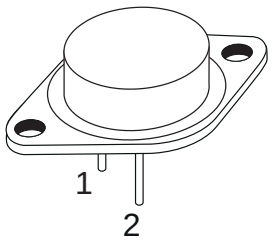
# 2N5886

# HIGH CURRENT SILICON NPN POWER TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE
- HIGH CURRENT CAPABILITY

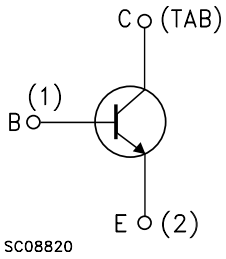
**APPLICATIONS**
- GENERAL PURPOSE SWITCHING AND AMPLIFIER
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

**DESCRIPTION**
The 2N5886 is a silicon Epitaxial-Base NPN power transistor mounted in Jedec TO-3 metal case. It is inteded for use in power linear amplifiers and switching applications.




**TO-3**

**INTERNAL SCHEMATIC DIAGRAM**




**ABSOLUTE MAXIMUM RATINGS**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage ($I_E$ = 0) | 80 | V |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | 80 | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | 5 | V |
| $I_C$ | Collector Current | 25 | A |
| $I_{CM}$ | Collector Peak Current | 50 | A |
| $I_B$ | Base Current | 7.5 | A |
| $P_{tot}$ | Total Dissipation at $T_c \leq 25\ ^oC$ | 200 | W |
| $T_{stg}$ | Storage Temperature | -65 to 200 | $^oC$ |
| $T_j$ | Max. Operating Junction Temperature | 200 | $^oC$ |

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{thj\text{-}case}$ | Thermal Resistance Junction-case | Max | 0.875 | $^oC/W$ |

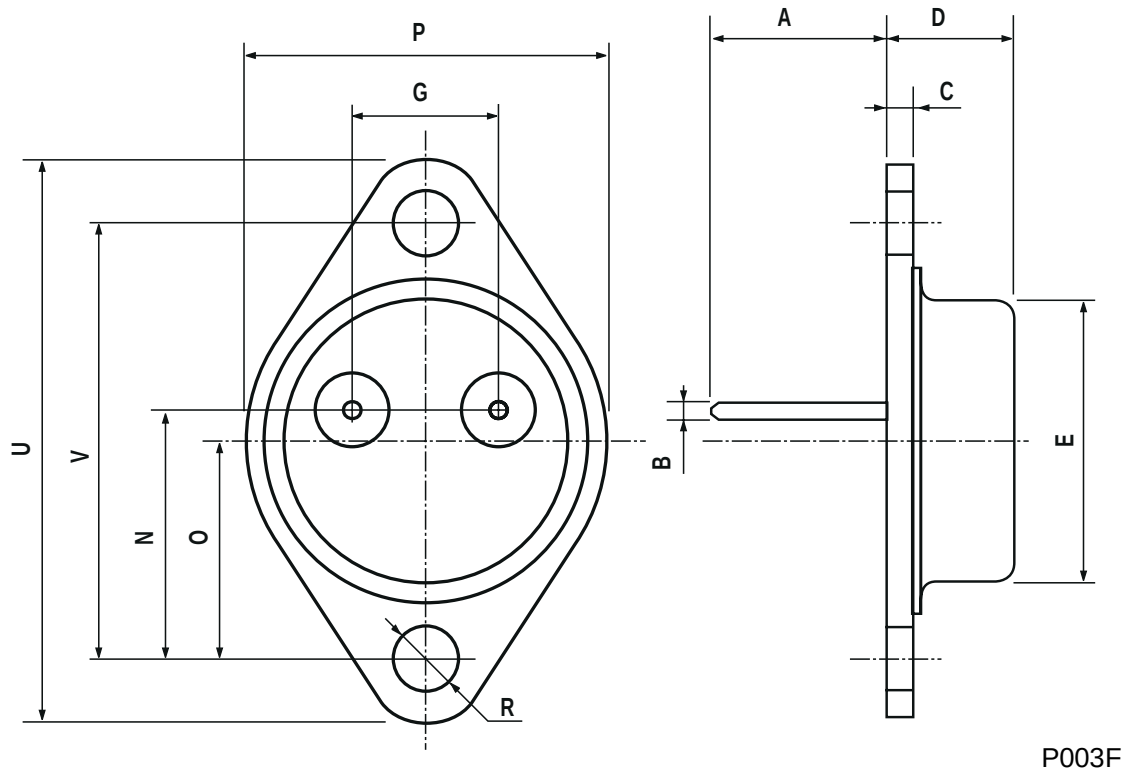
## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CEV}$ | Collector Cut-off Current ($V_{BE}$ = -1.5V) | $V_{CE}$ = 80 V<br>$V_{CE}$ = 80 V $T_c$ = 150 $^oC$ | | | 1<br>10 | mA<br>mA |
| $I_{CBO}$ | Collector Cut-off Current ($I_E$ = 0) | $V_{CB}$ = 80 V | | | 1 | mA |
| $I_{CEO}$ | Collector Cut-off Current ($I_B$ = 0) | $V_{CE}$ = 40 V | | | 2 | 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) | $I_C$ = 200 mA | 80 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = 15 A $I_B$ = 1.5 A<br>$I_C$ = 25 A $I_B$ = 6.25 A | | | 1<br>4 | V<br>V |
| $V_{BE(sat)}$* | Base-Emitter Saturation Voltage | $I_C$ = 25 A $I_B$ = 6.25 A | | | 2.5 | V |
| $V_{BE}$* | Base-Emitter Voltage | $I_C$ = 10 A $V_{CE}$ = 4 V | | | 1.5 | V |
| $h_{FE}$* | DC Current Gain | $I_C$ = 3 A $V_{CE}$ = 4 V<br>$I_C$ = 10 A $V_{CE}$ = 4 V<br>$I_C$ = 25 A $V_{CE}$ = 4 V | 35<br>20<br>4 | | 100 | |
| $h_{fe}$ | Small Signal Current Gain | $I_C$ = 3 A $V_{CE}$ = 4 V f = 1KHz | 20 | | | |
| $f_T$ | Transition frequency | $I_C$ = 1 A $V_{CE}$ = 10 V f =1 MHz | 4 | | | MHz |
| $C_{CBO}$ | Collector Base Capacitance | $I_E$ = 0 $V_{CB}$ = 10 V f = 1MHz | | | 500 | pF |
| <br>$t_r$<br>$t_s$<br>$t_f$ | RESISTIVE LOAD<br>Rise Time<br>Storage Time<br>Fall Time | $I_C$ = 10 A $V_{CC}$ = 30 V<br>$I_{B1}$ = $-I_{B2}$ = 1A | | | <br>0.7<br>1<br>0.8 | <br>µs<br>µs<br>µs |

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

## TO-3 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 11.00 | | 13.10 | 0.433 | | 0.516 |
| B | 0.97 | | 1.15 | 0.038 | | 0.045 |
| C | 1.50 | | 1.65 | 0.059 | | 0.065 |
| D | 8.32 | | 8.92 | 0.327 | | 0.351 |
| E | 19.00 | | 20.00 | 0.748 | | 0.787 |
| G | 10.70 | | 11.10 | 0.421 | | 0.437 |
| N | 16.50 | | 17.20 | 0.649 | | 0.677 |
| P | 25.00 | | 26.00 | 0.984 | | 1.023 |
| R | 4.00 | | 4.09 | 0.157 | | 0.161 |
| U | 38.50 | | 39.30 | 1.515 | | 1.547 |
| V | 30.00 | | 30.30 | 1.187 | | 1.193 |

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