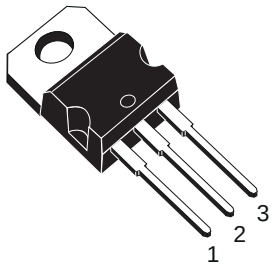
# 2N6111

## SILICON PNP SWITCHING TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE
- PNP TRANSISTOR

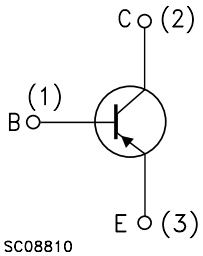
**APPLICATIONS:**
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

**DESCRIPTION**
The 2N6111 is an Epitaxial-Base PNP silicon transistor in Jedec TO-220 plastic package. It is intended for a wide variety of medium power switching and linear applications.




**TO-220**

**INTERNAL SCHEMATIC DIAGRAM**




**ABSOLUTE MAXIMUM RATINGS**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage ($I_E$ = 0) | -40 | V |
| $V_{CEX}$ | Collector-Emitter Voltage ($R_{BE}$ = 100 Ω) | -40 | V |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | -30 | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | -5 | V |
| $I_C$ | Collector Current | -7 | A |
| $I_B$ | Base Current | -3 | A |
| $P_{tot}$ | Total Dissipation at $T_c$ = 25 °C | 40 | W |
| $T_{stg}$ | Storage Temperature | -65 to 150 | °C |
| $T_j$ | Max. Operating Junction Temperature | 150 | °C |

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{thj\text{-}case}$ | Thermal Resistance Junction-case | Max | 3.12 | $^oC/W$ |
| $R_{thj\text{-}amb}$ | Thermal Resistance Junction-ambient | Max | 70 | $^oC/W$ |

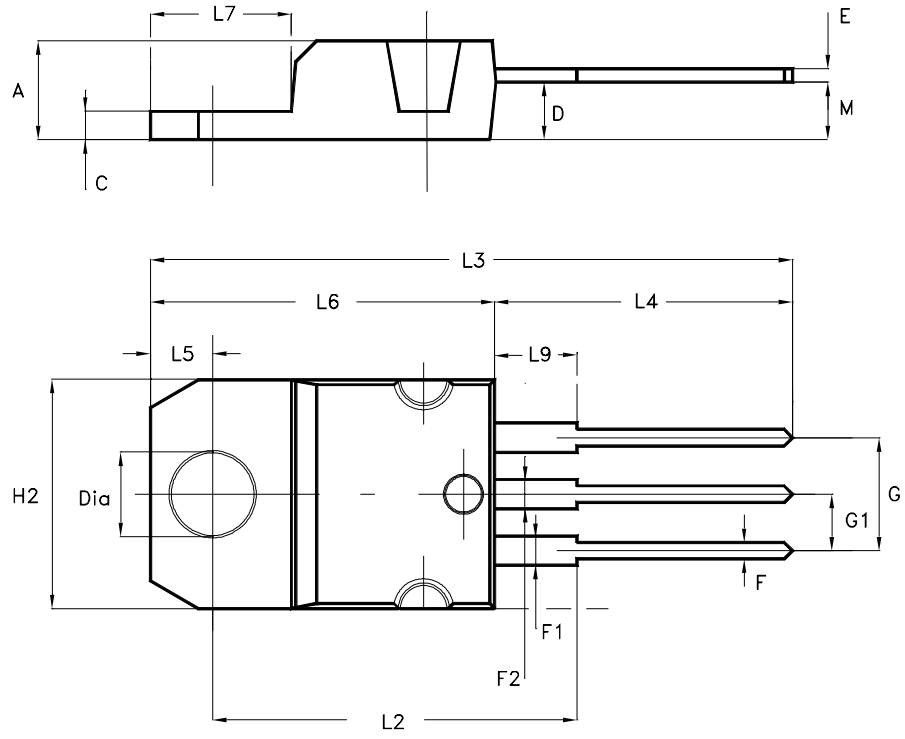
## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CEX}$ | Collector Cut-off Current ($V_{BE}$ = - 1.5V) | $V_{CE}$ = -40 V<br>$V_{CE}$ = -30 V $T_C$ = 150 $^oC$ | | | -0.1<br>-2 | mA<br>mA |
| $I_{CEO}$ | Collector Cut-off Current ($I_B$ = 0) | $V_{CE}$ = -20 V | | | -1 | mA |
| $I_{EBO}$ | Emitter Cut-off Current ($I_C$ = 0) | $V_{EB}$ = -5 V | | | -1 | mA |
| $V_{CEO(sus)}$* | Collector-Emitter Sustaining Voltage ($I_B$ = 0) | $I_C$ = -0.1 A | -30 | | | V |
| $V_{CER(sus)}$* | Collector-Emitter Sustaining Voltage ($I_C$ = 0) | $I_C$ = -0.1 A $R_{BE}$ = 100 Ω | -40 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = -2 A $I_B$ = -0.2 A<br>$I_C$ = -7 A $I_B$ = -3.0 A | | | -1<br>-3.5 | V<br>V |
| $V_{BE(on)}$* | Base-Emitter Voltage | $I_C$ = -2 A $V_{CE}$ = -4 V<br>$I_C$ = -7 A $V_{CE}$ = -4 V | | | -5<br>-3 | V<br>V |
| $h_{FE}$* | DC Current Gain | $I_C$ = -3 A $V_{CE}$ = -4 V<br>$I_C$ = -7 A $V_{CE}$ = -4 V | 30<br>2.3 | | 150 | |
| $h_{fe}$ | Small Signal Current Gain | $I_C$ = -0.5 A $V_{CE}$ = -4 V<br>f = 50 KHz | 20 | | | |
| $f_T$ | Transition-Frequency | $I_C$ = -0.5 A $V_{CE}$ = -4 V | 4 | | | MHz |
| $C_{cbo}$ | Collector-base Capacitance | $V_{CB}$ = -10 V f = 1 MHz | | | 250 | pF |

* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %.

## TO-220 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| C | 1.23 | | 1.32 | 0.048 | | 0.052 |
| D | 2.40 | | 2.72 | 0.094 | | 0.107 |
| E | 0.49 | | 0.70 | 0.019 | | 0.027 |
| F | 0.61 | | 0.88 | 0.024 | | 0.034 |
| F1 | 1.14 | | 1.70 | 0.044 | | 0.067 |
| F2 | 1.14 | | 1.70 | 0.044 | | 0.067 |
| G | 4.95 | | 5.15 | 0.194 | | 0.202 |
| G1 | 2.40 | | 2.70 | 0.094 | | 0.106 |
| H2 | 10.00 | | 10.40 | 0.394 | | 0.409 |
| L2 | | 16.40 | | | 0.645 | |
| L4 | 13.00 | | 14.00 | 0.511 | | 0.551 |
| L5 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| L6 | 15.25 | | 15.75 | 0.600 | | 0.620 |
| L7 | 6.20 | | 6.60 | 0.244 | | 0.260 |
| L9 | 3.50 | | 3.93 | 0.137 | | 0.154 |
| M | | 2.60 | | | 0.102 | |
| DIA. | 3.75 | | 3.85 | 0.147 | | 0.151 |




P011CI