



## SOT-23 Plastic-Encapsulate Transistors

### MMBTA44 TRANSISTOR (NPN)

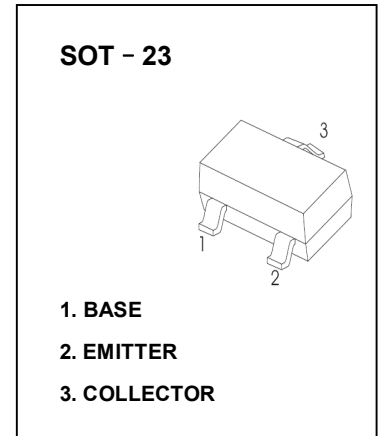
#### FEATURES

- High Collector-Emitter Voltage
- Complement to MMBTA94

#### MARKING: 3D

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

| Symbol          | Parameter                                   | Value    | Unit                      |
|-----------------|---|----------|---------------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | 400      | V                         |
| $V_{CEO}$       | Collector-Emitter Voltage                   | 400      | V                         |
| $V_{EBO}$       | Emitter-Base Voltage                        | 6        | V                         |
| $I_C$           | Collector Current-Continuous                | 200      | mA                        |
| $I_{CA}$        | Collector Current -Pulsed                   | 300      | mA                        |
| $P_C$           | Collector Power Dissipation                 | 350      | mW                        |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 357      | $^\circ\text{C}/\text{W}$ |
| $T_J$           | 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     | $V_{(BR)CBO}$    | $I_C=100\mu\text{A}, I_E=0$                | 400 |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$  | $I_C=1\text{mA}, I_B=0$                    | 400 |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$    | $I_E=10\mu\text{A}, I_C=0$                 | 6   |     |      | V             |
| Collector cut-off current            | $I_{CBO}$        | $V_{CB}=400\text{V}, I_E=0$                |     |     | 0.1  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$        | $V_{EB}=4\text{V}, I_C=0$                  |     |     | 0.1  | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}^*$    | $V_{CE}=10\text{V}, I_C=1\text{mA}$        | 40  |     |      |               |
|                                      | $h_{FE(2)}^*$    | $V_{CE}=10\text{V}, I_C=10\text{mA}$       | 50  |     | 200  |               |
|                                      | $h_{FE(3)}^*$    | $V_{CE}=10\text{V}, I_C=50\text{mA}$       | 45  |     |      |               |
|                                      | $h_{FE(4)}^*$    | $V_{CE}=10\text{V}, I_C=100\text{mA}$      | 40  |     |      |               |
| Collector-emitter saturation voltage | $V_{CE(sat)1}^*$ | $I_C=1\text{mA}, I_B=0.1\text{mA}$         |     |     | 0.4  | V             |
|                                      | $V_{CE(sat)2}^*$ | $I_C=10\text{mA}, I_B=1\text{mA}$          |     |     | 0.5  | V             |
|                                      | $V_{CE(sat)3}^*$ | $I_C=50\text{mA}, I_B=5\text{mA}$          |     |     | 0.75 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}^*$  | $I_C=10\text{mA}, I_B=1\text{mA}$          |     |     | 0.75 | V             |
| Collector output capacitance         | $C_{ob}$         | $V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$  |     |     | 7    | pF            |
| Emitter input capacitance            | $C_{ib}$         | $V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$ |     |     | 130  | pF            |

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

# Typical Characteristics

# MMBTA44

