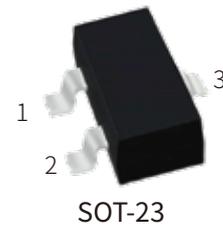


## FEATURES

| High Collector-Emitter Voltage

| Complement to MMBTA94



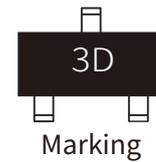
SOT-23

## MECHANICAL DATA

| SOT-23 Small outline Plastic Package

| Epoxy UL: 94V-0

| Mounting position: Any

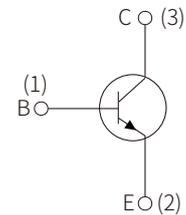


Marking

## APPROVALS

**RoHS** | Compliance with 2011/65/EU

**HF** | Compliance with IEC61249-2-21:2003



Schematic Symbol

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	400	V
Collector-Emitter Voltage	$V_{CEO}$	400	
Emitter-Base Voltage	$V_{EBO}$	6	
Collector Current-Continuous	$I_C$	200	mA
Collector Current -Pulsed	$I_{CM}$	300	mA
Collector Power Dissipation	$P_C$	350	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~+150	$^{\circ}\text{C}$

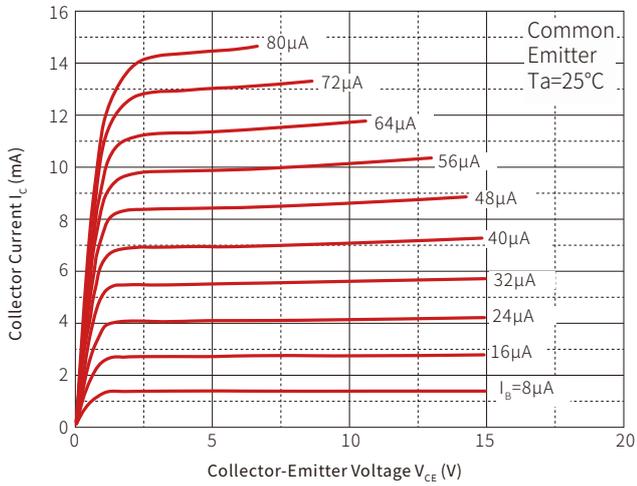
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

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	400			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub> *	I <sub>C</sub> =1mA, I <sub>B</sub> =0	400			
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	6			
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =400V, I <sub>E</sub> =0			0.1	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0			0.1	
DC current gain	h <sub>FE(1)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> =1mA	40			
	h <sub>FE(2)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> =10mA	50		200	
	h <sub>FE(3)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> =50mA	45			
	h <sub>FE(4)</sub> *	V <sub>CE</sub> =10V, I <sub>C</sub> =100mA	40			
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub> *	I <sub>C</sub> =1mA, I <sub>B</sub> =0.1mA			0.4	V
	V <sub>CE(sat)2</sub> *	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA			0.5	
	V <sub>CE(sat)3</sub> *	I <sub>C</sub> =50mA, I <sub>B</sub> =5mA			0.75	
Base-emitter saturation voltage	V <sub>BE(sat)</sub> *	I <sub>B</sub> =1mA, I <sub>C</sub> =10mA			0.75	V
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =20V, I <sub>E</sub> =0, f=1MHz			7	pF
Emitter input capacitance	C <sub>ib</sub>	V <sub>EB</sub> =0.5V, I <sub>C</sub> =0, f=1MHz			130	

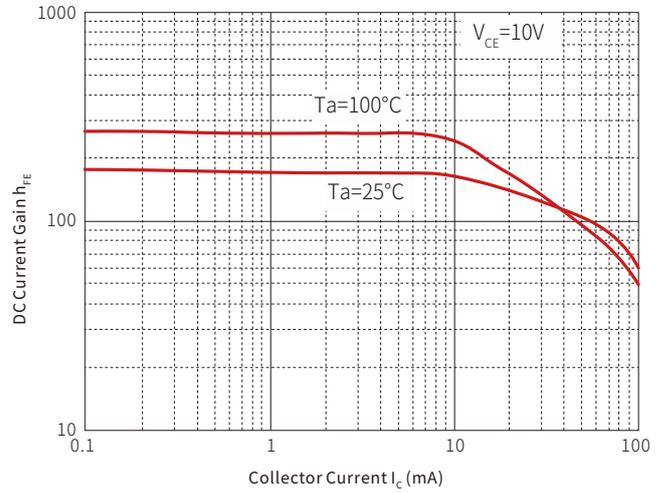
\*Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2.0%.

# TYPICAL CHARACTERISTICS

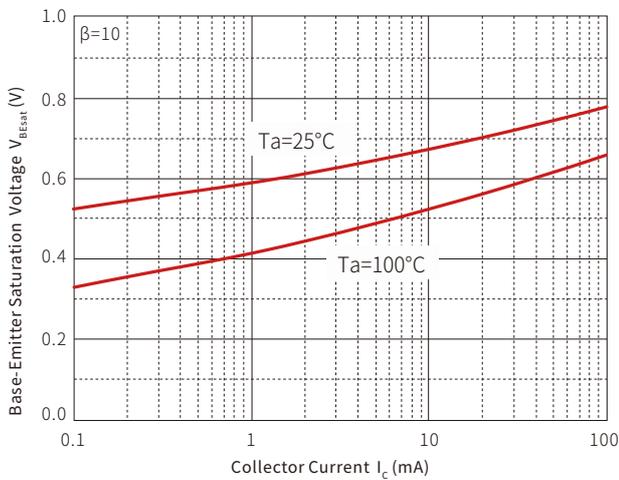
Static Characteristic



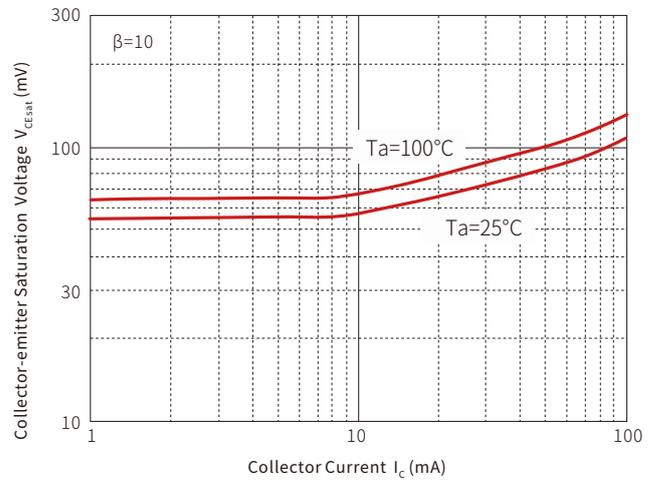
$h_{FE} \text{ — } I_C$

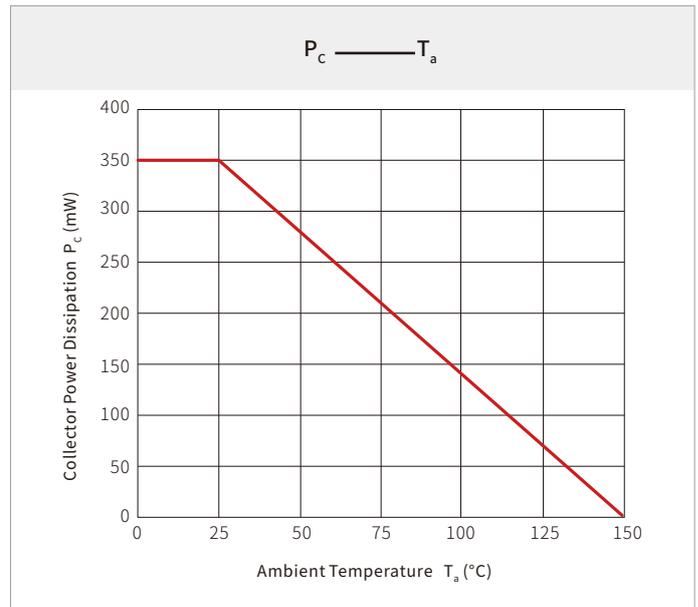
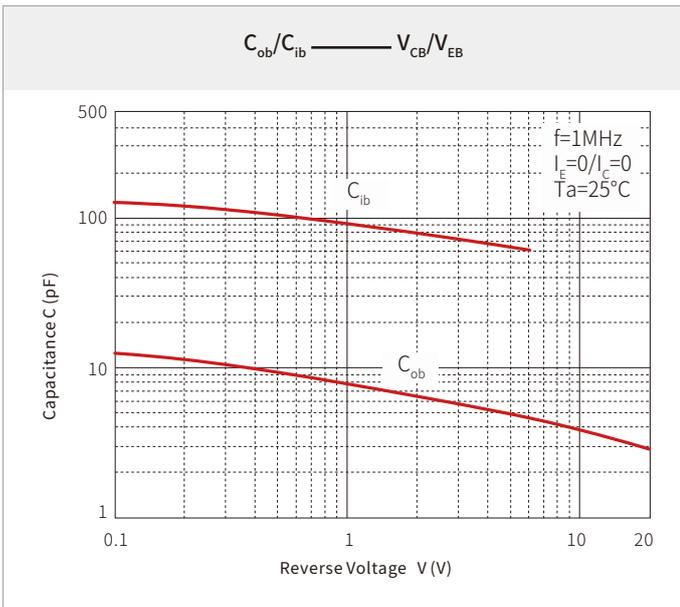


$V_{BE\text{sat}} \text{ — } I_C$



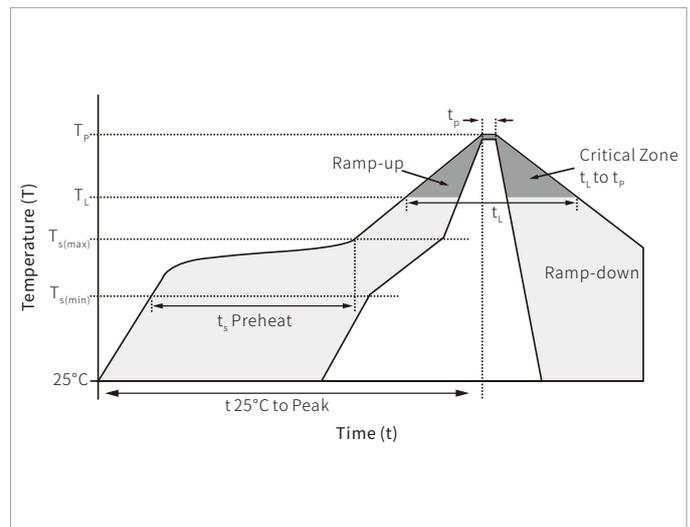
$V_{CE\text{sat}} \text{ — } I_C$



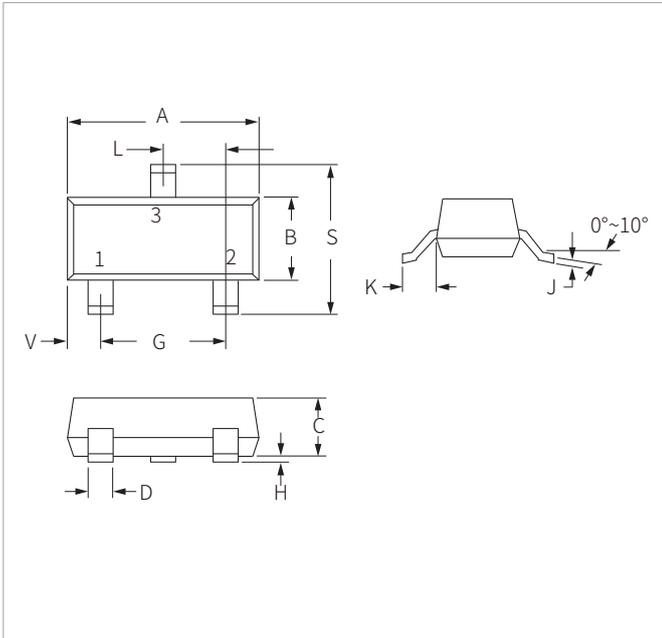


## SOLDERING PARAMETERS

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

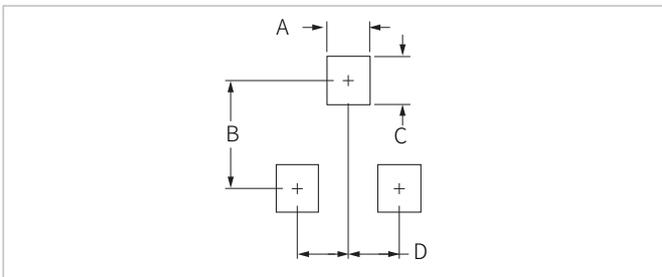


## SOT-23 PACKAGE INFORMATION



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
MMBTA44	SOT-23	3000PCS	7"

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Website



Wechat

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