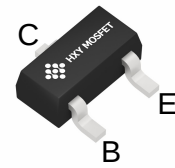


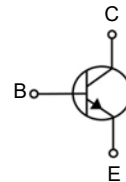


## Features

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



SOT-23



## Package Marking and Ordering Information

| Product ID | Pack   | Marking | Qty(PCS) |
|------------|--------|---------|----------|
| MMBT2222A  | SOT-23 | 1P      | 3000     |

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

| Parameter                                   | Symbol          | Limit    | Unit |
|---------------------------------------------|-----------------|----------|------|
| Collector-Base Voltage                      | $V_{CBO}$       | 75       | V    |
| Collector-Emitter Voltage                   | $V_{CEO}$       | 40       | V    |
| Emitter-Base Voltage                        | $V_{EBO}$       | 6        | V    |
| Collector Current                           | $I_C$           | 600      | mA   |
| Collector Power Dissipation                 | $P_C$           | 300      | mW   |
| Thermal Resistance From Junction To Ambient | $R_{\theta JA}$ | 417      | °C/W |
| Junction Temperature                        | $T_j$           | 150      | °C   |
| Storage Temperature                         | $T_{stg}$       | -55~+150 | °C   |

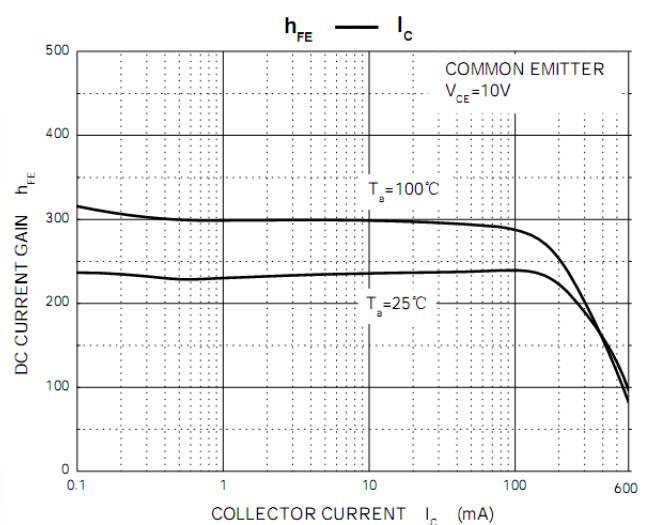
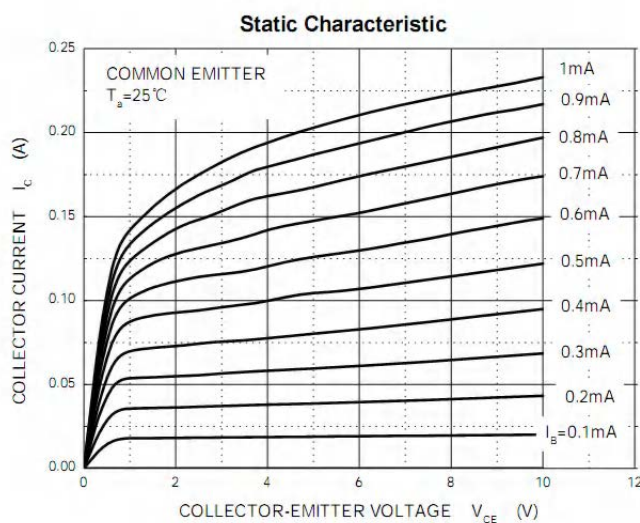


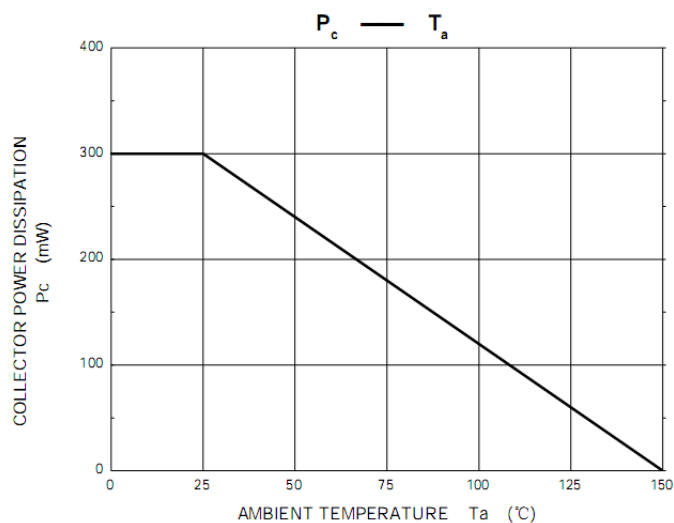
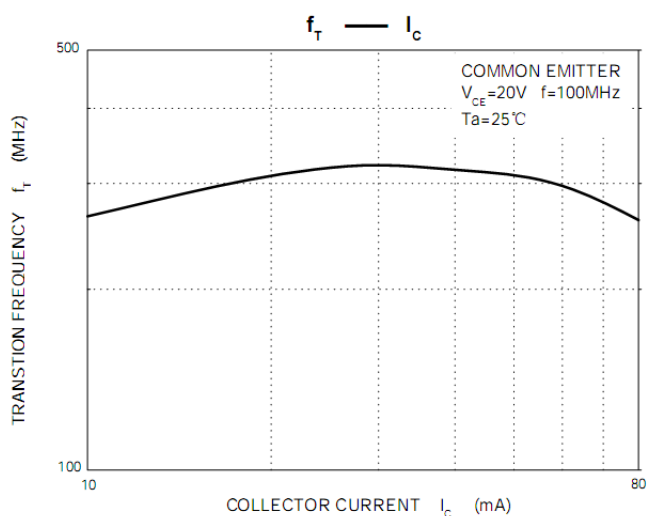
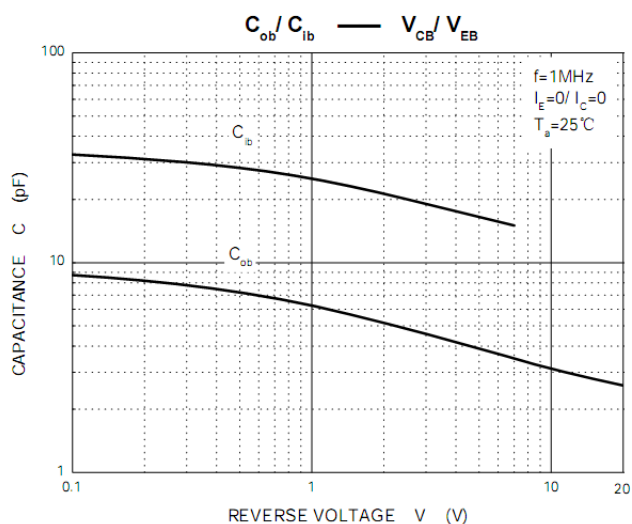
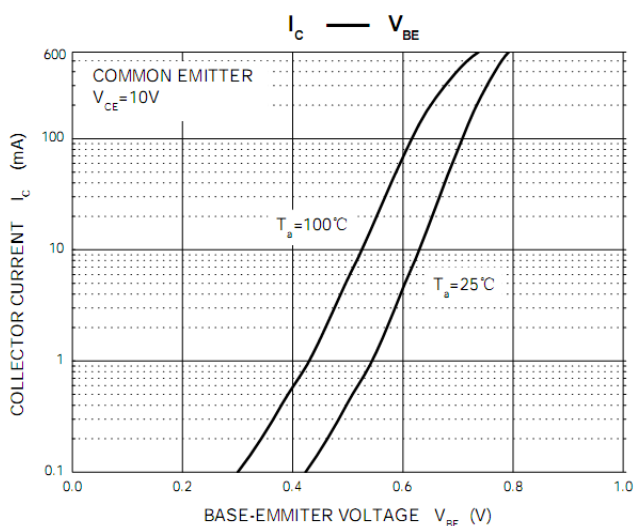
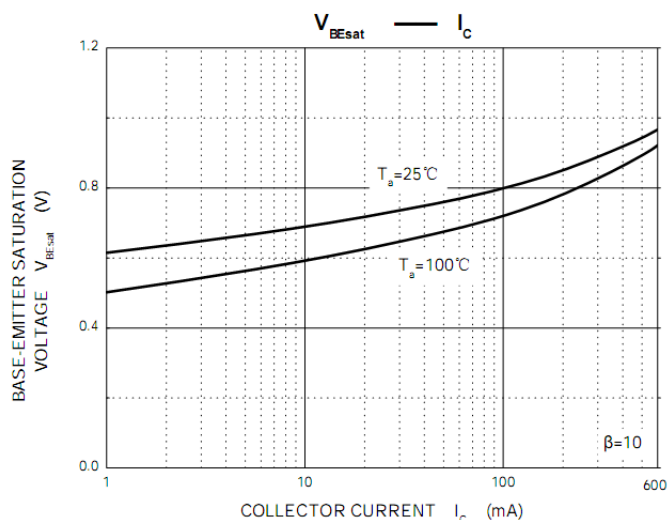
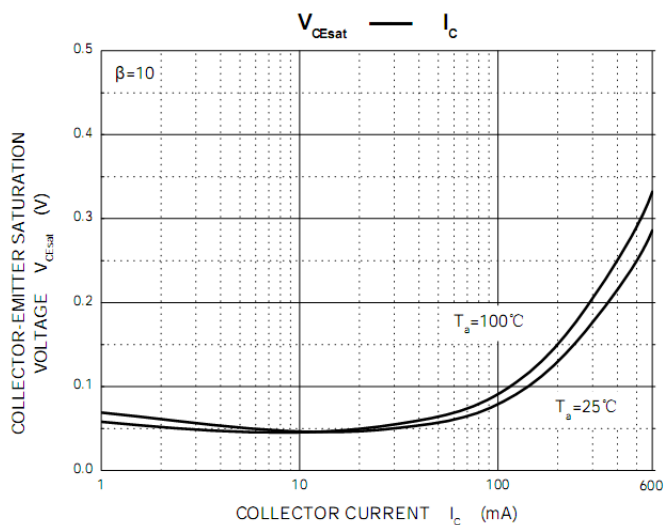
### Electrcal Charcteristics (Ta=25 unless otherwise specified)

| Parameter                            | Symbol          | Test conditions                                                     | Min | Typ | Max        | Unit    |
|--------------------------------------|-----------------|---------------------------------------------------------------------|-----|-----|------------|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$   | $I_C = 10\mu A, I_E = 0$                                            | 75  |     |            | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$ | $I_C = 10mA, I_B = 0$                                               | 40  |     |            | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$   | $I_E = 10\mu A, I_C = 0$                                            | 6   |     |            | V       |
| Collector cut-off current            | $I_{CBO}$       | $V_{CB} = 60V, I_E = 0$                                             |     |     | 0.01       | $\mu A$ |
| Collector cut-off current            | $I_{CEX}$       | $V_{CE} = 30V, V_{BE(off)} = 3V$                                    |     |     | 0.01       | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$       | $V_{EB} = 3V, I_C = 0$                                              |     |     | 0.1        | $\mu A$ |
| DC current gain                      | $h_{FE(1)}^*$   | $V_{CE} = 10V, I_C = 150mA$                                         | 100 |     | 300        |         |
|                                      | $h_{FE(2)}$     | $V_{CE} = 10V, I_C = 0.1mA$                                         | 40  |     |            |         |
|                                      | $h_{FE(3)}^*$   | $V_{CE} = 10V, I_C = 500mA$                                         | 42  |     |            |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C = 500mA, I_B = 50mA$<br>$I_C = 150mA, I_B = 15mA$              |     |     | 1<br>0.3   | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}^*$ | $I_C = 500mA, I_B = 50mA$<br>$I_C = 150mA, I_B = 15mA$              |     |     | 2.0<br>1.2 | V       |
| Transition frequency                 | $f_T$           | $V_{CE} = 20V, I_C = 20mA,$<br>$f = 100MHz$                         | 300 |     |            | MHz     |
| Delay time                           | $t_d$           | $V_{CC} = 30V, V_{BE(off)} = -0.5V$<br>$I_C = 150mA, I_{B1} = 15mA$ |     |     | 10         | ns      |
| Rise time                            | $t_r$           |                                                                     |     |     | 25         | ns      |
| Storage time                         | $t_s$           | $V_{CC} = 30V, I_C = 150mA$                                         |     |     | 225        | ns      |
| Fall time                            | $t_f$           | $I_{B1} = -I_{B2} = 15mA$                                           |     |     | 60         | ns      |

\*pulse test: Pulse Width  $\leq 300\mu s$ , Duty Cycles  $\leq 2.0\%$ .

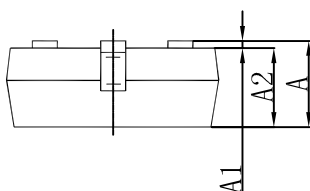
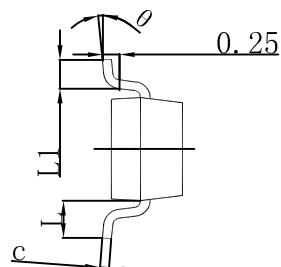
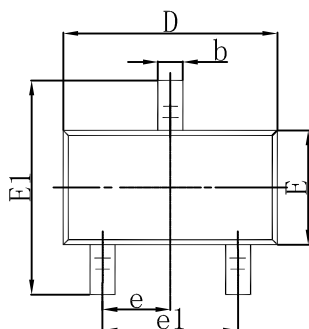
### Typical Characteristics





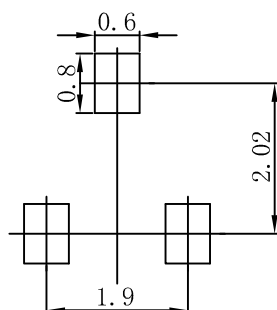


## SOT-23 Package Outline Dimensions



| 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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