

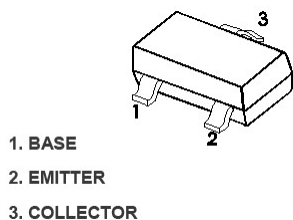
## MMBT3904 TRANSISTOR(NPN)

Rev.3.0

**SOT-23**

**SOT-23 贴片塑封三极管**

**SOT-23 Plastic-Encapsulate Transistors**



**Marking: 1AM**

### 特征 Features

- 与 MMBT3906 配对; Complementary to MMBT3906
- 最大功率耗散 200mW; Power Dissipation of 200mW
- 高稳定性和可靠性。High Stability and High Reliability

### 机械数据 Mechanical Data

- 封装: SOT-23 封装 SOT-23 Small Outline Plastic Package
- 环氧树脂 UL 易燃等级 Epoxy UL: 94V-0
- 安装位置: 任意 Mounting Position: Any

极限值和温度特性(TA = 25°C 除非另有规定)

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

参数 Parameters	符号 Symbol	数值 Value	单位 Unit
Collector-Base Voltage	V <sub>CB0</sub>	60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter -Base Voltage	V <sub>EBO</sub>	6	V
Collector Current-Continuous	I <sub>C</sub>	200	mA
Collector Power Dissipation	P <sub>C</sub>	200	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>	625	°C/W

电特性 (TA = 25°C 除非另有规定)

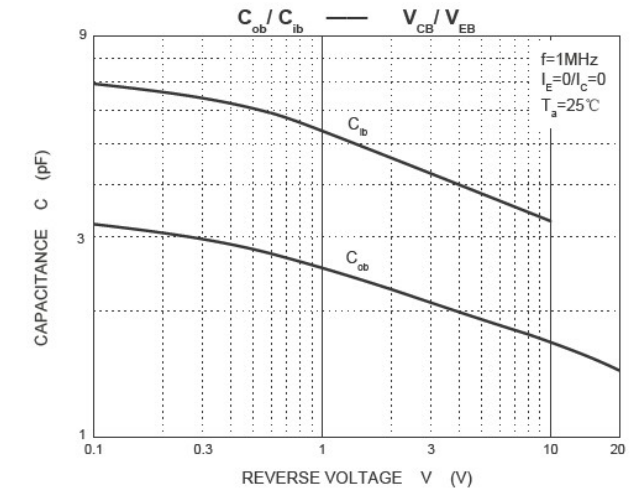
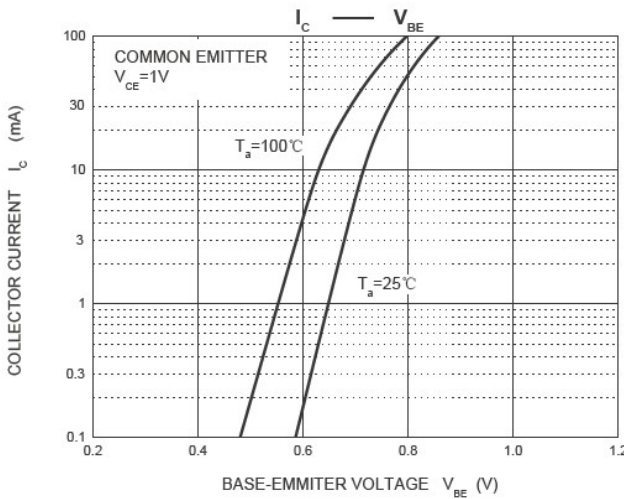
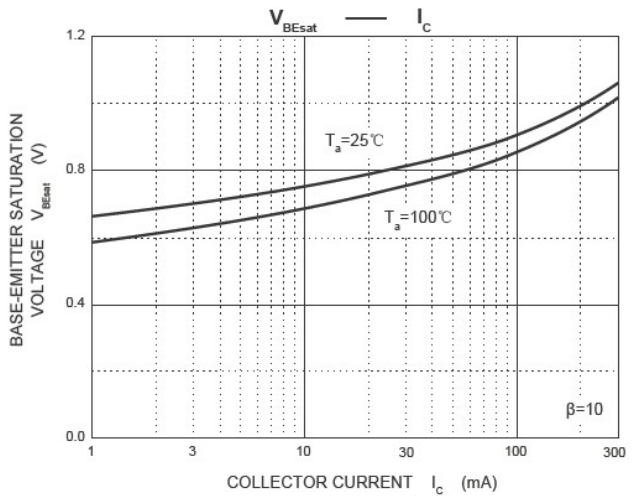
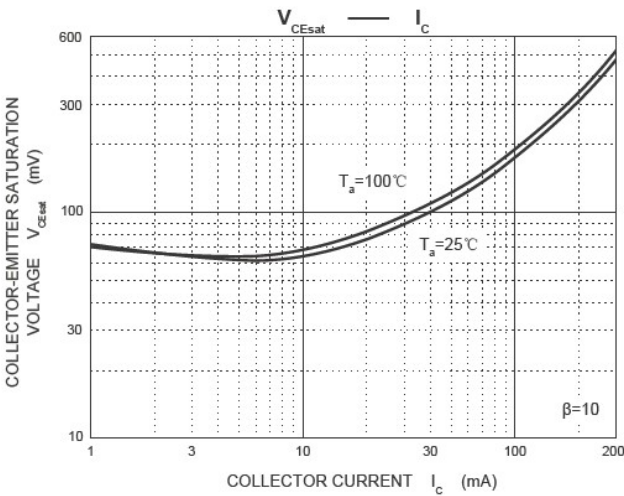
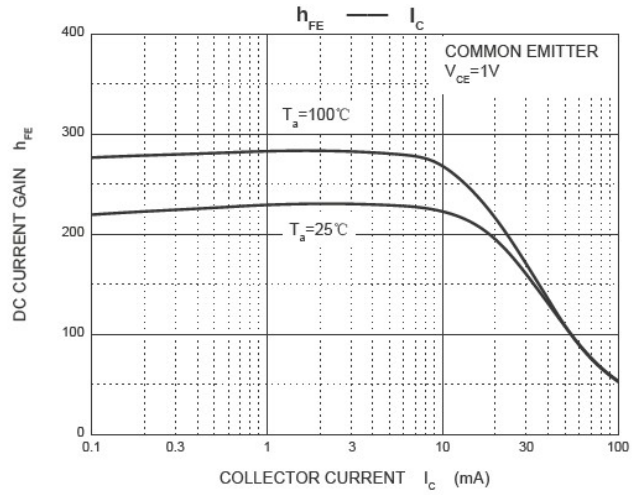
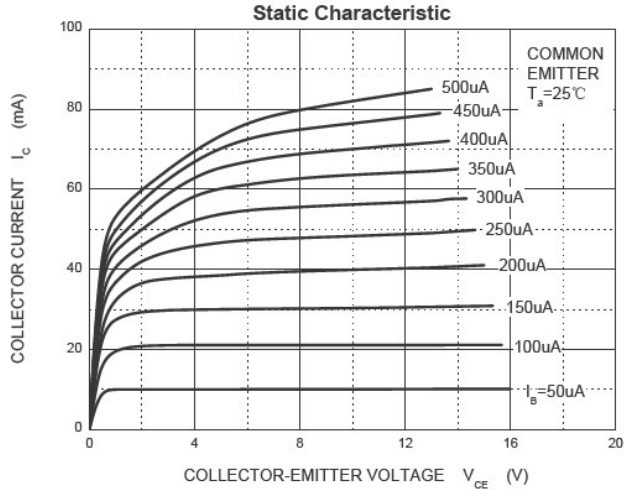
**Electrical Characteristics** (Ratings at 25°C ambient temperature unless otherwise specified.)

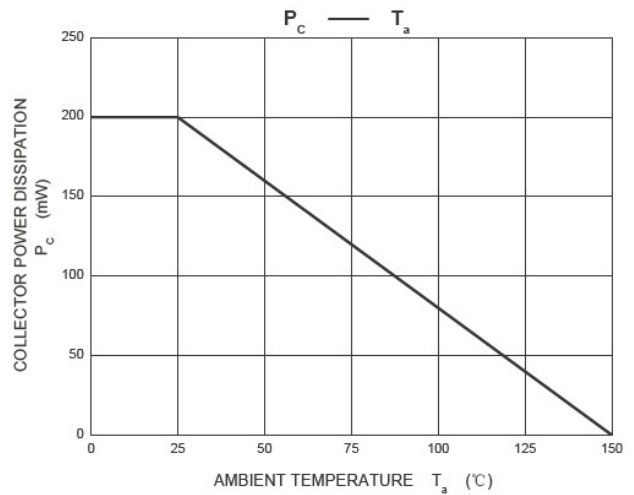
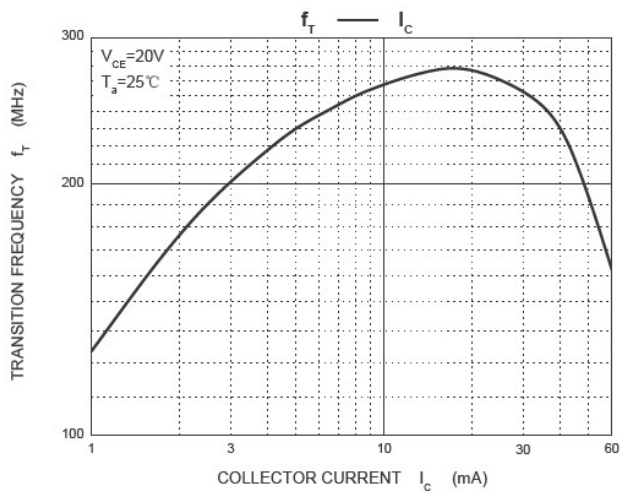
参数 Parameter	符号 Symbols	测试条件 Test Condition	界限 Limits		单位 Unit
			Min	Max	
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =10uA, I <sub>E</sub> =0	60		V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, I <sub>B</sub> =0	40		V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =10uA, I <sub>C</sub> =0	6		V
Collector cut-off current	I <sub>CEX</sub>	V <sub>CE</sub> =30V, V <sub>EB(off)</sub> =3V		50	nA
Collector cut-off current	I <sub>CB0</sub>	V <sub>CB</sub> =60V, I <sub>E</sub> =0		100	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0		100	nA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =10mA	100	300	
	h <sub>FE(2)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =50mA	60		
	h <sub>FE(3)</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =100mA	30		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =50mA, I <sub>B</sub> =5mA		0.30	V
Base -emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =50mA, I <sub>B</sub> =5mA		0.95	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> =10mA, f=100MHz	300		MHz
Delay time	t <sub>d</sub>	V <sub>CC</sub> =3V, V <sub>BE(off)</sub> =-0.5V, I <sub>C</sub> =10mA, I <sub>B1</sub> =1mA		35	nS
Rise time	t <sub>r</sub>	V <sub>CC</sub> =3V, V <sub>BE(off)</sub> =-0.5V, I <sub>C</sub> =10mA, I <sub>B1</sub> =1mA		35	nS
Storage time	t <sub>s</sub>	V <sub>CC</sub> =3V, I <sub>C</sub> =10mA, I <sub>B1</sub> =I <sub>B2</sub> =1mA		200	nS
Fall time	t <sub>f</sub>	V <sub>CC</sub> =3V, I <sub>C</sub> =10mA, I <sub>B1</sub> =I <sub>B2</sub> =1mA		50	nS

### CLASSIFICATION OF h<sub>FE(1)</sub>

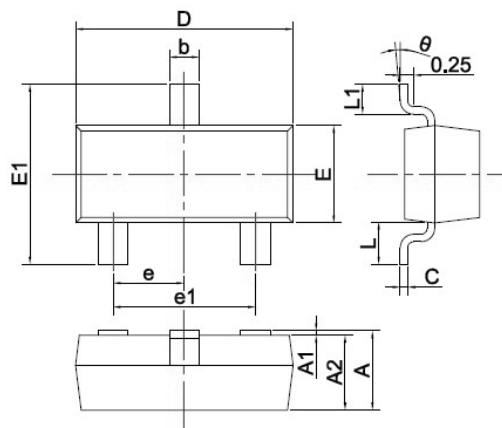
HFE	100-300	
RANK	L	H
RANGE	100-200	200-300

Typical characteristics





## SOT-23 PACKAGE OUTLINE Plastic surface mounted package

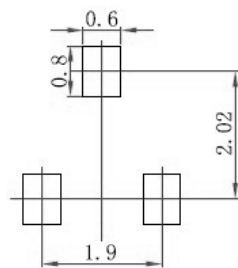


SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Unit: mm

### 焊盘设计参考 Precautions: PCB Design

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



- Note:
1. Controlling dimension: In millimeters.
  2. General tolerance: ± 0.05mm.
  3. The pad layout is for reference purposes only.

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