

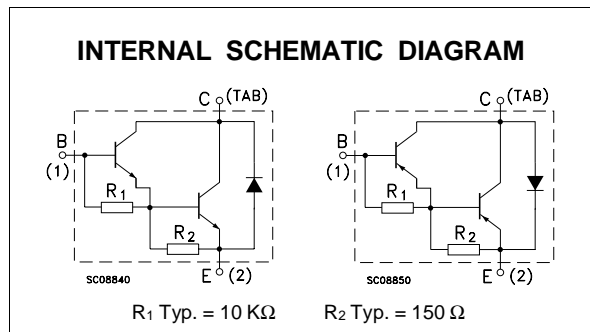
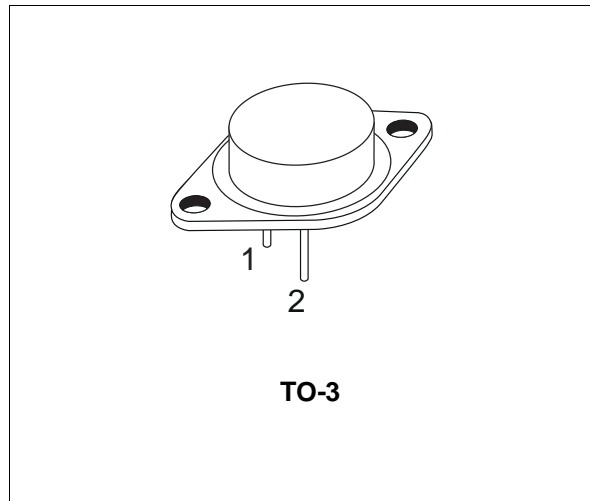
## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

■ SGS-THOMSON PREFERRED SALESTYPES

**DESCRIPTION**

The MJ2501 is a silicon epitaxial-base PNP power transistors in monolithic Darlingtion configuration and are mounted in Jedec TO-3 metal case. They are intended for use in power linear and switching applications.

The complementary NPN type is the MJ3001.



**ABSOLUTE MAXIMUM RATINGS**

| Symbol           | Parameter                                      | Value |            | Unit |
|------------------|--|-------|------------|------|
|                  |  | PNP   | MJ2501     |      |
|                  |  | NPN   | MJ3001     |      |
| V <sub>CBO</sub> | Collector-base Voltage (I <sub>E</sub> = 0)    |       | 80         | V    |
| V <sub>CEO</sub> | Collector-emitter Voltage (I <sub>B</sub> = 0) |       | 80         | V    |
| V <sub>EBO</sub> | Emitter-base Voltage (I <sub>C</sub> = 0)      |       | 5          | V    |
| I <sub>C</sub>   | Collector Current                              |       | 10         | A    |
| I <sub>B</sub>   | Base Current                                   |       | 0.2        | A    |
| P <sub>tot</sub> | Total Dissipation at T <sub>c</sub> ≤ 25 °C    |       | 150        | W    |
| T <sub>stg</sub> | Storage Temperature                            |       | -65 to 200 | °C   |
| T <sub>j</sub>   | Max. Operating Junction Temperature            |       | 200        | °C   |

For PNP types voltage and current values are negative.

**THERMAL DATA**

|                |                                  |     |      |      |
|----------------|----------------------------------|-----|------|------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 1.17 | °C/W |
|----------------|----------------------------------|-----|------|------|

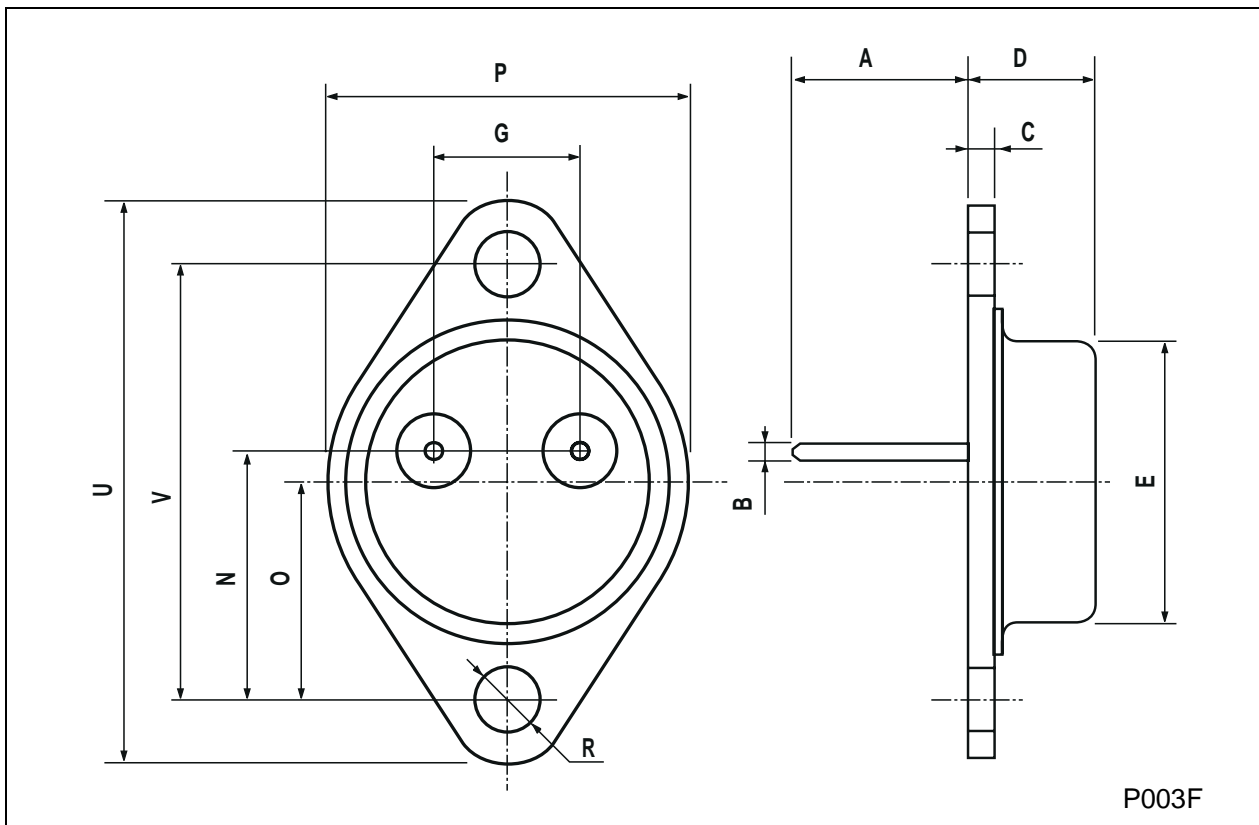
**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25\text{ °C}$  unless otherwise specified)

| Symbol          | Parameter   | Test Conditions                                      | Min. | Typ. | Max.   | Unit     |
|-----------------|---|--|------|------|--------|----------|
| $I_{CER}$       | Collector Cut-off Current ( $R_{BE} = 1\text{ K}\Omega$ ) | $V_{CE} = 80\text{ V}$<br>$T_{case} = 150\text{ °C}$ |      |      | 1      | mA       |
|                 |   | $V_{CE} = 80\text{ V}$                               |      |      | 5      | mA       |
| $I_{CEO}$       | Collector Cut-off Current ( $I_B = 0$ )                   | $V_{CE} = 30\text{ V}$<br>$V_{CE} = 40\text{ V}$     |      |      | 1<br>1 | mA<br>mA |
| $I_{EBO}$       | Emitter Cut-off Current ( $I_C = 0$ )                     | $V_{EB} = 5\text{ V}$                                |      |      | 2      | mA       |
| $V_{CEO(sus)*}$ | Collector-Emitter Sustaining Voltage ( $I_B = 0$ )        | $I_C = 100\text{ mA}$                                | 80   |      |        | V        |
| $V_{CE(sat)*}$  | Collector-emitter Saturation Voltage                      | $I_C = 5\text{ A}$ $I_B = 20\text{ mA}$              |      |      | 2      | V        |
|                 |   | $I_C = 10\text{ A}$ $I_B = 50\text{ mA}$             |      |      | 4      | V        |
| $V_{BE*}$       | Base-emitter Voltage                                      | $I_C = 5\text{ A}$ $V_{CE} = 3\text{ V}$             |      |      | 3      | V        |
| $h_{FE*}$       | DC Current Gain   | $I_C = 5\text{ A}$ $V_{CE} = 3\text{ V}$             | 1000 |      |        |          |

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

**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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