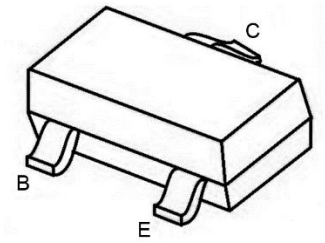
# MMBT3906T5

## Feature

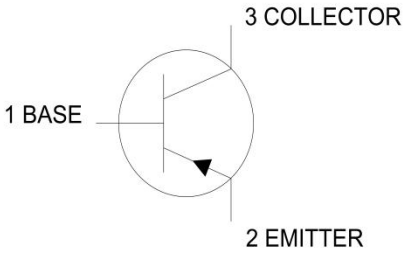
- Switching Transistor
- Collector-emitter voltage VCE=-40V
- Collector current IC=-0.2A

## Package

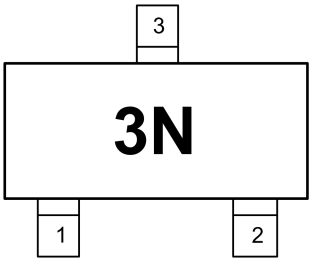



**SOT-523**

## Circuit diagram




## Marking



## Absolute maximum ratings (Ta=25℃ unless otherwise noted)

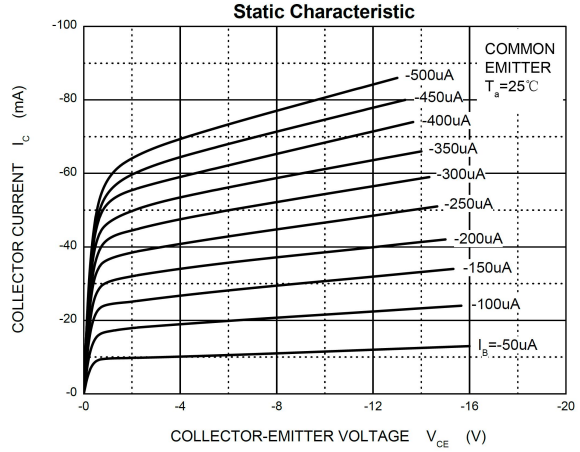
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector Base Voltage | $V_{CBO}$ | -40 | V |
| Collector Emitter Voltage | $V_{CEO}$ | -40 | V |
| Emitter Base Voltage | $V_{EBO}$ | -5 | V |
| Collector Current | $I_C$ | -200 | mA |
| Power Dissipation | $P_{tot}$ | 150 | mW |
| Junction Temperature | $T_j$ | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | - 55 to + 150 | ℃ |

## Electrical characteristics ($T_A$=25 ºC, unless otherwise noted)

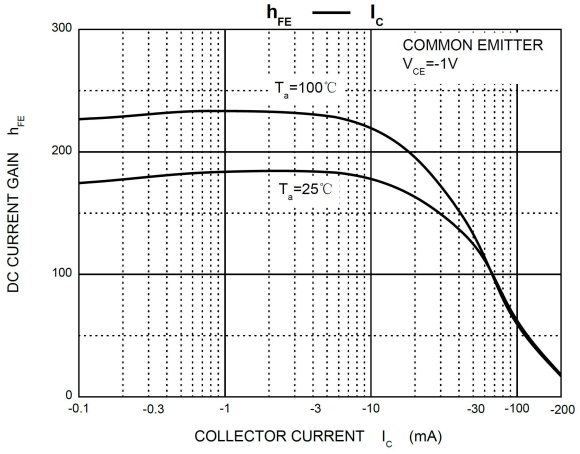
| Parameter | Symbol | Test Condition | Min | Max | Unit |
|---|---|---|---|---|---|
| Collector-base breakdown voltage | $BV_{CBO}$ | $I_C$=-100μA ,$I_E$=0 | -40 | | V |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | $I_C$=-100μA , $I_B$=0 | -40 | | V |
| Emitter-base breakdown voltage | $BV_{EBO}$ | $I_E$=-100μA,$I_C$=0 | -5 | | V |
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$=-30V, $I_E$=0 | | -100 | nA |
| Collector cut-off current | $I_{CEO}$ | $V_{CE}$=-30V, $I_B$=0 | | -50 | nA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$=-5V, $I_C$=0 | | -100 | nA |
| DC current gain | $h_{FE1}$ | $V_{CE}$=-1V, $I_C$=-0.1mA | 60 | | |
| | $h_{FE2}$ | $V_{CE}$=-1V, $I_C$=-1mA | 80 | | |
| | $h_{FE3}$ | $V_{CE}$=-1V, $I_C$=-10mA | 100 | 300 | |
| | $h_{FE4}$ | $V_{CE}$=-1V, $I_C$=-50mA | 60 | | |
| | $h_{FE5}$ | $V_{CE}$=-1V, $I_C$=-100mA | 30 | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C$=-10mA, $I_B$=-1mA | | -0.25 | V |
| | $V_{CE(sat)}$ | $I_C$=-50mA, $I_B$=-5mA | | -0.4 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C$=-10mA, $I_B$=-1mA | -0.65 | -0.85 | V |
| | $V_{BE(sat)}$ | $I_C$=-50mA, $I_B$=-5mA | | -0.95 | V |
| Transition frequency | $f_T$ | $V_{CE}$= -20V, $I_C$=-10mA,f=30MHz | 250 | | MHZ |

## Typical Characteristics

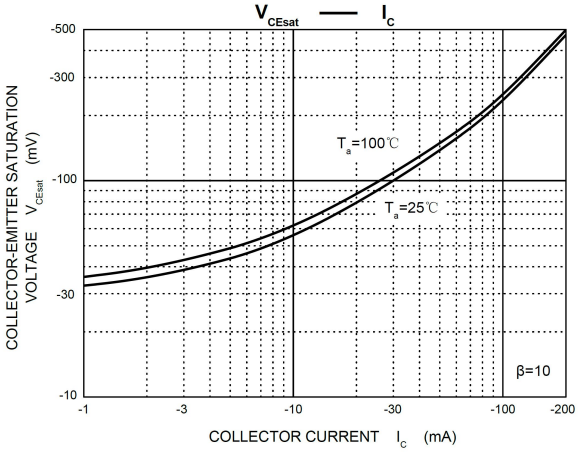
Static Characteristic



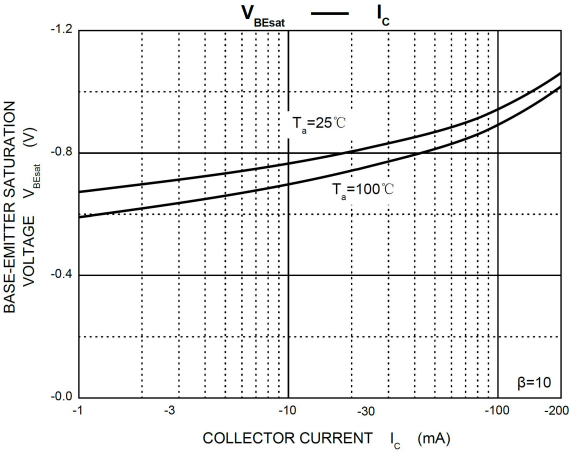

$h_{FE}$ — $I_C$



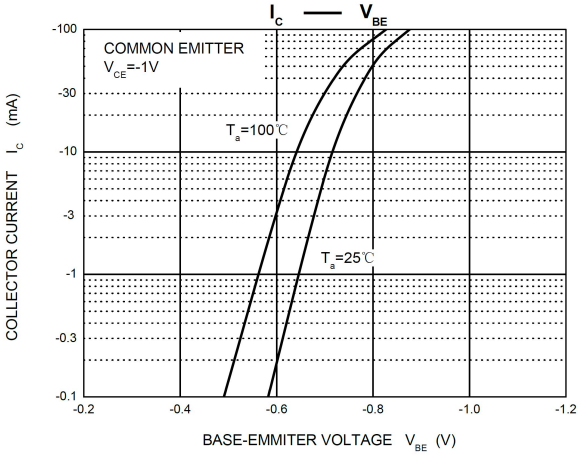

$V_{CEsat}$ — $I_C$



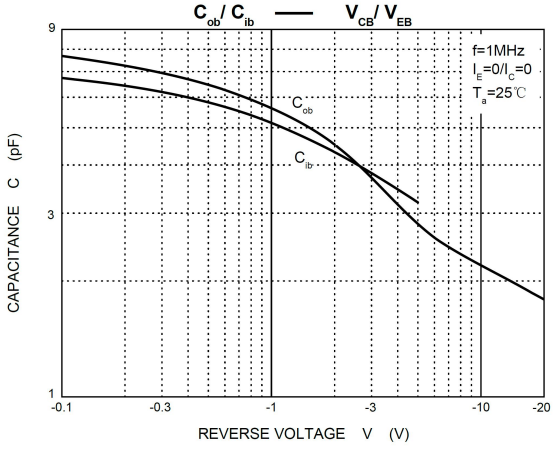

$V_{BEsat}$ — $I_C$



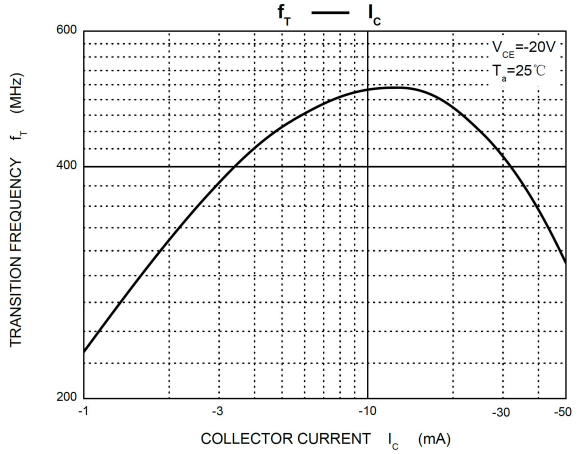

$I_C$ — $V_{BE}$



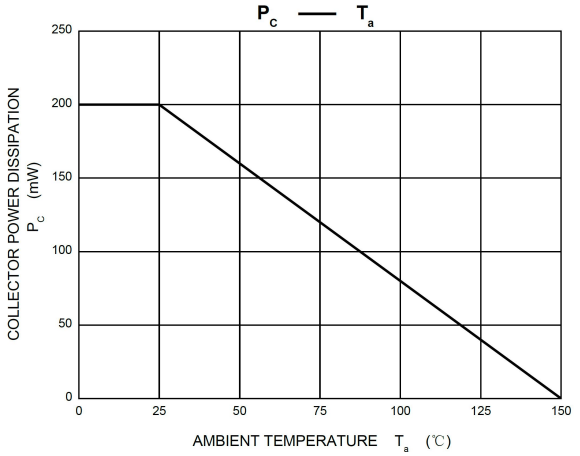

$C_{ob}$ / $C_{ib}$ — $V_{CB}$ / $V_{EB}$



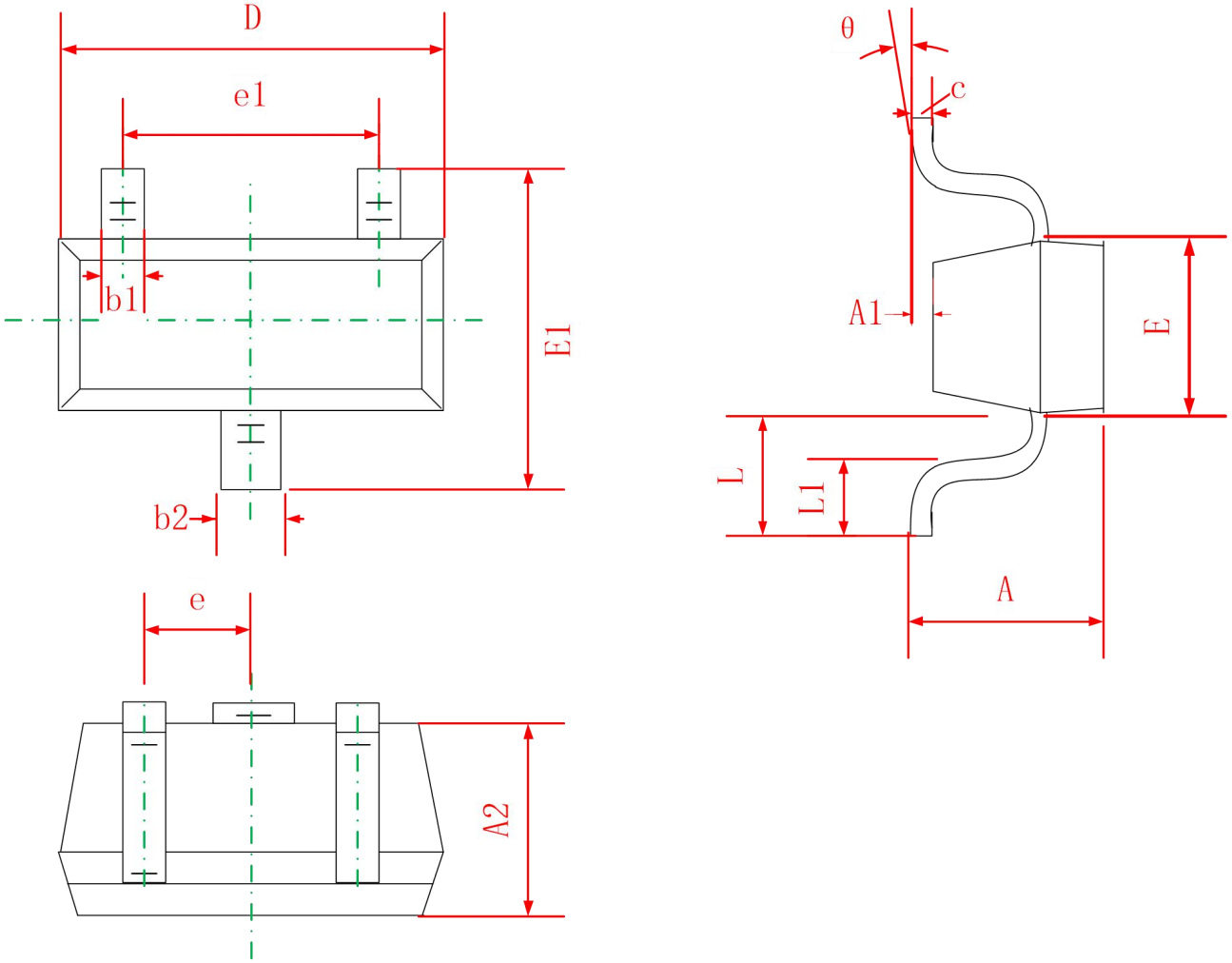

$f_T$ — $I_C$




$P_C$ — $T_a$



## SOT-523 Package Information




| Symbol | Dimensions In Millimeters | |
|---|---|---|
| | Min | Max |
| A | 0.700 | 0.900 |
| A1 | 0.000 | 0.100 |
| A2 | 0.700 | 0.800 |
| b1 | 0.150 | 0.250 |
| b2 | 0.250 | 0.350 |
| C | 0.100 | 0.200 |
| D | 1.500 | 1.700 |
| E | 0.700 | 0.900 |
| E1 | 1.450 | 1.750 |
| e | 0.500 TYP | |
| e1 | 0.900 | 1.100 |
| L | 0.400 REF | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |