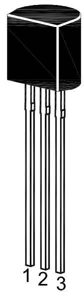
# 2N2222 / 2N2222A

## NPN Silicon Epitaxial Planar Transistor

for switching and AF amplifier applications.

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

On special request, these transistors can be manufactured in different pin configurations.



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

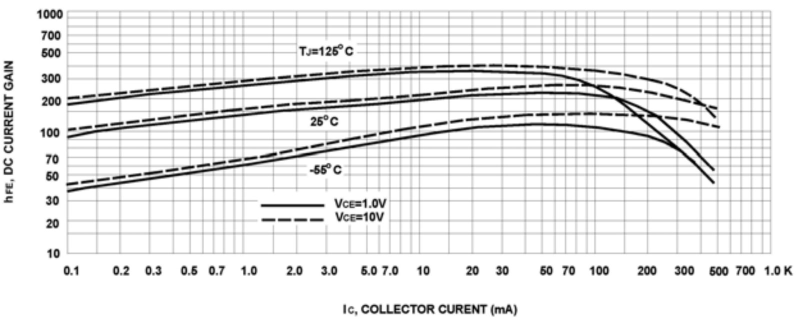
### Absolute Maximum Ratings ($T_a$ = 25 °C)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector Base Voltage | 2N2222 | $V_{CBO}$ | 60 | V |
| | 2N2222A | | 75 | |
| Collector Emitter Voltage | 2N2222 | $V_{CEO}$ | 30 | V |
| | 2N2222A | | 40 | |
| Emitter Base Voltage | 2N2222 | $V_{EBO}$ | 5 | V |
| | 2N2222A | | 6 | |
| Collector Current | | $I_C$ | 600 | mA |
| Power Dissipation | | $P_{tot}$ | 625 | mW |
| Junction Temperature | | $T_j$ | 150 | °C |
| Storage Temperature Range | | $T_{stg}$ | - 55 to + 150 | °C |

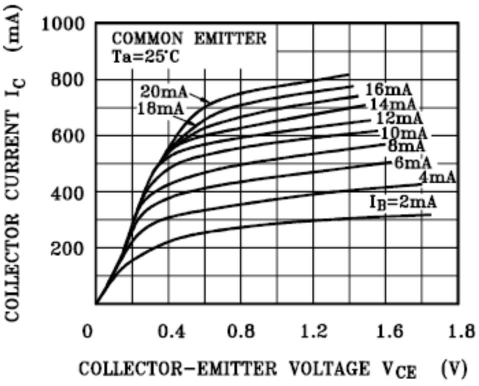
**Characteristics at $T_a = 25\ ^\circ C$**

| Parameter | | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|---|
| DC Current Gain | | | | | |
| at $V_{CE} = 10$ V, $I_C = 0.1$ mA | | $h_{FE}$ | 35 | - | - |
| at $V_{CE} = 10$ V, $I_C = 1$ mA | | $h_{FE}$ | 50 | - | - |
| at $V_{CE} = 10$ V, $I_C = 10$ mA | | $h_{FE}$ | 75 | - | - |
| at $V_{CE} = 10$ V, $I_C = 150$ mA | | $h_{FE}$ | 100 | 300 | - |
| at $V_{CE} = 10$ V, $I_C = 500$ mA | 2N2222 | $h_{FE}$ | 30 | - | - |
| | 2N2222A | $h_{FE}$ | 40 | - | - |
| Collector Base Cutoff Current | | | | | |
| at $V_{CB} = 50$ V | 2N2222 | $I_{CBO}$ | - | 10 | nA |
| at $V_{CB} = 60$ V | 2N2222A | | - | 10 | |
| Collector Base Breakdown Voltage | | | | | |
| at $I_C = 10$ µA | 2N2222 | $V_{(BR)CBO}$ | 60 | - | V |
| | 2N2222A | | 75 | - | |
| Collector Emitter Breakdown Voltage | | | | | |
| at $I_C = 10$ mA | 2N2222 | $V_{(BR)CEO}$ | 30 | - | V |
| | 2N2222A | | 40 | - | |
| Emitter Base Breakdown Voltage | | | | | |
| at $I_E = 10$ µA | 2N2222 | $V_{(BR)EBO}$ | 5 | - | V |
| | 2N2222A | | 6 | - | |
| Collector Emitter Saturation Voltage | | | | | |
| at $I_C = 150$ mA, $I_B = 15$ mA | 2N2222 | $V_{CE(sat)}$ | - | 0.4 | V |
| | 2N2222A | | - | 0.3 | |
| at $I_C = 500$ mA, $I_B = 50$ mA | 2N2222 | | - | 1.6 | |
| | 2N2222A | | - | 1 | |
| Base Emitter Saturation Voltage | | | | | |
| at $I_C = 150$ mA, $I_B = 15$ mA | 2N2222 | $V_{BE(sat)}$ | - | 1.3 | V |
| | 2N2222A | | 0.6 | 1.2 | |
| at $I_C = 500$ mA, $I_B = 50$ mA | 2N2222 | | - | 2.6 | |
| | 2N2222A | | - | 2 | |
| Gain Bandwidth Product<br>at $I_C = 20$ mA, $V_{CE} = 20$ V, f = 100 MHz | | $f_T$ | 250 | - | MHz |
| Collector Output Capacitance<br>at $V_{CB} = 10$ V, f = 1 MHz | | $C_{ob}$ | - | 8 | pF |

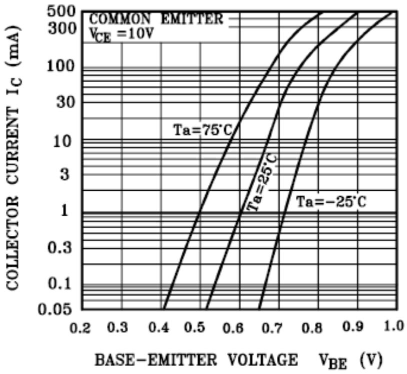
**Figure 1. DC Current Gain**



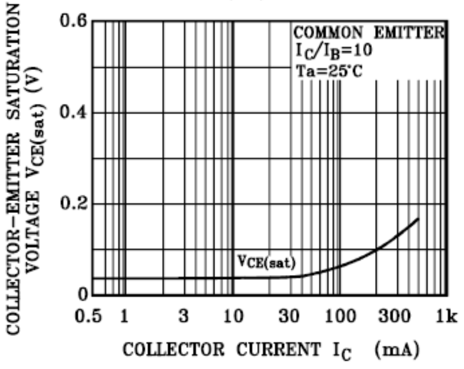
$I_C - V_{CE}$



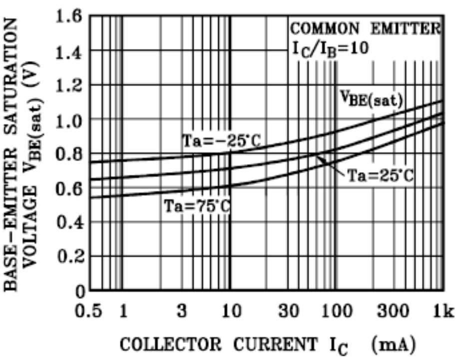
$I_C - V_{BE}$



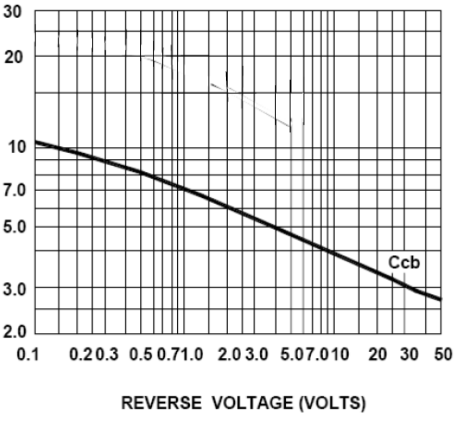
$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$



**Capacitances**



Pc - Ta