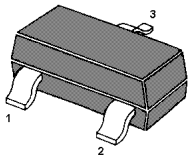
# MMBT2907 / MMBT2907A

## PNP Silicon Epitaxial Planar Transistor

for switching and AF amplifier applications.

The transistor is subdivided into one group according to its DC current gain.




1. Base 2. Emitter 3. Collector

TO-236 Plastic Package

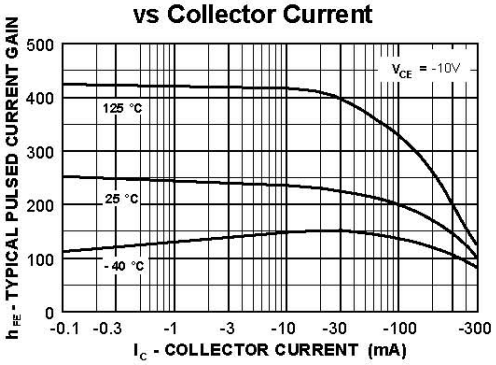
**Absolute Maximum Ratings ($T_a$ = 25 °C)**

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector Base Voltage | | $-V_{CBO}$ | 60 | V |
| Collector Emitter Voltage | MMBT2907<br>MMBT2907A | $-V_{CEO}$ | 40<br>60 | V |
| Emitter Base Voltage | | $-V_{EBO}$ | 5 | V |
| Collector Current | | $-I_C$ | 600 | mA |
| Power Dissipation | | $P_{tot}$ | 350 | mW |
| Junction Temperature | | $T_j$ | 150 | °C |
| Storage Temperature Range | | $T_{stg}$ | - 55 to + 150 | °C |

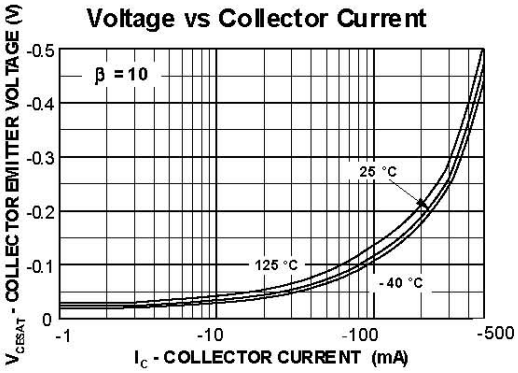
**Characteristics at $T_a$ = 25 °C**

| Parameter | | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|---|
| DC Current Gain | | | | | |
| at $-I_C$ = 0.1 mA, $-V_{CE}$ = 10 V | MMBT2907 | $h_{FE}$ | 35 | - | - |
| | MMBT2907A | $h_{FE}$ | 75 | - | - |
| at $-I_C$ = 1 mA, $-V_{CE}$ = 10 V | MMBT2907 | $h_{FE}$ | 50 | - | - |
| | MMBT2907A | $h_{FE}$ | 100 | - | - |
| at $-I_C$ = 10 mA, $-V_{CE}$ = 10 V | MMBT2907 | $h_{FE}$ | 75 | - | - |
| | MMBT2907A | $h_{FE}$ | 100 | - | - |
| at $-I_C$ = 150 mA, $-V_{CE}$ = 10 V | | $h_{FE}$ | 100 | 300 | - |
| at $-I_C$ = 500 mA, $-V_{CE}$ = 10 V | MMBT2907 | $h_{FE}$ | 30 | - | - |
| | MMBT2907A | $h_{FE}$ | 50 | - | - |
| Collector Base Cutoff Current | | | | | |
| at $-V_{CB}$ = 50 V | MMBT2907 | $-I_{CBO}$ | - | 20 | nA |
| | MMBT2907A | $-I_{CBO}$ | - | 10 | nA |
| Collector Base Breakdown Voltage at $-I_C$ = 10 µA | | $-V_{(BR)CBO}$ | 60 | - | V |
| Collector Emitter Breakdown Voltage | | | | | |
| at $-I_C$ = 10 mA | MMBT2907 | $-V_{(BR)CEO}$ | 40 | - | V |
| | MMBT2907A | $-V_{(BR)CEO}$ | 60 | - | V |
| Emitter Base Breakdown Voltage at $-I_E$ = 10 µA | | $-V_{(BR)EBO}$ | 5 | - | V |
| Collector Saturation Voltage | | | | | |
| at $-I_C$ = 150 mA, $-I_B$ = 15 mA | | $-V_{CE(sat)}$ | - | 0.4 | V |
| at $-I_C$ = 500 mA, $-I_B$ = 50 mA | | $-V_{CE(sat)}$ | - | 1.6 | V |
| Base Saturation Voltage | | | | | |
| at $-I_C$ = 150 mA, $-I_B$ = 15 mA | | $-V_{BE(sat)}$ | - | 1.3 | V |
| at $-I_C$ = 500 mA, $-I_B$ = 50 mA | | $-V_{BE(sat)}$ | - | 2.6 | V |
| Gain Bandwidth Product at $-I_C$ = 50 mA , $-V_{CE}$ = 20 V, f = 100 MHz | | $f_T$ | 200 | - | MHz |
| Collector Output Capacitance at $-V_{CB}$ = 10 V, f = 1 MHz | | $C_{ob}$ | - | 8 | pF |
| Turn-on Time at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA | | $t_{on}$ | - | 45 | ns |
| Delay Time at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA | | $t_d$ | - | 10 | ns |
| Rise Time at $-V_{CC}$ = 30 V, $-I_C$ = 150 mA, $-I_{B1}$ = 15 mA | | $t_r$ | - | 40 | ns |
| Turn-off Time at $-V_{CC}$ = 6 V, $-I_C$ = 150 mA, $-I_{B1}$ = $-I_{B2}$ = 15 mA | | $t_{off}$ | - | 100 | ns |
| Storage Time at $-V_{CC}$ = 6 V, $-I_C$ = 150 mA, $-I_{B1}$ = $-I_{B2}$ = 15 mA | | $t_s$ | - | 80 | ns |
| Fall Time at $-V_{CC}$ = 6 V, $-I_C$ = 150 mA, $-I_{B1}$ = $-I_{B2}$ = 15 mA | | $t_f$ | - | 30 | ns |

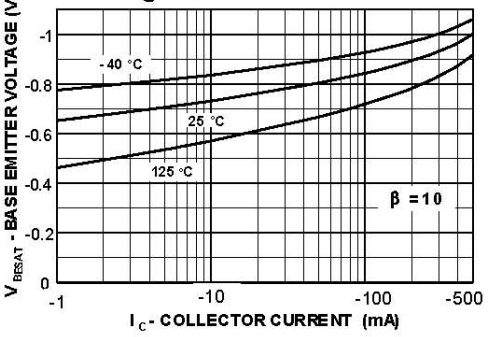
**Typical Pulsed Current Gain vs Collector Current**



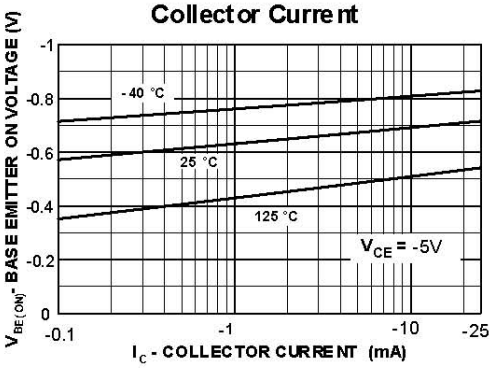

**Collector-Emitter Saturation Voltage vs Collector Current**



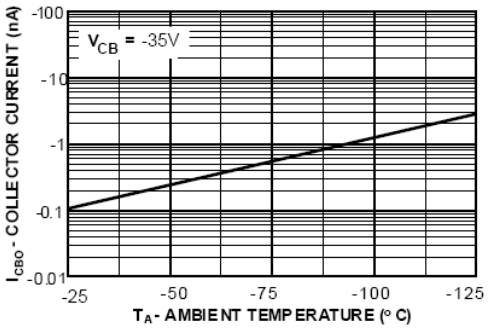

**Base-Emitter Saturation Voltage vs Collector Current**




**Base Emitter ON Voltage vs Collector Current**




**Collector-Cutoff Current vs Ambient Temperature**




**Input and Output Capacitance vs Reverse Bias Voltage**