

# MMBT4403

## MMBT4403 SOT-23 Plastic-Encapsulate Switching Transistors (PNP)

### General description

SOT-23 Plastic-Encapsulate Switching Transistors (PNP)

### FEATURES

- Power Dissipation of 300mW
- High Stability and High Reliability
- SOT-23 Small Outline Plastic Package
- Epoxy UL: 94V-0



Marking:2T

### Maximum Ratings & Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameters	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-40	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-40	V
Emitter -Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current-Continuous	I <sub>c</sub>	-600	mA
Collector Power Dissipation	P <sub>c</sub>	300	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55-+150	°C
Thermal resistance From junction to ambient	R <sub>θJA</sub>	417	°C/W

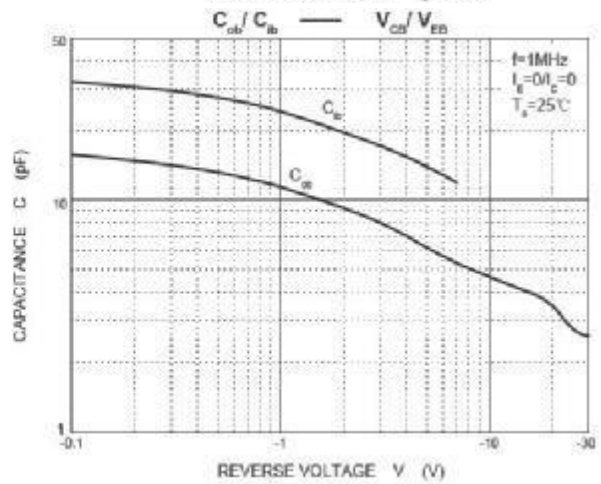
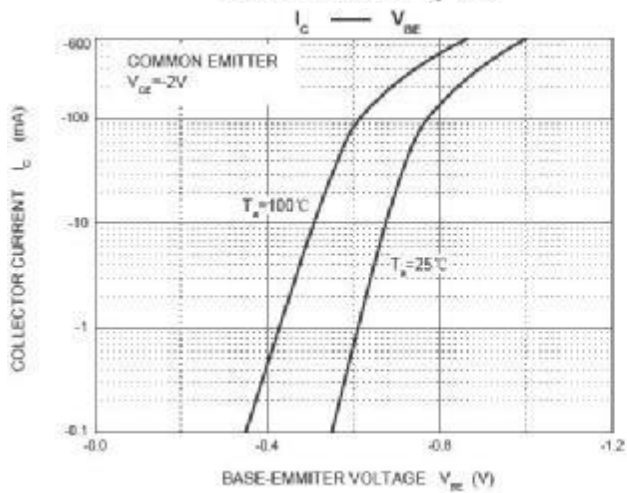
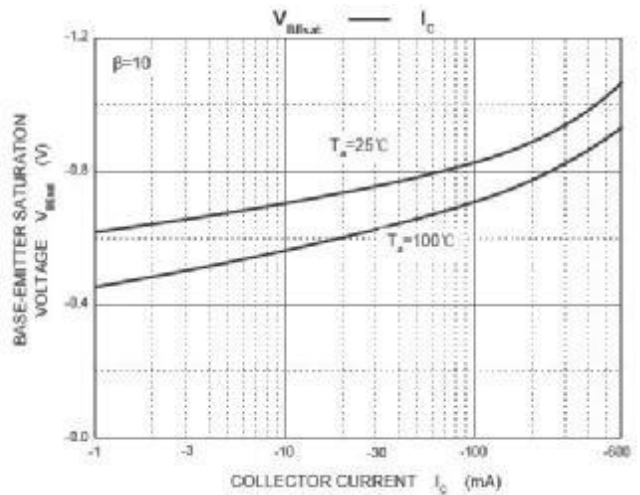
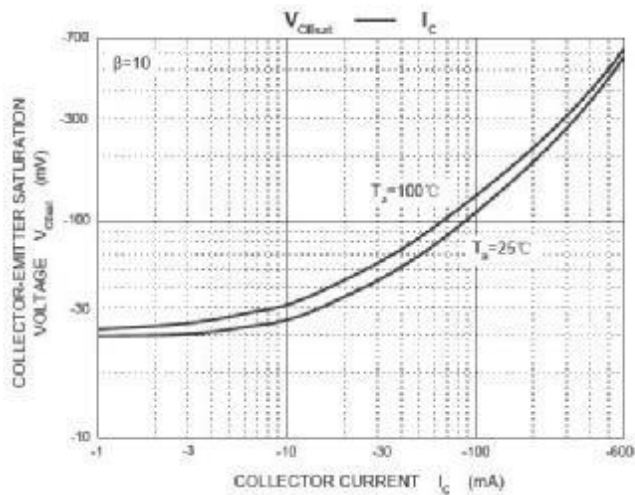
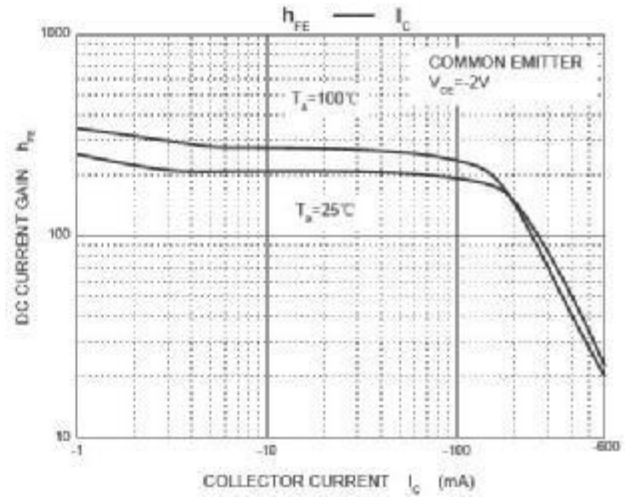
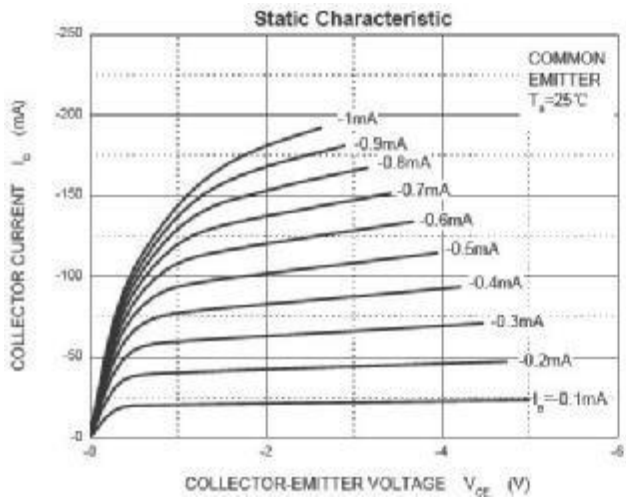
### Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

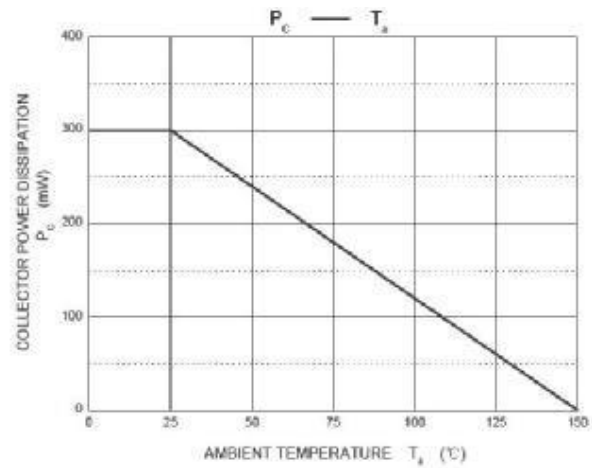
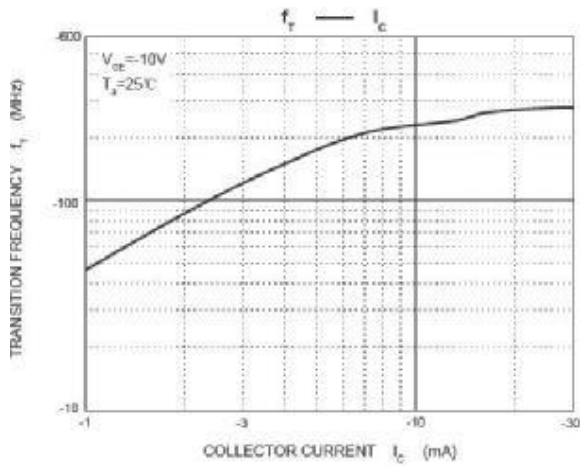
Parameter	Symbols	Test Condition	Limits		Unit
			Min	Max	
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-100uA, I <sub>E</sub> =0	-40		V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-1mA, I <sub>B</sub> =0	-40		V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-100uA, I <sub>C</sub> =0	-5		V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =-35V, I <sub>E</sub> =0		-100	nA
Collector cut-off current	I <sub>CEX</sub>	V <sub>CE</sub> =-35V, V <sub>EB(off)</sub> =-0.4V		-100	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =-4V, I <sub>C</sub> =0		-100	nA
DC current gain	h <sub>FE</sub> (1)	V <sub>CE</sub> =-1V, I <sub>C</sub> =-0.1mA	30		
	h <sub>FE</sub> (2)	V <sub>CE</sub> =-1V, I <sub>C</sub> =-1mA	60		
	h <sub>FE</sub> (3)	V <sub>CE</sub> =-1V, I <sub>C</sub> =-10mA	100		
	h <sub>FE</sub> (4)	V <sub>CE</sub> =-2V, I <sub>C</sub> =-150mA	100	300	
	h <sub>FE</sub> (5)	V <sub>CE</sub> =-2V, I <sub>C</sub> =-500mA	20		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA		-0.40	V
		I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA		-0.75	V
Base -emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA		-0.95	V
		I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA		-1.30	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =-10V, I <sub>C</sub> =-20mA, f=100MHz	200		MHz
Delay time	t <sub>d</sub>	V <sub>CC</sub> =-30V, V <sub>BE(off)</sub> =-0.5V, I <sub>C</sub> =-150mA, I <sub>B1</sub> =-15mA		15	nS
Rise time	t <sub>r</sub>			20	nS
Storage time	t <sub>s</sub>			225	nS
Fall time	t <sub>f</sub>	V <sub>CC</sub> =-30V, I <sub>C</sub> =-150mA, I <sub>B1</sub> =I <sub>B2</sub> =-15mA		60	nS



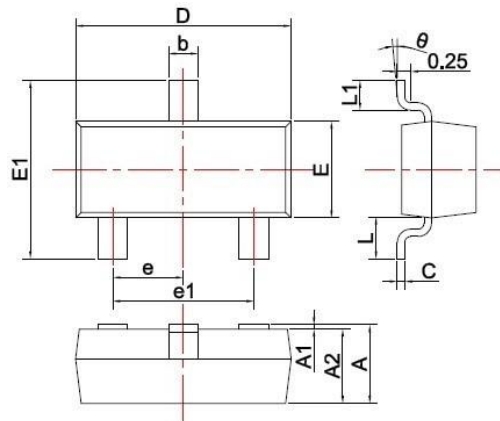
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## RATING AND CHARACTERISTIC CURVES





## SOT-23 PACKAGE OUTLINE Plastic surface mounted package

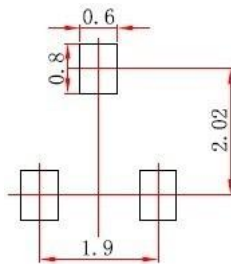


SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

Precautions: PCB Design

Recommended land dimensions for SOT-23 diode. Electrode patterns for PCBs



Note:

1. Controlling dimension: In millimeters.
2. General tolerance:  $\pm 0.05mm$ .
3. The pad layout is for reference purposes only.

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