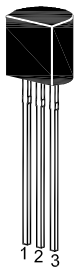
# ST 13002G

## NPN Silicon Epitaxial Planar Transistor

High voltage power transistor




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

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

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector Emitter Voltage | $V_{CES}$ | 700 | V |
| Collector Emitter Voltage | $V_{CEO}$ | 450 | V |
| Emitter Base Voltage | $V_{EBO}$ | 9 | V |
| Collector Current | $I_C$ | 0.5 | A |
| Collector Peak Current | $I_{CM}$ | 1.5 | A |
| Total Power Dissipation | $P_{tot}$ | 0.8 | W |
| Operating 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<br>at $V_{CE}$ = 2 V, $I_C$ = 200 mA | $h_{FE}$ | 23 | 35 | - |
| Collector Emitter Cutoff Current<br>at $V_{CE}$ = 700 V | $I_{CES}$ | - | 1 | mA |
| Collector Emitter Breakdown Voltage<br>at $I_C$ = 10 mA | $V_{(BR)CEO}$ | 450 | - | V |
| Emitter Base Breakdown Voltage<br>at $I_E$ = 10 mA | $V_{(BR)EBO}$ | 9 | 18 | V |
| Collector Emitter Saturation Voltage<br>at $I_C$ = 200 mA, $I_B$ = 40 mA<br>at $I_C$ = 500 mA, $I_B$ = 100 mA | $V_{CEsat}$ | -<br>- | 0.5<br>1 | V |
| Base Emitter Saturation Voltage<br>at $I_C$ = 200 mA, $I_B$ = 40 mA<br>at $I_C$ = 500 mA, $I_B$ = 100 mA | $V_{BEsat}$ | -<br>- | 1<br>1.2 | V |
| Rise Time<br>at $V_{CC}$ = 60 V, $I_C$ = 0.3 A, $I_B$ = -$I_{B2}$ = 0.1 A, $t_p$ = 25 µs | $t_r$ | - | 0.7 | µs |
| Storage Time<br>at $V_{CC}$ = 60 V, $I_C$ = 0.3 A, $I_B$ = -$I_{B2}$ = 0.1 A, $t_p$ = 25 µs | $t_s$ | - | 2.5 | µs |
| Fall Time<br>at $V_{CC}$ = 60 V, $I_C$ = 0.3 A, $I_B$ = -$I_{B2}$ = 0.1 A, $t_p$ = 25 µs | $t_f$ | - | 0.5 | µs |

**Figure 3:Base-Emitter Saturation Voltage**

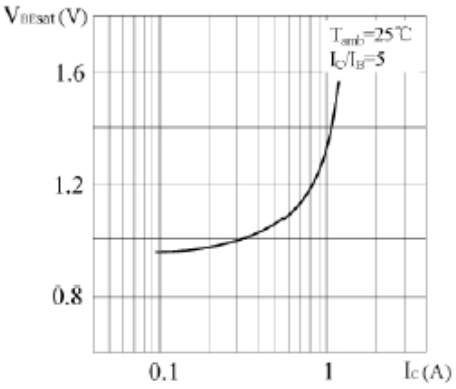



**Figure 6: Derating Curve**

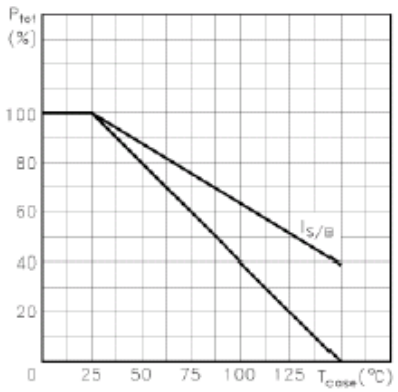



**Figure 4: Output Characteristics**

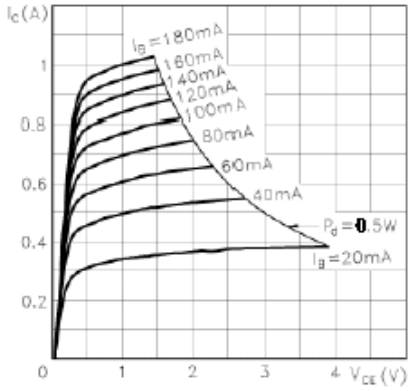



**Figure 7: Collector-Emitter Saturation Voltage**

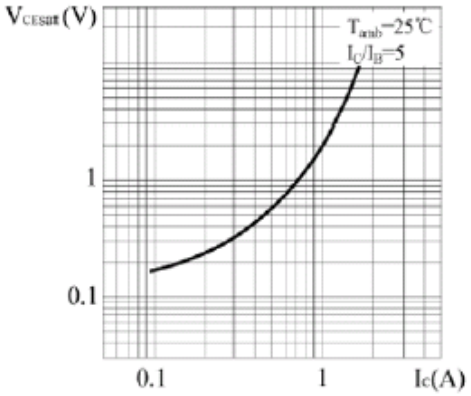



**Figure 5: DC Current Gain**