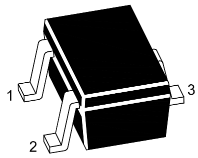
# MMBT2907W / MMBT2907AW

**PNP Silicon Epitaxial Planar Medium Power Transistor**
for switching and amplifier applications




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

**Absolute Maximum Ratings ($T_a$ = 25 °C)**

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector Base Voltage | | $-V_{CBO}$ | 60 | V |
| Collector Emitter Voltage | MMBT2907W<br>MMBT2907AW | $-V_{CEO}$ | 40<br>60 | V |
| Emitter Base Voltage | | $-V_{EBO}$ | 5 | V |
| Collector Current | | $-I_C$ | 600 | mA |
| Total 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. | Max. | Unit |
|---|---|---|---|---|---|
| DC Current Gain | | | | | |
| at $-V_{CE}$ = 10 V, $-I_C$ = 0.1 mA | MMBT2907W | $h_{FE}$ | 35 | - | - |
| | MMBT2907AW | $h_{FE}$ | 75 | - | - |
| at $-V_{CE}$ = 10 V, $-I_C$ = 1 mA | MMBT2907W | $h_{FE}$ | 50 | - | - |
| | MMBT2907AW | $h_{FE}$ | 100 | - | - |
| at $-V_{CE}$ = 10 V, $-I_C$ = 10 mA | MMBT2907W | $h_{FE}$ | 75 | - | - |
| | MMBT2907AW | $h_{FE}$ | 100 | - | - |
| at $-V_{CE}$ = 10 V, $-I_C$ = 150 mA | | $h_{FE}$ | 100 | 300 | - |
| at $-V_{CE}$ = 10 V, $-I_C$ = 500 mA | MMBT2907W | $h_{FE}$ | 30 | - | - |
| | MMBT2907AW | $h_{FE}$ | 50 | - | - |
| Collector Base Cutoff Current<br>at $-V_{CB}$ = 50 V | | $-I_{CBO}$ | - | 100 | nA |
| Collector Emitter Cutoff Current<br>at $-V_{CE}$ = 30 V | | $-I_{CES}$ | - | 100 | nA |
| Emitter Base Cutoff Current<br>at $-V_{EB}$ = 3 V | | $-I_{EBO}$ | - | 100 | nA |
| Collector Base Breakdown Voltage<br>at $-I_C$ = 10 µA | | $-V_{(BR)CBO}$ | 60 | - | V |
| Collector Emitter Breakdown Voltage<br>at $-I_C$ = 10 mA | MMBT2907W | $-V_{(BR)CEO}$ | 40 | - | V |
| | MMBT2907AW | | 60 | - | |
| Emitter Base Breakdown Voltage<br>at $-I_E$ = 10 µA | | $-V_{(BR)EBO}$ | 5 | - | V |
| Collector Emitter Saturation Voltage<br>at $-I_C$ = 150 mA, $-I_B$ = 15 mA<br>at $-I_C$ = 500 mA, $-I_B$ = 50 mA | | $-V_{CE(sat)}$ | -<br>- | 0.4<br>1.6 | V |
| Base Emitter Saturation Voltage<br>at $-I_C$ = 150 mA, $-I_B$ = 15 mA<br>at $-I_C$ = 500 mA, $-I_B$ = 50 mA | | $-V_{BE(sat)}$ | -<br>- | 1.3<br>2.6 | V |
| Transition Frequency<br>at $-V_{CE}$ = 20 V, $I_E$ = 50 mA, f = 100 MHz | | $f_T$ | 200 | - | MHz |
| Collector Output Capacitance<br>at $-V_{CB}$ = 10 V, f = 100 KHz | | $C_{ob}$ | - | 8 | pF |
| Turn-on Time<br>at $-V_{CC}$ = 30 V, $-V_{BE(OFF)}$ = 1.5 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA | | $t_{on}$ | - | 50 | ns |
| Delay Time<br>at $-V_{CC}$ = 30 V, $-V_{BE(OFF)}$ = 1.5 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA | | $t_d$ | - | 10 | ns |
| Rise Time<br>at $-V_{CC}$ = 30 V, $-V_{BE(OFF)}$ = 1.5 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA | | $t_r$ | - | 40 | ns |
| Turn-off Time<br>at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $I_{B1}$ = $I_{B2}$ = -15 mA | | $t_{off}$ | - | 100 | ns |
| Storage Time<br>at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $I_{B1}$ = $I_{B2}$ = -15 mA | | $t_{stg}$ | - | 80 | ns |
| Fall Time<br>at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $I_{B1}$ = $I_{B2}$ = -15 mA | | $t_f$ | - | 30 | ns |

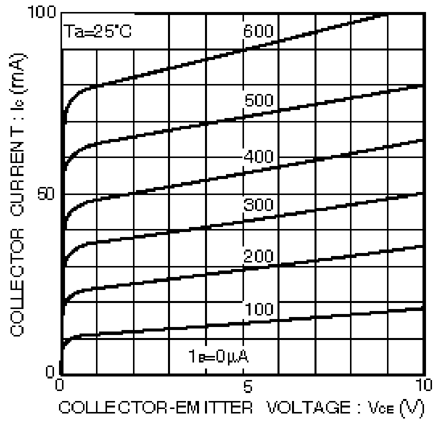



Fig.1 Grounded emitter output characteristics

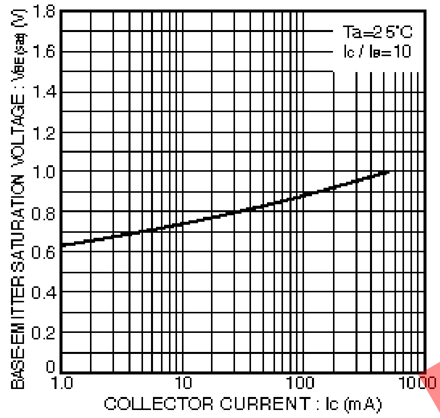



Fig.2 Base-emitter saturation voltage vs. collector current

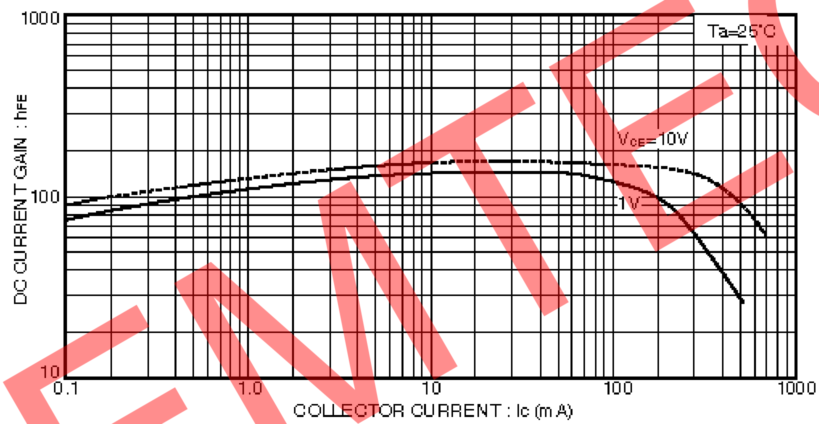



Fig.3 DC current gain vs. collector current ( I )

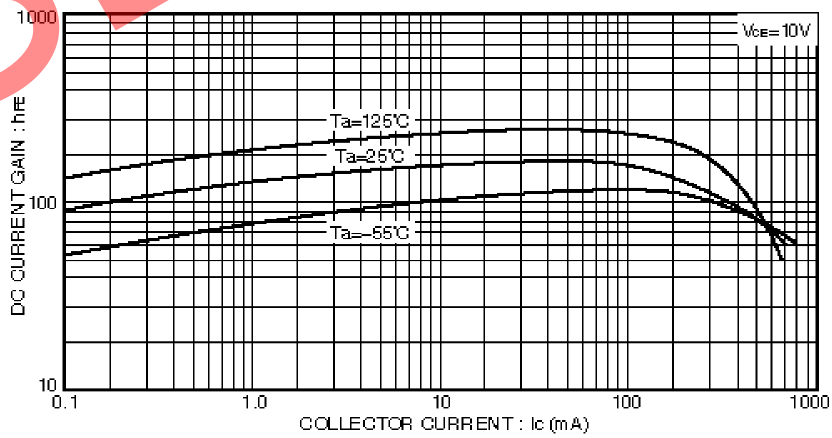



Fig.4 DC current gain vs. collector current ( II )

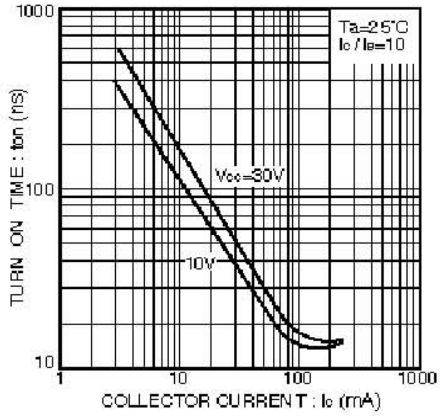



Fig.5 Turn-on time vs.collector current

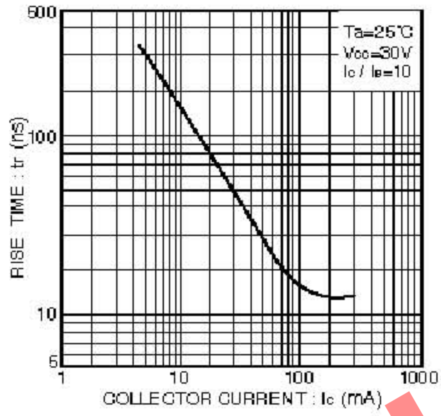



Fig.6 Rise time vs. collector current

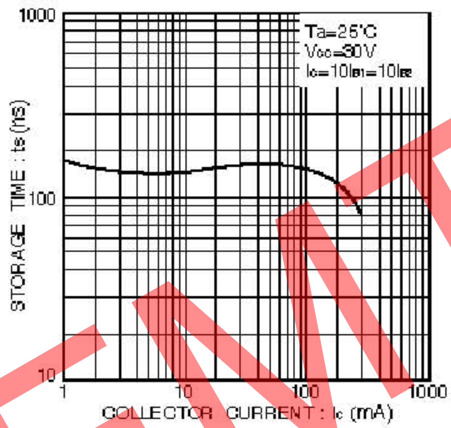



Fig.7 Storage time vs. collector current

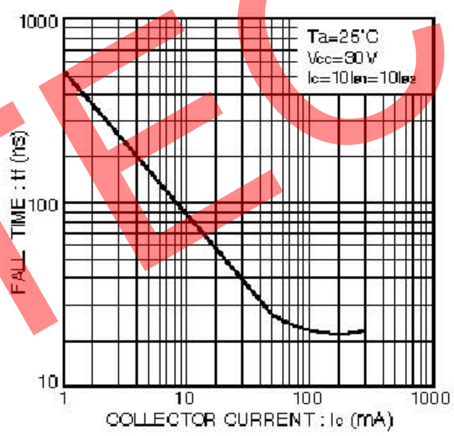



Fig.8 Fall time vs. collector current

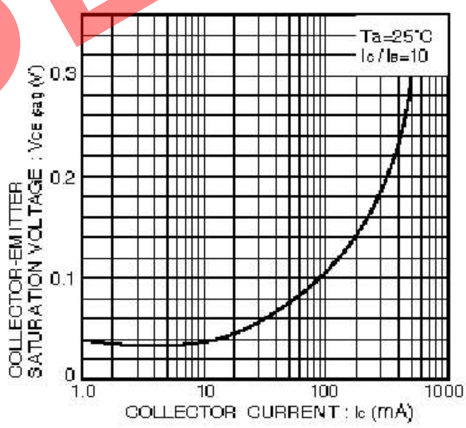



Fig.9 Collector-emitter saturation voltage vs. collector current

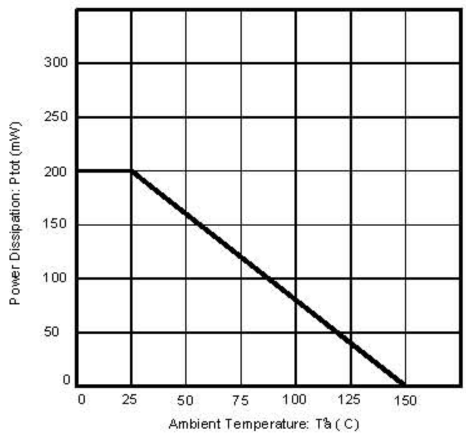



Fig.10 Power Dissipation vs Ambient Temperature