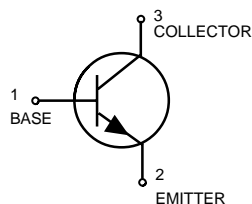
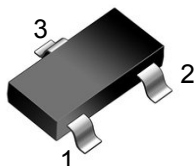


**SOT-23**

**MARKING: 1AM**
**Features**

As complementary type the PNP transistor MMBT3906 is recommended  
 Epitaxial planar die construction  
 Halogen free and RoHS compliant

**Mechanical Data**

SOT-23 Small Outline Plastic Package  
 Epoxy UL: 94V-0

**Summary of Packing Options**

| Package | Packing Description | Packing Quantity | Industry Standard |
|---------|---------------------|------------------|-------------------|
| SOT-23  | Tape/Reel, 7" reel  | 3000             | EIA-481-1         |

**Maximum Ratings & Thermal Characteristics**

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

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

**Electrical Characteristics**

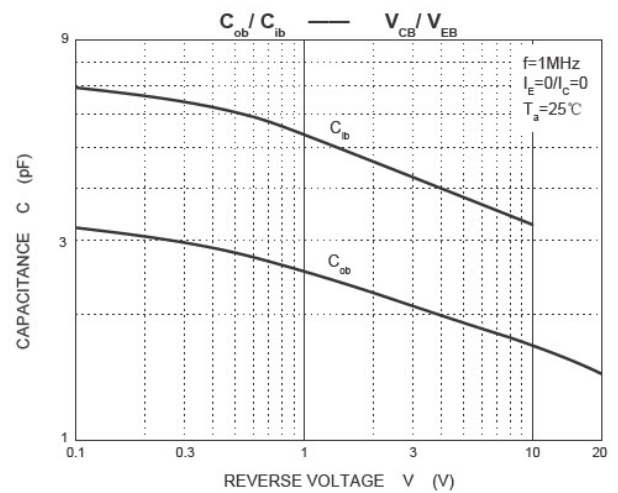
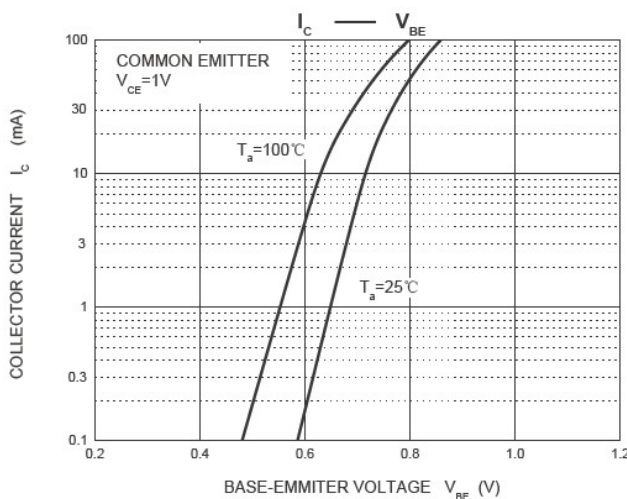
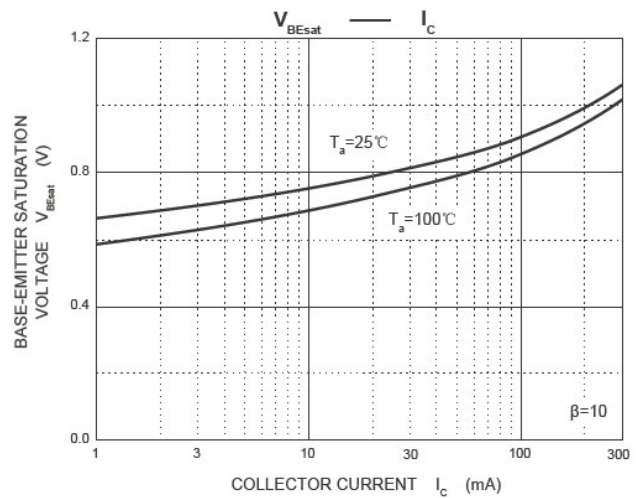
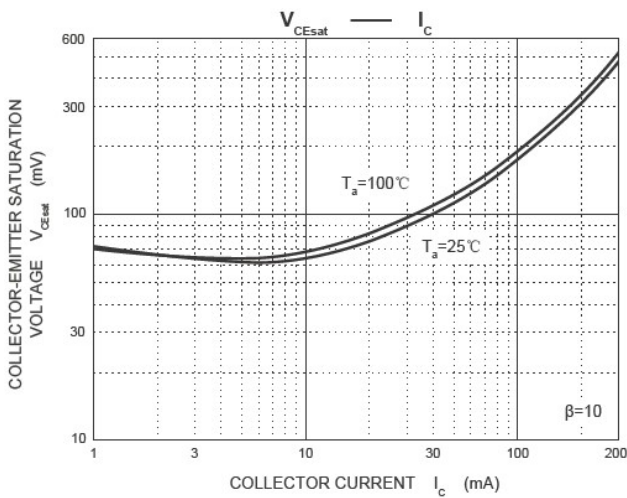
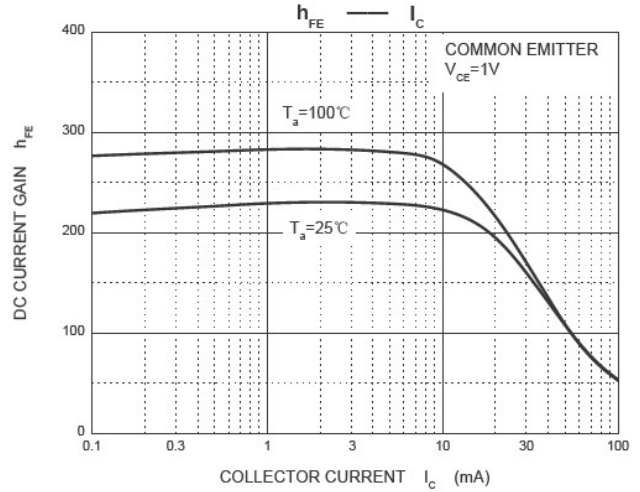
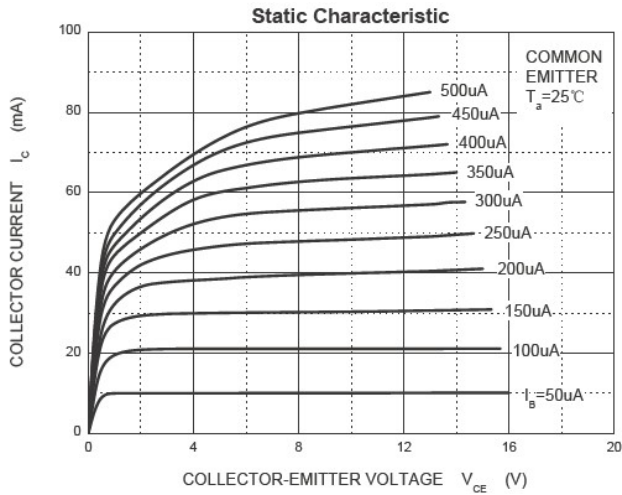
(Ratings at 25°C ambient temperature unless otherwise specified).

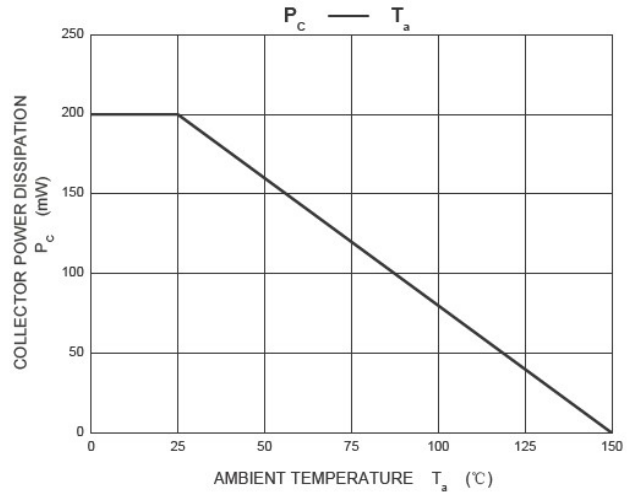
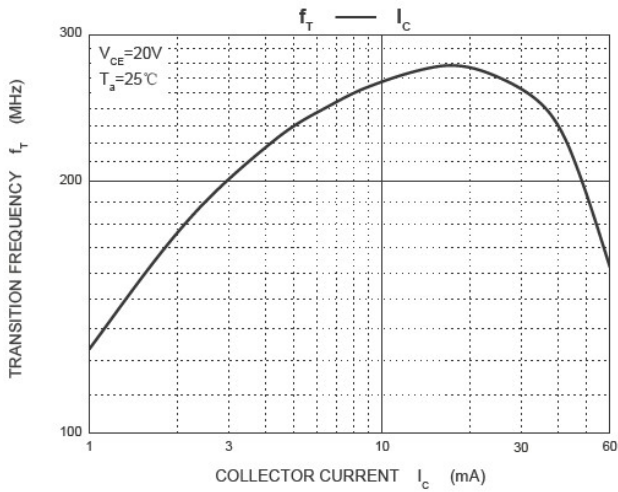
| Parameter                            | Symbol        | Test conditions                        | MIN | MAX  | UNIT    |
|--------------------------------------|---------------|--|-----|------|---------|
| Collector-base breakdown voltage     | $V_{CBO}$     | $I_C = 10\mu A, I_E = 0$               | 60  |      | V       |
| Collector-emitter breakdown voltage  | $V_{CEO}$     | $I_C = 1mA, I_B = 0$                   | 40  |      | V       |
| Emitter-base breakdown voltage       | $V_{EBO}$     | $I_E = 10\mu A, I_C = 0$               | 6   |      | V       |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = 60V, I_E = 0$                |     | 0.1  | $\mu A$ |
| Collector cut-off current            | $I_{CEX}$     | $V_{CE} = 30V, V_{BE(off)} = 3V$       |     | 50   | nA      |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 5V, I_C = 0$                 |     | 0.1  | $\mu A$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE} = 1V, I_C = 10mA$              | 100 | 400  |         |
|                                      | $h_{FE(2)}$   | $V_{CE} = 1V, I_C = 50mA$              | 60  |      |         |
|                                      | $h_{FE(3)}$   | $V_{CE} = 1V, I_C = 100mA$             | 30  |      |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 50mA, I_B = 5mA$                |     | 0.3  | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = 50mA, I_B = 5mA$                |     | 0.95 | V       |
| Transition frequency                 | $f_T$         | $V_{CE} = 20V, I_C = 10mA, f = 100MHz$ | 300 |      | MHz     |
| Delay Time                           | $t_d$         | $V_{CC} = 3V, V_{BE} = -0.5V$          |     | 35   | nS      |
| Rise Time                            | $t_r$         | $I_C = 10mA, I_{B1} = -I_{B2} = 1.0mA$ |     | 35   | nS      |
| Storage Time                         | $t_s$         | $V_{CC} = 3V, I_C = 10mA,$             |     | 200  | nS      |
| Fall Time                            | $t_f$         | $I_{B1} = -I_{B2} = 1mA$               |     | 50   | nS      |

**CLASSIFICATION OF  $h_{FE(1)}$**

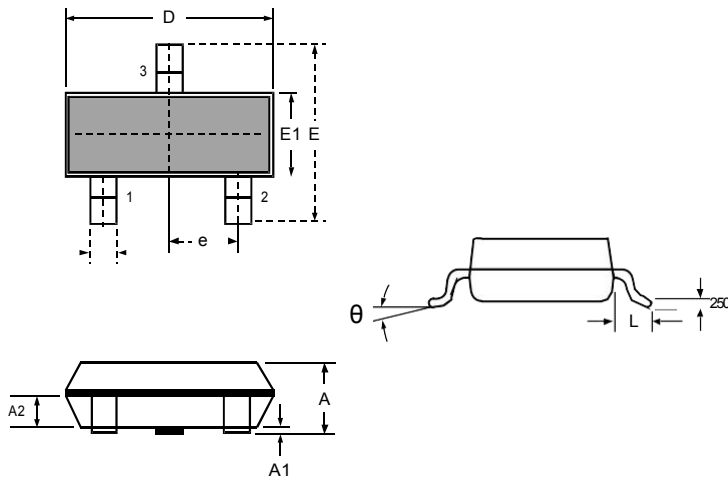
|       |         |         |
|-------|---------|---------|
| HFE   | 100-300 |         |
| RANK  | L       | H       |
| RANGE | 100-200 | 200-300 |

**Ratings and Characteristic Curves**





### Package Outline Dimensions: SOT-23



DIMENSIONS

| SYMBOL | MILLIMETER |       | 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 |
| D      | 2.800      | 3.000 | 0.110     | 0.118 |
| b      | 0.300      | 0.500 | 0.012     | 0.020 |
| E      | 2.250      | 2.550 | 0.089     | 0.100 |
| E1     | 1.200      | 1.400 | 0.047     | 0.055 |
| e      | 0.950 BSC  |       | 0.037 BSC |       |
| L      | 0.300      | 0.500 | 0.012     | 0.020 |
| θ      | 0          | 8°    | 0         | 8°    |