



# 2N6487 2N6488/2N6490

## COMPLEMENTARY SILICON POWER TRANSISTORS

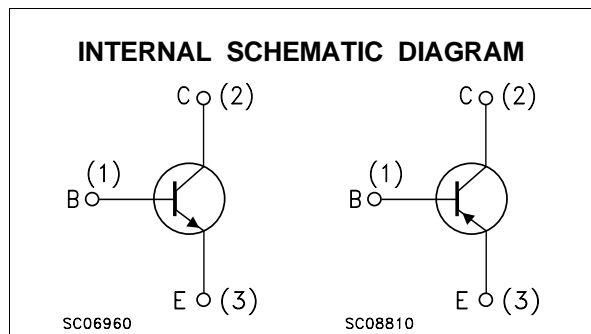
- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES

### DESCRIPTION

The 2N6487 and 2N6488 are silicon epitaxial-base NPN transistors in Jedec TO-220 plastic package.

They are intended for use in power linear and low frequency switching applications.

The 2N6487 complementary type is 2N6490.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter  | Value |            | Unit |            |
|-----------|--|-------|------------|------|------------|
|           |  | NPN   | 2N6487     |      | 2N6488     |
|           |  | PNP   | 2N6490     |      |            |
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )                               |       | 70         | 90   | V          |
| $V_{CEX}$ | Collector-Emitter Voltage ( $V_{BE} = -1.5V, R_{BE} = 100\Omega$ ) |       | 70         | 90   | V          |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )                            |       | 60         | 80   | V          |
| $V_{EBO}$ | Emitter-Base Voltage ( $I_C = 0$ )                                 |       | 5          |      | V          |
| $I_C$     | Collector Current  |       | 15         |      | A          |
| $I_B$     | Base Current   |       | 5          |      | A          |
| $P_{tot}$ | Total Dissipation at $T_c \leq 25^\circ C$                         |       | 75         |      | W          |
| $T_{stg}$ | Storage Temperature  |       | -65 to 150 |      | $^\circ C$ |
| $T_j$     | Max. Operating Junction Temperature                                |       | 150        |      | $^\circ C$ |

For PNP types voltage and current values are negative.

## 2N6487 / 2N6488 / 2N6490

### THERMAL DATA

|                       |                                     |     |      |      |
|-----------------------|-------------------------------------|-----|------|------|
| R <sub>thj-case</sub> | Thermal Resistance Junction-case    | Max | 1.67 | °C/W |
| R <sub>thj-amb</sub>  | Thermal Resistance Junction-ambient | Max | 70   | °C/W |

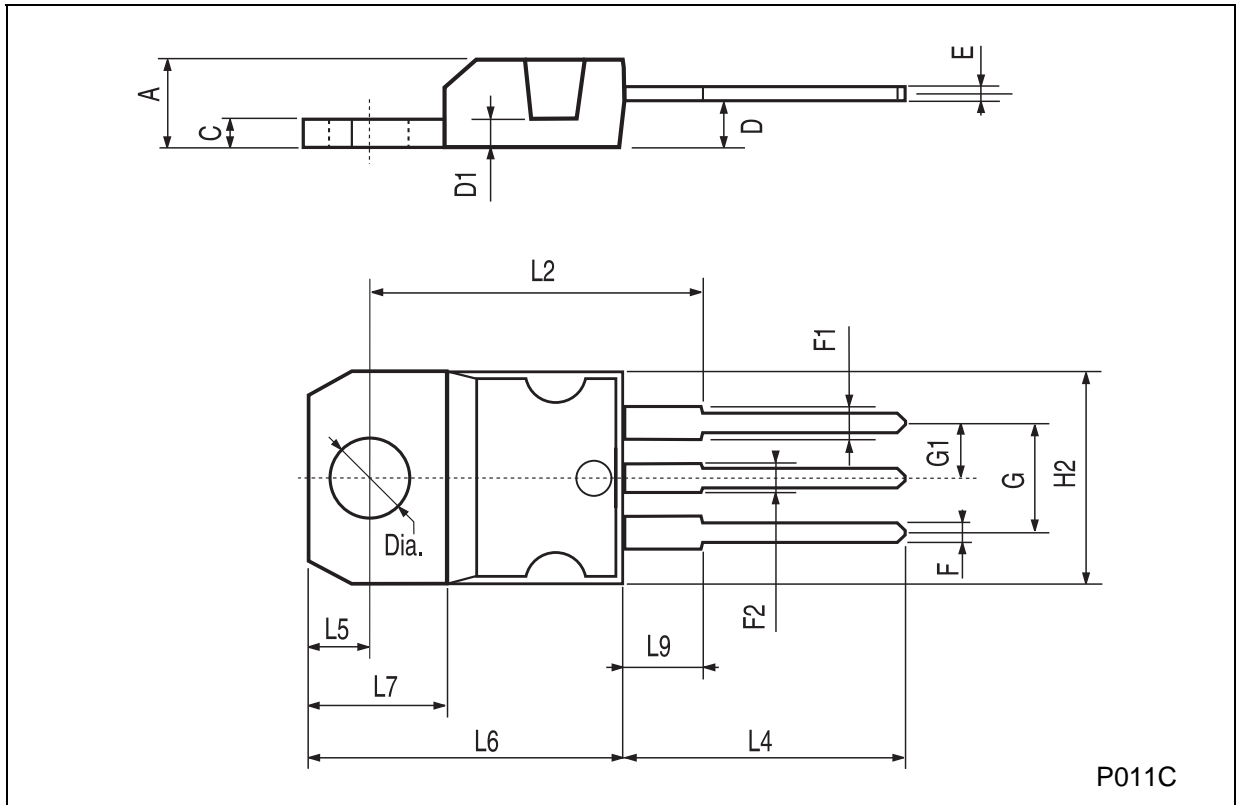
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol                 | Parameter  | Test Conditions                                     | Min. | Typ. | Max. | Unit |
|------------------------|--|---|------|------|------|------|
| I <sub>CEX</sub>       | Collector Cut-off Current (V <sub>BE</sub> = -1.5V)                                    | for <b>2N6487/2N6490</b> V <sub>CE</sub> = 65 V     |      |      | 0.5  | mA   |
|                        |  | for <b>2N6488</b> V <sub>CE</sub> = 85 V            |      |      | 0.5  | mA   |
|                        |  | for <b>2N6487/2N6490</b> T <sub>c</sub> = 150 °C    |      |      |      |      |
|                        |  | for <b>2N6487/2N6490</b> V <sub>CE</sub> = 60 V     |      |      | 5    | mA   |
|                        |  | for <b>2N6488</b> V <sub>CE</sub> = 80 V            |      |      | 5    | mA   |
| I <sub>CER</sub>       | Collector Cut-off Current (R <sub>BE</sub> = 100Ω)                                     | for <b>2N6487/2N6490</b> V <sub>CE</sub> = 55 V     |      |      | 0.5  | mA   |
|                        |  | for <b>2N6488</b> V <sub>CE</sub> = 75 V            |      |      | 0.5  | mA   |
| I <sub>CEO</sub>       | Collector Cut-off Current (I <sub>B</sub> = 0)   | for <b>2N6487/2N6490</b> V <sub>CE</sub> = 30 V     |      |      | 1    | mA   |
|                        |  | for <b>2N6488</b> V <sub>CE</sub> = 40 V            |      |      | 1    | mA   |
| I <sub>EBO</sub>       | Emitter Cut-off Current (I <sub>C</sub> = 0)   | V <sub>EB</sub> = 5 V                               |      |      | 1    | mA   |
| V <sub>CEO(sus)*</sub> | Collector-Emitter Sustaining Voltage   | I <sub>C</sub> = 200 mA                             |      |      |      |      |
|                        |  | for <b>2N6487/2N6490</b>                            | 60   |      |      | V    |
|                        |  | for <b>2N6488</b>                                   | 80   |      |      | V    |
| V <sub>CER(sus)*</sub> | Collector-Emitter Sustaining Voltage (R <sub>BE</sub> = 100Ω)                          | I <sub>C</sub> = 200 mA                             |      |      |      |      |
|                        |  | for <b>2N6487/2N6490</b>                            | 65   |      |      | V    |
|                        |  | for <b>2N6488</b>                                   | 85   |      |      | V    |
| V <sub>CEX(sus)*</sub> | Collector-Emitter Sustaining Voltage (V <sub>BE</sub> = -1.5V, R <sub>BE</sub> = 100Ω) | I <sub>C</sub> = 200 mA                             |      |      |      |      |
|                        |  | for <b>2N6487/2N6490</b>                            | 70   |      |      | V    |
|                        |  | for <b>2N6488</b>                                   | 90   |      |      | V    |
| V <sub>CE(sat)*</sub>  | Collector-Emitter Saturation Voltage   | I <sub>C</sub> = 5 A I <sub>B</sub> = 0.5 A         |      |      | 1.3  | V    |
|                        |  | I <sub>C</sub> = 15 A I <sub>B</sub> = 5 A          |      |      | 3.5  | V    |
| V <sub>BE*</sub>       | Base-Emitter Voltage   | I <sub>C</sub> = 5 A V <sub>CE</sub> = 4 V          |      |      | 1.3  | V    |
|                        |  | I <sub>C</sub> = 15 A V <sub>CE</sub> = 4 V         |      |      | 3.5  | V    |
| h <sub>FE*</sub>       | DC Current Gain  | I <sub>C</sub> = 5 A V <sub>CE</sub> = 4 V          | 20   |      | 150  |      |
|                        |  | I <sub>C</sub> = 15 A V <sub>CE</sub> = 4 V         | 5    |      |      |      |
| h <sub>fe</sub>        | Small Signal Current Gain  | I <sub>C</sub> = 1 A V <sub>CE</sub> = 4 V f = 1MHz | 5    |      |      |      |
|                        |  | I <sub>C</sub> = 1 A V <sub>CE</sub> = 4 V f = 1KHz | 25   |      |      |      |

\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %  
For PNP types voltage and current values are negative.

**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 |       | 0.051 |
| D    | 2.40  |      | 2.72  | 0.094 |       | 0.107 |
| D1   |       | 1.27 |       |       | 0.050 |       |
| 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 |       | 0.203 |
| G1   | 2.4   |      | 2.7   | 0.094 |       | 0.106 |
| H2   | 10.0  |      | 10.40 | 0.393 |       | 0.409 |
| L2   |       | 16.4 |       |       | 0.645 |       |
| L4   | 13.0  |      | 14.0  | 0.511 |       | 0.551 |
| L5   | 2.65  |      | 2.95  | 0.104 |       | 0.116 |
| L6   | 15.25 |      | 15.75 | 0.600 |       | 0.620 |
| L7   | 6.2   |      | 6.6   | 0.244 |       | 0.260 |
| L9   | 3.5   |      | 3.93  | 0.137 |       | 0.154 |
| DIA. | 3.75  |      | 3.85  | 0.147 |       | 0.151 |



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