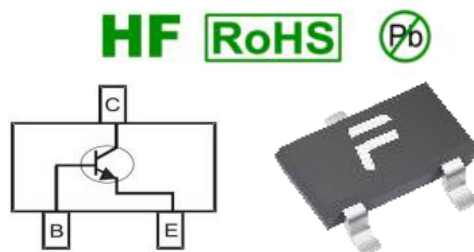


## SOT-23 Bipolar Transistor 双极型三极管

### ■Features 特点

NPN Switching 开关

### ■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                      | $P_C(T_a=25^{\circ}C)$ | 200                   | mW            |
| Thermal Resistance Junction-Ambient 热阻      | $R_{\theta JA}$        | 625                   | $^{\circ}C/W$ |
| Junction and Storage Temperature<br>结温和储藏温度 | $T_J, T_{stg}$         | -55to+150 $^{\circ}C$ |               |

### ■Device Marking 产品打标

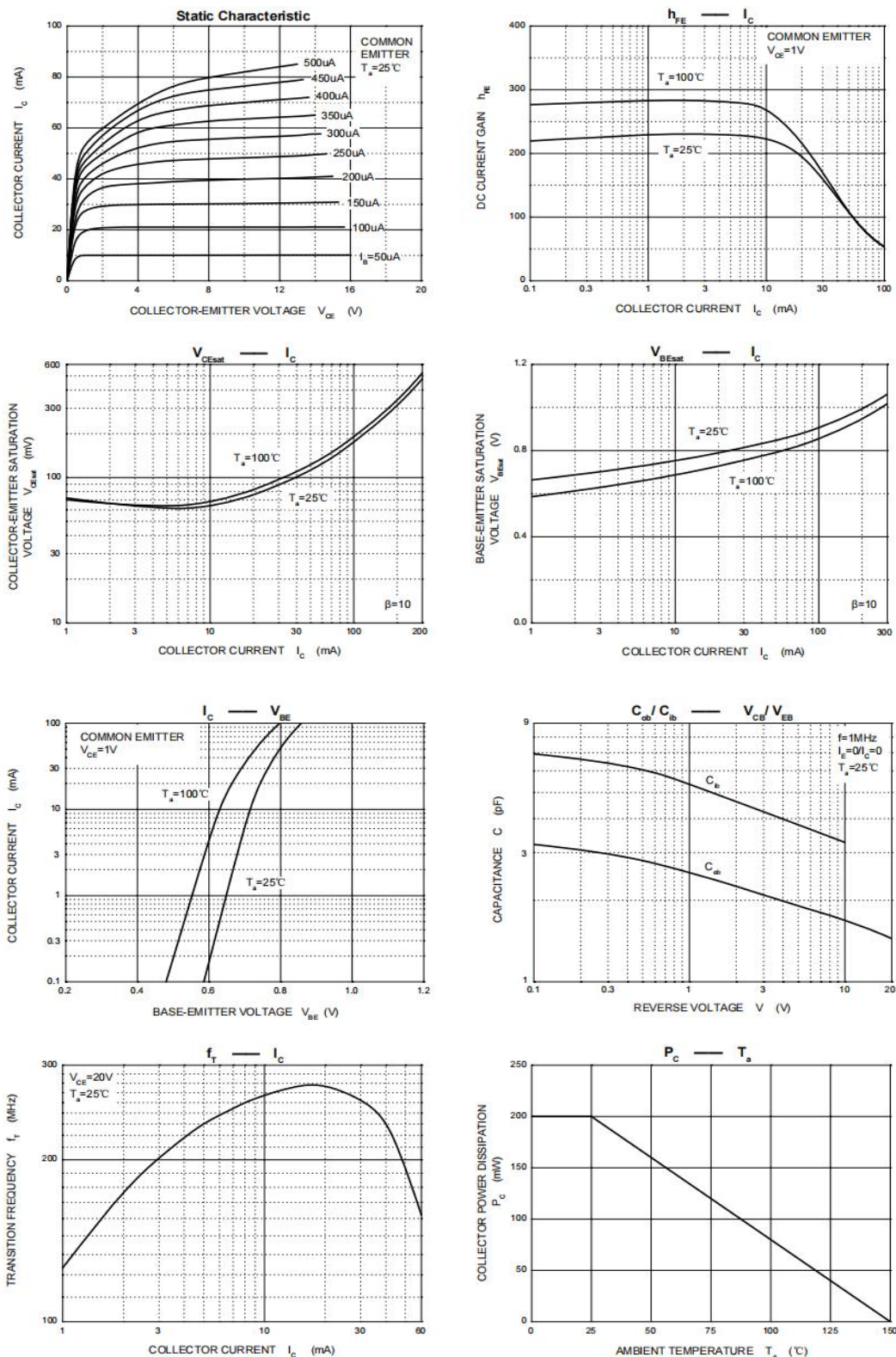
MMBT3904-6AF=1AM

**■Electrical Characteristics 电特性**

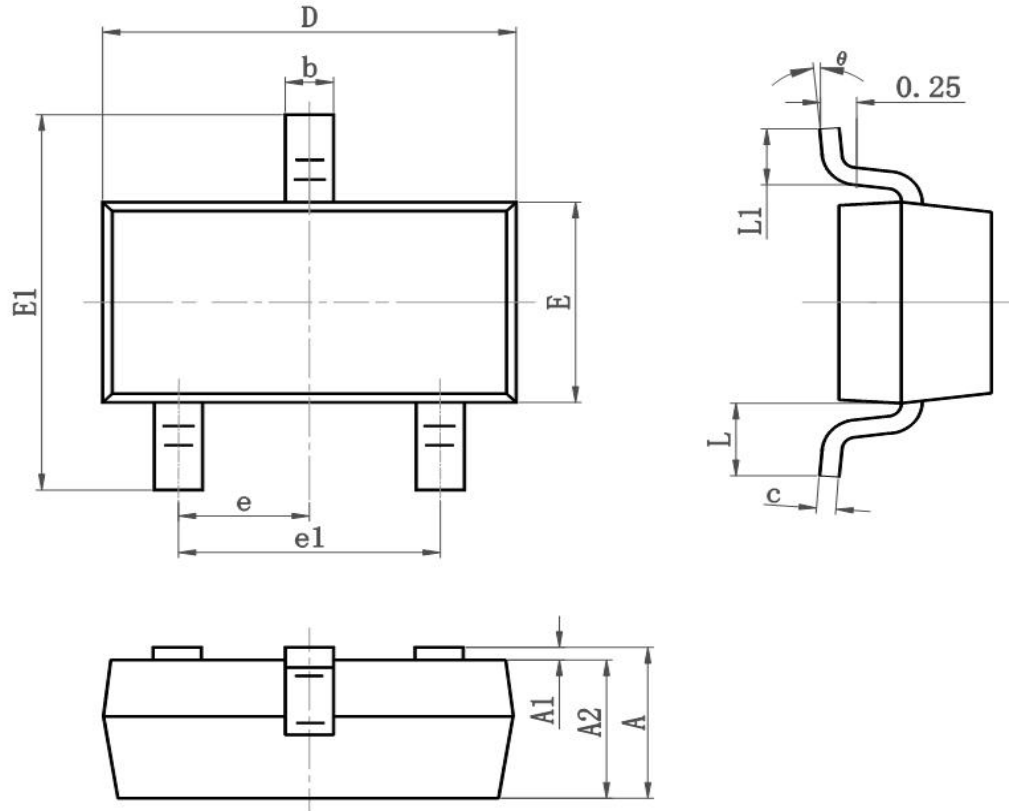
(TA=25°C unless otherwise noted 如无特殊说明, 温度为 25°C)

| Characteristic<br>特性参数                                                                                                   | Symbol<br>符号         | Min<br>最小值      | Type<br>典型值 | Max<br>最大值 | Unit<br>单位 |
|--------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------|-------------|------------|------------|
| Collector-Base Breakdown Voltage<br>集电极基极击穿电压(IC=10uA, IE=0)                                                             | BV <sub>CBO</sub>    | 60              | —           | —          | V          |
| Collector-Emitter Breakdown Voltage<br>集电极发射极击穿电压(IC=1mA, IB=0)                                                          | BV <sub>CEO</sub>    | 40              | —           | —          | V          |
| Emitter-Base Breakdown Voltage<br>发射极基极击穿电压(IE=10uA, IC=0)                                                               | BV <sub>EBO</sub>    | 6               | —           | —          | V          |
| Collector-Base Leakage Current<br>集电极基极漏电流(V <sub>CB</sub> =60V, IE=0)                                                   | I <sub>CBO</sub>     | —               | —           | 100        | nA         |
| Collector-Emitter Leakage Current<br>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<br>发射极基极漏电流(V <sub>EB</sub> =5V, IC=0)                                                      | I <sub>EBO</sub>     | —               | —           | 100        | nA         |
| DC Current Gain(V <sub>CE</sub> =1V, IC=10mA)<br>直流电流增益(V <sub>CE</sub> =1V, IC=50mA)<br>(V <sub>CE</sub> =1V, IC=100mA) | H <sub>FE</sub>      | 100<br>60<br>30 | —           | 300        |            |
| Collector-Emitter Saturation Voltage<br>集电极发射极饱和压降(IC=50mA, IB=5mA)                                                      | V <sub>CE(sat)</sub> | —               | —           | 0.3        | V          |
| Base-Emitter Saturation Voltage<br>基极发射极饱和压降(IC=50mA, IB=5mA)                                                            | V <sub>BE(sat)</sub> | —               | —           | 0.95       | V          |
| Transition Frequency<br>特征频率(V <sub>CE</sub> =20V, IC=10mA)                                                              | f <sub>T</sub>       | 300             | —           | —          | MHz        |
| Delay Time 延迟时间<br>(V <sub>CC</sub> =3V, V <sub>BE</sub> =-0.5V, IC=10mA, IB1=1mA)                                       | t <sub>d</sub>       | —               | —           | 35         | ns         |
| Rise Time 上升时间<br>(V <sub>CC</sub> =3V, V <sub>BE</sub> =-0.5V, IC=10mA, IB1=1mA)                                        | t <sub>r</sub>       | —               | —           | 35         | ns         |
| Storage Time 贮存时间<br>(V <sub>CC</sub> =3V, IC=10mA, IB1=IB2=1mA)                                                         | t <sub>s</sub>       | —               | —           | 200        | ns         |
| Fall Time 下降时间<br>(V <sub>CC</sub> =3V, IC=10mA, IB1=IB2=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      | 0.900                     | 1.00  | 0.035                | 0.039 |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.500                     | 0.600 | 0.020                | 0.024 |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |