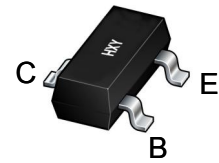




## FEATURES

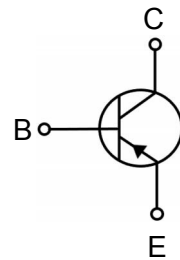
- Collector Current:  $I_C = -0.6A$
- Power Dissipation of 300mw



SOT-23

## Package Marking and Ordering Information

| Product ID | Pack   | Marking | Qty(PCS) |
|------------|--------|---------|----------|
| MMBT4403   | SOT-23 | 2T      | 3000     |



## MAXIMUM RATINGS (Ta=25 unless otherwise noted)

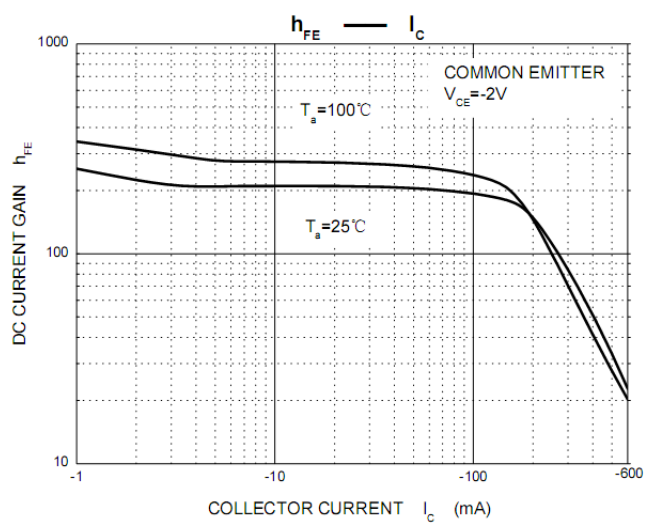
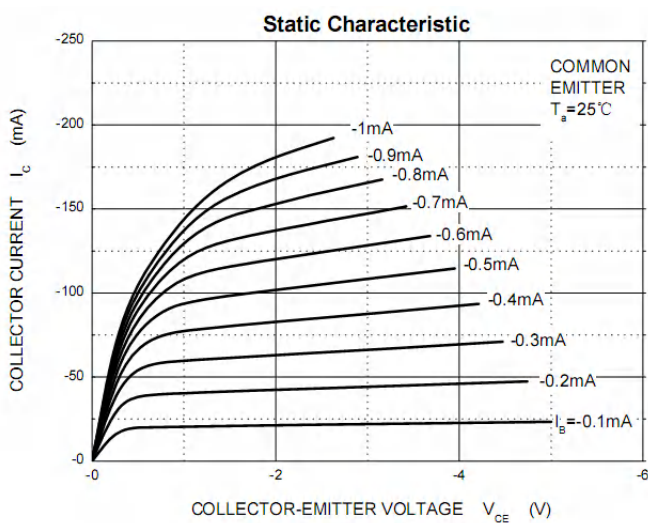
| Parameter                                   | Symbol    | Limit    | Unit |
|---|-----------|----------|------|
| Collector-Base Voltage                      | $V_{CBO}$ | -40      | V    |
| Collector-Emitter Voltage                   | $V_{CEO}$ | -40      | V    |
| Emitter-Base Voltage                        | $V_{EBO}$ | -5       | V    |
| Collector Current                           | $I_C$     | -600     | mA   |
| Collector Power Dissipation                 | $P_C$     | 300      | mW   |
| Thermal Resistance From Junction To Ambient | $R_{OJA}$ | 417      | °C/W |
| Junction Temperature                        | $T_J$     | 150      | °C   |
| Storage Temperature                         | $T_{stg}$ | -55~+150 | °C   |

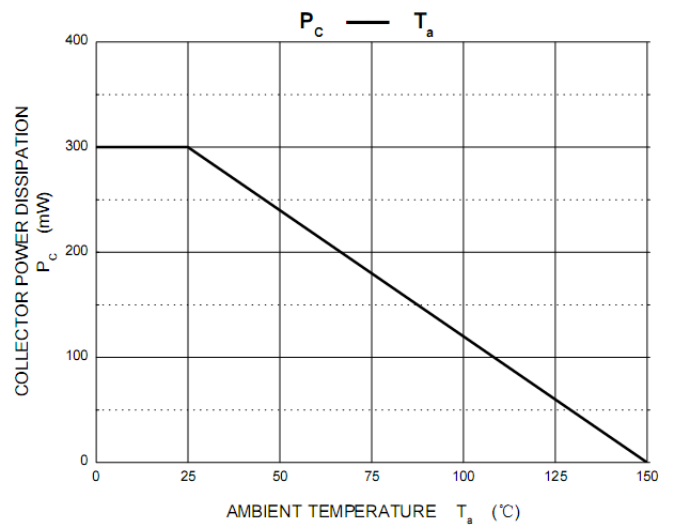
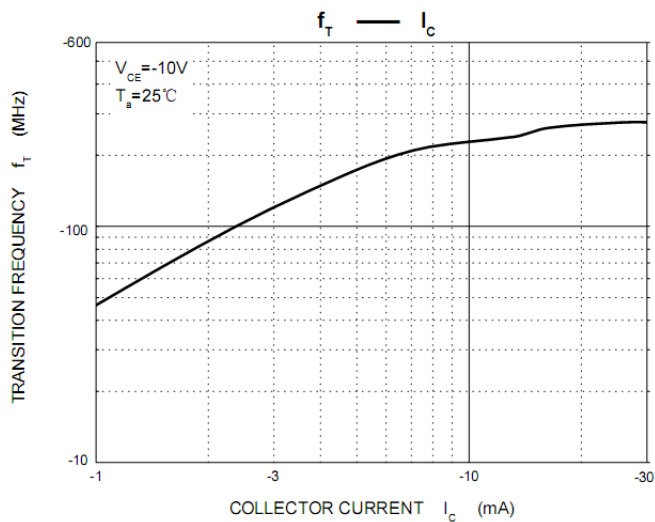
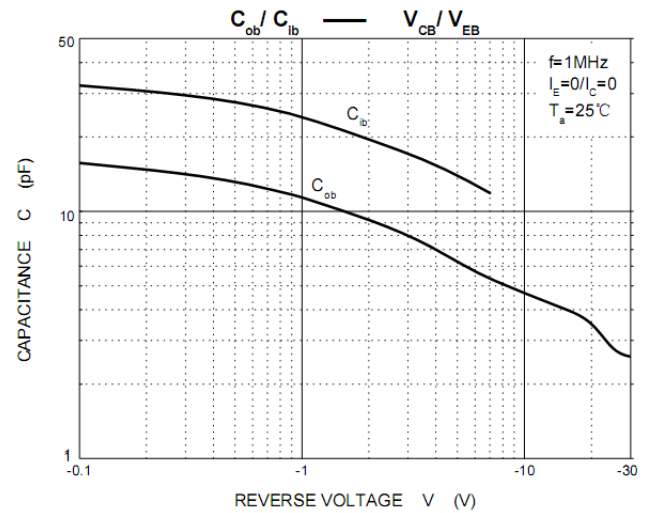
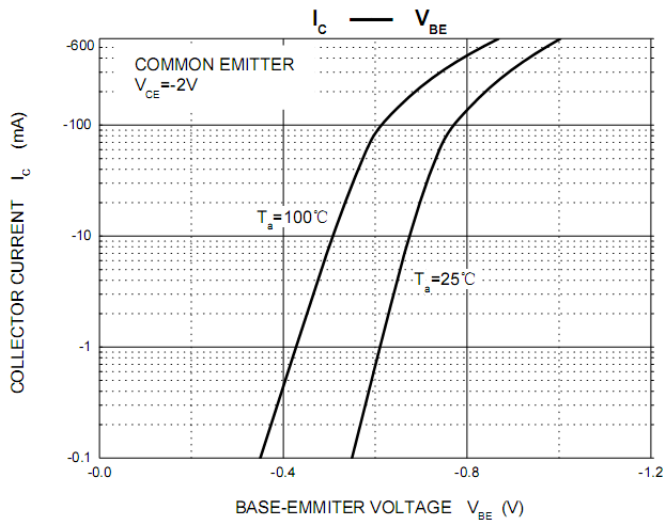
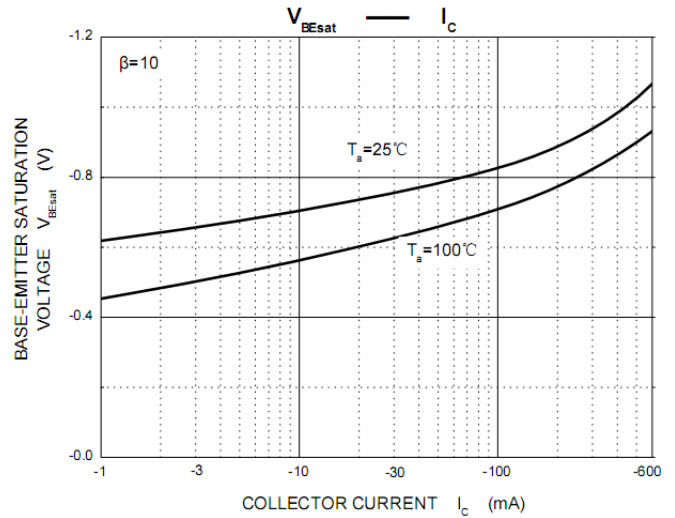
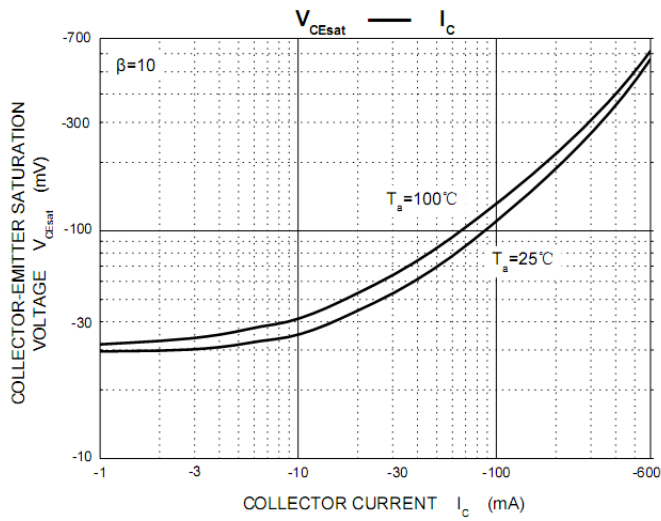


**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25 unless otherwise specified)**

| Parameter                            | Symbol               | Test Conditions  | Min | Typ | Max   | Unit |
|--------------------------------------|----------------------|--|-----|-----|-------|------|
| Collector-base breakdown voltage     | V <sub>(BR)CBO</sub> | I <sub>C</sub> =-100 μ A, I <sub>E</sub> =0            | -40 |     |       | V    |
| Collector-emitter breakdown voltage  | V <sub>(BR)CEO</sub> | I <sub>C</sub> =-1mA, I <sub>B</sub> =0                | -40 |     |       | V    |
| Emitter-base breakdown voltage       | V <sub>(BR)EBO</sub> | I <sub>E</sub> =-100 μ A, I <sub>C</sub> =0            | -5  |     |       | V    |
| Collector cut-off current            | I <sub>CBO</sub>     | V <sub>CB</sub> =-35V, I <sub>E</sub> =0               |     |     | -0.1  | μ A  |
| Collector cut-off current            | I <sub>CEX</sub>     | V <sub>CE</sub> =-35V, V <sub>BE</sub> =0.4V           |     |     | -0.1  | μ A  |
| Emitter cut-off current              | I <sub>EBO</sub>     | V <sub>EB</sub> =-4V, I <sub>C</sub> =0                |     |     | -0.1  | μ A  |
| DC current gain                      | h <sub>FE1</sub>     | V <sub>CE</sub> =-1V, I <sub>C</sub> =-0.1mA           | H0  |     |       |      |
|                                      | h <sub>FE2</sub>     | V <sub>CE</sub> =-1V, I <sub>C</sub> =-1mA             | I0  |     |       |      |
|                                      | h <sub>FE3</sub>     | V <sub>CE</sub> =-1V, I <sub>C</sub> =-10mA            | F00 |     |       |      |
|                                      | h <sub>FE4</sub>     | V <sub>CE</sub> =-2V, I <sub>C</sub> =-150mA           | 100 |     | 300   |      |
|                                      | h <sub>FE5</sub>     | V <sub>CE</sub> =-2V, I <sub>C</sub> =-500mA           | G0  |     |       |      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA          |     |     | -0.4  | V    |
|                                      |                      | I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA          |     |     | -0.75 | V    |
| Base-emitter saturation voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =-150mA, I <sub>B</sub> =-15mA          |     |     | -0.95 | V    |
|                                      |                      | I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA          |     |     | -1.3  | V    |
| Transition frequency                 | f <sub>T</sub>       | V <sub>CE</sub> =-10V, I <sub>C</sub> =-20mA, f=100MHz | 200 |     |       | MHz  |
| Delay time                           | t <sub>d</sub>       | V <sub>CC</sub> =-30V, V <sub>BE(off)</sub> =-0.5V     |     |     | 15    | }s   |
| Rise time                            | t <sub>r</sub>       | I <sub>C</sub> =-150mA, I <sub>B1</sub> =-15mA         |     |     | 20    | }s   |
| Storage time                         | t <sub>s</sub>       | V <sub>CC</sub> =-30V, I <sub>C</sub> =-150mA          |     |     | 225   | }s   |
| Fall time                            | t <sub>f</sub>       | I <sub>B1</sub> =I <sub>B2</sub> =-15mA                |     |     | I0    | }s   |

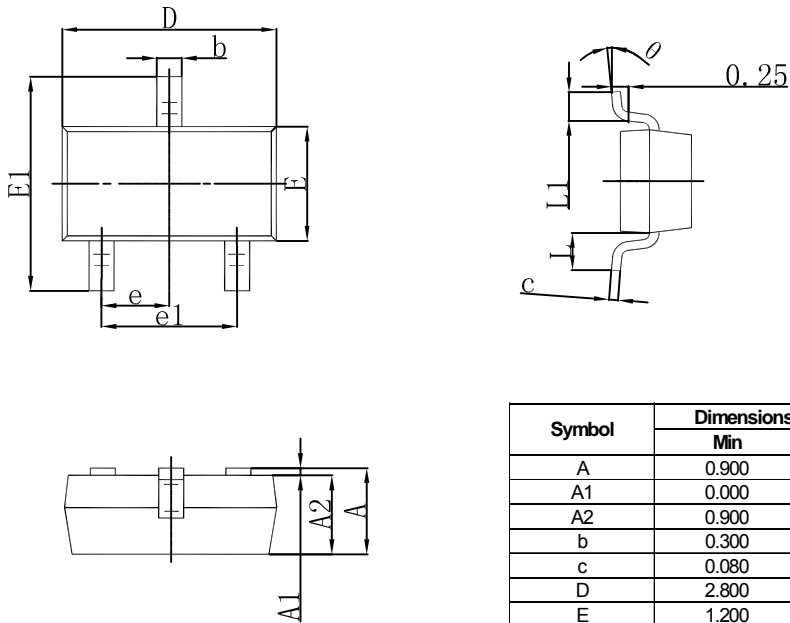
**Typical Characteristics**





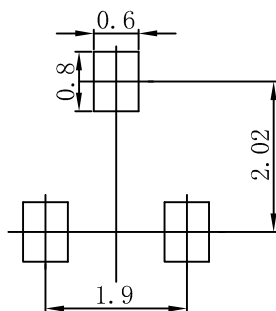


### SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

### SOT-23 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.



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