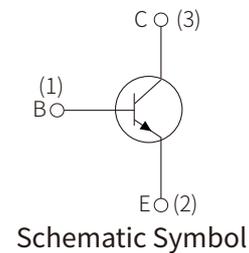
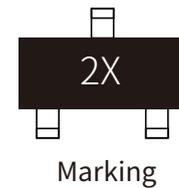


## FEATURES

- | Complementary PNP Type: MMBT4403
- | Ideal for medium power amplification and switching



## MECHANICAL DATA

- | SOT-23 small outline plastic package
- | Epoxy UL: 94V-0
- | Mounting position: Any

## APPROVALS

- |             |                                    |
|-------------|------------------------------------|
| <b>RoHS</b> | Compliance with 2011/65/EU         |
| <b>HF</b>   | Compliance with IEC61249-2-21:2003 |

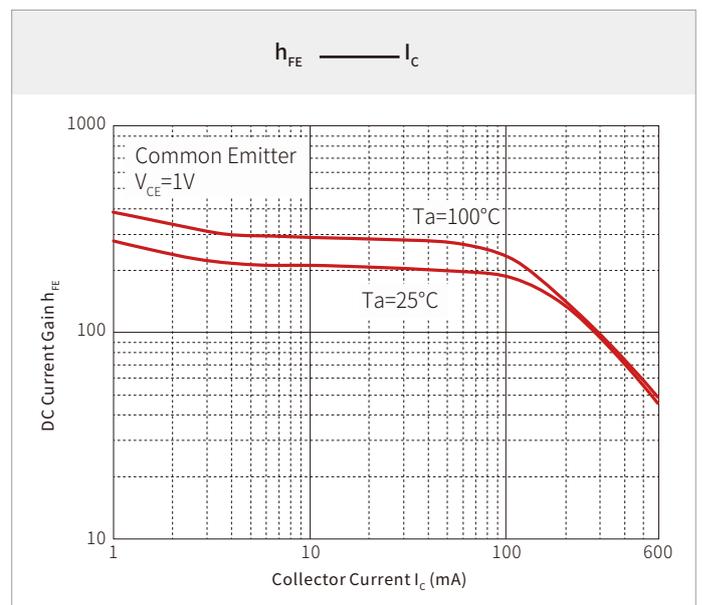
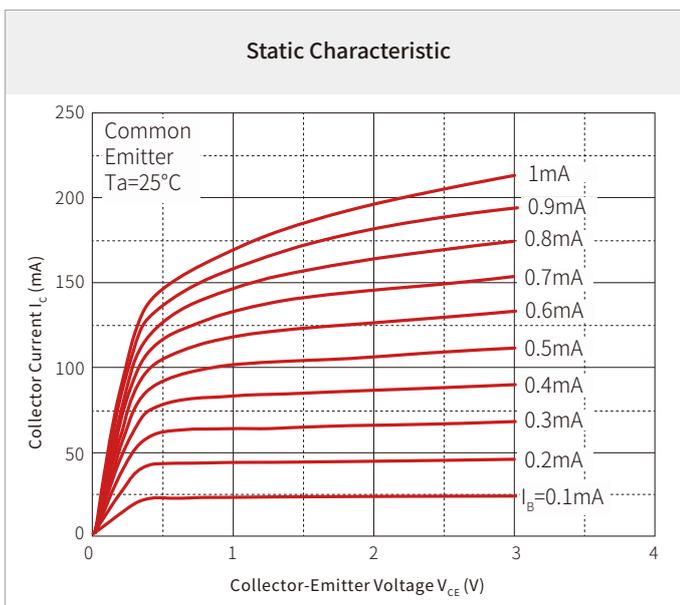
## MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ )

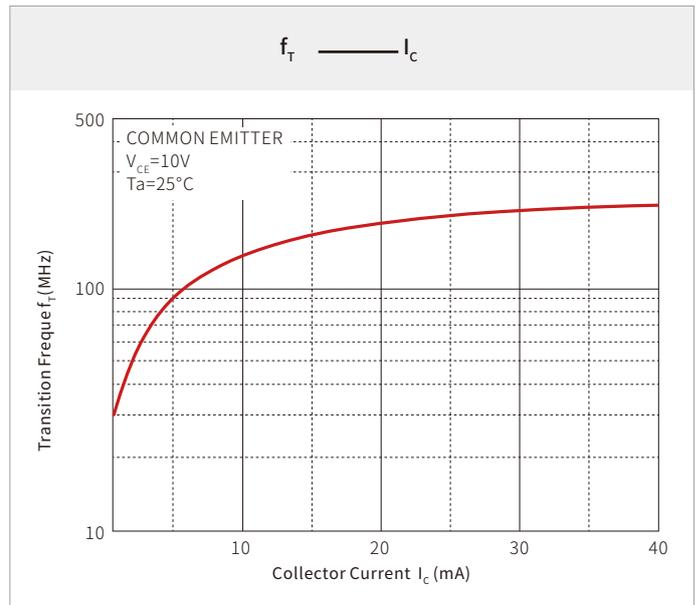
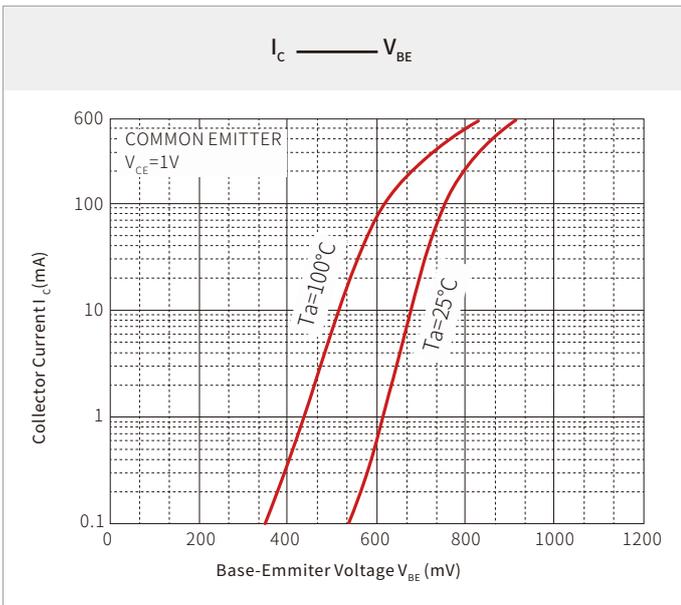
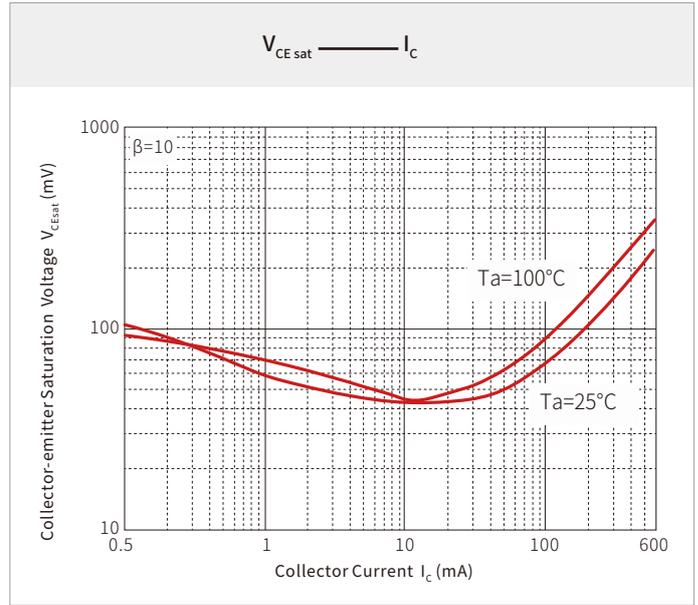
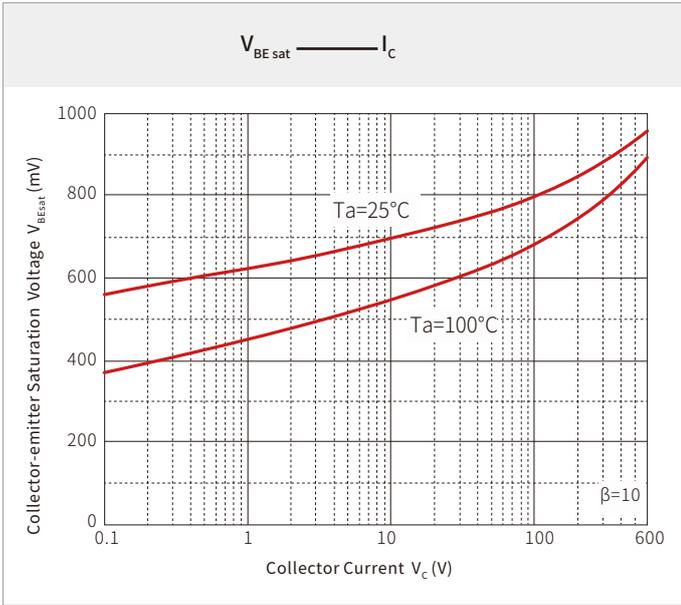
Parameter	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	40	
Emitter-Base Voltage	$V_{EBO}$	6	
Collector Current -Continuous	$I_C$	600	mA
Collector Power Dissipation	$P_C$	0.3	W
Thermal Resistance, junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{mW}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~+150	$^{\circ}\text{C}$

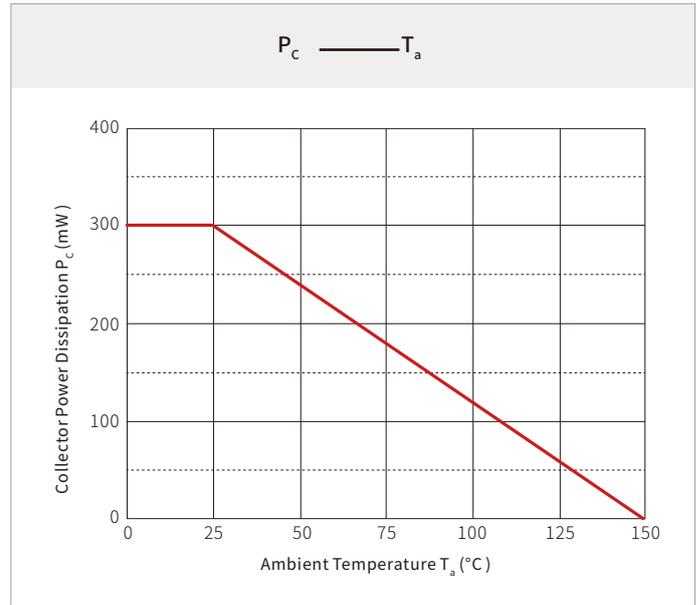
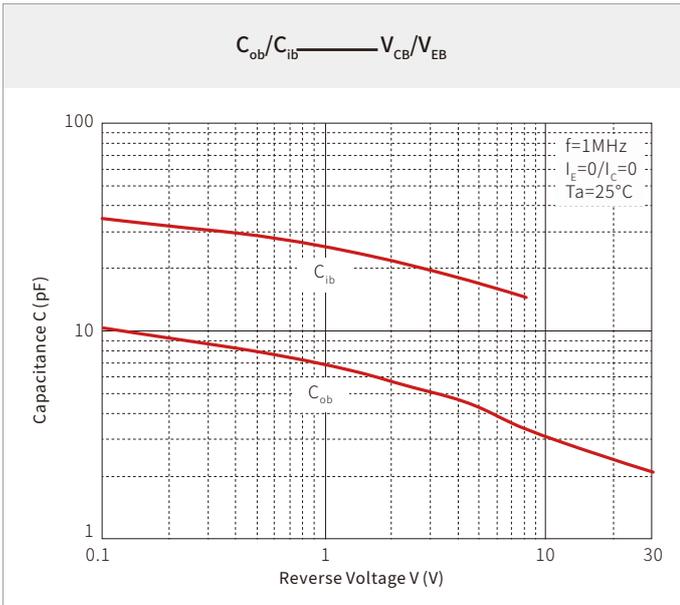
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =100μA, I <sub>E</sub> =0	60			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, I <sub>B</sub> =0	40			
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =100μA, I <sub>C</sub> =0	6			
Collector cut-off current	I <sub>CEO</sub>	V <sub>CE</sub> =30V, I <sub>B</sub> =0			0.1	μA
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =50V, I <sub>E</sub> =0			0.1	
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0			0.1	
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =150mA	100		300	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA			0.4	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA			0.95	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =20mA, f=100MHz	250			MHz

## TYPICAL CHARACTERISTICS

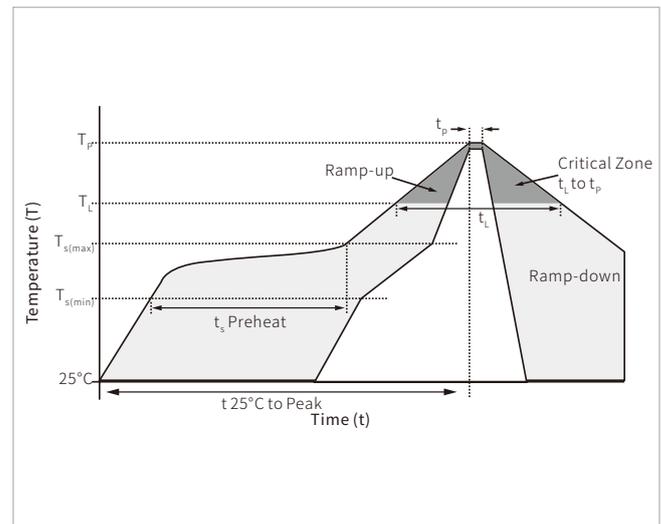




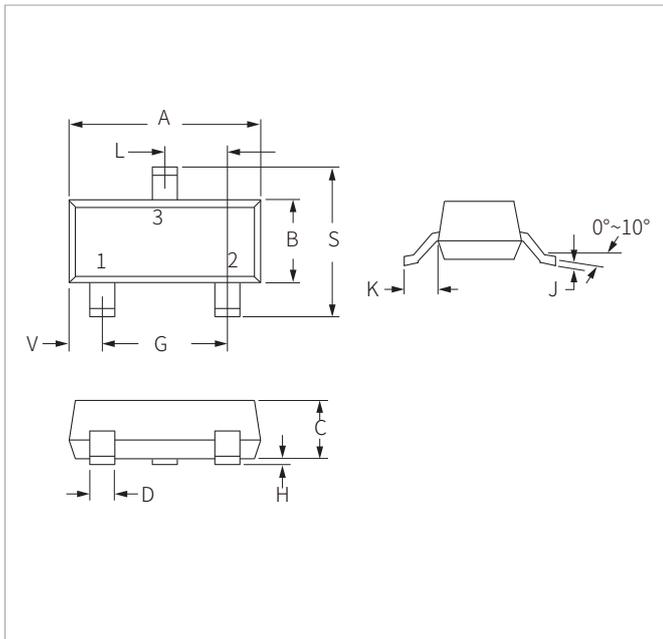


## SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ( $T_{s(\min)}$ )	150 $^\circ\text{C}$
	Temperature Max ( $T_{s(\max)}$ )	200 $^\circ\text{C}$
	Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3 $^\circ\text{C}/\text{second}$ max
$T_{s(\max)}$ to $T_L$ - Ramp-up Rate		3 $^\circ\text{C}/\text{second}$ max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217 $^\circ\text{C}$
	Time (min to max) ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260 $^\circ\text{C}$
Time within 5 $^\circ\text{C}$ of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6 $^\circ\text{C}/\text{second}$ max
Time 25 $^\circ\text{C}$ to peak Temperature ( $T_p$ )		8 minutes max.
Do not exceed		260 $^\circ\text{C}$

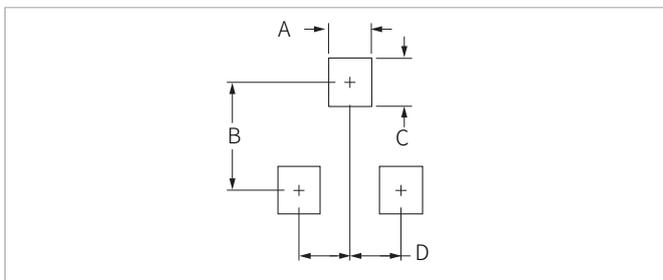


## SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

## RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

## ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
MMBT4401	SOT-23	3000PCS	7"

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