



MMBT4403

PNP GENERAL PURPOSE SWITCHING TRANSISTOR

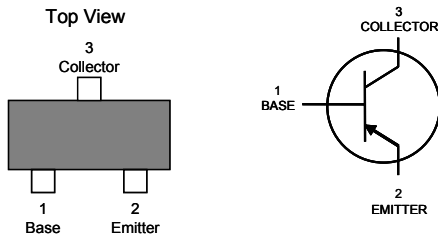
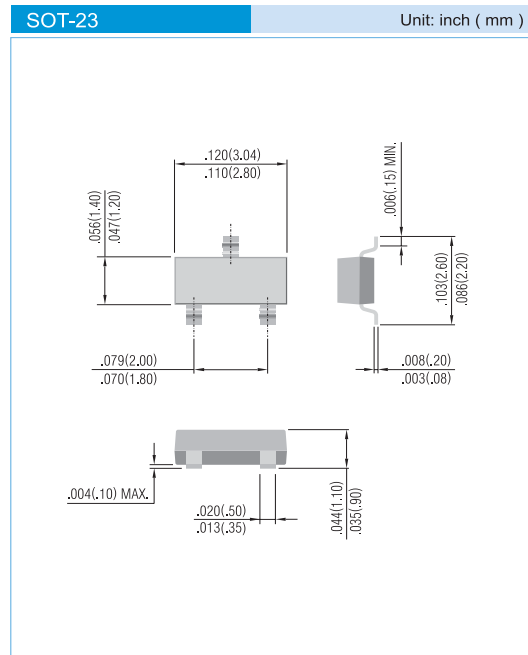
VOLTAGE	40V	POWER	225mW
----------------	------------	--------------	--------------

FEATURES

- PNP epitaxial silicon, planar design
- Collector-emitter voltage $V_{CE} = -40V$
- Collector current $I_C = -600mA$
- Complimentary (NPN) device: MMBT4401
- In compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

- Case: SOT-23
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx Weight: 0.008 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	°C

THERMAL CHARACTERISTICS

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

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



MMBT4403

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	Test Condition	MIN.	TYP.	MAX.	UNIT
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1.0\text{mA}$, $I_B = 0$	-40	-	-	V
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu\text{A}$, $I_E = 0$	-40	-	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -100\mu\text{A}$, $I_C = 0$	-5.0	-	-	V
Base Cutoff Current	I_{BEV}	$V_{CE} = -35\text{V}$, $V_{EB} = -0.4\text{V}$	-	-	-100	nA
Collector Cutoff Current	I_{CEX}	$V_{CE} = -35\text{V}$, $V_{EB} = -0.4\text{V}$	-	-	-100	nA
DC Current Gain	h_{FE}	$I_C = -0.1\text{mA}$, $V_{CE} = -1.0\text{V}$	30	-	-	
		$I_C = -1.0\text{mA}$, $V_{CE} = -1.0\text{V}$	60	-	-	
		$I_C = -10\text{mA}$, $V_{CE} = -1.0\text{V}$	100	-	-	
		$I_C = -150\text{mA}$, $V_{CE} = -2.0\text{V}$	100	-	300	
		$I_C = -500\text{mA}$, $V_{CE} = -2.0\text{V}$	20	-	-	
Collector - Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = -150\text{mA}$, $I_B = -15\text{mA}$ $I_C = -500\text{mA}$, $I_B = -50\text{mA}$	-	-	-0.4 -0.75	V
Base - Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = -150\text{mA}$, $I_B = -15\text{mA}$ $I_C = -500\text{mA}$, $I_B = -50\text{mA}$	-0.75 -	-	-0.95 -1.3	V
Current-Gain – Bandwidth Product	f_T	$I_C = -20\text{mA}$, $V_{CE} = -10\text{V}$, $f = 100\text{MHz}$	200	-	-	MHz
Collector - Base Capacitance	C_{CBO}	$V_{CB} = -5.0\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	-	-	8.5	pF
Emitter - Base Capacitance	C_{EBO}	$V_{CB} = -0.5\text{V}$, $I_C = 0$, $f = 1\text{MHz}$	-	-	30	pF
Delay Time	t_d	$V_{CC} = -30\text{V}$, $V_{BE} = -2.0\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = -15\text{mA}$	-	-	15	ns
Rise Time	t_r		-	-	20	ns
Storage Time	t_s		$V_{CC} = -30\text{V}$, $I_C = -150\text{mA}$,	-	-	225
Fall Time	t_f	$I_{B1} = I_{B2} = 15\text{mA}$	-	-	30	ns

SWITCHING TIME EQUIVALENT TEST CIRCUITS

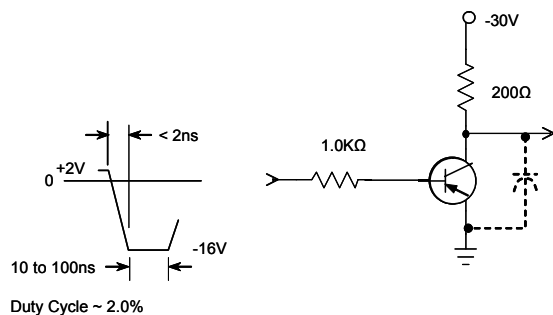


Fig. 1. Turn-On Time

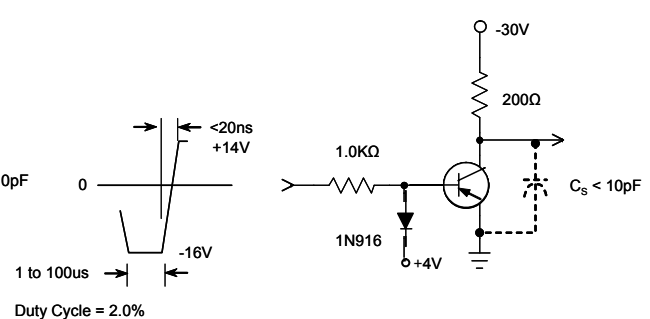


Fig. 2. Turn-Off Time



MMBT4403

ELECTRICAL CHARACTERISTICS CURVES

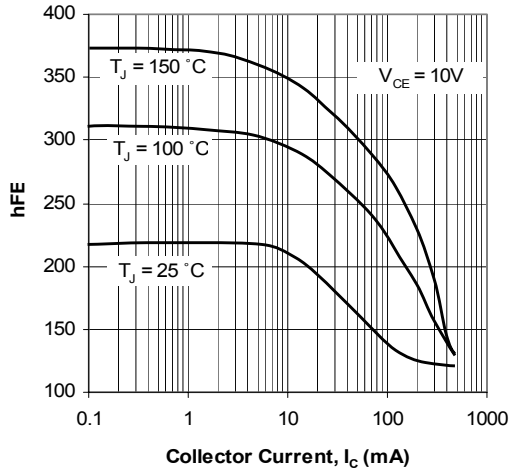


Fig. 3. Typical h_{FE} vs Collector Current

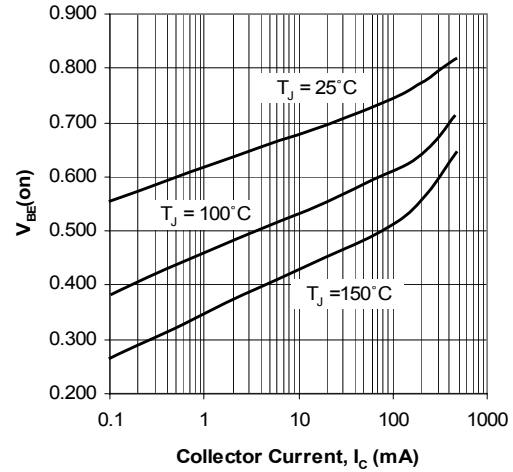


Fig. 4. Typical V_{BE} vs Collector Current

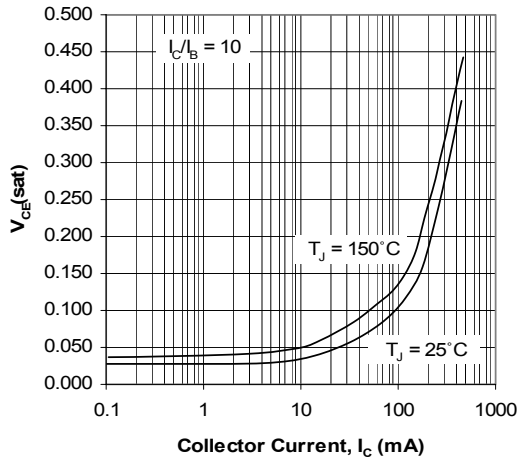


Fig. 5. Typical $V_{CE}(sat)$ vs Collector Current

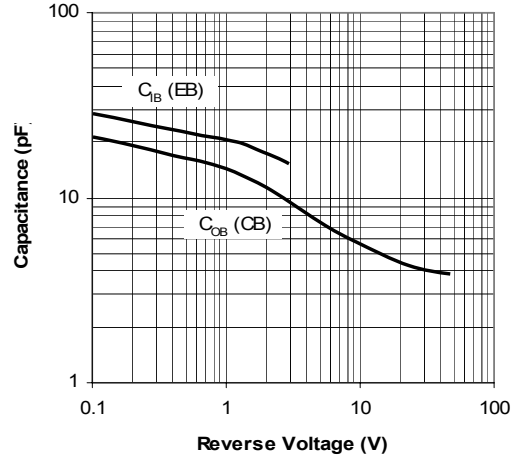
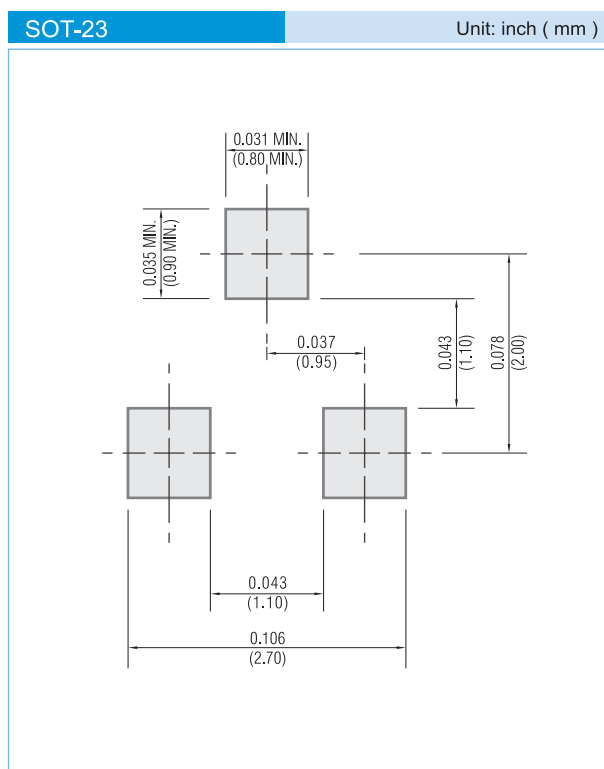


Fig. 6. Typical Capacitances vs Reverse Voltage



MMBT4403

MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information
 - T/R - 12K per 13" plastic Reel
 - T/R - 3K per 7" plastic Reel

LEGAL STATEMENT

Copyright PanJit International, Inc 2009

The information presented in this document is believed to be accurate and reliable. The specifications and information herein are subject to change without notice. Pan Jit makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. Pan Jit products are not authorized for use in life support devices or systems. Pan Jit does not convey any license under its patent rights or rights of others.