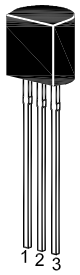
# ST 9012



## PNP Silicon Epitaxial Planar Transistor

for switching and amplifier applications. Especially suitable for AF-driver stages and low power output stages.

The transistor is subdivided into three groups, G, H and I, according to its DC current gain. As complementary type the NPN transistor 9013 is recommended.




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

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

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector Base Voltage | $-V_{CBO}$ | 40 | V |
| Collector Emitter Voltage | $-V_{CEO}$ | 30 | V |
| Emitter Base Voltage | $-V_{EBO}$ | 5 | V |
| Collector Current | $-I_C$ | 500 | 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 °C**

| Parameter | | | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|---|---|
| DC Current Gain | | | | | | |
| at $-V_{CE}$ = 1 V, $-I_C$ = 50 mA | Current Gain Group | G | $h_{FE}$ | 110 | 183 | - |
| | | H | $h_{FE}$ | 177 | 250 | - |
| | | I | $h_{FE}$ | 250 | 380 | - |
| at $-V_{CE}$ = 1 V, $-I_C$ = 500 mA | | | $h_{FE}$ | 40 | - | - |
| Collector Base Cutoff Current at $-V_{CB}$ = 35 V | | | $-I_{CBO}$ | - | 100 | nA |
| Emitter Base Cutoff Current at $-V_{EB}$ = 5 V | | | $-I_{EBO}$ | - | 100 | nA |
| Collector Base Breakdown Voltage at $-I_C$ = 100 µA | | | $-V_{(BR)CBO}$ | 40 | - | V |
| Collector Emitter Breakdown Voltage at $-I_C$ = 1 mA | | | $-V_{(BR)CEO}$ | 30 | - | V |
| Emitter Base Breakdown Voltage at $-I_E$ = 100 µA | | | $-V_{(BR)EBO}$ | 5 | - | V |
| Collector Emitter Saturation Voltage at $-I_C$ = 500 mA, $-I_B$ = 50 mA | | | $-V_{CE(sat)}$ | - | 0.6 | V |
| Base Emitter Saturation Voltage at $-I_C$ = 500 mA, $-I_B$ = 50 mA | | | $-V_{BE(sat)}$ | - | 1.2 | V |
| Base Emitter Voltage at $-V_{CE}$ = 1 V, $-I_C$ = 100 mA | | | $-V_{BE}$ | - | 1 | V |
| Gain Bandwidth Product at $-V_{CE}$ = 6 V, $-I_C$ = 20 mA | | | $f_T$ | 100 | - | MHz |

**Fig. 1 $P_{tot}$ - $T_a$**

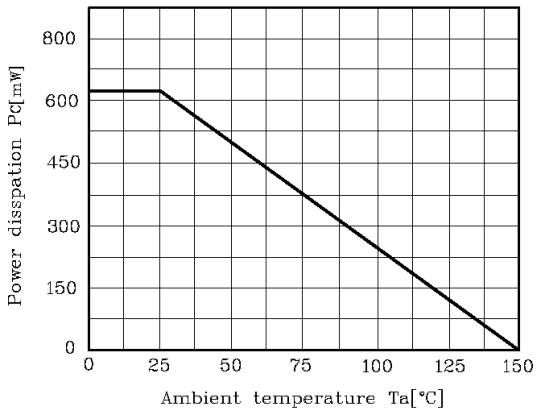



**Fig. 2 $I_C$ - $V_{BE}$**

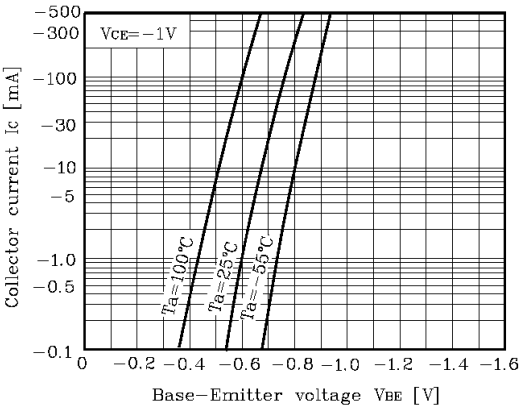



**Fig. 3 $I_C$ - $V_{CE}$**

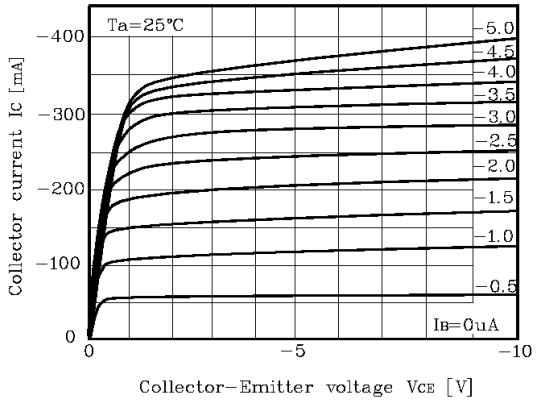



**Fig. 4 $V_{CE(sat)}$ - $I_C$**

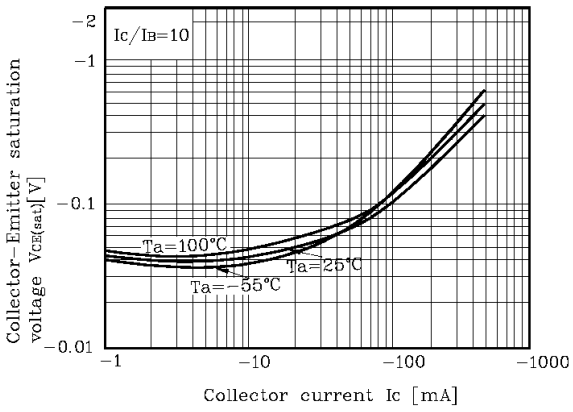



**Fig. 5 $h_{FE}$ - $I_C$**

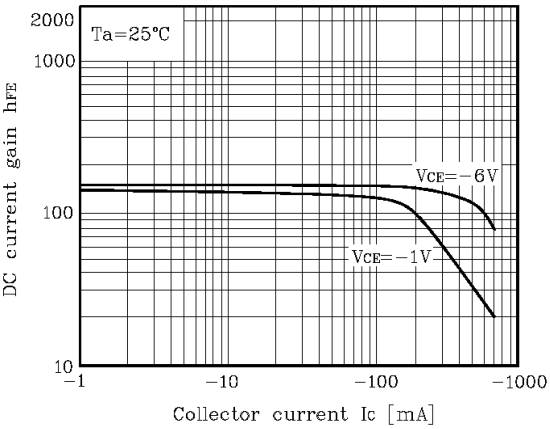



**Fig. 6 $h_{FE}$ - $I_C$**