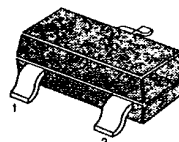


**MMBT4123****NPN EPITAXIAL SILICON TRANSISTOR****GENERAL PURPOSE TRANSISTOR****ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )**

| Characteristic                         | Symbol        | Rating | Unit               |
|----------------------------------------|---------------|--------|--------------------|
| Collector-Base Voltage                 | $V_{CB0}$     | 40     | V                  |
| Collector-Emitter Voltage              | $V_{CE0}$     | 30     | V                  |
| Emitter-Base Voltage                   | $V_{EB0}$     | 5      | V                  |
| Collector Current                      | $I_C$         | 200    | mA                 |
| Collector Dissipation                  | $P_C$         | 350    | mW                 |
| Storage Temperature                    | $T_{stg}$     | 150    | $^\circ\text{C}$   |
| Thermal Resistance Junction to Ambient | $R_{th(j-a)}$ | 357    | $^\circ\text{C/W}$ |

SOT-23



1. Base 2. Emitter 3. Collector

**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )**

| Characteristic                         | Symbol        | Test Condition                                                                                               | Min | Max  | Unit |
|----------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------|-----|------|------|
| Collector-Base Breakdown Voltage       | $BV_{CB0}$    | $I_C = 10\mu\text{A}$ , $I_E = 0$                                                                            | 40  |      | V    |
| * Collector-Emitter Breakdown Voltage  | $BV_{CE0}$    | $I_C = 1\text{mA}$ , $I_E = 0$                                                                               | 30  |      | V    |
| Emitter-Base Breakdown Voltage         | $BV_{EB0}$    | $I_E = 10\mu\text{A}$ , $I_C = 0$                                                                            | 5   |      | V    |
| Collector Cutoff Current               | $I_{CB0}$     | $V_{CB} = 20\text{V}$ , $I_E = 0$                                                                            |     | 50   | nA   |
| Emitter Cutoff Current                 | $I_{EB0}$     | $V_{BE} = 3\text{V}$ , $I_C = 0$                                                                             |     | 50   | nA   |
| * DC Current Gain                      | $h_{FE}$      | $V_{CE} = 1\text{V}$ , $I_C = 2\text{mA}$                                                                    | 50  | 150  |      |
|                                        |               | $V_{CE} = 1\text{V}$ , $I_C = 50\text{mA}$                                                                   | 25  |      |      |
| * Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 50\text{mA}$ , $I_B = 5\text{mA}$                                                                     |     | 0.3  | V    |
| * Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = 50\text{mA}$ , $I_B = 5\text{mA}$                                                                     |     | 0.95 | V    |
| Current Gain-Bandwidth Product         | $f_T$         | $V_{CE} = 20\text{V}$ , $I_C = 10\text{mA}$ , $f = 100\text{MHz}$                                            | 250 |      | MHz  |
| Collector Output Capacitance           | $C_{ob}$      | $V_{CB} = 5\text{V}$ , $I_E = 0$ , $f = 100\text{MHz}$                                                       |     | 4    | pF   |
| Collector Input Capacitance            | $C_{ib}$      | $V_{BE} = 0.5\text{V}$ , $I_C = 0$ , $f = 100\text{KHz}$                                                     |     | 8    | pF   |
| Collector-Base Capacitance             | $C_{cb}$      | $V_{CB} = 5\text{V}$ , $I_E = 0$ , $f = 100\text{KHz}$                                                       |     | 4    | pF   |
| Noise Figure                           | NF            | $V_{CE} = 5\text{V}$ , $I_C = 100\mu\text{A}$ , $R_s = 1\text{k}\Omega$<br>Noise Bandwidth = 10Hz to 15.7KHz |     | 6    | dB   |

\* Pulse Test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ 

Marking

