



## HIGH VOLTAGE NPN SILICON POWER TRANSISTORS

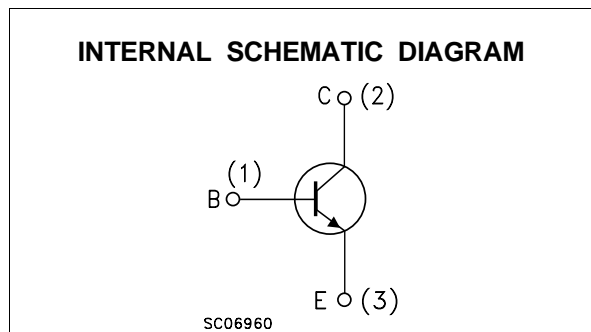
- STMicroelectronics PREFERRED SALESTYPES
- NPN TRANSISTORS
- HIGH VOLTAGE CAPABILITY
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- FAST SWITCHING SPEED

### APPLICATIONS

- GENERAL PURPOSE SWITCHING
- SWITCH MODE POWER SUPPLIES
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING

### DESCRIPTION

The devices are silicon Multiepitaxial Mesa NPN transistors in the Jedec TO-220 plastic package intended for high voltage, fast switching applications.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter   | Value      |        | Unit             |
|-----------|---|------------|--------|------------------|
|           |   | BUV46      | BUV46A |                  |
| $V_{CES}$ | Collector-Emitter Voltage ( $V_{BE} = 0$ )            | 850        | 1000   | V                |
| $V_{CEX}$ | Collector-Emitter Voltage ( $V_{BE} = -2.5V$ )        | 850        | 1000   | V                |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )               | 400        | 450    | V                |
| $V_{EBO}$ | Emitter-Base Voltage ( $I_C = 0$ )                    | 7          |        | V                |
| $I_C$     | Collector Current                                     | 5          |        | A                |
| $I_B$     | Base Current  | 3          |        | A                |
| $P_{tot}$ | Total Dissipation at $T_c = 25\text{ }^\circ\text{C}$ | 70         |        | W                |
| $T_{stg}$ | Storage Temperature                                   | -65 to 150 |        | $^\circ\text{C}$ |
| $T_j$     | Max. Operating Junction Temperature                   | 150        |        | $^\circ\text{C}$ |

## BUV46 / BUV46A

### THERMAL DATA

|                       |                                  |     |      |      |
|-----------------------|----------------------------------|-----|------|------|
| R <sub>thj-case</sub> | Thermal Resistance Junction-Case | Max | 1.76 | °C/W |
|-----------------------|----------------------------------|-----|------|------|

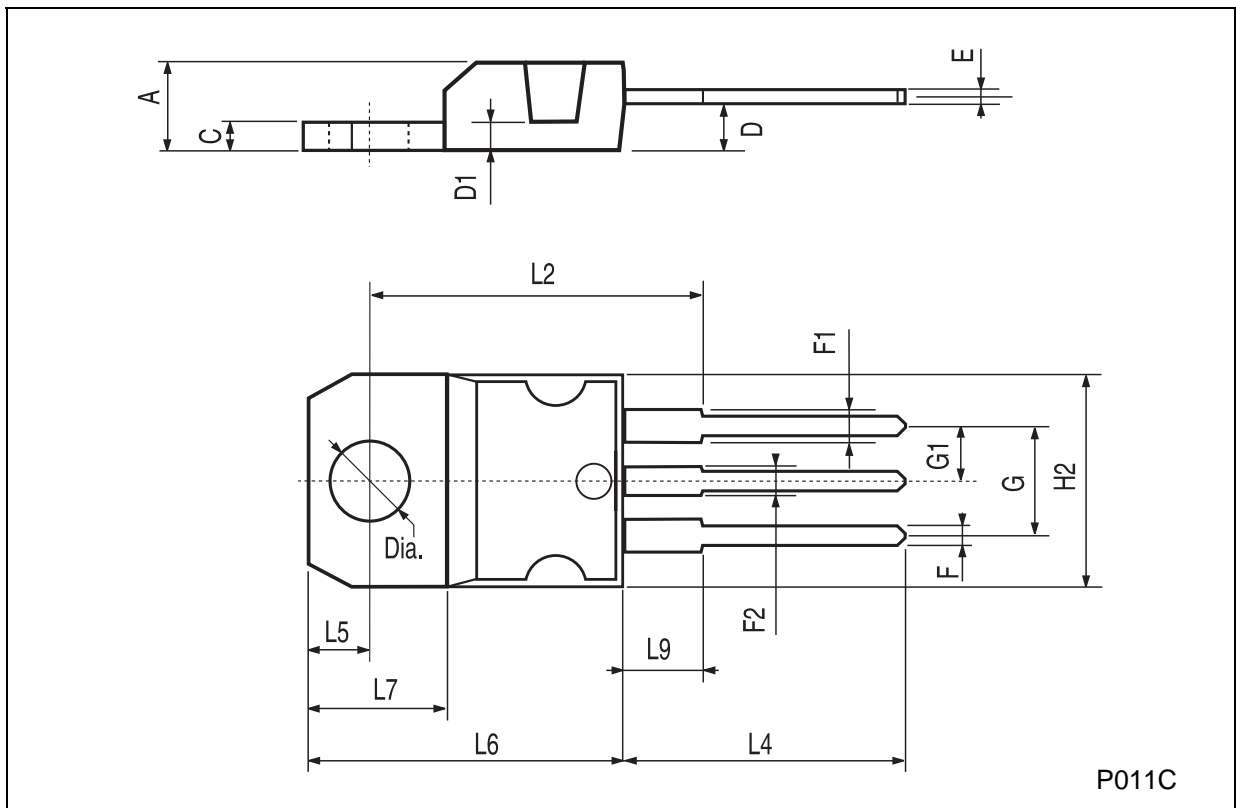
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol  | Parameter   | Test Conditions   | Min.       | Typ. | Max.                 | Unit             |
|---|---|---|------------|------|----------------------|------------------|
| I <sub>CEr</sub>                                    | Collector Cut-off Current (R <sub>BE</sub> = 10Ω)           | V <sub>CE</sub> = V <sub>CEx</sub><br>V <sub>CE</sub> = V <sub>CEx</sub> T <sub>C</sub> = 125 °C  |            |      | 0.1<br>1             | mA<br>mA         |
| I <sub>CEx</sub>                                    | Collector Cut-off Current                                   | V <sub>CE</sub> = V <sub>CEx</sub> V <sub>BE</sub> = -2.5 V<br>V <sub>CE</sub> = V <sub>CEx</sub> V <sub>BE</sub> = -2.5 V T <sub>C</sub> = 125 °C  |            |      | 0.3<br>2             | mA               |
| I <sub>EBO</sub>                                    | Emitter Cut-off Current (I <sub>C</sub> = 0)                | V <sub>BE</sub> = 7 V   |            |      | 1                    | mA               |
| V <sub>CEO(sus)*</sub>                              | Collector-Emitter Sustaining Voltage                        | I <sub>C</sub> = 100 mA for <b>BUV46</b><br>for <b>BUV46A</b>   | 400<br>450 |      |                      | V<br>V           |
| V <sub>CE(sat)*</sub>                               | Collector-Emitter Saturation Voltage                        | for <b>BUV46</b><br>I <sub>C</sub> = 2.5 A I <sub>B</sub> = 0.5 A<br>I <sub>C</sub> = 3.5 A I <sub>B</sub> = 0.7 A<br>for <b>BUV46A</b><br>I <sub>C</sub> = 2 A I <sub>B</sub> = 0.4 A<br>I <sub>C</sub> = 3 A I <sub>B</sub> = 0.6 A |            |      | 1.5<br>5<br>1.5<br>5 | V<br>V<br>V<br>V |
| V <sub>BE(sat)*</sub>                               | Base-Emitter Saturation Voltage                             | for <b>BUV46</b><br>I <sub>C</sub> = 2.5 A I <sub>B</sub> = 0.5 A<br>for <b>BUV46A</b><br>I <sub>C</sub> = 2 A I <sub>B</sub> = 0.4 A   |            |      | 1.3<br>1.3           | V<br>V           |
| t <sub>on</sub><br>t <sub>s</sub><br>t <sub>f</sub> | RESISTIVE LOAD<br>Turn-on Time<br>Storage Time<br>Fall Time | for <b>BUV46</b><br>I <sub>C</sub> = 2.5 A V <sub>CC</sub> = 150 V<br>I <sub>B1</sub> = - I <sub>B2</sub> = 0.5 A   |            |      | 1<br>3<br>0.8        | μs<br>μs<br>μs   |
| t <sub>on</sub><br>t <sub>s</sub><br>t <sub>f</sub> | RESISTIVE LOAD<br>Turn-on Time<br>Storage Time<br>Fall Time | for <b>BUV46A</b><br>I <sub>C</sub> = 2 A V <sub>CC</sub> = 150 V<br>I <sub>B1</sub> = - I <sub>B2</sub> = 0.4 A  |            |      | 1<br>3<br>0.8        | μs<br>μs<br>μs   |

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

**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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