

## HIGH POWER NPN SILICON TRANSISTOR

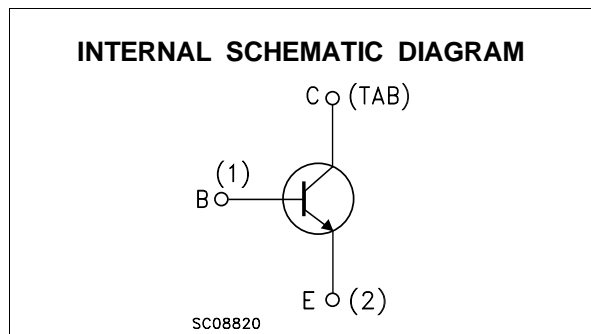
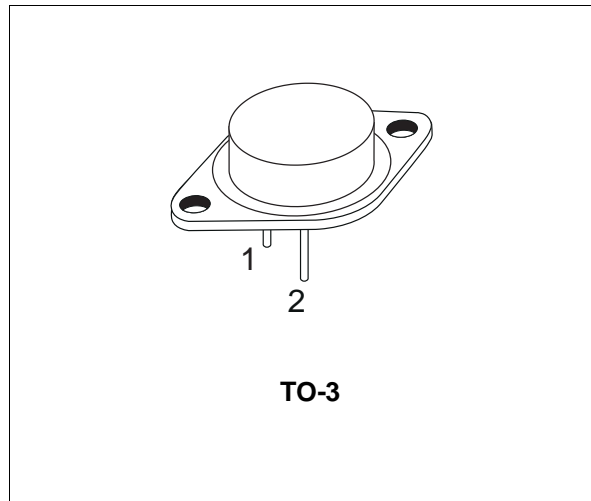
- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED

### APPLICATIONS

- MOTOR CONTROL
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

### DESCRIPTION

The BUX10 is a silicon multiepitaxial planar NPN transistor in Jedec TO-3 metal case, intended for use in switching and linear applications in military and industrial equipment.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter  | Value      | Unit |
|-----------|--|------------|------|
| $V_{CBO}$ | Collector-base Voltage ( $I_E = 0$ )             | 160        | V    |
| $V_{CEX}$ | Collector-emitter Voltage ( $V_{BE} = -1.5V$ )   | 160        | V    |
| $V_{CEO}$ | Collector-emitter Voltage ( $I_B = 0$ )          | 125        | V    |
| $V_{EBO}$ | Emitter-base Voltage ( $I_C = 0$ )               | 7          | V    |
| $I_C$     | Collector Current                                | 25         | A    |
| $I_{CM}$  | Collector Peak Current ( $t_P = 10$ ms)          | 30         | A    |
| $I_B$     | Base Current                                     | 5          | A    |
| $P_{tot}$ | Total Power Dissipation at $T_{case} \leq 25$ °C | 150        | W    |
| $T_{stg}$ | Storage Temperature                              | -65 to 200 | °C   |
| $T_j$     | Max Operating Junction Temperature               | 200        | °C   |

## BUX10

### THERMAL DATA

|                       |                                  |     |      |      |
|-----------------------|----------------------------------|-----|------|------|
| R <sub>thj-case</sub> | Thermal Resistance Junction-case | Max | 1.17 | °C/W |
|-----------------------|----------------------------------|-----|------|------|

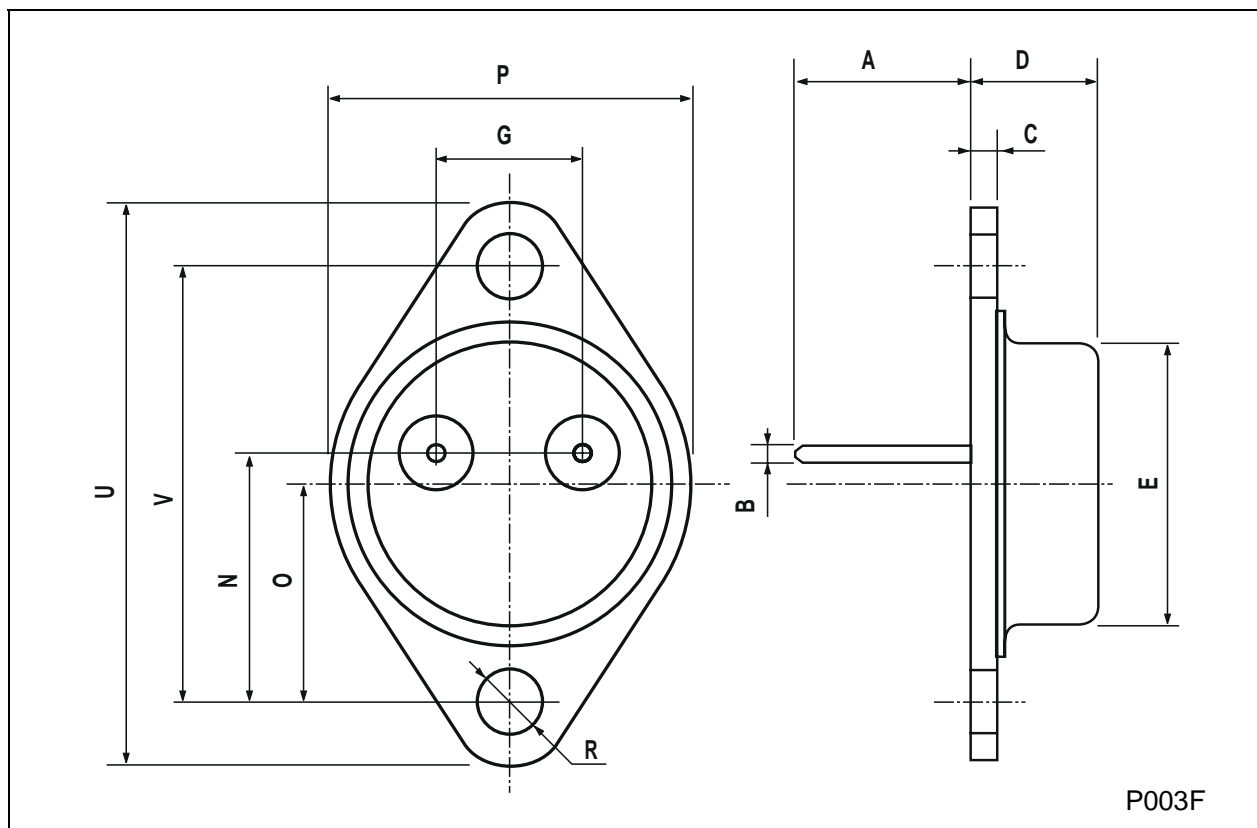
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol                           | Parameter                                      | Test Conditions  | Min.               | Typ.       | Max.        | Unit                   |
|----------------------------------|--|--|--------------------|------------|-------------|------------------------|
| I <sub>CEO</sub>                 | Collector Cut-off Current (I <sub>B</sub> = 0) | V <sub>CE</sub> = 100 V  |                    |            | 1.5         | mA                     |
| I <sub>CEX</sub>                 | Collector Cut-off Current                      | V <sub>CE</sub> = 160 V<br>T <sub>case</sub> = 125 °C<br>V <sub>CE</sub> = 160 V |                    |            | 1.5<br>6    | mA<br>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  | 125                |            |             | V                      |
| V <sub>EBO</sub>                 | Emitter-Base Voltage (I <sub>C</sub> = 0)      | I <sub>E</sub> = 50 mA   | 7                  |            |             | V                      |
| V <sub>CE(sat)*</sub>            | Collector-Emitter Saturation Voltage           | I <sub>C</sub> = 10 A<br>I <sub>C</sub> = 20 A                                   |                    | 0.3<br>0.7 | 0.6<br>1.2  | V<br>V                 |
| V <sub>BE(sat)*</sub>            | Base-Emitter Saturation Voltage                | I <sub>C</sub> = 20 A  |                    | 1.6        | 2           | V                      |
| h <sub>FE</sub>                  | DC Current Gain                                | I <sub>C</sub> = 10 A<br>I <sub>C</sub> = 20 A                                   | 20<br>10           |            | 60          |                        |
| I <sub>S/b</sub>                 | Second Breakdown Collector Current             | V <sub>CE</sub> = 30 V<br>V <sub>CE</sub> = 48 V                                 | t = 1 s<br>t = 1 s | 5<br>1     |             | A<br>A                 |
| f <sub>T</sub>                   | Transistor Frequency                           | I <sub>C</sub> = 1 A<br>f = 10MHz  |                    | 8          |             | MHz                    |
| t <sub>on</sub>                  | Turn-on Time                                   | I <sub>C</sub> = 20 A<br>V <sub>CC</sub> = 30V                                   |                    |            | 0.5<br>1.5  | μs<br>μs               |
| t <sub>s</sub><br>t <sub>f</sub> | Storage Time<br>Fall Time                      | I <sub>C</sub> = 20 A<br>V <sub>CC</sub> = 30V                                   |                    |            | 0.6<br>0.15 | 1.2<br>0.3<br>μs<br>μs |
|                                  | Clamped E <sub>s/b</sub><br>Collector Current  | V <sub>clamp</sub> = 125 V<br>L = 500 μH   | 20                 |            |             | A                      |

\* Pulsed: Pulse duration = 300μs, duty cycle ≤ 2 %

**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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