# MMBTSC2411

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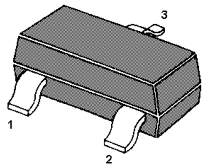
## NPN Silicon Epitaxial Planar Transistor

The transistor is subdivided into three groups P, Q and R according to its DC current gain.



1.BASE 2.EMITTER 3.COLLECTOR

SOT-23 Plastic Package

### Absolute Maximum Ratings ($T_a$ = 25 °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 | $I_C$ | 500 | mA |
| Power Dissipation | $P_{tot}$ | 200 | mW |
| Junction Temperature | $T_j$ | 150 | °C |
| Storage Temperature Range | $T_{Stg}$ | -55 to +150 | °C |

### Characteristics at $T_a$ =25 °C

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| DC Current Gain<br>at $V_{CE}$ = 3 V, $I_C$ = 100 mA P | $h_{FE}$ | 82 | - | 180 | - |
| Q | $h_{FE}$ | 120 | - | 270 | - |
| R | $h_{FE}$ | 180 | - | 390 | - |
| Collector Base Breakdown Voltage<br>at $I_C$= 100 µA | $V_{(BR)CBO}$ | 40 | - | - | V |
| Collector Emitter Breakdown Voltage<br>at $I_C$= 1 mA | $V_{(BR)CEO}$ | 32 | - | - | V |
| Emitter Base Breakdown Voltage<br>at $I_E$= 100 µA | $V_{(BR)EBO}$ | 5 | - | - | V |
| Collector Cutoff Current<br>at $V_{CB}$= 20 V | $I_{CBO}$ | - | - | 1 | µA |
| Emitter Cutoff Current<br>at $V_{EB}$ = 4 V | $I_{EBO}$ | - | - | 1 | µA |
| Collector Saturation Voltage<br>at $I_C$ = 500 mA, $I_B$ = 50 mA | $V_{CE(sat)}$ | - | - | 0.4 | V |
| Transition frequency<br>at $V_{CE}$ = 5 V, $-I_E$ = 20 mA, f = 100 MHz | $f_T$ | - | 250 | - | MHz |
| Output Capacitance<br>at $V_{CB}$ = 10 V, $I_E$ = 0 A, f = 1 MHz | $C_{ob}$ | - | 6 | - | pF |

*Dated : 21/12/2005*

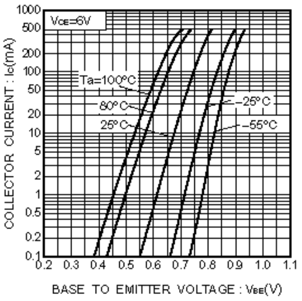


Fig.1 Grounded emitter propagation characteristics

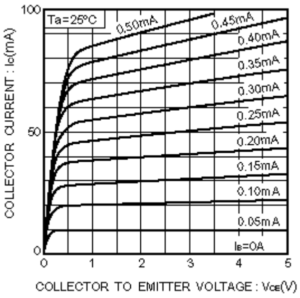


Fig.2 Grounded emitter output characteristics(I)

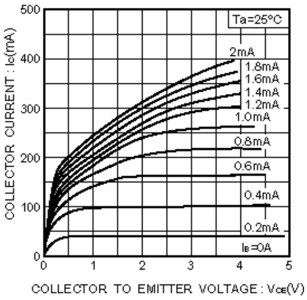


Fig.3 Grounded emitter output characteristics(II)

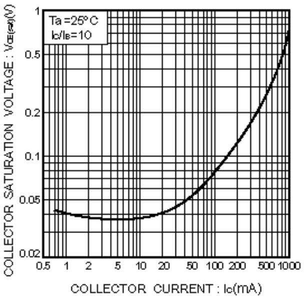


Fig.4 Collector-emitter saturation voltage vs. collector current

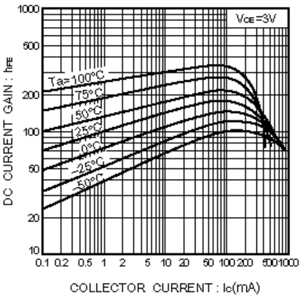


Fig.5 DC current gain vs. collector current

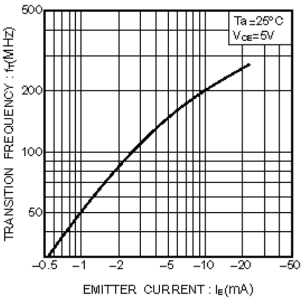


Fig. 6 Gain bandwidth product vs. emitter current

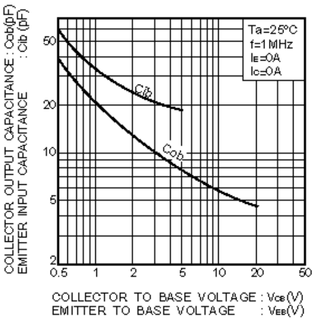


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage