - Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=-150mA, I_B=-15 mA	-	-	-0.4	V
		I_C=-500mA, I_B=-50mA	-	-	-0.75	
Base - Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=-150mA, I_B=-15mA	-0.75	-	-0.95	V
		I_C=-500mA, I_B=-50mA	-	-	-1.3	
Current-Gain – Bandwidth Product	f_T	I_C=-20mA, V_{CE}=-10V, f=100MHz	200	-	-	MHz
Collector - Base Capacitance	C_{CBO}	V_{CB}=-5.0V, I_E=0, f=1MHz	-	-	8.5	pF
Emitter - Base Capacitance	C_{EBO}	V_{CB}=-0.5V, I_C=0, f=1MHz	-	-	30	pF
Delay Time	t_d	V_{CC}=-30V, V_{BE}=-2.0V, I_C=-150mA, I_{B1}=-15mA	-	-	15	ns
Rise Time	t_r		-	-	20	ns
Storage Time	t_s	V_{CC}=-30V, I_C=-150mA, I_{B1}=I_{B2}=15mA	-	-	225	ns
Fall Time	t_f		-	-	30	ns

SWITCHING TIME EQUIVALENT TEST CIRCUITS

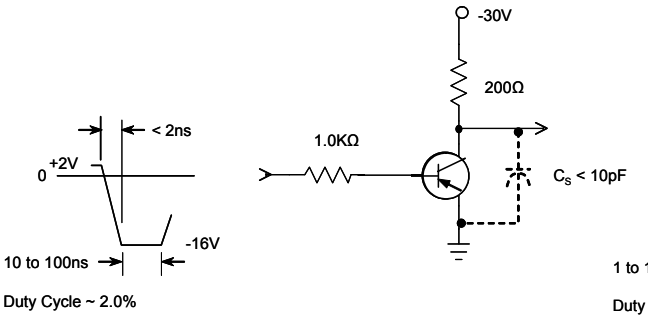


Fig. 1. Turn-On Time

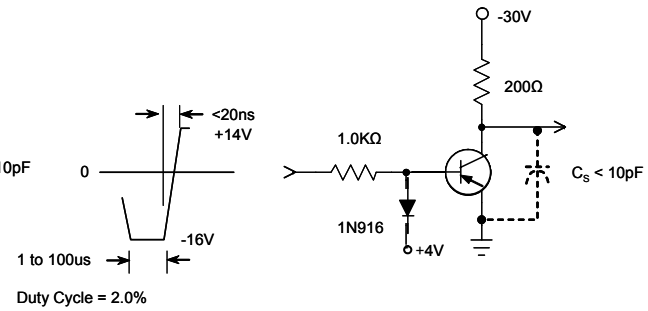


Fig. 2. Turn-Off Time

MMBT4403

ELECTRICAL CHARACTERISTICS CURVES

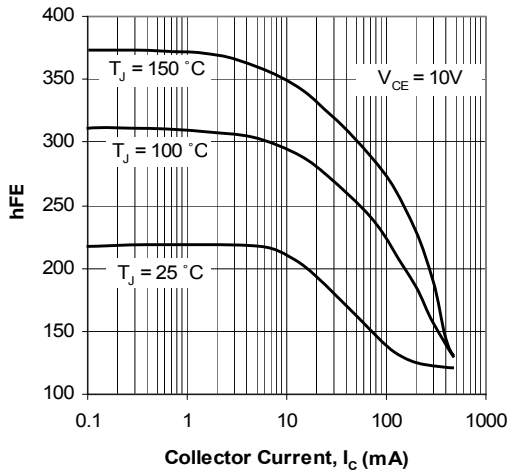


Fig. 3. Typical h_{FE} vs Collector Current

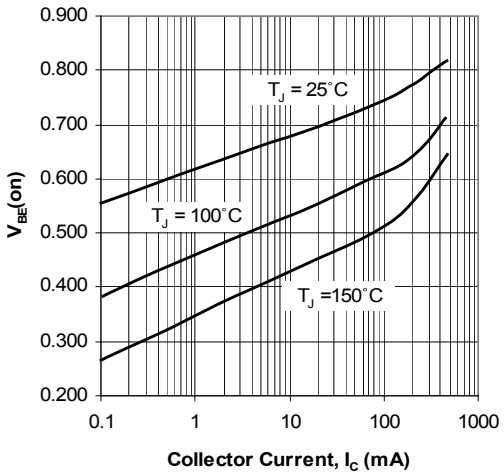


Fig. 4. Typical V_{BE} vs Collector Current

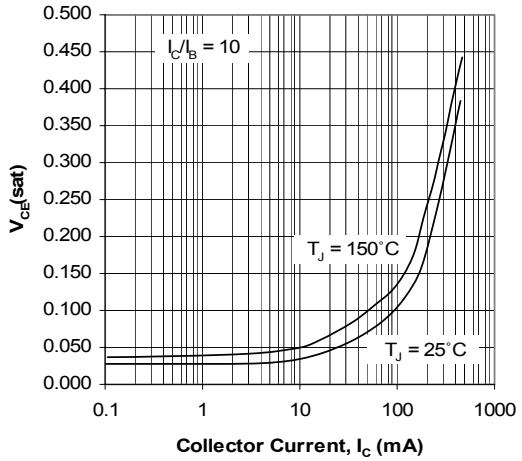


Fig. 5. Typical V_{CE} (sat) vs Collector Current

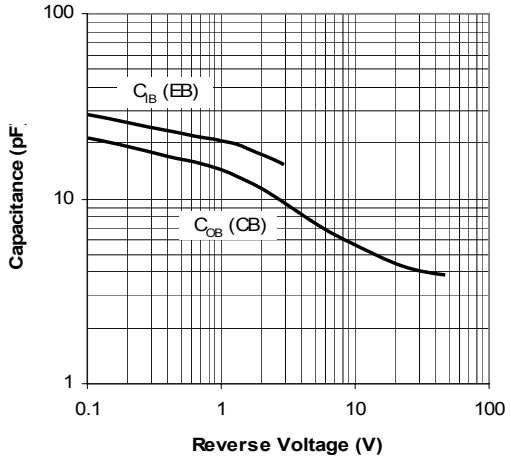
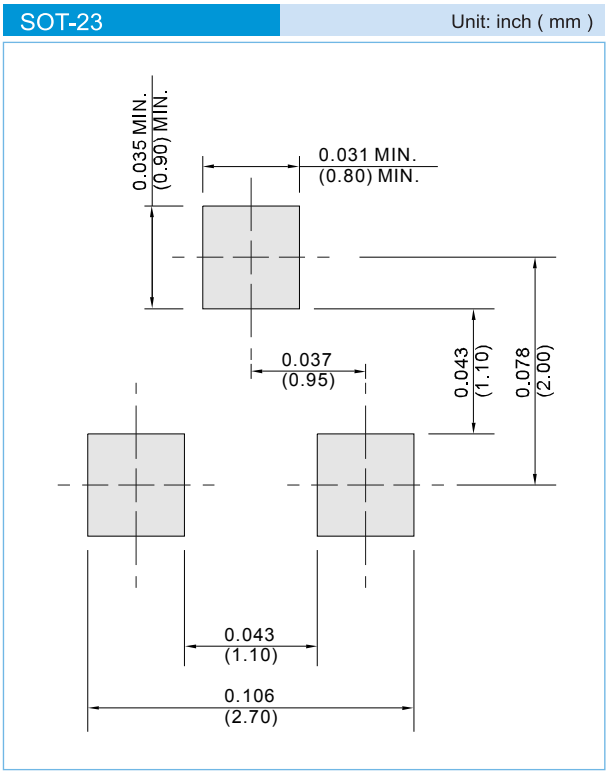


Fig. 6. Typical Capacitances vs Reverse Voltage

MMBT4403

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

MMBT4403

Part No_packing code_Version

MMBT4403_R1_00001
MMBT4403_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			

MMBT4403

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