

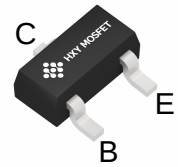


## Features

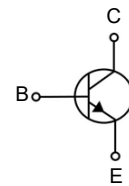
- Collector Current:  $I_C=0.2A$
- Power Dissipation of 350mw

## Package Marking and Ordering Information

| Product ID | Pack   | Marking | Qty(PCS) |
|------------|--------|---------|----------|
| MMBTA44    | SOT-23 | 3D      | 3000     |



**SOT-23**



## Maxmim Ratings (Ta=25 unless otherwise noted)

| Parameter                                   | Symbol          | Limit    | Unit |
|---------------------------------------------|-----------------|----------|------|
| Collector-Base Voltage                      | $V_{CBO}$       | 350      | V    |
| Collector-Emitter Voltage                   | $V_{CEO}$       | 350      | V    |
| Emitter-Base Voltage                        | $V_{EBO}$       | 6        | V    |
| Collector Current                           | $I_C$           | 200      | mA   |
| Collector Power Dissipation                 | $P_C$           | 350      | mW   |
| Thermal Resistance From Junction To Ambient | $R_{\theta JA}$ | 357      | °C/W |
| Junction Temperature                        | $T_j$           | 150      | °C   |
| Storage Temperature                         | $T_{stg}$       | -55~+150 | °C   |

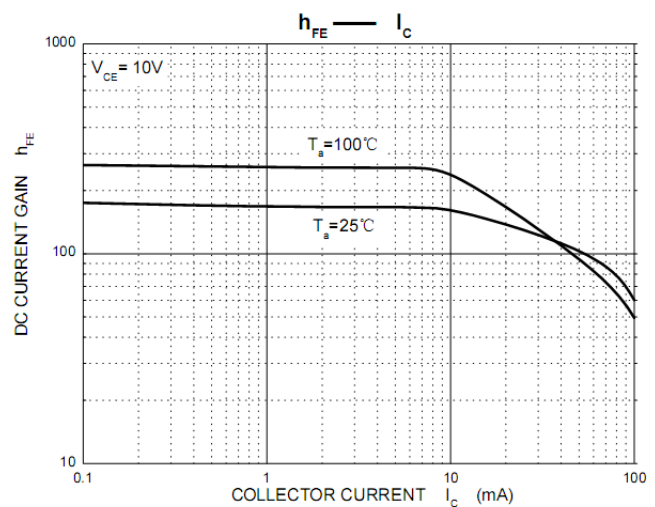
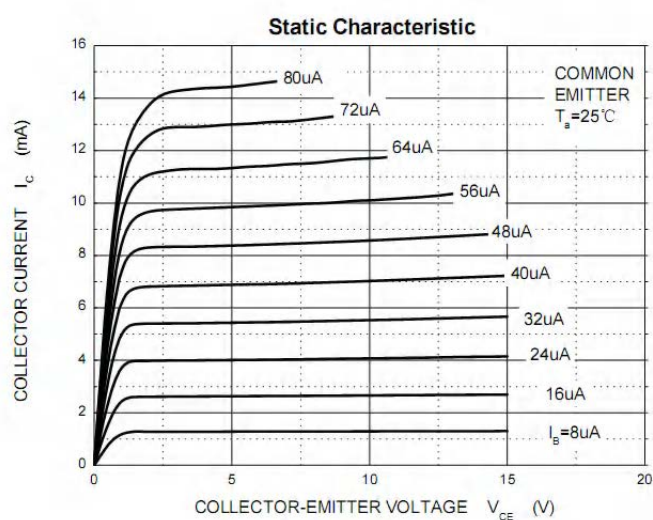


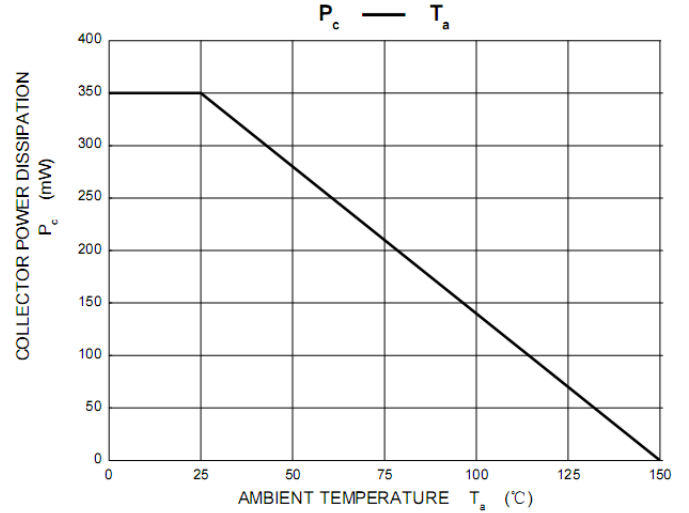
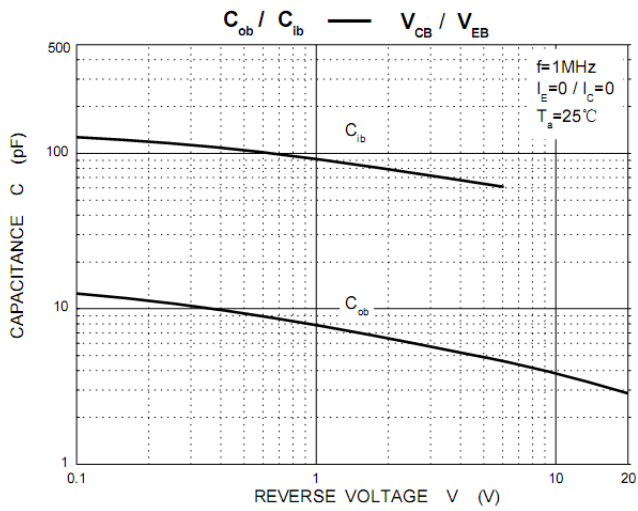
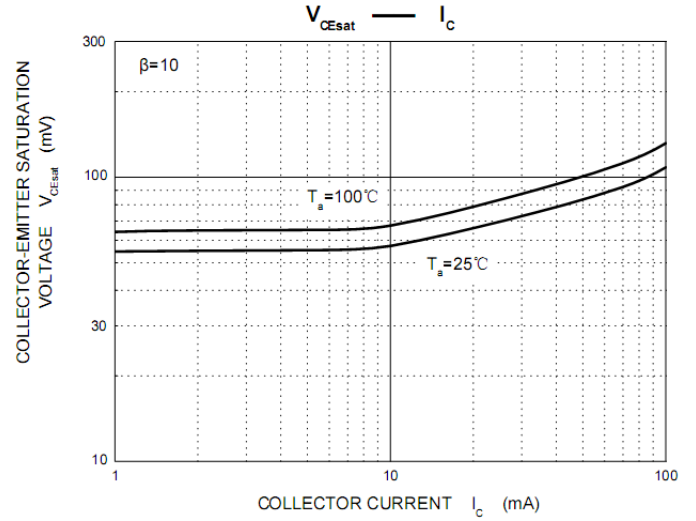
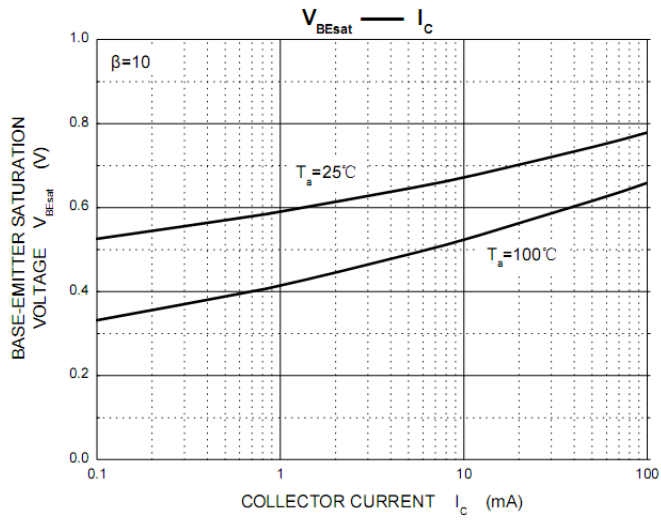
**Electrcal Charcteristics ( $T_a=25$  unless otherwise specified)**

| Parameter                            | Symbol           | Test conditions                 | Min | Typ | Max  | Unit    |
|--------------------------------------|------------------|---------------------------------|-----|-----|------|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$    | $I_C=100\mu A, I_E=0$           | 350 |     |      | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$  | $I_C=1mA, I_B=0$                | 350 |     |      | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$    | $I_E=10\mu A, I_C=0$            | 6   |     |      | V       |
| Collector cut-off current            | $I_{CBO}$        | $V_{CB}=300V, I_E=0$            |     |     | 0.1  | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$        | $V_{EB}=4V, I_C=0$              |     |     | 0.1  | $\mu A$ |
| DC current gain                      | $h_{FE(1)}^*$    | $V_{CE}=10V, I_C=1mA$           | 40  |     |      |         |
|                                      | $h_{FE(2)}^*$    | $V_{CE}=10V, I_C=10mA$          | 50  |     | 200  |         |
|                                      | $h_{FE(3)}^*$    | $V_{CE}=10V, I_C=50mA$          | 45  |     |      |         |
|                                      | $h_{FE(4)}^*$    | $V_{CE}=10V, I_C=100mA$         | 40  |     |      |         |
| Collector-emitter saturation voltage | $V_{CE(sat)1}^*$ | $I_C=1mA, I_B=0.1mA$            |     |     | 0.4  | V       |
|                                      | $V_{CE(sat)2}^*$ | $I_C=10mA, I_B=1mA$             |     |     | 0.5  | V       |
|                                      | $V_{CE(sat)3}^*$ | $I_C=50mA, I_B=5mA$             |     |     | 0.75 | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}^*$  | $I_C=10mA, I_B=1mA$             |     |     | 0.75 | V       |
| Collector output capacitance         | $C_{ob}$         | $V_{CB}=20V, I_E=0, f=1MHz$     |     |     | 7    | pF      |
| Emitter input capacitance            | $C_{ib}$         | $V_{EB}=0.5V, I_C=0, f=1MHz$    |     |     | 130  | pF      |
| Transition frequency                 | $f_T$            | $V_{CE}=20V, I_C=10mA, f=30MHz$ | 50  |     |      | MHz     |

\*Pulse test: pulse width  $\leq 300\mu s$ , duty cycles  $\leq 2.0\%$ .

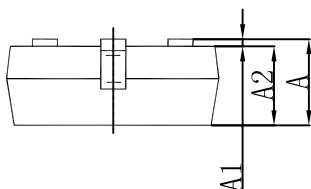
**Typical Characteristics**







## 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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