

## MEDIUM POWER NPN SILICON TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTOR

### APPLICATIONS

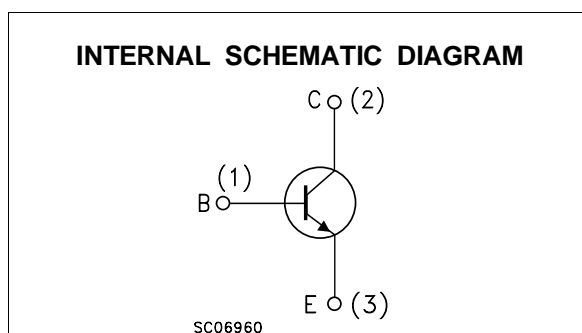
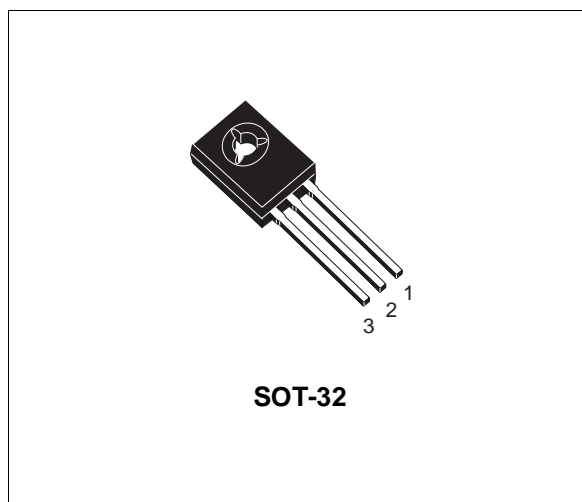
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

### DESCRIPTION

The 2N5191 and 2N5192 are silicon epitaxial-base NPN transistors in Jedec SOT-32 plastic package.

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

The complementary PNP type of 2N5192 is 2N5195.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter  | Value      |        | Unit             |
|-----------|--|------------|--------|------------------|
|           |  | 2N5191     | 2N5192 | Unit             |
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )             | 60         | 80     | 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                                | 4          |        | A                |
| $I_{CM}$  | Collector Peak Current                           | 7          |        | A                |
| $I_B$     | Base Current                                     | 1          |        | A                |
| $P_{tot}$ | Total Dissipation at $T_c \leq 25^\circ\text{C}$ | 40         |        | W                |
| $T_{stg}$ | Storage Temperature                              | -65 to 150 |        | $^\circ\text{C}$ |
| $T_j$     | Max. Operating Junction Temperature              | 150        |        | $^\circ\text{C}$ |

**THERMAL DATA**

|                       |                                     |     |      |      |
|-----------------------|-------------------------------------|-----|------|------|
| R <sub>thj-case</sub> | Thermal Resistance Junction-case    | Max | 3.12 | °C/W |
| R <sub>thj-amb</sub>  | Thermal Resistance Junction-ambient | Max | 100  | °C/W |

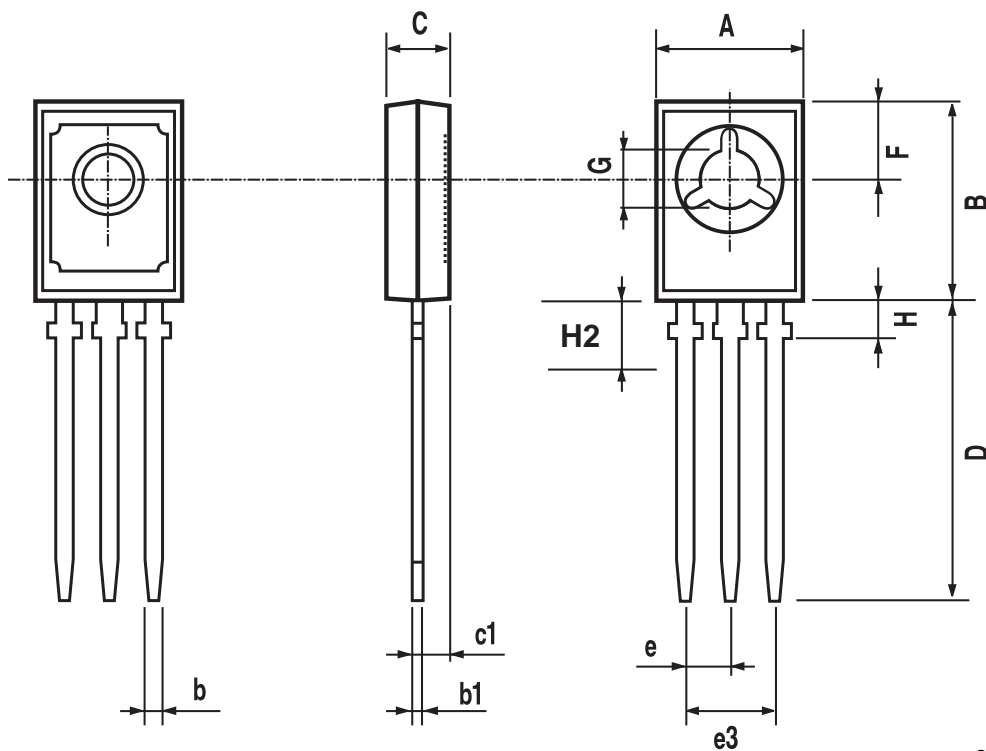
**ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol                 | Parameter   | Test Conditions  | Min.                | Typ. | Max.       | Unit     |
|------------------------|---|--|---------------------|------|------------|----------|
| I <sub>CBO</sub>       | Collector Cut-off Current (I <sub>E</sub> = 0)      | V <sub>CB</sub> = rated V <sub>CB0</sub>   |                     |      | 0.1        | mA       |
| I <sub>CEX</sub>       | Collector Cut-off Current (V <sub>BE</sub> = -1.5V) | V <sub>CE</sub> = rated V <sub>CEO</sub><br>V <sub>CE</sub> = rated V <sub>CEO</sub> T <sub>C</sub> = 125 °C   |                     |      | 0.1<br>2   | mA<br>mA |
| I <sub>CEO</sub>       | Collector Cut-off Current (I <sub>B</sub> = 0)      | V <sub>CE</sub> = rated V <sub>CEO</sub>   |                     |      | 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> = 100 mA<br>for <b>2N5191</b><br>for <b>2N5192</b>  | 60<br>80            |      |            | V<br>V   |
| V <sub>CE(sat)*</sub>  | Collector-Emitter Saturation Voltage                | I <sub>C</sub> = 1.5 A I <sub>B</sub> = 0.15 A<br>I <sub>C</sub> = 4 A I <sub>B</sub> = 1 A  |                     |      | 0.6<br>1.4 | V<br>V   |
| V <sub>BE*</sub>       | Base-Emitter Voltage                                | I <sub>C</sub> = 1.5 A V <sub>CE</sub> = 2 V   |                     |      | 1.2        | V        |
| h <sub>FE*</sub>       | DC Current Gain                                     | I <sub>C</sub> = 1.5 A V <sub>CE</sub> = 2 V<br>for <b>2N5191</b><br>for <b>2N5192</b><br>I <sub>C</sub> = 4 A V <sub>CE</sub> = 2 V<br>for <b>2N5191</b><br>for <b>2N5192</b> | 25<br>20<br>10<br>7 |      | 100<br>80  |          |
| f <sub>T</sub>         | Transition frequency                                | I <sub>C</sub> = 1 A V <sub>CE</sub> = 10 V  | 2                   |      |            | MHz      |

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

## SOT-32 (TO-126) MECHANICAL DATA

| DIM. | mm   |      |      | inch  |       |       |
|------|------|------|------|-------|-------|-------|
|      | MIN. | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A    | 7.4  |      | 7.8  | 0.291 |       | 0.307 |
| B    | 10.5 |      | 10.8 | 0.413 |       | 0.445 |
| b    | 0.7  |      | 0.9  | 0.028 |       | 0.035 |
| b1   | 0.49 |      | 0.75 | 0.019 |       | 0.030 |
| C    | 2.4  |      | 2.7  | 0.040 |       | 0.106 |
| c1   | 1.0  |      | 1.3  | 0.039 |       | 0.050 |
| D    | 15.4 |      | 16.0 | 0.606 |       | 0.629 |
| e    |      | 2.2  |      |       | 0.087 |       |
| e3   | 4.15 |      | 4.65 | 0.163 |       | 0.183 |
| F    |      | 3.8  |      |       | 0.150 |       |
| G    | 3    |      | 3.2  | 0.118 |       | 0.126 |
| H    |      |      | 2.54 |       |       | 0.100 |
| H2   |      | 2.15 |      |       | 0.084 |       |



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