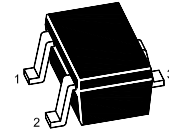


# MMBTSC5345W

## NPN Silicon Epitaxial Planar Transistor

for RF amplifier

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



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    | $V_{CBO}$ | 30         | V                |
| Collector-Emitter Voltage | $V_{CEO}$ | 20         | V                |
| Emitter-Base Voltage      | $V_{EBO}$ | 4          | V                |
| Collector Current         | $I_C$     | 20         | mA               |
| Power Dissipation         | $P_{tot}$ | 200        | mW               |
| Junction Temperature      | $T_j$     | 150        | $^\circ\text{C}$ |
| Storage Temperature Range | $T_{Stg}$ | - 55 + 150 | $^\circ\text{C}$ |

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

| Parameter                                                                             | Symbol                                                                | Min. | Typ. | Max. | Unit          |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------|------|------|---------------|
| DC Current Gain<br>at $V_{CE} = 6\text{ V}$ , $I_C = 1\text{ mA}$                     | Current Gain Group<br>R<br>O<br>Y<br>$h_{FE}$<br>$h_{FE}$<br>$h_{FE}$ | 40   | -    | 80   | -             |
|                                                                                       |                                                                       | 70   | -    | 140  | -             |
|                                                                                       |                                                                       | 120  | -    | 240  | -             |
|                                                                                       |                                                                       |      |      |      |               |
| Collector Base Breakdown Voltage<br>at $I_C = 10\text{ }\mu\text{A}$                  | $V_{(BR)CBO}$                                                         | 30   | -    | -    | V             |
| Collector Emitter Breakdown Voltage<br>at $I_C = 5\text{ mA}$                         | $V_{(BR)CEO}$                                                         | 20   | -    | -    | V             |
| Emitter Base Breakdown Voltage<br>at $I_E = 10\text{ }\mu\text{A}$                    | $V_{(BR)EBO}$                                                         | 4    | -    | -    | V             |
| Collector Cutoff Current<br>at $V_{CB} = 30\text{ V}$                                 | $I_{CBO}$                                                             | -    | -    | 0.5  | $\mu\text{A}$ |
| Emitter Cutoff Current<br>at $V_{EB} = 4\text{ V}$                                    | $I_{EBO}$                                                             | -    | -    | 0.5  | $\mu\text{A}$ |
| Collector Emitter Saturation Voltage<br>at $I_C = 10\text{ mA}$ , $I_B = 1\text{ mA}$ | $V_{CE(sat)}$                                                         | -    | -    | 0.3  | V             |
| Transition Frequency<br>at $V_{CE} = 6\text{ V}$ , $-I_E = 1\text{ mA}$               | $f_T$                                                                 | -    | 550  | -    | MHz           |
| Collector Output Capacitance<br>at $V_{CB} = 6\text{ V}$ , $f = 1\text{ MHz}$         | $C_{OB}$                                                              | -    | 1.4  | -    | pF            |

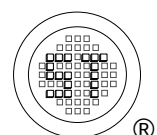


Fig. 1  $P_C-T_a$

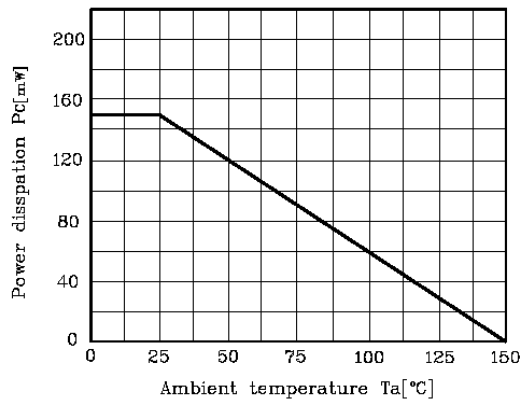


Fig. 2  $I_C-V_{CE}$

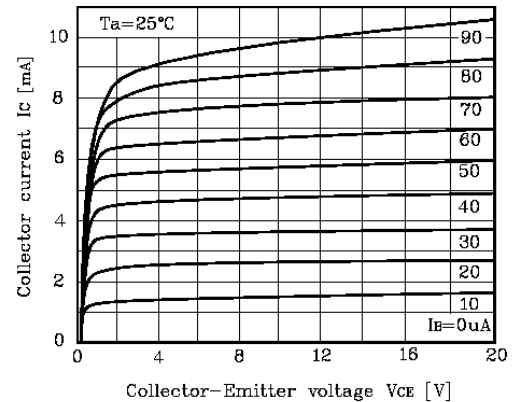


Fig. 3  $h_{FE}-I_C$

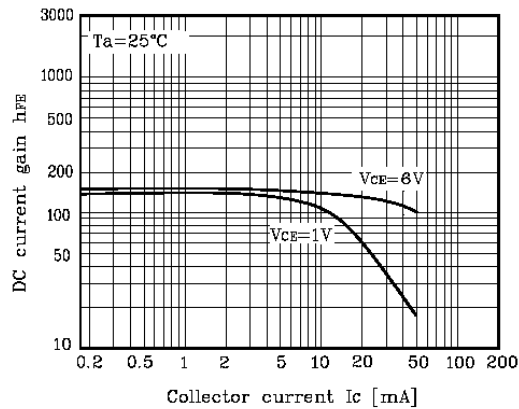


Fig. 4  $f_T-I_E$

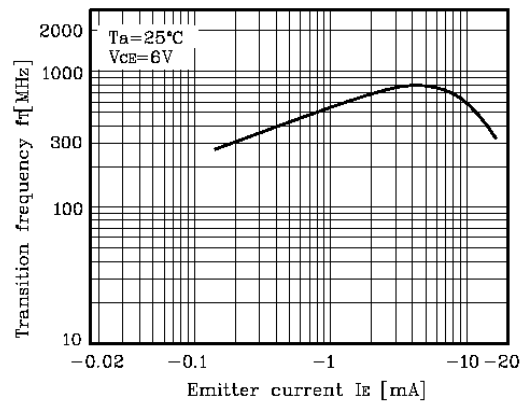


Fig. 5  $C_{ob}-V_{CB}$ ,  $C_{ib}-V_{EB}$

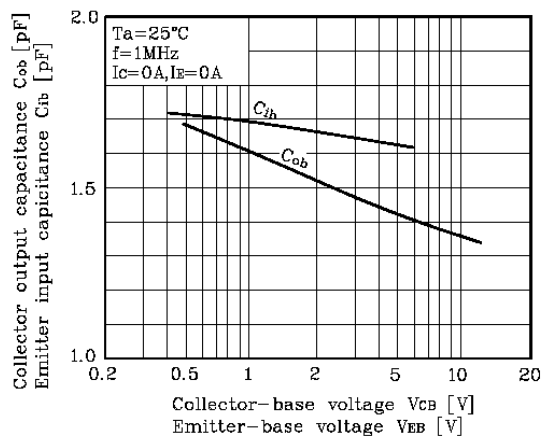


Fig. 6  $Y_{ie}-I_C$

