

NPN Transistors

Features

- Silicon epitaxial planar transistors
- For switching and amplifier applications



1. Collector 2. Base 3. Emitter
TO-92 Plastic Package

Absolute Maximum Ratings (T_a = 25°C)

| Parameter | Symbol | Value | Unit |
|---------------------------|------------------|------------------------------------|------|
| Collector Base Voltage | V _{CBO} | RND BC546 (A,B,C), RND BC547 (B,C) | 80 |
| | | RND BC548 (B,C) | 50 |
| | | RND BC549 (A,B) | 30 |
| Collector Emitter Voltage | V _{CEO} | RND BC546 (A,B,C), RND BC547 (B,C) | 65 |
| | | RND BC548 (B,C) | 45 |
| | | RND BC549 (A,B) | 30 |
| Emitter Base Voltage | V _{EBO} | 6 | V |
| Collector Current (DC) | I _C | 100 | mA |
| Peak Collector Current | I _{CM} | 200 | mA |
| Total Power Dissipation | P _{tot} | 500 | mW |
| Junction Temperature | T _j | 150 | °C |
| Storage Temperature Range | T _{stg} | - 65 to + 150 | °C |

Characteristics at T_a = 25°C

| Parameter | Symbol | Min. | Max. | Unit | |
|---|--|------------------------------------|------|------|---|
| DC Current Gain at V _{CE} = 5 V, I _C = 2 mA | RND BC546A, RND BC549A | h _{FE} | 110 | 220 | - |
| | RND BC546B, RND BC547B, RND BC548B, RND BC549B | h _{FE} | 200 | 450 | - |
| | RND BC546C, RND BC547C, RND BC548C | h _{FE} | 420 | 800 | - |
| Collector Base Cutoff Current at V _{CB} = 30 V | I _{CBO} | - | 15 | nA | |
| Emitter Base Cutoff Current at V _{EB} = 5 V | I _{EBO} | - | 100 | nA | |
| Collector Base Breakdown Voltage at I _C = 100 μA | V _{(BR)CBO} | RND BC546 (A,B,C), RND BC547 (B,C) | 80 | - | V |
| | | RND BC548 (B,C) | 50 | - | |
| | | RND BC549 (A,B) | 30 | - | |
| Collector Emitter Breakdown Voltage at I _C = 1 mA | V _{(BR)CEO} | RND BC546 (A,B,C), RND BC547 (B,C) | 65 | - | V |
| | | RND BC548 (B,C) | 45 | - | |
| | | RND BC549 (A,B) | 30 | - | |
| Emitter Base Breakdown Voltage at I _E = 10 μA | V _{(BR)EBO} | 6 | - | V | |

Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Min. | Max. | Unit |
|---|---------------|------|-------------|------|
| Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$ at $I_C = 100\text{ mA}$, $I_B = 5\text{ mA}$ | $V_{CE(sat)}$ | - | 0.25 0.6 | V |
| Base Emitter On Voltage at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$ at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$ | $V_{BE(on)}$ | 0.55 | 0.7 0.77 | V |
| Transition Frequency at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$, $f = 100\text{ MHz}$ | f_T | 100 | - | MHz |
| Collector Base Capacitance at $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$ | C_{cbo} | - | 6 | pF |

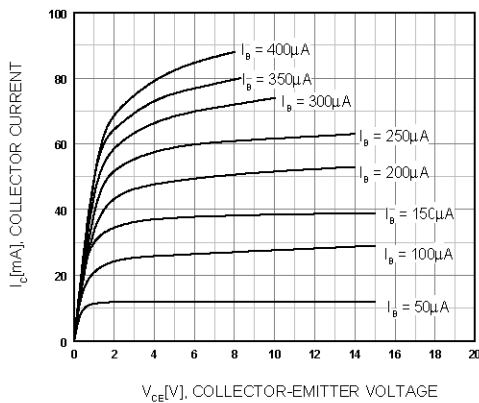


Figure 1. Static Characteristic

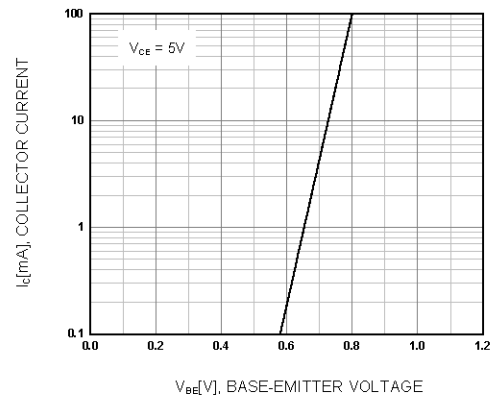


Figure 2. Transfer Characteristic

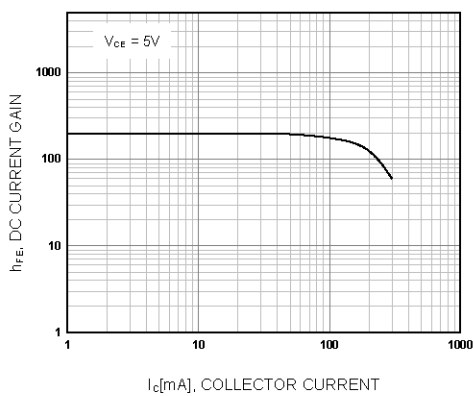


Figure 3. DC current Gain

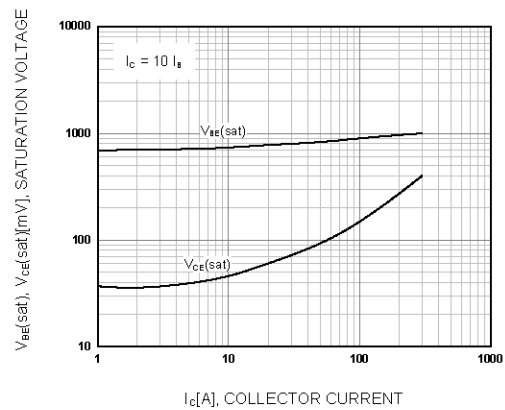


Figure 4. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage