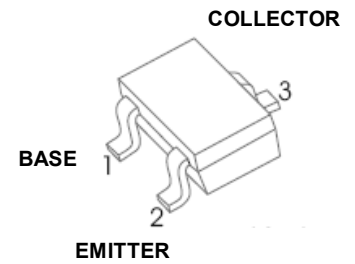




### MMBT9015T TRANSISTOR(PNP)

#### FEATURES

- Small Surface Mount Package
- High DC Current Gain



SOT - 323

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

| Symbol          | Parameter                                   | Value    | Unit                        |
|-----------------|---|----------|-----------------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | -50      | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                   | -45      | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                        | -5       | V                           |
| $I_C$           | Collector Current                           | -100     | mA                          |
| $P_C$           | Collector Power 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)

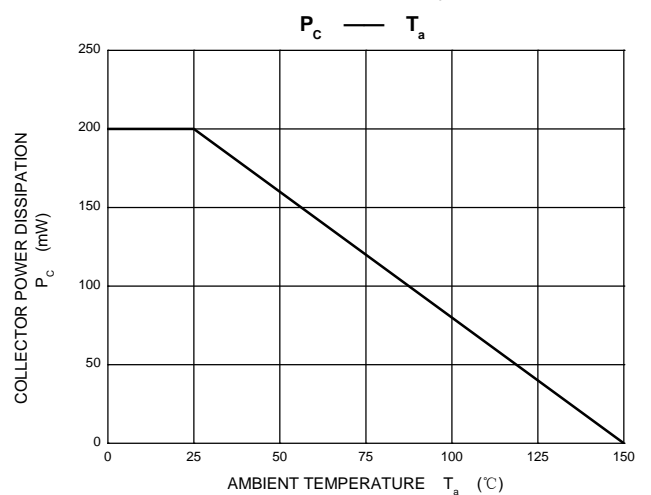
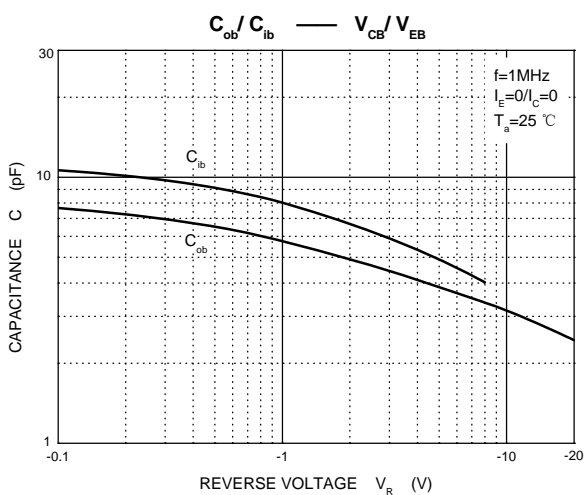
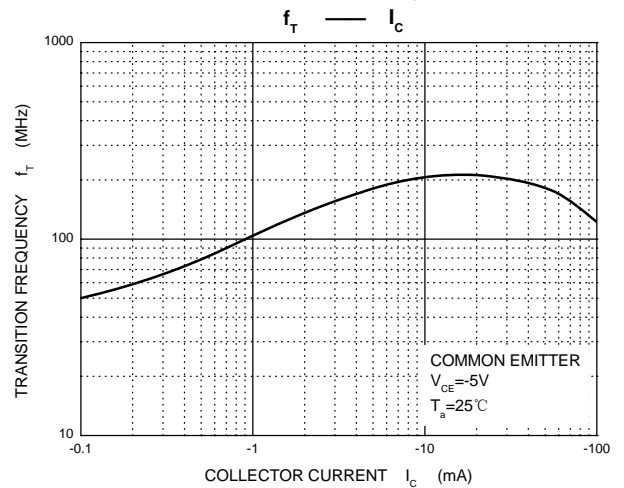
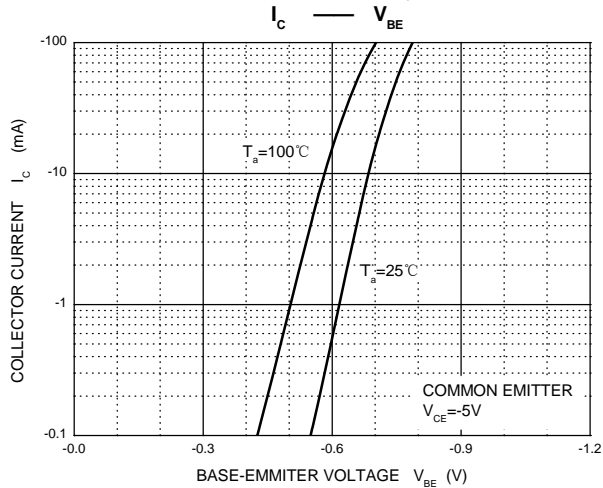
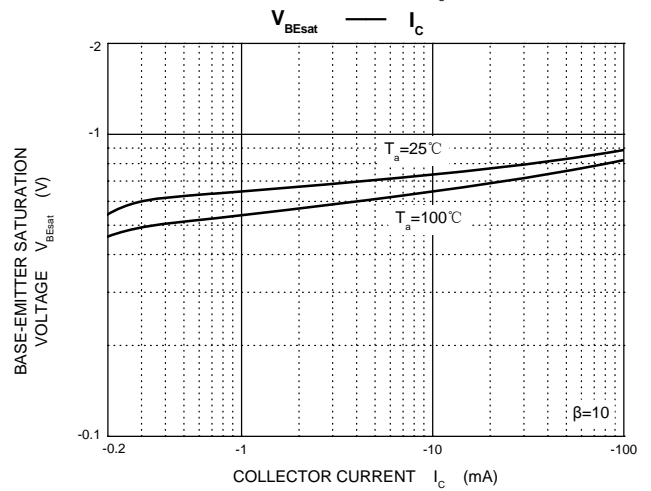
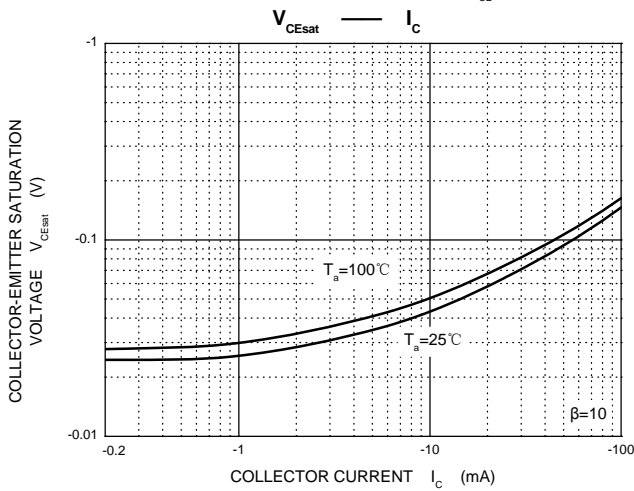
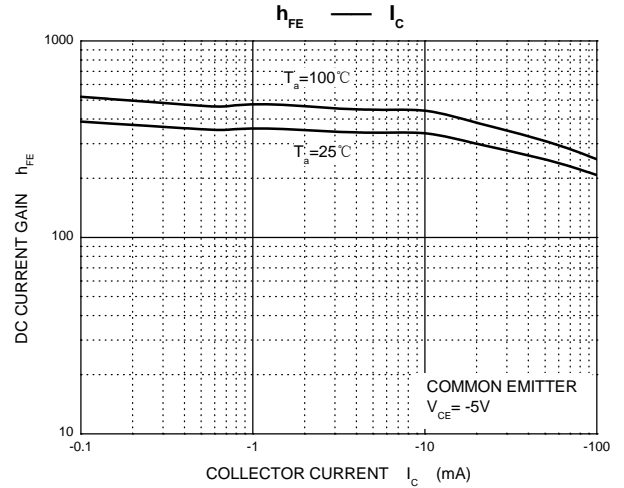
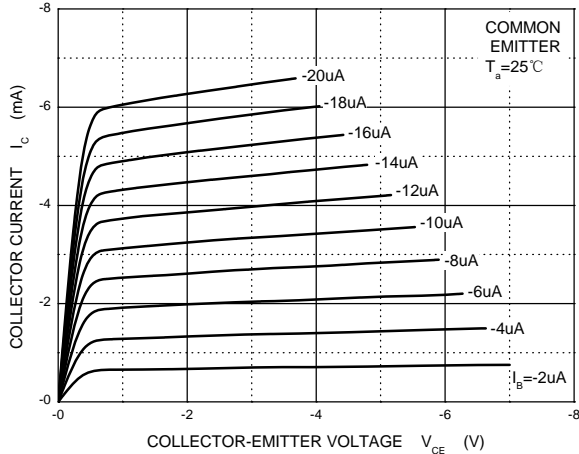
| Parameter                            | Symbol        | Test conditions                                       | Min  | Typ | Max   | Unit |
|--------------------------------------|---------------|---|------|-----|-------|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=-100\mu\text{A}, I_E=0$                          | -50  |     |       | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=-100\mu\text{A}, I_B=0$                          | -45  |     |       | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=-100\mu\text{A}, I_C=0$                          | -5   |     |       | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=-50\text{V}, I_E=0$                           |      |     | -100  | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=-5\text{V}, I_C=0$                            |      |     | -100  | nA   |
| DC current gain                      | $h_{FE}$      | $V_{CE}=-5\text{V}, I_C=-1\text{mA}$                  | 200  |     | 1000  |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=-100\text{mA}, I_B=-10\text{mA}$                 |      |     | -0.3  | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=-100\text{mA}, I_B=-10\text{mA}$                 |      |     | -1    | V    |
| Base-emitter voltage                 | $V_{BE}$      | $V_{CE}=-5\text{V}, I_C=-1\text{mA}$                  | -0.6 |     | -0.75 | V    |
| Transition frequency                 | $f_T$         | $V_{CE}=-5\text{V}, I_C=-10\text{mA}, f=30\text{MHz}$ | 150  |     |       | MHz  |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$            |      |     | 7     | pF   |

#### CLASSIFICATION OF $h_{FE}$

| RANK    | L         | H          |
|---------|-----------|------------|
| RANGE   | 200 - 450 | 450 - 1000 |
| MARKING | M6        |            |

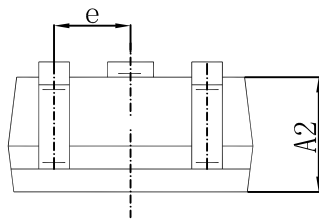
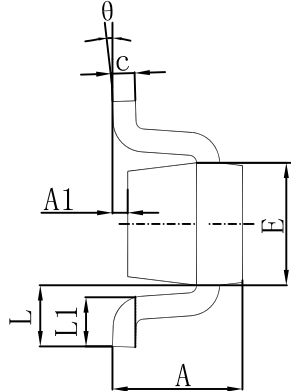
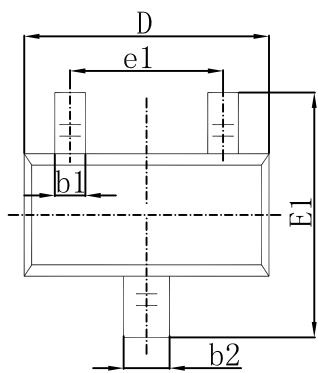


### Static Characteristic



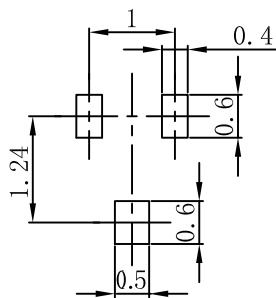


## SOT-523 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.700                     | 0.900 | 0.028                | 0.035 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.700                     | 0.800 | 0.028                | 0.031 |
| b1     | 0.150                     | 0.250 | 0.006                | 0.010 |
| b2     | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 0.700                     | 0.900 | 0.028                | 0.035 |
| E1     | 1.450                     | 1.750 | 0.057                | 0.069 |
| e      | 0.500 TYP.                |       | 0.020 TYP.           |       |
| e1     | 0.900                     | 1.100 | 0.035                | 0.043 |
| L      | 0.400 REF.                |       | 0.016 REF.           |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| theta  | 0°                        | 8°    | 0°                   | 8°    |

## SOT-523 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.