

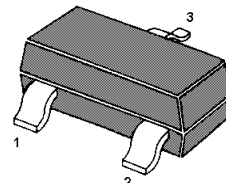


## FEATURES

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (MMBT3906)
- Ideal for Medium Power Amplification and Switching

## MARKING: 1AM

## SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

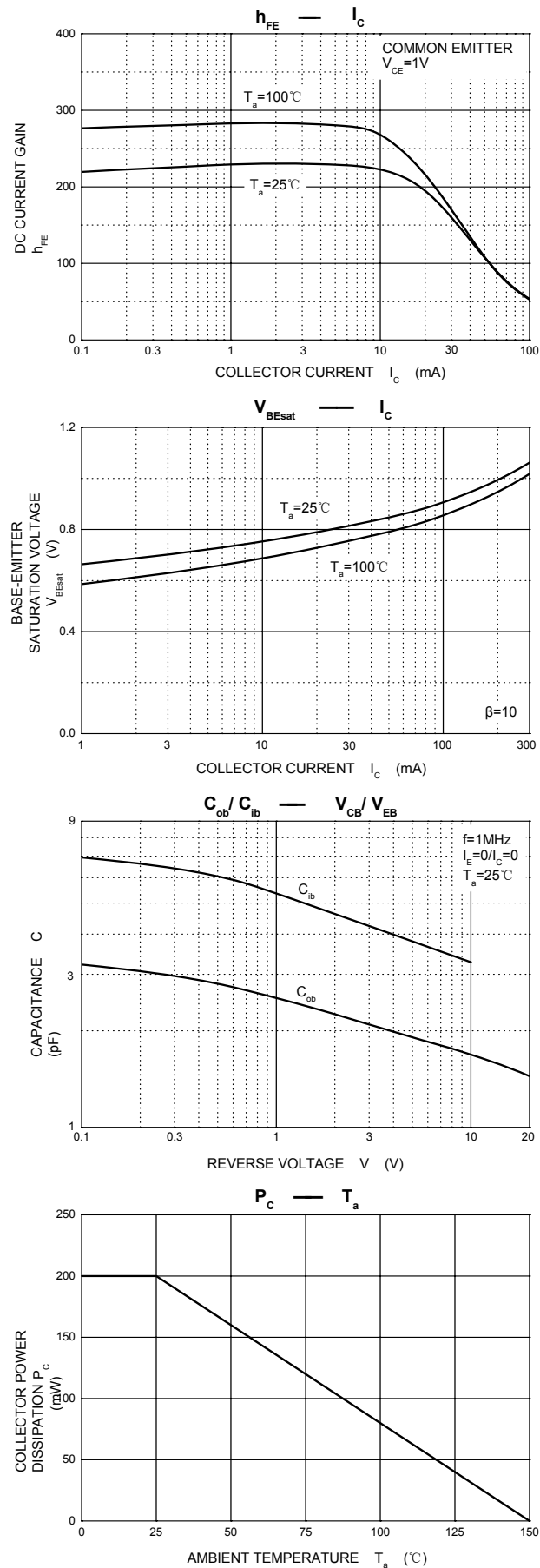
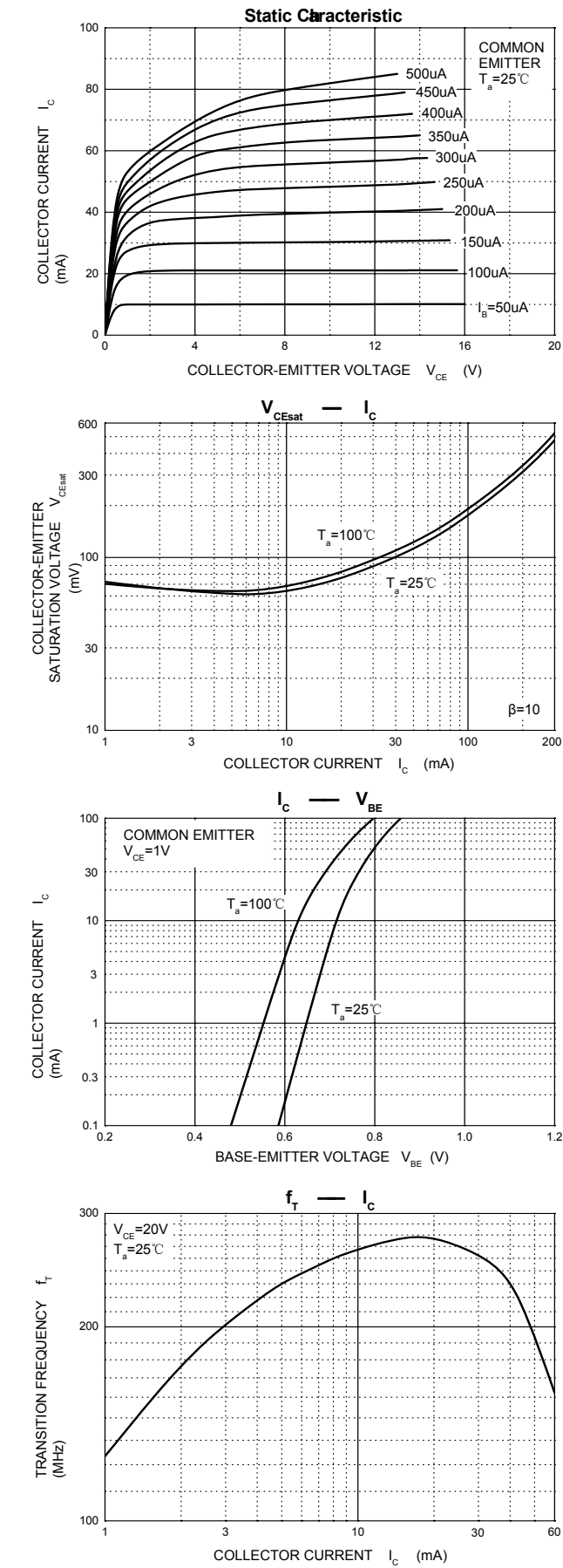
MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$  unless otherwise noted)

| Symbol          | Parameter                                   | Value      | Unit                        |
|-----------------|---------------------------------------------|------------|-----------------------------|
| $V_{CB0}$       | Collector-Base Voltage                      | 60         | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                   | 40         | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                        | 6          | V                           |
| $I_C$           | Collector Current                           | 200        | mA                          |
| $P_C$           | Total Device Dissipation                    | 200        | mW                          |
| $R_{\theta JA}$ | Thermal Resistance From Junction to Ambient | 625        | $^{\circ}\text{C}/\text{W}$ |
| $T_J$           | Junction Temperature                        | 150        | $^{\circ}\text{C}$          |
| $T_{stg}$       | Storage Temperature                         | -55 ~ +150 | $^{\circ}\text{C}$          |

ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$  unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                                                   | Min | Max  | Unit          |
|--------------------------------------|---------------|-------------------------------------------------------------------|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C = 10\mu\text{A}$ , $I_E = 0$                                 | 60  |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C = 1\text{mA}$ , $I_B = 0$                                    | 40  |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E = 10\mu\text{A}$ , $I_C = 0$                                 | 6   |      | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = 60\text{V}$ , $I_E = 0$                                 |     | 0.1  | $\mu\text{A}$ |
| Collector cut-off current            | $I_{CEX}$     | $V_{CE} = 30\text{V}$ , $V_{BE(off)} = 3\text{V}$                 |     | 50   | nA            |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 5\text{V}$ , $I_C = 0$                                  |     | 0.1  | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE} = 1\text{V}$ , $I_C = 10\text{mA}$                        | 100 | 300  |               |
|                                      | $h_{FE(2)}$   | $V_{CE} = 1\text{V}$ , $I_C = 50\text{mA}$                        | 60  |      |               |
|                                      | $h_{FE(3)}$   | $V_{CE} = 1\text{V}$ , $I_C = 100\text{mA}$                       | 30  |      |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 50\text{mA}$ , $I_B = 5\text{mA}$                          |     | 0.3  | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = 50\text{mA}$ , $I_B = 5\text{mA}$                          |     | 0.95 | V             |
| Transition frequency                 | $f_T$         | $V_{CE} = 20\text{V}$ , $I_C = 10\text{mA}$ , $f = 100\text{MHz}$ | 300 |      | MHz           |
| Delay Time                           | $t_d$         | $V_{CC} = 3\text{V}$ , $V_{BE} = -0.5\text{V}$                    |     | 35   | nS            |
| Rise Time                            | $t_r$         | $I_C = 10\text{mA}$ , $I_{B1} = -I_{B2} = 1.0\text{mA}$           |     | 35   | nS            |
| Storage Time                         | $t_s$         | $V_{CC} = 3\text{V}$ , $I_C = 10\text{mA}$ ,                      |     | 200  | nS            |
| Fall Time                            | $t_f$         | $I_{B1} = -I_{B2} = 1\text{mA}$                                   |     | 50   | nS            |

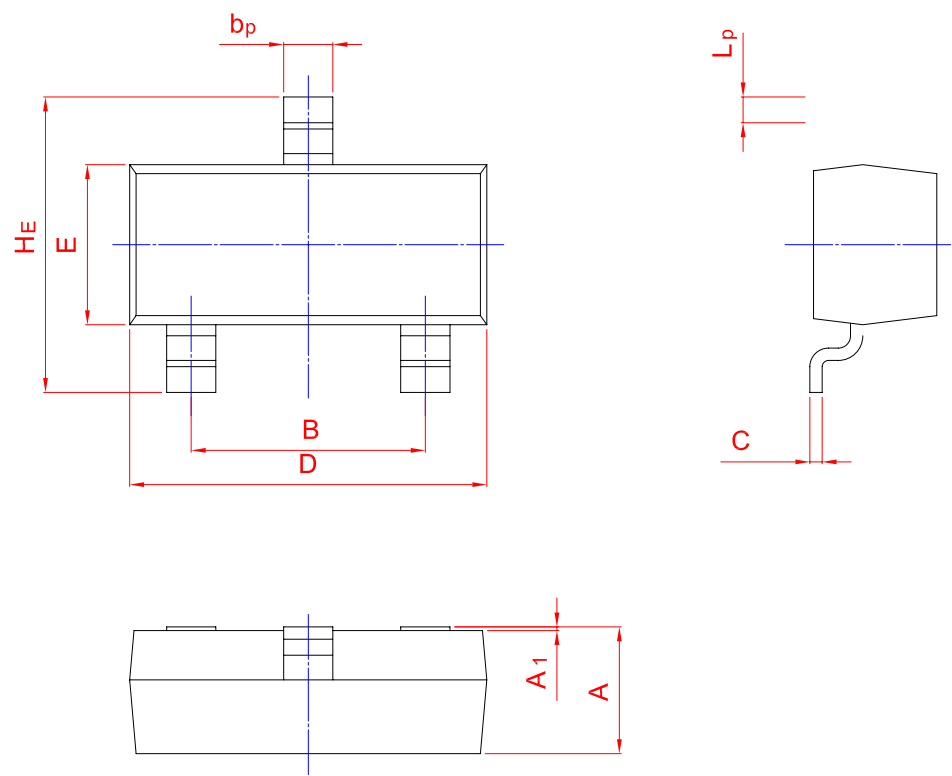
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



| UNIT | A            | B            | b <sub>p</sub> | C            | D            | E            | H <sub>E</sub> | A <sub>1</sub> | L <sub>p</sub> |
|------|--------------|--------------|----------------|--------------|--------------|--------------|----------------|----------------|----------------|
| mm   | 1.40<br>0.95 | 2.04<br>1.78 | 0.50<br>0.35   | 0.19<br>0.08 | 3.10<br>2.70 | 1.65<br>1.20 | 3.00<br>2.20   | 0.100<br>0.013 | 0.50<br>0.20   |