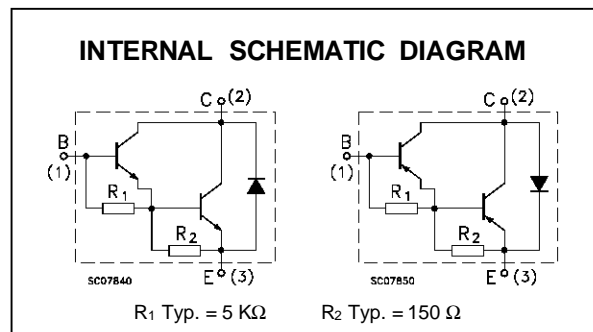
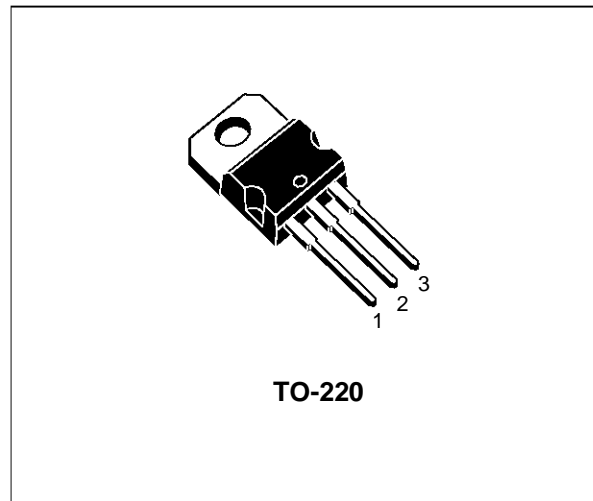


**COMPLEMENTARY SILICON POWER  
DARLINGTON TRANSISTORS**

- TIP131, TIP132, TIP135 AND TIP137 ARE SGS-THOMSON PREFERRED SALESTYPES

**DESCRIPTION**

The TIP130, TIP131 and TIP132 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration, mounted in Jedec TO-220 plastic package. They are intended for use in power linear and switching applications. The complementary PNP types are TIP135, TIP136 and TIP137.



**ABSOLUTE MAXIMUM RATINGS**

| Symbol           | Parameter  | Value |        |            |        | Unit   |
|------------------|--|-------|--------|------------|--------|--------|
|                  |  | NPN   | TIP130 | TIP131     | TIP132 |        |
|                  |  | PNP   | TIP135 | TIP136     | TIP137 |        |
| V <sub>CBO</sub> | Collector-Base Voltage (I <sub>E</sub> = 0)                                |       | 60     | 80         | 100    | V      |
| V <sub>CEO</sub> | Collector-Emitter Voltage (I <sub>B</sub> = 0)                             |       | 60     | 80         | 100    | V      |
| V <sub>EBO</sub> | Emitter-Base Voltage (I <sub>C</sub> = 0)                                  |       |        | 5          |        | V      |
| I <sub>C</sub>   | Collector Current  |       |        | 8          |        | A      |
| I <sub>CM</sub>  | Collector Peak Current   |       |        | 12         |        | A      |
| I <sub>B</sub>   | Base Current   |       |        | 0.3        |        | A      |
| P <sub>tot</sub> | Total Dissipation at T <sub>case</sub> ≤ 25 °C<br>T <sub>amb</sub> ≤ 25 °C |       |        | 70<br>2    |        | W<br>W |
| T <sub>stg</sub> | Storage Temperature  |       |        | -65 to 150 |        | °C     |
| T <sub>j</sub>   | Max. Operating Junction Temperature  |       |        | 150        |        | °C     |

\* For PNP types voltage and current values are negative.

## TIP130/TIP131/TIP132/TIP135/TIP136/TIP137

### THERMAL DATA

|                |                                     |     |      |               |
|----------------|-------------------------------------|-----|------|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case    | Max | 1.78 | $^{\circ}C/W$ |
| $R_{thj-amb}$  | Thermal Resistance Junction-ambient | Max | 63.5 | $^{\circ}C/W$ |

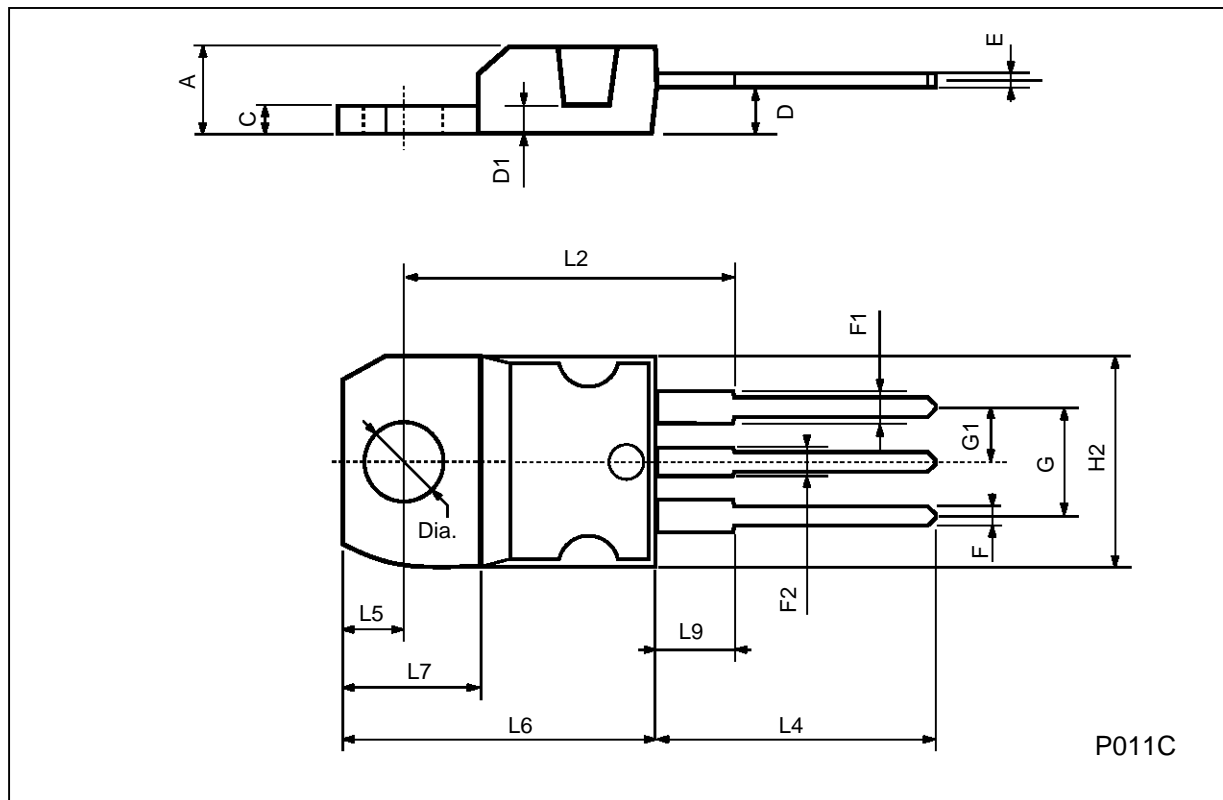
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

| Symbol           | Parameter  | Test Conditions  | Min.            | Typ. | Max.   | Unit        |
|------------------|--|--|-----------------|------|--------|-------------|
| $I_{CEO}$        | Collector Cut-off Current ( $I_B = 0$ )            | $V_{CE} = \text{Half Rates } V_{CEO}$  |                 |      | 0.5    | mA          |
| $I_{CBO}$        | Collector Cut-off Current ( $I_B = 0$ )            | $V_{CB} = \text{Half Rates } V_{CBO}$  |                 |      | 0.2    | mA          |
| $I_{EBO}$        | Emitter Cut-off Current ( $I_C = 0$ )              | $V_{EB} = 5 V$   |                 |      | 5      | mA          |
| $V_{CEO(sus)}^*$ | Collector-Emitter Sustaining Voltage ( $I_B = 0$ ) | $I_C = 30 \text{ mA}$<br>for <b>TIP130/135</b><br>for <b>TIP131/136</b><br>for <b>TIP132/137</b> | 60<br>80<br>100 |      |        | V<br>V<br>V |
| $V_{CE(sat)}^*$  | Collector-Emitter Saturation Voltage               | $I_C = 4 A$ $I_B = 16 \text{ mA}$<br>$I_C = 6 A$ $I_B = 30 \text{ mA}$                           |                 |      | 2<br>4 | V<br>V      |
| $V_{BE(on)}^*$   | Base-Emitter Voltage                               | $I_C = 4 A$ $V_{CE} = 4 V$   |                 |      | 2.5    | V           |
| $h_{FE}^*$       | DC Current Gain                                    | $I_C = 1 A$ $V_{CE} = 4 V$<br>$I_C = 4 A$ $V_{CE} = 4 V$   | 500<br>1000     |      | 15000  |             |

\* 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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