



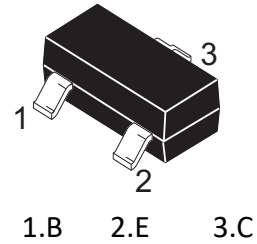
# MMBT2907/MMBT2907A

## PNP Silicon Epitaxial Planar Transistor

### Features

- For switching and amplifier applications
- The transistor is subdivided into one group according to its DC current gain.

SOT-23



### Absolute Maximum Ratings (Ta=25°C )

| Parameter                 | Symbol     | Value         | Unit |
|---------------------------|------------|---------------|------|
| Collector Base Voltage    | $-V_{CBO}$ | 60            | V    |
| Collector Emitter Voltage | $-V_{CEO}$ | 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 (Ta=25°C )

| Parameter  | Symbol    | Min.       | Max. | Unit |
|--|-----------|------------|------|------|
| DC Current Gain<br>at $-I_C = 0.1 \text{ mA}$ , $-V_{CE} = 10 \text{ V}$ | MMBT2907  | $h_{FE}$   | 35   | -    |
|  | MMBT2907A | $h_{FE}$   | 75   | -    |
| at $-I_C = 1 \text{ mA}$ , $-V_{CE} = 10 \text{ V}$                      | MMBT2907  | $h_{FE}$   | 50   | -    |
|  | MMBT2907A | $h_{FE}$   | 100  | -    |
| at $-I_C = 10 \text{ mA}$ , $-V_{CE} = 10 \text{ V}$                     | MMBT2907  | $h_{FE}$   | 75   | -    |
|  | MMBT2907A | $h_{FE}$   | 100  | -    |
| at $-I_C = 150 \text{ mA}$ , $-V_{CE} = 10 \text{ V}$                    | $h_{FE}$  | 100        | 300  | -    |
| at $-I_C = 500 \text{ mA}$ , $-V_{CE} = 10 \text{ V}$                    | MMBT2907  | $h_{FE}$   | 30   | -    |
|  | MMBT2907A | $h_{FE}$   | 50   | -    |
| Collector Base Cutoff Current<br>at $-V_{CB} = 50 \text{ V}$             | MMBT2907  | $-I_{CBO}$ | -    | 20   |
|  | MMBT2907A | $-I_{CBO}$ | -    | 10   |



# MMBT2907/MMBT2907A

## PNP Silicon Epitaxial Planar Transistor

|  |                             |     |     |     |
|--|-----------------------------|-----|-----|-----|
| Collector Base Breakdown Voltage at $-I_C = 10 \mu\text{A}$  | $-V_{(BR)CBO}$              | 60  | -   | V   |
| Collector Emitter Breakdown Voltage<br>at $-I_C = 10 \text{ mA}$   | MMBT2907<br>$-V_{(BR)CEO}$  | 40  | -   | V   |
|  | MMBT2907A<br>$-V_{(BR)CEO}$ | 60  | -   | V   |
| Emitter Base Breakdown Voltage at $-I_E = 10 \mu\text{A}$  | $-V_{(BR)EBO}$              | 5   | -   | V   |
| Collector Saturation Voltage<br>at $-I_C = 150 \text{ mA}$ , $-I_B = 15 \text{ mA}$<br>at $-I_C = 500 \text{ mA}$ , $-I_B = 50 \text{ mA}$ | $-V_{CE(sat)}$              | -   | 0.4 | V   |
|  | $-V_{CE(sat)}$              | -   | 1.6 | V   |
| Base Saturation Voltage<br>at $-I_C = 150 \text{ mA}$ , $-I_B = 15 \text{ mA}$<br>at $-I_C = 500 \text{ mA}$ , $-I_B = 50 \text{ mA}$      | $-V_{BE(sat)}$              | -   | 1.3 | V   |
|  | $-V_{BE(sat)}$              | -   | 2.6 | V   |
| Gain Bandwidth Product<br>at $-I_C = 50 \text{ mA}$ , $-V_{CE} = 20 \text{ V}$ , $f = 100 \text{ MHz}$                                     | $f_T$                       | 200 | -   | MHz |
| Collector Output Capacitance<br>at $-V_{CB} = 10 \text{ V}$ , $f = 1 \text{ MHz}$  | $C_{ob}$                    | -   | 8   | pF  |
| Turn-on Time<br>at $-V_{CC} = 30 \text{ V}$ , $-I_C = 150 \text{ mA}$ , $-I_{B1} = 15 \text{ mA}$  | $t_{on}$                    | -   | 45  | ns  |
| Delay Time<br>at $-V_{CC} = 30 \text{ V}$ , $-I_C = 150 \text{ mA}$ , $-I_{B1} = 15 \text{ mA}$  | $t_d$                       | -   | 10  | ns  |
| Rise Time<br>at $-V_{CC} = 30 \text{ V}$ , $-I_C = 150 \text{ mA}$ , $-I_{B1} = 15 \text{ mA}$   | $t_r$                       | -   | 40  | ns  |
| Turn-off Time<br>at $-V_{CC} = 6 \text{ V}$ , $-I_C = 150 \text{ mA}$ , $-I_{B1} = -I_{B2} = 15 \text{ mA}$                                | $t_{off}$                   | -   | 100 | ns  |
| Storage Time<br>at $-V_{CC} = 6 \text{ V}$ , $-I_C = 150 \text{ mA}$ , $-I_{B1} = -I_{B2} = 15 \text{ mA}$                                 | $t_s$                       | -   | 80  | ns  |
| Fall Time<br>at $-V_{CC} = 6 \text{ V}$ , $-I_C = 150 \text{ mA}$ , $-I_{B1} = -I_{B2} = 15 \text{ mA}$                                    | $t_f$                       | -   | 30  | ns  |

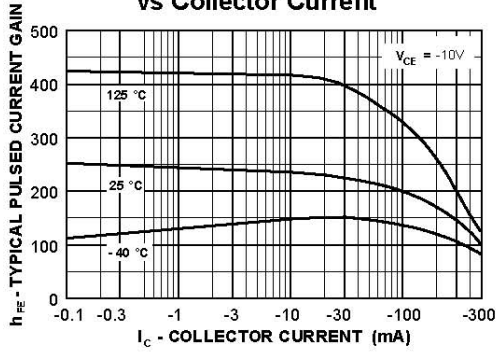


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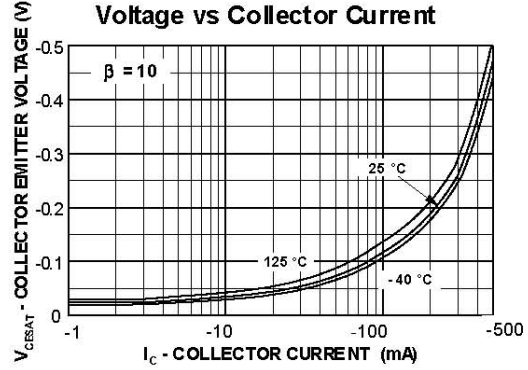
## PNP Silicon Epitaxial Planar Transistor

### Ratings And Characteristic Curves

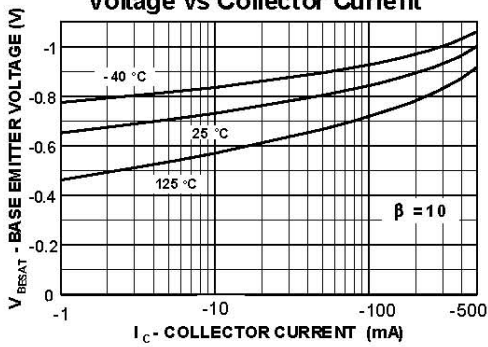
Typical Pulsed Current Gain vs Collector Current



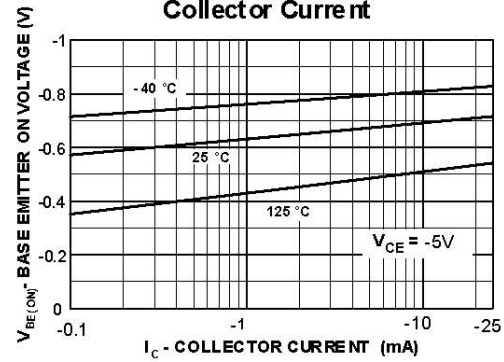
Collector-Emitter Saturation Voltage vs Collector Current



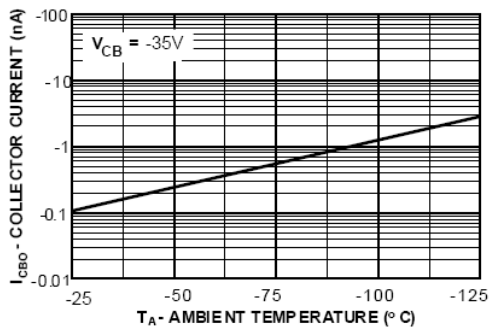
Base-Emitter Saturation Voltage vs Collector Current



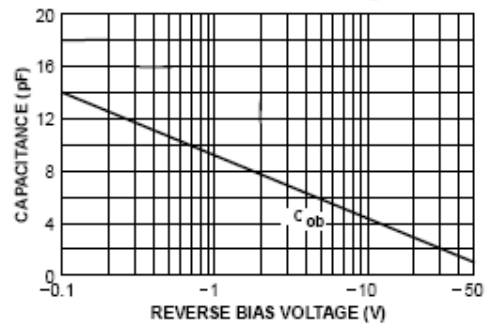
Base Emitter ON Voltage vs Collector Current



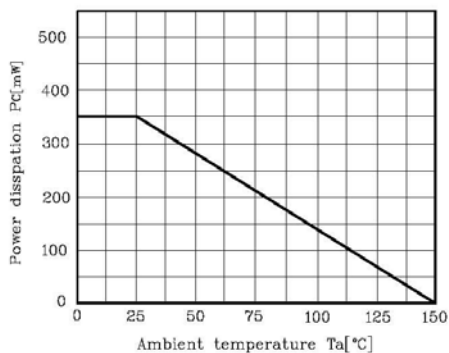
Collector-Cutoff Current vs Ambient Temperature



Input and Output Capacitance vs Reverse Bias Voltage



$P_C T_a$



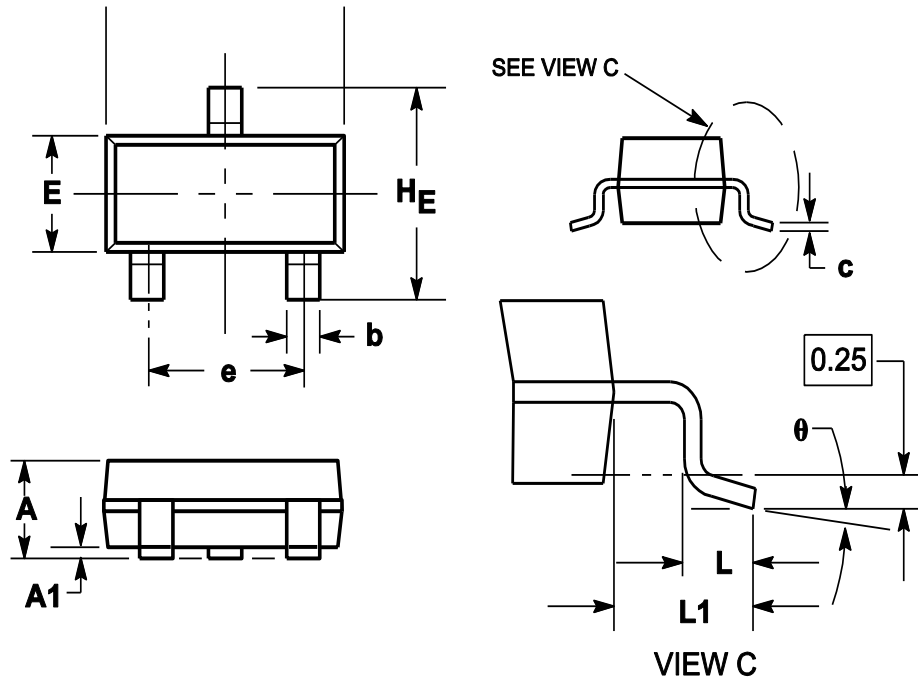


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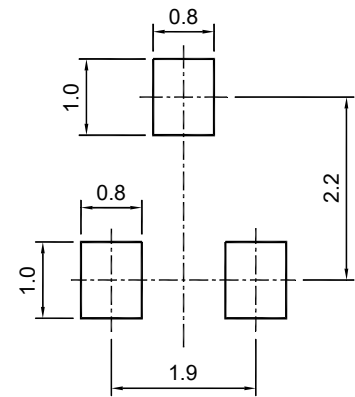
## PNP Silicon Epitaxial Planar Transistor

### Package Outline

SOT-23



| Symbol | Dimensions in millimeter |       |       |
|--------|--------------------------|-------|-------|
|        | Min.                     | Typ.  | Max.  |
| A      | 0.900                    | 1.025 | 1.150 |
| A1     | 0.000                    | 0.050 | 0.100 |
| b      | 0.300                    | 0.400 | 0.500 |
| c      | 0.080                    | 0.115 | 0.150 |
| D      | 2.800                    | 2.900 | 3.000 |
| E      | 1.200                    | 1.300 | 1.400 |
| HE     | 2.250                    | 2.400 | 2.550 |
| e      | 1.800                    | 1.900 | 2.000 |
| L1     | 0.550REF                 |       |       |
| L      | 0.300                    |       | 0.500 |
| θ      | 0°                       |       | 8°    |



SOT-23

**Recommended soldering pad**

### Ordering information

| Device             | Package | Shipping                |
|--------------------|---------|-------------------------|
| MMBT2907/MMBT2907A | SOT-23  | 3000/Tape&Reel(7inches) |

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