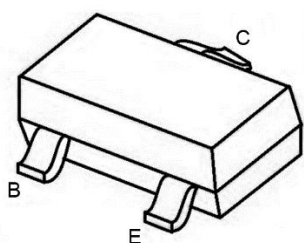


## MMBT3904T5

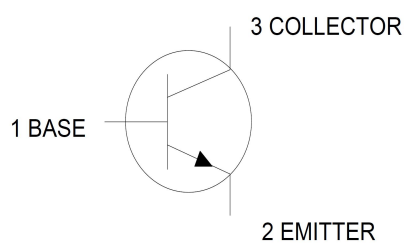
### Feature

- Switching Transistor
- Collector-emitter voltage  $V_{CE}=40V$
- Collector current  $I_C=0.2A$

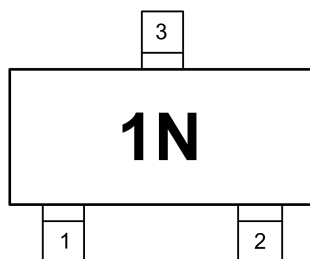
### Package

**SOT-523**

### Circuit diagram



### Marking



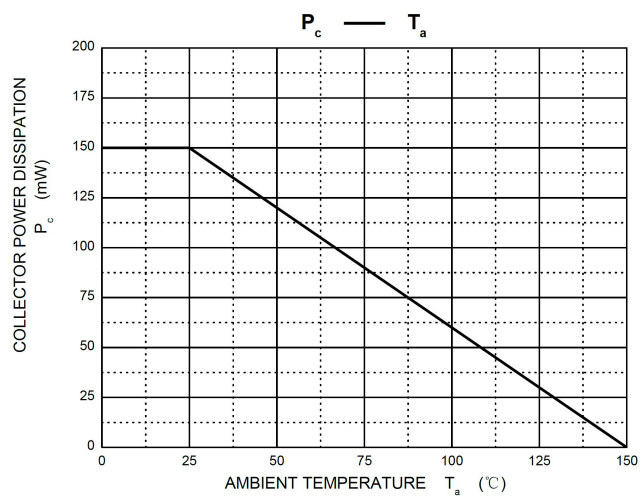
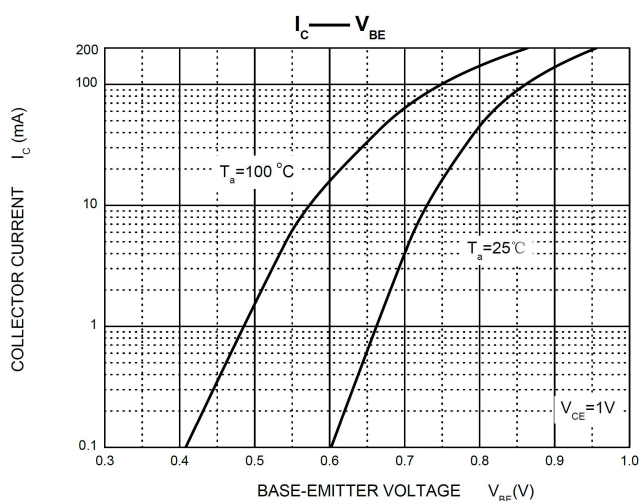
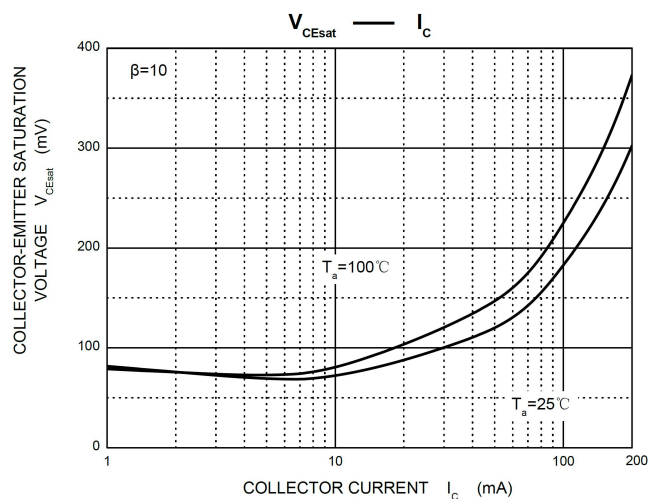
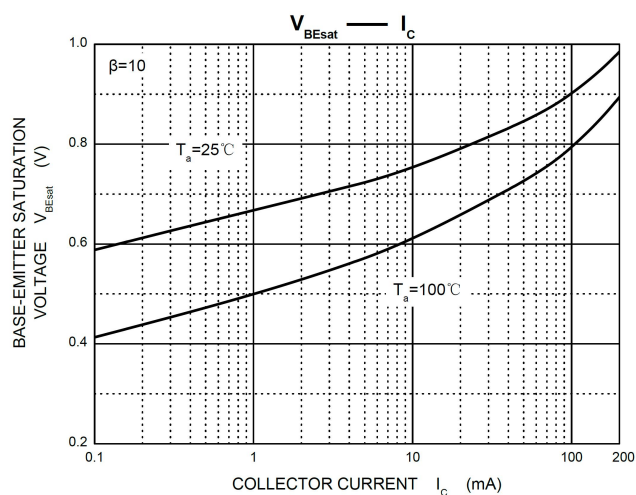
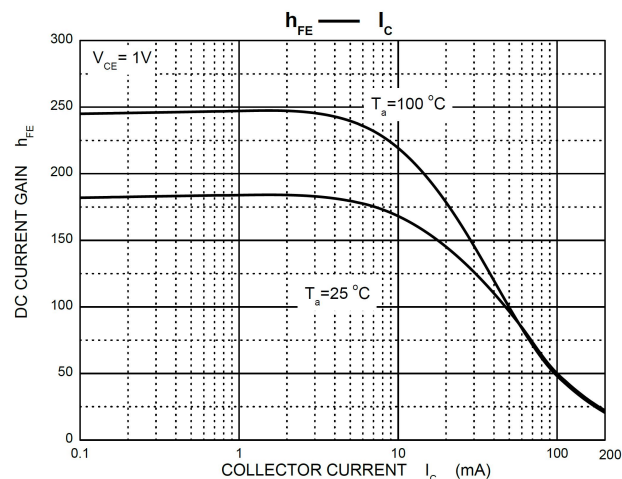
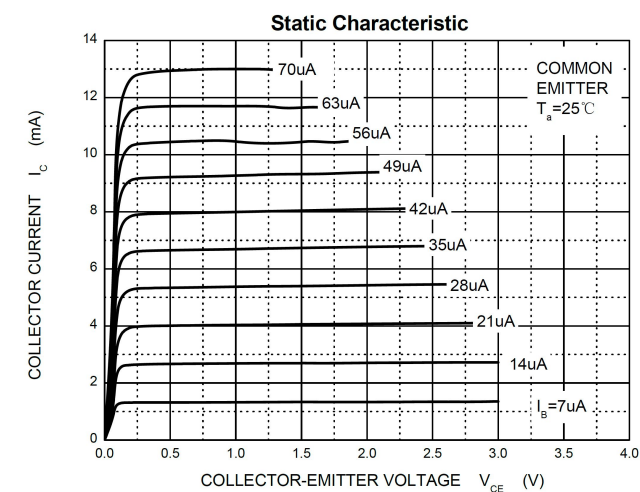
**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

| Parameter                                   | Symbol          | Value         | Unit |
|---------------------------------------------|-----------------|---------------|------|
| Collector Emitter Voltage                   | $V_{CEO}$       | 40            | V    |
| Collector Base Voltage                      | $V_{CBO}$       | 60            | V    |
| Emitter Base Voltage                        | $V_{EBO}$       | 6             | V    |
| Collector Current                           | $I_C$           | 200           | mA   |
| Power Dissipation                           | $P_{tot}$       | 150           | mW   |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 833           | °C/W |
| Junction Temperature                        | $T_j$           | 150           | °C   |
| Storage Temperature Range                   | $T_{stg}$       | - 55 to + 150 | °C   |

**Electrical characteristics (T<sub>A</sub>=25 °C, unless otherwise noted)**

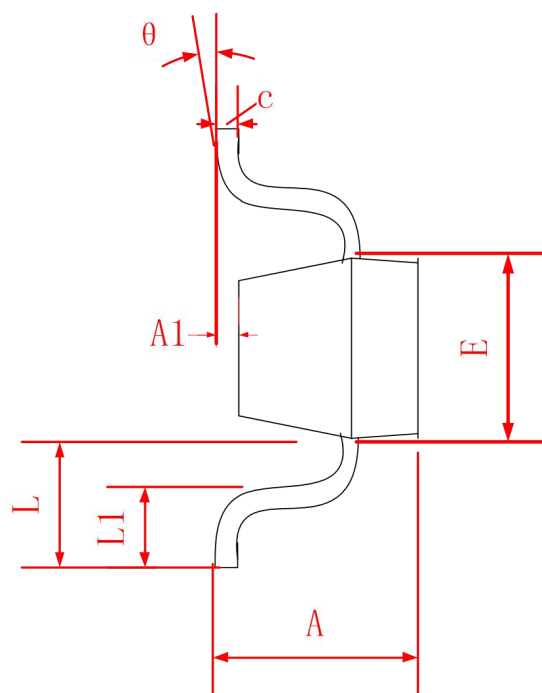
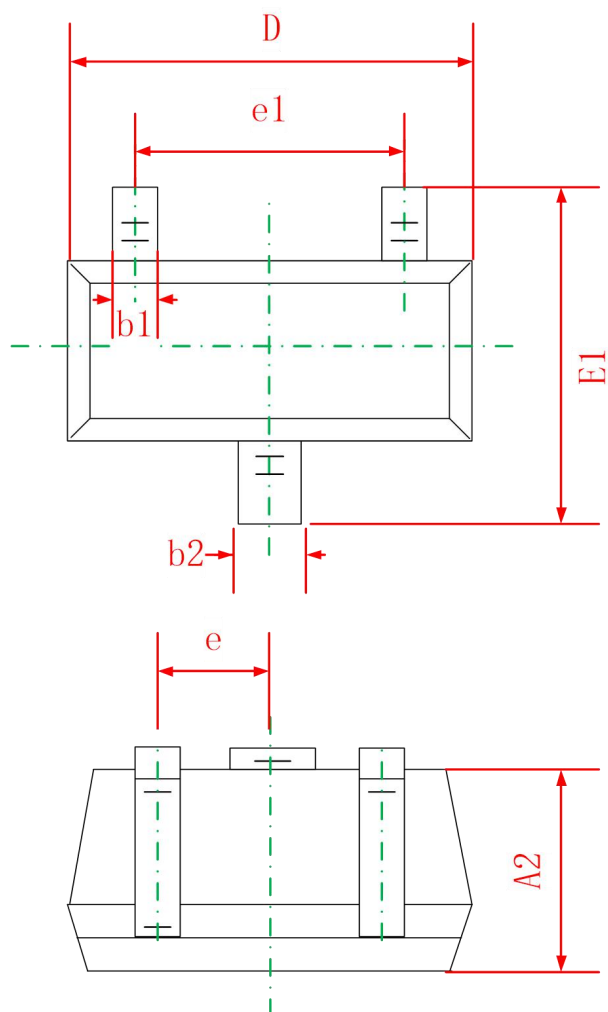
| Parameter                            | Symbol        | Test Condition                   | Min  | Max  | Unit |
|--------------------------------------|---------------|----------------------------------|------|------|------|
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | $I_C=1mA, I_B=0$                 | 40   |      | V    |
| Collector-base breakdown voltage     | $BV_{CBO}$    | $I_C=10\mu A, I_E=0$             | 60   |      | V    |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | $I_E=10\mu A, I_C=0$             | 6    |      | V    |
| Collector cut-off current            | $I_{CEX}$     | $V_{CE}=30V, V_{EB}(off)=3V$     |      | 50   | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=5V, I_C=0$               |      | 100  | nA   |
| DC current gain                      | $h_{FE}$      | $V_{CE}=1V, I_C=0.1mA$           | 40   |      |      |
|                                      |               | $V_{CE}=1V, I_C=1mA$             | 70   |      |      |
|                                      |               | $V_{CE}=1V, I_C=10mA$            | 100  |      | 300  |
|                                      |               | $V_{CE}=1V, I_C=50mA$            | 60   |      |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=10mA, I_B=1mA$              |      | 0.2  | V    |
|                                      |               | $I_C=50mA, I_B=5mA$              |      | 0.3  | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=10mA, I_B=1mA$              | 0.65 | 0.85 | V    |
|                                      |               | $I_C=50mA, I_B=5mA$              |      | 0.95 | V    |
| Transition frequency                 | $f_T$         | $V_{CE}=20V, I_C=10mA, f=100MHz$ | 300  |      | MHZ  |

## Typical Characteristics





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 |
| $\theta$ | 0°                        | 8°    |

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