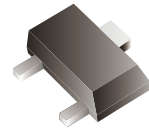


MMBT3906M-HF (PNP)

RoHS Device

Halogen Free



Features

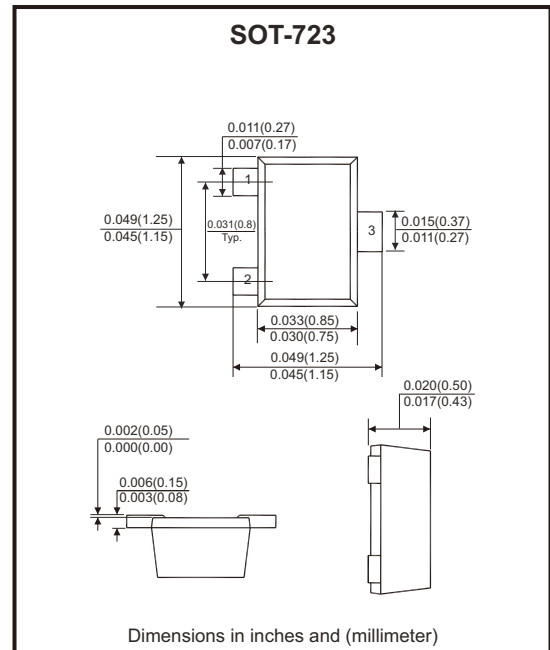
- Small package.

Mechanical data

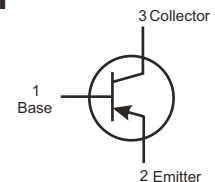
- Case: SOT-723, molded plastic.

Maximum Ratings (at TA=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|------------------|----------|------|
| Collector-Base voltage | V _{CB0} | -40 | V |
| Collector-Emitter voltage | V _{CEO} | -40 | V |
| Emitter-Base voltage | V _{EB0} | -5 | V |
| Collector current-continuous | I _C | -0.2 | A |
| Power dissipation | P _C | 100 | mW |
| Thermal resistance from junction to ambient | R _{θJA} | 1250 | °C/W |
| Junction temperature | T _J | 150 | °C |
| Storage temperature | T _{stg} | -55~+150 | °C |



Circuit Diagram



Electrical Characteristics (at TA=25°C unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Max | Unit |
|--------------------------------------|----------------------|---|-----|-------|------|
| Collector-Base breakdown voltage | V _{(BR)CB0} | I _C =-10μA, I _E =0 | -40 | - | V |
| Collector-Emitter breakdown voltage | V _{(BR)CEO} | I _C =-1mA, I _B =0 | -40 | - | V |
| Emitter-Base breakdown voltage | V _{(BR)EBO} | I _E =-10μA, I _C =0 | -5 | - | V |
| Collector cut-off current | I _{CB0} | V _{CB} =-40V, I _E =0 | - | -100 | nA |
| 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 | - | -100 | nA |
| DC current gain | h _{FE(1)} | V _{CE} =-1V, I _C =-10mA | 100 | 300 | |
| | 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 _r | V _{CE} =-20V, I _C =-10mA f=100MHz | 300 | - | MHz |
| Delay time | t _d | V _{CC} =-3V, V _{BE(off)} =-0.5V | - | 35 | nS |
| Rise time | t _r | I _C =-10mA, I _{B1} =I _{B2} =-1mA | - | 35 | nS |
| Storage time | t _s | V _{CC} =-3V, I _C =-10mA | - | 225 | nS |
| Fall time | t _f | I _{B1} =I _{B2} =-1mA | - | 75 | nS |

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REV:B

Rating and Characteristic Curves (MMBT3906M-HF)

Fig.1 - Static Characteristic

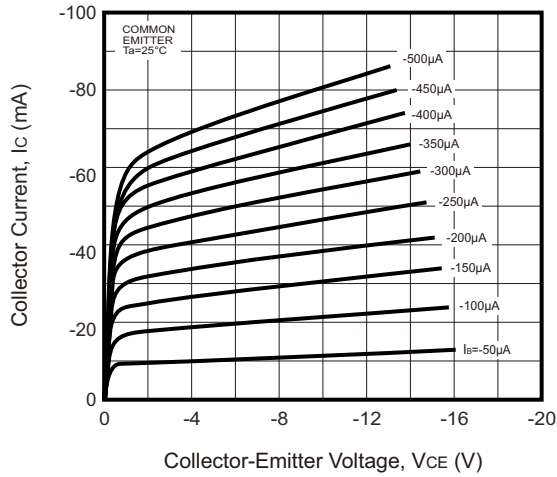


Fig.2 - $h_{FE} - I_c$

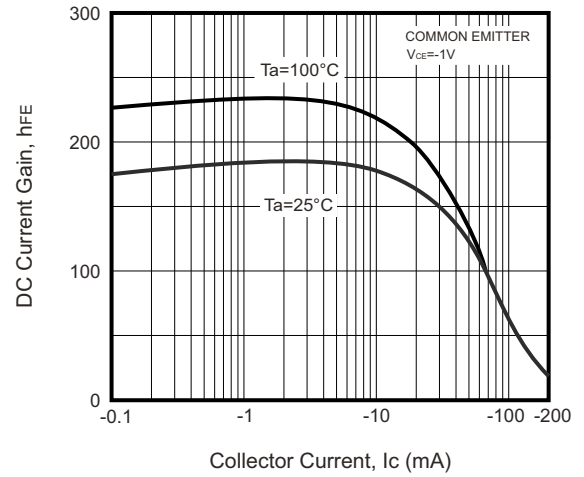


Fig.3 - $V_{CEsat} - I_c$

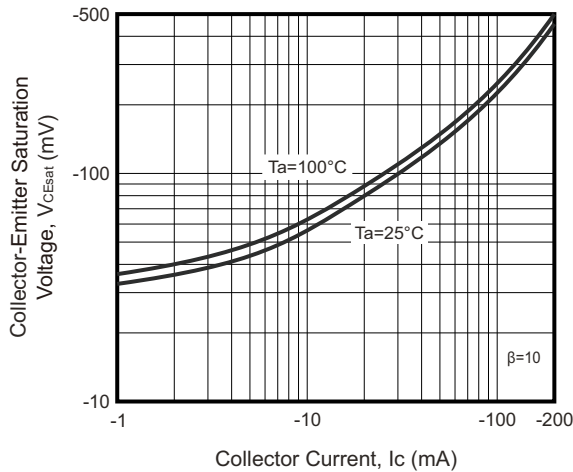


Fig.4 - $V_{BEsat} - I_c$

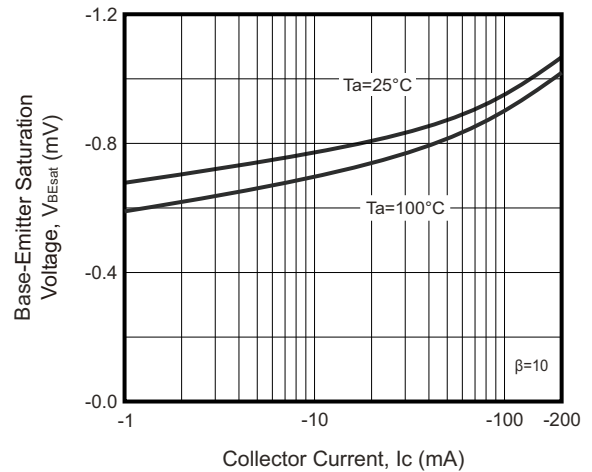


Fig.5 - $V_{BE} - I_c$

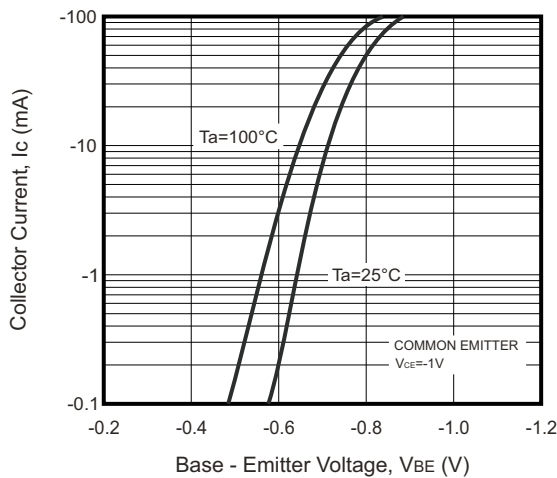
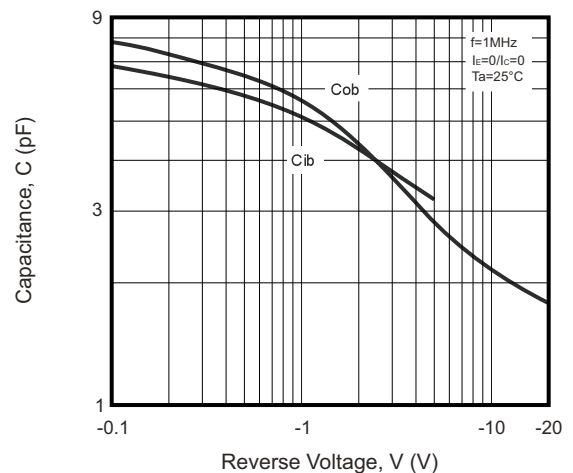


Fig.6 - $C_{ob}/C_{ib} - V_{CB}/V_{EB}$



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REV:B

Rating and Characteristic Curves (MMBT3906M-HF)

Fig.7 - F_T — I_c

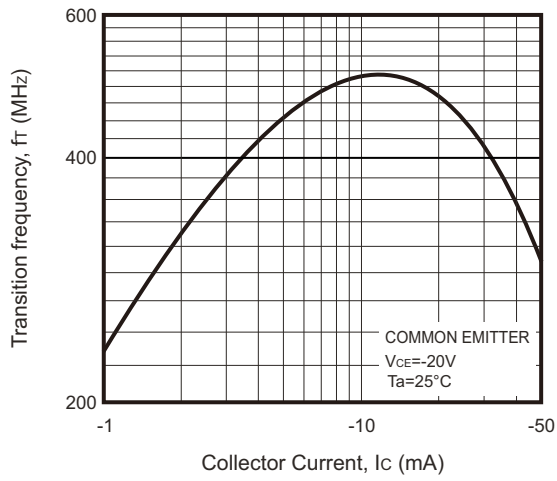
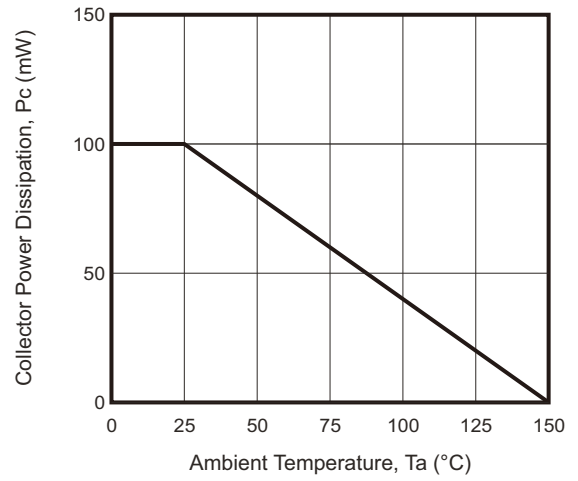
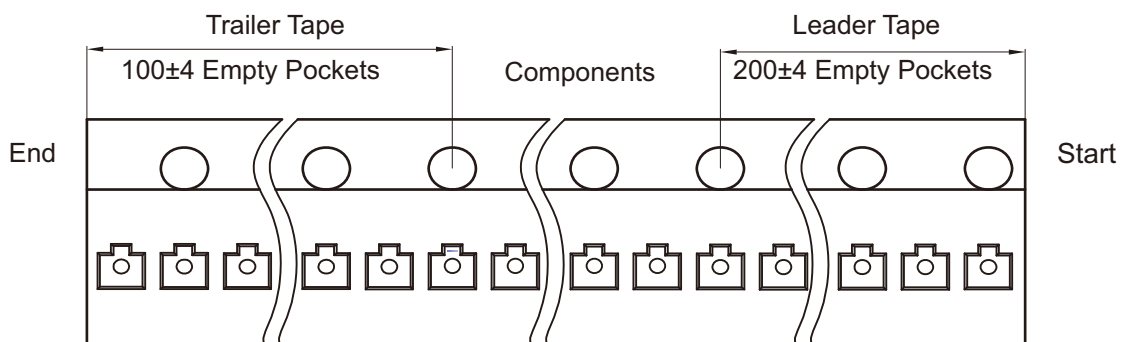
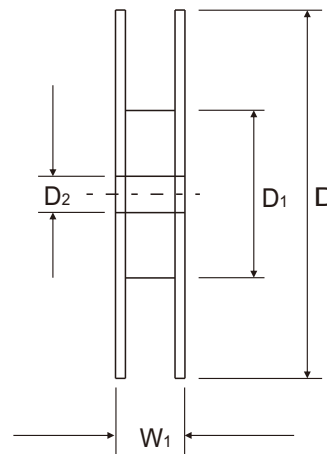
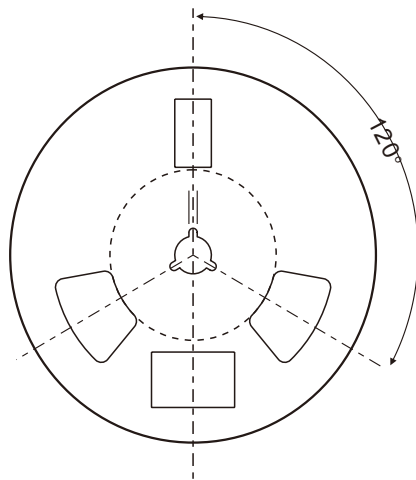
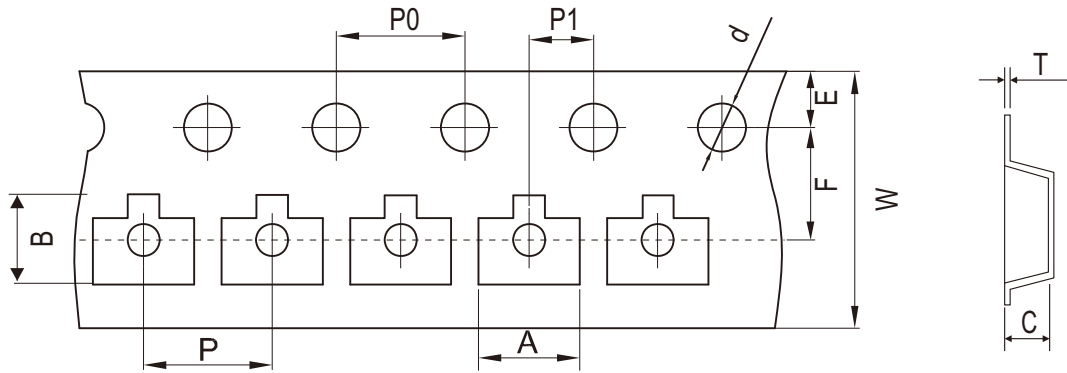


Fig.8 - P_c — T_a



Reel Taping Specification



| SOT-723 | SYMBOL | A | B | C | d | D | D1 | D2 |
|---------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | (mm) | 1.33 ± 0.05 | 1.45 ± 0.05 | 0.61 ± 0.05 | 1.50 ± 0.10 | 178 ± 2.00 | 54.40 ± 1.00 | 13.00 ± 1.00 |
| | (inch) | 0.052 ± 0.002 | 0.057 ± 0.002 | 0.024 ± 0.002 | 0.059 ± 0.004 | 7.008 ± 0.078 | 2.142 ± 0.039 | 0.512 ± 0.039 |

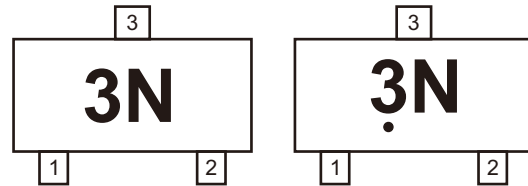
| SOT-723 | SYMBOL | E | F | P | P0 | P1 | W | W1 |
|---------|--------|---------------|---------------|---------------|---------------|---------------|-------------------------|---------------|
| | (mm) | 1.75 ± 0.10 | 3.50 ± 0.05 | 2.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 8.00 + 0.30 / - 0.10 | 12.30 ± 1.00 |
| | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.079 ± 0.004 | 0.158 ± 0.004 | 0.079 ± 0.004 | 0.315 + 0.012 / - 0.004 | 0.484 ± 0.039 |

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REV:B

Marking Code

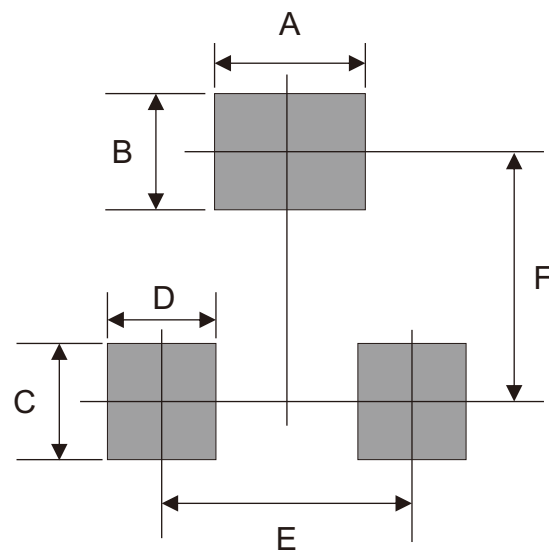
| Part Number | Marking Code |
|--------------|--------------|
| MMBT3906M-HF | 3N |



Solid dot = Control code

Suggested P.C.B. PAD Layout

| SIZE | SOT-723 | |
|------|---------|--------|
| | (mm) | (inch) |
| A | 0.42 | 0.017 |
| B | 0.30 | 0.012 |
| C | 0.30 | 0.012 |
| D | 0.32 | 0.013 |
| E | 0.80 | 0.031 |
| F | 1.00 | 0.039 |



Note: 1. The pad layout is for reference purposes only.

Standard Packaging

| Case Type | REEL PACK | |
|-----------|--------------|------------------|
| | REEL (pcs) | Reel Size (inch) |
| SOT-723 | 8,000 | 7 |