



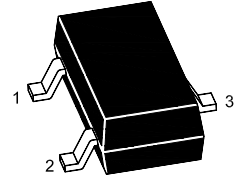
MMBT3906

PNP Transistor

Features

- For Switching and AF Amplifier Applications.
- Silicon Epitaxial Chip.

SOT-23
(TO-236)



1.Base 2.Emitter 3.Collector

Marking: 3E

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

| Parameter | Symbol | Value | Unit |
|---------------------------|------------|---------------|------------------|
| Collector Base Voltage | $-V_{CBO}$ | 40 | V |
| Collector Emitter Voltage | $-V_{CEO}$ | 40 | V |
| Emitter Base Voltage | $-V_{EBO}$ | 6 | V |
| Collector Current | $-I_C$ | 200 | mA |
| Power Dissipation | P_D | 350 | mW |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | - 55 to + 150 | $^\circ\text{C}$ |

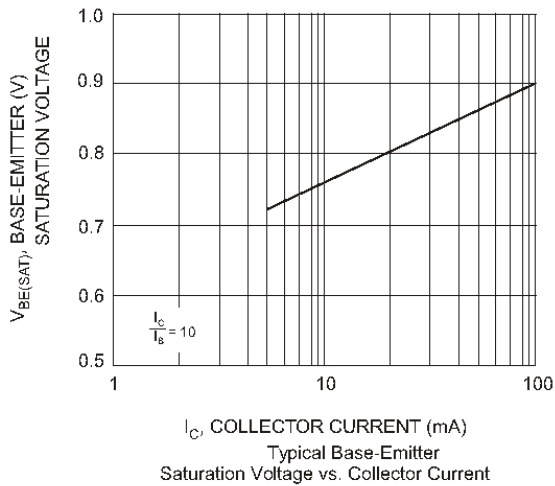
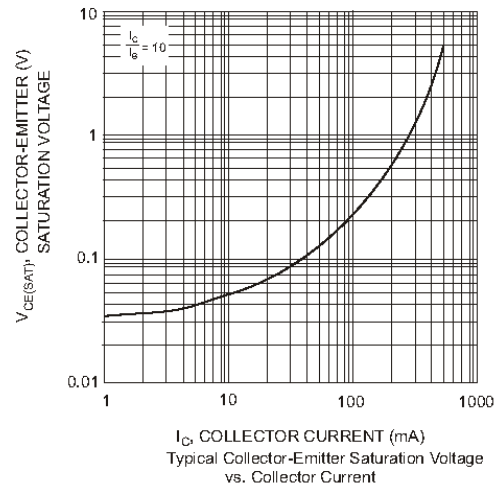
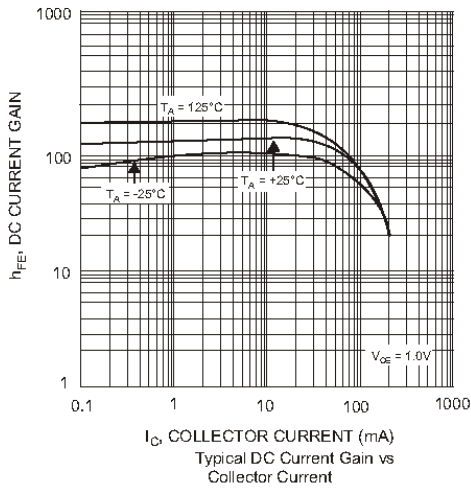
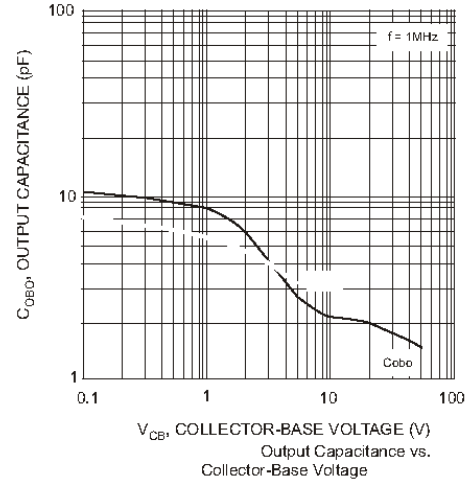
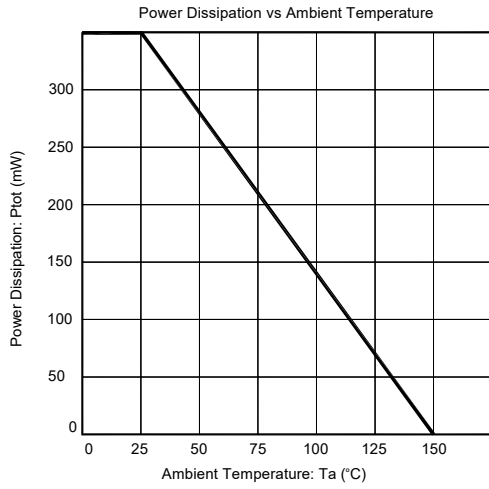


Electrical Characteristics at $T_A = 25^\circ\text{C}$

| Parameter | Symbol | Min. | Max. | Unit |
|--|----------------|------|------|------|
| DC Current Gain at $-V_{CE} = 1\text{ V}$, $-I_C = 0.1\text{ mA}$ | h_{FE} | 60 | - | - |
| at $-V_{CE} = 1\text{ V}$, $-I_C = 1\text{ mA}$ | h_{FE} | 80 | - | - |
| at $-V_{CE} = 1\text{ V}$, $-I_C = 10\text{ mA}$ | h_{FE} | 100 | 300 | - |
| at $-V_{CE} = 1\text{ V}$, $-I_C = 50\text{ mA}$ | h_{FE} | 60 | - | - |
| at $-V_{CE} = 1\text{ V}$, $-I_C = 100\text{ mA}$ | h_{FE} | 30 | - | - |
| Collector Base Cutoff Current at $-V_{CB} = 30\text{ V}$ | $-I_{CBO}$ | - | 50 | nA |
| Emitter Base Cutoff Current at $-V_{EB} = 6\text{ V}$ | $-I_{EBO}$ | - | 50 | nA |
| Collector Base Breakdown Voltage at $-I_C = 10\text{ }\mu\text{A}$ | $-V_{(BR)CBO}$ | 40 | - | V |
| Collector Emitter Breakdown Voltage at $-I_C = 1\text{ mA}$ | $-V_{(BR)CEO}$ | 40 | - | V |
| Emitter Base Breakdown Voltage at $-I_E = 10\text{ }\mu\text{A}$ | $-V_{(BR)EBO}$ | 6 | - | V |
| Collector Emitter Saturation Voltage at $-I_C = 10\text{ mA}$, $-I_B = 1\text{ mA}$ | $-V_{CE(sat)}$ | - | 0.25 | V |
| at $-I_C = 50\text{ mA}$, $-I_B = 5\text{ mA}$ | $-V_{CE(sat)}$ | - | 0.4 | V |
| Base Emitter Saturation Voltage at $-I_C = 10\text{ mA}$, $-I_B = 1\text{ mA}$ | $-V_{BE(sat)}$ | 0.65 | 0.85 | V |
| at $-I_C = 50\text{ mA}$, $-I_B = 5\text{ mA}$ | $-V_{BE(sat)}$ | - | 0.95 | V |
| Current Gain Bandwidth Product at $-V_{CE} = 20\text{ V}$, $-I_C = 10\text{ mA}$, $f = 100\text{ MHz}$ | f_T | 250 | - | MHz |
| Output Capacitance at $-V_{CB} = 5\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$ | C_{ob} | - | 4.5 | pF |
| Delay Time at $-V_{CC} = 3\text{ V}$, $-V_{BE} = 0.5\text{ V}$, $-I_C = 10\text{ mA}$, $-I_{B1} = 1\text{ mA}$ | t_d | - | 35 | ns |
| Rise Time at $-V_{CC} = 3\text{ V}$, $-V_{BE} = 0.5\text{ V}$, $-I_C = 10\text{ mA}$, $-I_{B1} = 1\text{ mA}$ | t_r | - | 35 | ns |
| Storage Time at $-V_{CC} = 3\text{ V}$, $-I_C = 10\text{ mA}$, $-I_{B1} = I_{B2} = 1\text{ mA}$ | t_s | - | 225 | ns |
| Fall Time at $-V_{CC} = 3\text{ V}$, $-I_C = 10\text{ mA}$, $-I_{B1} = I_{B2} = 1\text{ mA}$ | t_f | - | 75 | ns |

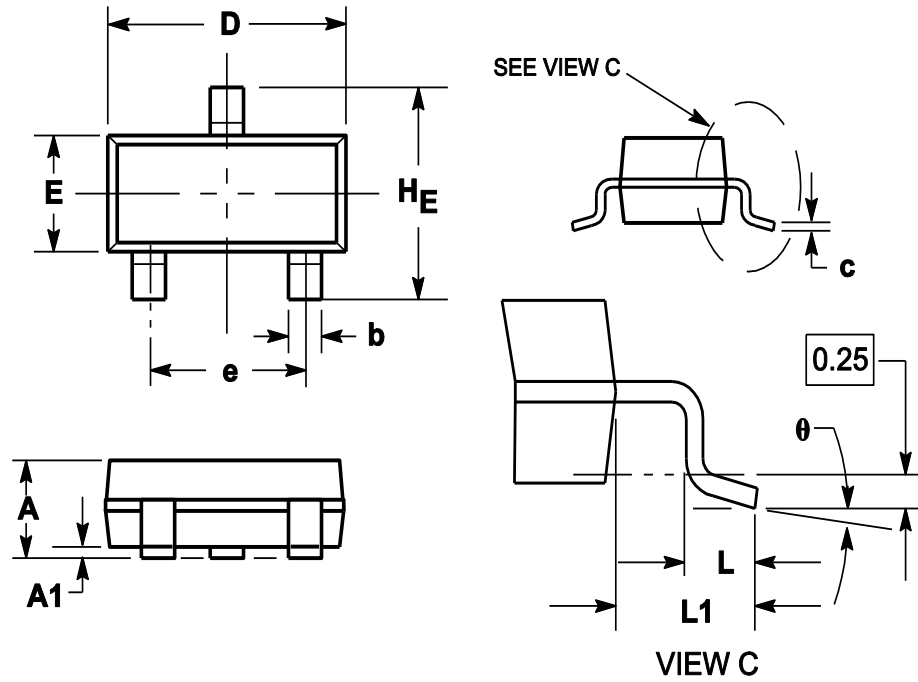


Electrical Characteristics Curves





Package Outline (SOT-23)



| Symbol | Dimensions in millimeter | | |
|--------|--------------------------|-------|-------|
| | Min. | Typ. | Max. |
| A | 0.900 | 1.025 | 1.150 |
| A1 | 0.000 | 0.050 | 0.100 |
| b | 0.300 | 0.400 | 0.500 |
| c | 0.080 | 0.115 | 0.150 |
| D | 2.800 | 2.900 | 3.000 |
| E | 1.200 | 1.300 | 1.400 |
| HE | 2.250 | 2.400 | 2.550 |
| e | 1.800 | 1.900 | 2.000 |
| L1 | 0.550REF | | |
| L | 0.300 | | 0.500 |
| θ | 0° | | 8° |

Ordering Information

| Device | Package | Reel Dimension (inch) | Shipping Quantity |
|----------|---------|-----------------------|-------------------|
| MMBT3906 | SOT-23 | 7 | 3,000 |

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