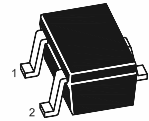


# MMBTSC4097W

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## NPN Silicon Epitaxial Planar Transistor



1.Base 2.Emitter 3.Collector  
SOT-323 Plastic Package

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

| Parameter                 | Symbol    | Value         | Unit             |
|---------------------------|-----------|---------------|------------------|
| Collector Base Voltage    | $V_{CBO}$ | 40            | V                |
| Collector Emitter Voltage | $V_{CEO}$ | 32            | V                |
| Emitter Base Voltage      | $V_{EBO}$ | 5             | V                |
| Collector Current         | $I_C$     | 0.5           | A                |
| Power Dissipation         | $P_{tot}$ | 200           | mW               |
| Junction Temperature      | $T_j$     | 150           | $^\circ\text{C}$ |
| Storage Temperature Range | $T_s$     | - 55 to + 150 | $^\circ\text{C}$ |

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

| Parameter                                                                                       | Symbol                                         | Min. | Typ. | Max. | Unit          |
|-------------------------------------------------------------------------------------------------|------------------------------------------------|------|------|------|---------------|
| DC Current Gain<br>at $V_{CE} = 3\text{ V}$ , $I_C = 10\text{ mA}$                              | Current Gain Group Q R<br>$h_{FE}$<br>$h_{FE}$ | 120  | -    | 270  | -             |
|                                                                                                 |                                                | 180  | -    | 390  | -             |
| Collector Base Cutoff Current<br>at $V_{CB} = 20\text{ V}$                                      | $I_{CBO}$                                      | -    | -    | 1    | $\mu\text{A}$ |
| Emitter Base Cutoff Current<br>at $V_{EB} = 4\text{ V}$                                         | $I_{EBO}$                                      | -    | -    | 1    | $\mu\text{A}$ |
| Collector Base Breakdown Voltage<br>at $I_C = 100\text{ }\mu\text{A}$                           | $V_{(BR)CBO}$                                  | 40   | -    | -    | V             |
| Collector Emitter Breakdown Voltage<br>at $I_C = 1\text{ mA}$                                   | $V_{(BR)CEO}$                                  | 32   | -    | -    | V             |
| Emitter Base Breakdown Voltage<br>at $I_E = 100\text{ }\mu\text{A}$                             | $V_{(BR)EBO}$                                  | 5    | -    | -    | V             |
| Collector Emitter Saturation Voltage<br>at $I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$         | $V_{CE(sat)}$                                  | -    | -    | 0.6  | V             |
| Transition Frequency<br>at $V_{CE} = 5\text{ V}$ , $-I_E = 20\text{ mA}$ , $f = 100\text{ MHz}$ | $f_T$                                          | -    | 250  | -    | MHz           |
| Output Capacitance<br>at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                            | $C_{ob}$                                       | -    | 6.5  | -    | pF            |

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ISO/TS 16949 : 2002  
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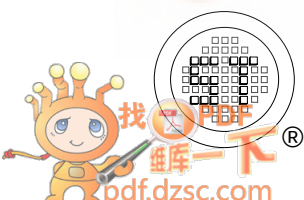


ISO 14001:2004  
Certificate No. 7116



ISO 9001:2000  
Certificate No. 0506088

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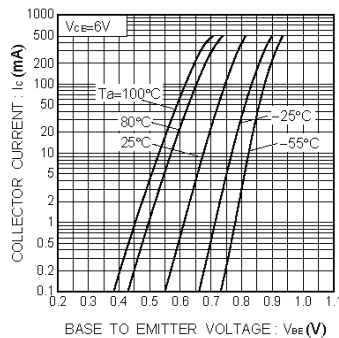


Fig.1 Grounded emitter propagation characteristics

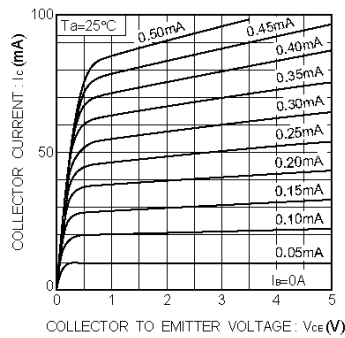


Fig.2 Grounded emitter output characteristics ( I )

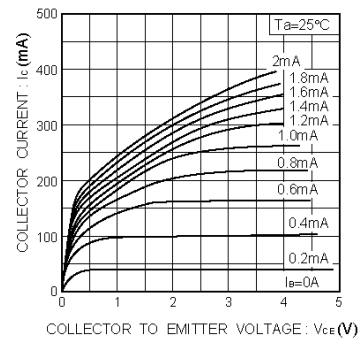


Fig.3 Grounded emitter output characteristics( II )

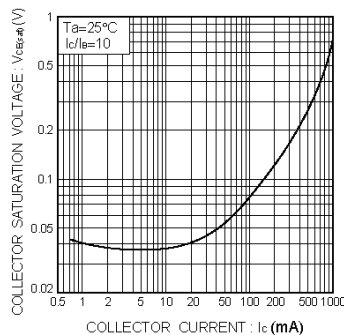


Fig.4 Collector-emitter saturation voltage vs. collector current

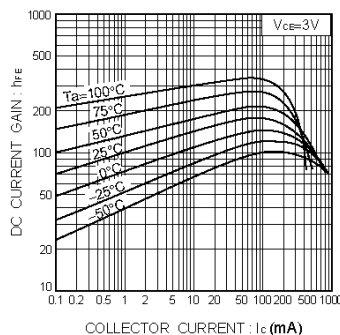


Fig.5 DC current gain vs. collector current

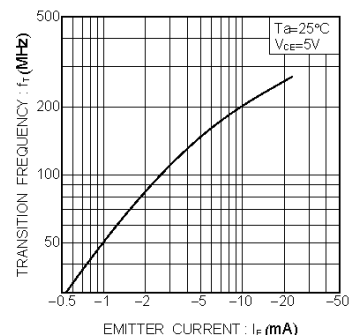


Fig.6 Gain bandwidth product vs. emitter current

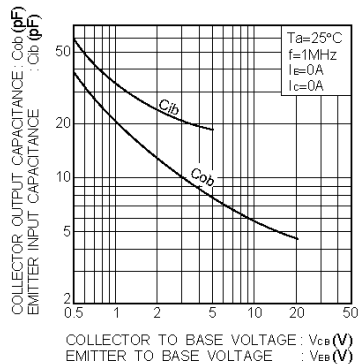
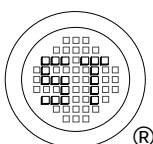


Fig.7 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage



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