



# 安徽富信半导体科技有限公司

ANHUI FOSAN SEMICONDUCTOR TECHNOLOGY CO., LTD.

MMBT3904

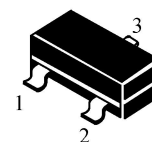
## SOT-23 Bipolar Transistor 双极型三极管

### ■ Features 特点

### NPN Switching 开关

## SOT-23

- 1. BASE
- 2. EMITTER
- 3. COLLECTOR



### ■ Absolute Maximum Ratings 最大额定值

Characteristic 特性参数	Symbol 符号	Rat 额定值	Unit 单位
Collector-Base Voltage 集电极基极电压	$V_{CBO}$	60	V
Collector-Emitter Voltage 集电极发射极电压	$V_{CEO}$	40	V
Emitter-Base Voltage 发射极基极电压	$V_{EBO}$	6	V
Collector Current 集电极电流	$I_C$	200	mA
Power dissipation 耗散功率	$P_C(T_a=25^\circ\text{C})$	200	mW
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature 结温和储藏温度	$T_J, T_{stg}$	-55to+150 $^\circ\text{C}$	

### ■ Device Marking 产品打标

MMBT3904=1AM

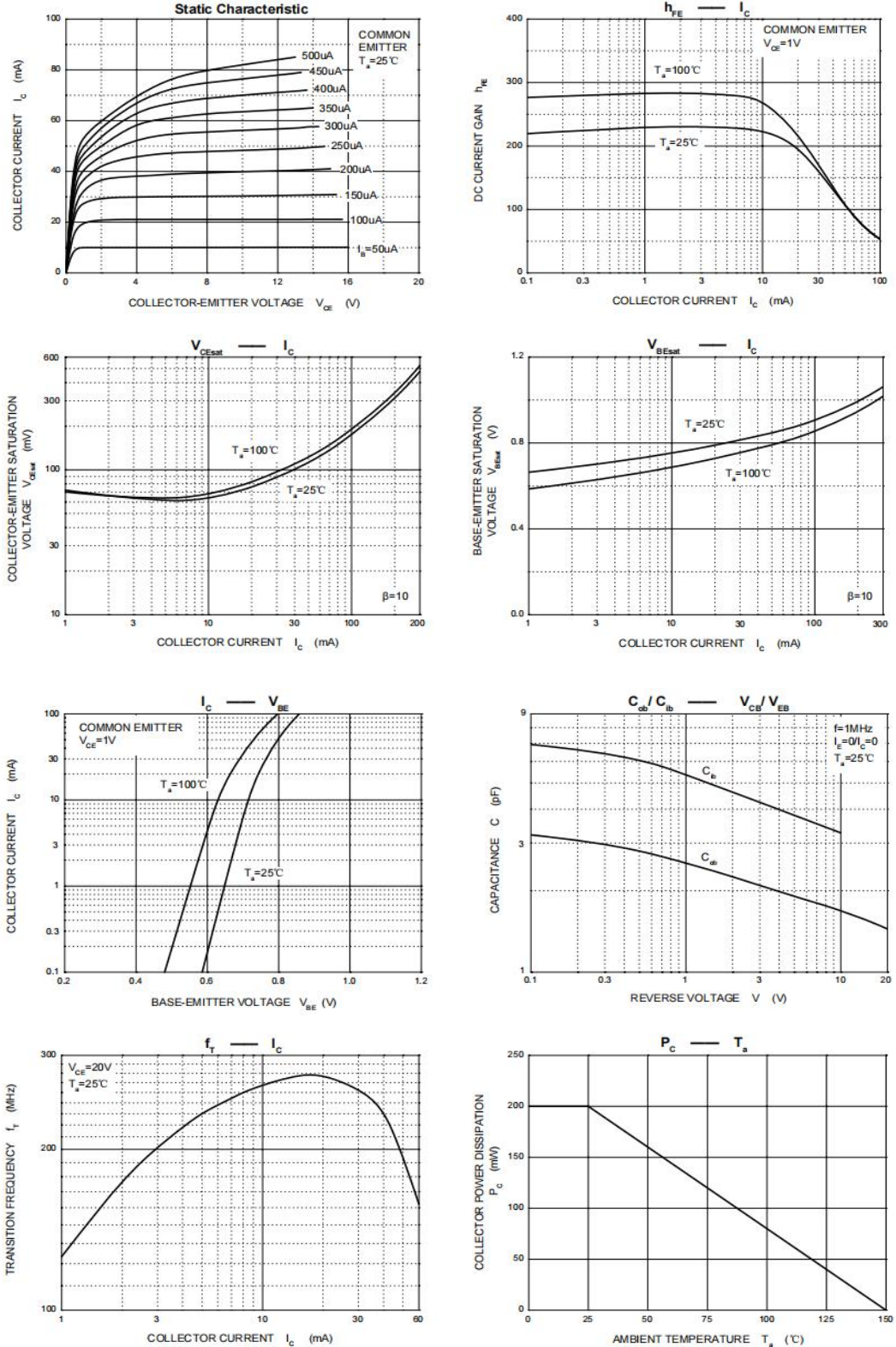


## ■ Electrical Characteristics 电特性

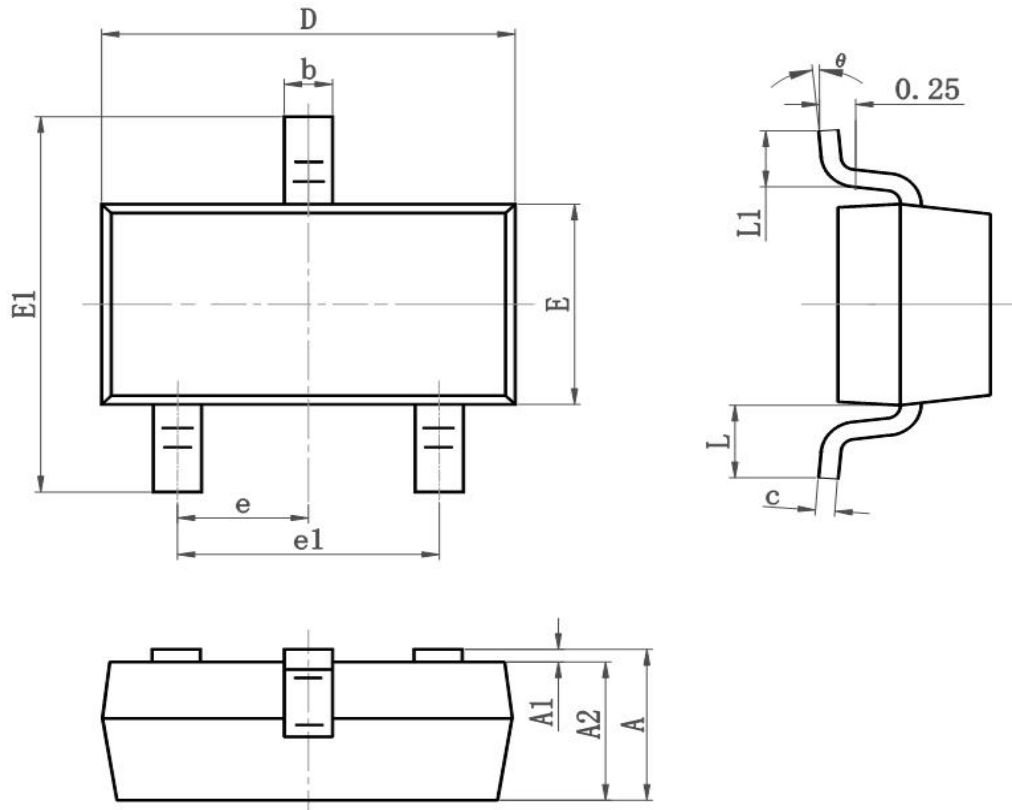
(TA=25°C unless otherwise noted 如无特殊说明, 温度为 25°C)

Characteristic 特性参数	Symbol 符号	Min 最小值	Type 典型值	Max 最大值	Unit 单位
Collector-Base Breakdown Voltage 集电极基极击穿电压(I <sub>C</sub> =10uA, I <sub>E</sub> =0)	BV <sub>CBO</sub>	60	—	—	V
Collector-Emitter Breakdown Voltage 集电极发射极击穿电压(I <sub>C</sub> =1mA, I <sub>B</sub> =0)	BV <sub>CEO</sub>	40	—	—	V
Emitter-Base Breakdown Voltage 发射极基极击穿电压(I <sub>E</sub> =10uA, I <sub>C</sub> =0)	BV <sub>EBO</sub>	6	—	—	V
Collector-Base Leakage Current 集电极基极漏电流(V <sub>CB</sub> =60V, I <sub>E</sub> =0)	I <sub>CBO</sub>	—	—	100	nA
Collector-Emitter Leakage Current 集电极发射极漏电流(V <sub>CE</sub> =30V, V <sub>BE</sub> =-3V)	I <sub>CEX</sub>	—	—	100	nA
Emitter-Base Leakage Current 发射极基极漏电流(V <sub>EB</sub> =5V, I <sub>C</sub> =0)	I <sub>EBO</sub>	—	—	100	nA
DC Current Gain(V <sub>CE</sub> =1V, I <sub>C</sub> =10mA) 直流电流增益(V <sub>CE</sub> =1V, I <sub>C</sub> =50mA) (V <sub>CE</sub> =1V, I <sub>C</sub> =100mA)	H <sub>FE</sub>	100 60 30	—	300	
Collector-Emitter Saturation Voltage 集电极发射极饱和压降(I <sub>C</sub> =50mA, I <sub>B</sub> =5mA)	V <sub>CE(sat)</sub>	—	—	0.3	V
Base-Emitter Saturation Voltage 基极发射极饱和压降(I <sub>C</sub> =50mA, I <sub>B</sub> =5mA)	V <sub>BE(sat)</sub>	—	—	0.95	V
Transition Frequency 特征频率(V <sub>CE</sub> =20V, I <sub>C</sub> =10mA)	f <sub>T</sub>	300	—	—	MHz
Delay Time 延迟时间 (V <sub>CC</sub> =3V, V <sub>BE</sub> =-0.5V, I <sub>C</sub> =10mA, I <sub>B1</sub> =1mA)	t <sub>d</sub>	—	—	35	ns
Rise Time 上升时间 (V <sub>CC</sub> =3V, V <sub>BE</sub> =-0.5V, I <sub>C</sub> =10mA, I <sub>B1</sub> =1mA)	t <sub>r</sub>	—	—	35	ns
Storage Time 贮存时间 (V <sub>CC</sub> =3V, I <sub>C</sub> =10mA, I <sub>B1</sub> =I <sub>B2</sub> =1mA)	t <sub>s</sub>	—	—	200	ns
Fall Time 下降时间 (V <sub>CC</sub> =3V, I <sub>C</sub> =10mA, I <sub>B1</sub> =I <sub>B2</sub> =1mA)	t <sub>f</sub>	—	—	50	ns

## Typical Characteristic Curve 典型特性曲线



## ■Dimension 外形封装尺寸



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.050	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°