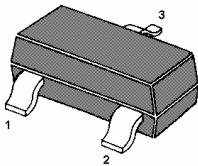


# MMBTSC1621

## NPN Silicon Epitaxial Planar Switching Transistor

SOT-23

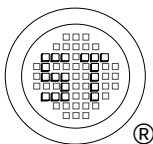


1.BASE 2.EMITTER 3.COLLECTOR

SOT-23 Plastic Package

### Absolute Maximum Ratings ( $T_a = 25\text{ }^{\circ}\text{C}$ )

|                                                            | Symbol      | Value       | Unit               |
|------------------------------------------------------------|-------------|-------------|--------------------|
| Collector Base Voltage                                     | $V_{CBO}$   | 40          | V                  |
| Collector Emitter Voltage                                  | $V_{CES}$   | 40          | V                  |
| Collector Emitter Voltage                                  | $V_{CEO}$   | 15          | V                  |
| Emitter Base Voltage                                       | $V_{EBO}$   | 4.5         | V                  |
| Collector Current                                          | $I_C$       | 500         | mA                 |
| Power Dissipation                                          | $P_{tot}$   | 200         | mW                 |
| Thermal Resistance<br>Form junction to ambient in free air | $R_{thj-a}$ | 500         | K/W                |
| Junction Temperature                                       | $T_j$       | 150         | $^{\circ}\text{C}$ |
| Storage Temperature Range                                  | $T_s$       | -55 to +150 | $^{\circ}\text{C}$ |



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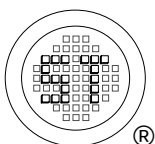
ISO 9001:2000  
Certificate No. 0506098

Dated : 20/10/2005

# MMBTSC1621

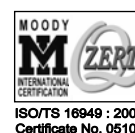
## Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

|                                                                 | Symbol        | Min. | Typ. | Max. | Unit    |
|-----------------------------------------------------------------|---------------|------|------|------|---------|
| DC Current Gain                                                 |               |      |      |      |         |
| at $V_{CE}=1V$ , $I_C=10mA$                                     | $h_{FE}$      | 40   | -    | 120  | -       |
| at $V_{CE}=1V$ , $I_C=10mA$ , $T_a=-55\text{ }^{\circ}\text{C}$ | $h_{FE}$      | 20   | -    | -    | -       |
| at $V_{CE}=2V$ , $I_C=100mA$                                    | $h_{FE}$      | 20   | -    | -    | -       |
| Small Signal Current Gain                                       |               |      |      |      |         |
| at $V_{CE}=10V$ , $I_C=1mA$ , $f=100MHz$                        | $h_{fe}$      | 5    | -    | -    | -       |
| Collector Cutoff Current                                        |               |      |      |      |         |
| at $V_{CB}=20V$                                                 | $I_{CBO}$     | -    | -    | 0.4  | $\mu A$ |
| at $V_{CB}=20V$ , $T_j=125\text{ }^{\circ}\text{C}$             |               | -    | -    | 30   | mA      |
| Collector Saturation Voltage                                    |               |      |      |      |         |
| at $I_C=10mA$ , $I_B=1mA$                                       | $V_{CE(sat)}$ | -    | -    | 0.25 | V       |
| Base Saturation Voltage                                         |               |      |      |      |         |
| at $I_C=10mA$ , $I_B=1mA$                                       | $V_{BE(sat)}$ | 0.7  | -    | 0.85 | V       |
| Collector Emitter Breakdown Voltage                             |               |      |      |      |         |
| at $I_C=10mA$                                                   | $V_{(BR)CEO}$ | 15   | -    | -    | V       |
| Collector Emitter Breakdown Voltage                             |               |      |      |      |         |
| at $I_C=10mA$                                                   | $V_{(BR)CES}$ | 40   | -    | -    | V       |
| Collector Base Breakdown Voltage                                |               |      |      |      |         |
| at $I_C=10mA$                                                   | $V_{(BR)CBO}$ | 40   | -    | -    | V       |
| Emitter Base Breakdown Voltage                                  |               |      |      |      |         |
| at $I_E=10mA$                                                   | $V_{(BR)EBO}$ | 4.5  | -    | -    | V       |
| Output Capacitance                                              |               |      |      |      |         |
| at $V_{CB}=5V$ , $f=1MHz$                                       | $C_{ob}$      | -    | -    | 4    | pF      |
| Storage Time                                                    |               |      |      |      |         |
| at $I_{Con}=I_{Bon}=-I_{Boff}=10mA$                             | $t_s$         | -    | 5    | 13   | ns      |
| Turn-on Time                                                    |               |      |      |      |         |
| at $I_C=10mA$ , $I_{Bon}=3mA$ , $V_{CC}=3V$                     | $t_{on}$      | -    | 8    | 12   | ns      |
| Turn-off Time                                                   |               |      |      |      |         |
| at $I_C=10mA$ , $I_{Bon}=3mA$ , $I_{Boff}=1.5mA$ , $V_{CC}=3V$  | $t_{off}$     | -    | 10   | 18   | ns      |



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