

## HIGH POWER NPN SILICON TRANSISTOR

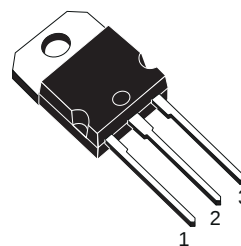
- SGS-THOMSON PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH VOLTAGE CAPABILITY
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED

### APPLICATIONS

- HIGH FREQUENCY AND EFFICIENCY CONVERTERS
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

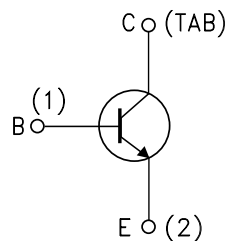
### DESCRIPTION

The BUX98AP is a silicon multiepitaxial mesa NPN transistor in jedec TO-218 plastic package, intended for use in industrial applications from single and three-phase mains operation.



TO-218 (SOT-93)

### INTERNAL SCHEMATIC DIAGRAM



SC08820

### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter                                                | Value      | Unit             |
|-----------|----------------------------------------------------------|------------|------------------|
| $V_{CER}$ | Collector-Emitter Voltage ( $R_{BE} \leq 10 \Omega$ )    | 1000       | V                |
| $V_{CES}$ | Collector-Base Voltage ( $V_{BE} = 0$ )                  | 1000       | V                |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )                  | 450        | V                |
| $V_{EBO}$ | Emitter-Base Voltage ( $I_C = 0$ )                       | 7          | V                |
| $I_C$     | Collector Current                                        | 24         | A                |
| $I_{CM}$  | Collector Peak Current ( $t_p < 5$ ms)                   | 36         | A                |
| $I_B$     | Base Current                                             | 5          | A                |
| $I_{BM}$  | Base Peak Current ( $t_p < 5$ ms)                        | 8          | A                |
| $P_{tot}$ | Total Power Dissipation at $T_{case} < 25^\circ\text{C}$ | 200        | 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 | 0.63 | °C/W |
|-----------------------|----------------------------------|-----|------|------|

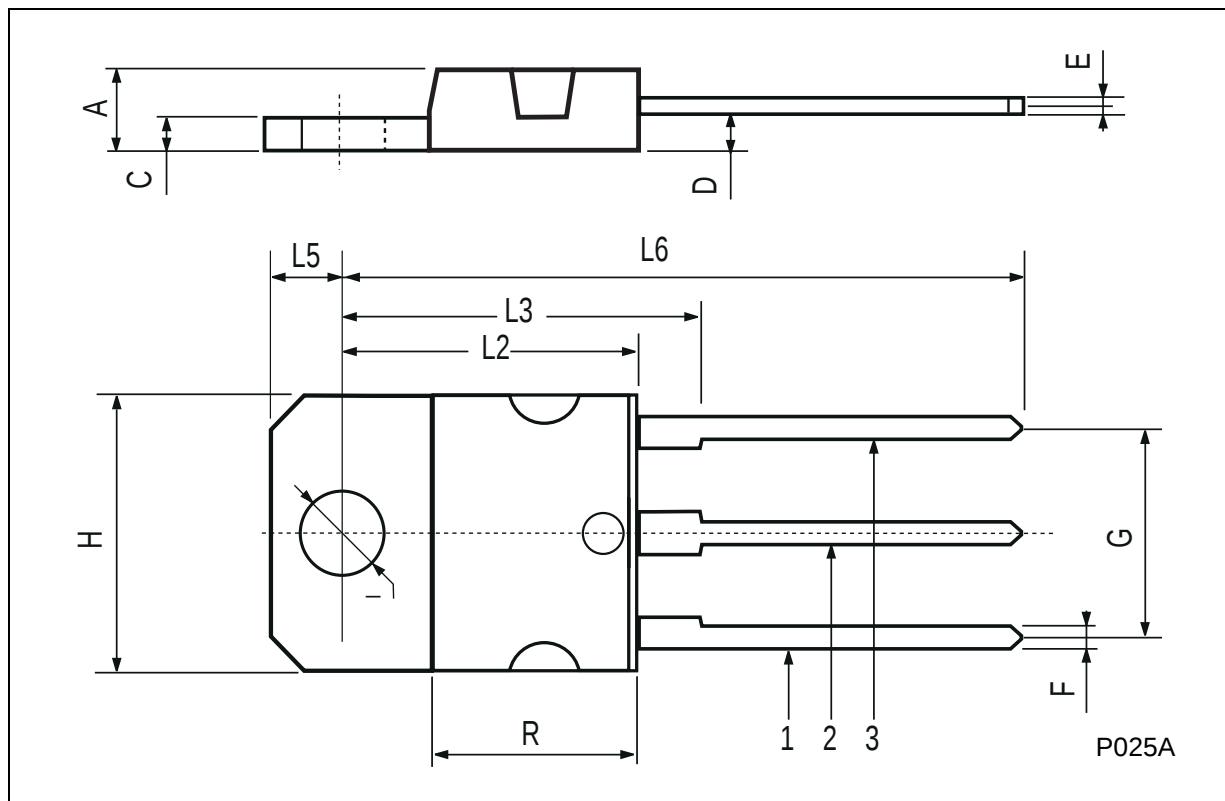
**ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol                 | Parameter                                          | Test Conditions                                                                                     | Min. | Typ. | Max.     | Unit     |
|------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------|------|------|----------|----------|
| I <sub>CER</sub>       | Collector Cut-off Current (R <sub>BE</sub> = 10 Ω) | V <sub>CE</sub> = V <sub>CES</sub><br>V <sub>CE</sub> = V <sub>CES</sub> T <sub>CASE</sub> = 125 °C |      |      | 1<br>8   | μA<br>mA |
| I <sub>CES</sub>       | Collector Cut-off Current (V <sub>BE</sub> = 0 )   | V <sub>CE</sub> = V <sub>CES</sub><br>V <sub>CE</sub> = V <sub>CES</sub> T <sub>CASE</sub> = 125 °C |      |      | 400<br>4 | μA<br>mA |
| I <sub>CEO</sub>       | Collector Cut-off Current (I <sub>B</sub> = 0)     | V <sub>CE</sub> = V <sub>CEO</sub>                                                                  |      |      | 2        | mA       |
| I <sub>EBO</sub>       | Emitter Cut-off Current (I <sub>C</sub> = 0)       | V <sub>EB</sub> = 5 V                                                                               |      |      | 2        | mA       |
| V <sub>CEO(sus)*</sub> | Collector-Emitter Sustaining Voltage               | I <sub>C</sub> = 200 mA                                                                             | 450  |      |          | V        |
| V <sub>CER(sus)*</sub> | Collector-Emitter Sustaining Voltage               | L = 2mH I <sub>C</sub> = 1 A                                                                        | 1000 |      |          | V        |
| V <sub>CE(sat)*</sub>  | Collector-Emitter Saturation Voltage               | I <sub>C</sub> = 16 A I <sub>B</sub> = 3.2 A                                                        |      |      | 1.2      | V        |
| V <sub>BE(sat)*</sub>  | Base-Emitter Saturation Voltage                    | I <sub>C</sub> = 16 A I <sub>B</sub> = 3.2 A                                                        |      |      | 1.5      | V        |
| t <sub>on</sub>        | Turn-on Time                                       | V <sub>CC</sub> = 150 V I <sub>C</sub> = 20 A<br>I <sub>B1</sub> = - I <sub>B2</sub> = 4 A          |      |      | 1        | μs       |
| t <sub>s</sub>         | Storage Time                                       |                                                                                                     |      |      | 3        | μs       |
| t <sub>f</sub>         | Fall Time                                          |                                                                                                     |      |      | 0.8      | μs       |
| t <sub>on</sub>        | Turn-on Time                                       | V <sub>CC</sub> = 150 V I <sub>C</sub> = 16 A<br>I <sub>B1</sub> = - I <sub>B2</sub> = 3.2 A        |      |      | 1        | μs       |
| t <sub>s</sub>         | Storage Time                                       |                                                                                                     |      |      | 3        | μs       |
| t <sub>f</sub>         | Fall Time                                          |                                                                                                     |      |      | 0.8      | μs       |

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

## TO-218 (SOT-93) MECHANICAL DATA

| DIM. | mm   |      |      | inch  |       |       |
|------|------|------|------|-------|-------|-------|
|      | MIN. | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A    | 4.7  |      | 4.9  | 0.185 |       | 0.193 |
| C    | 1.17 |      | 1.37 | 0.046 |       | 0.054 |
| D    |      | 2.5  |      |       | 0.098 |       |
| E    | 0.5  |      | 0.78 | 0.019 |       | 0.030 |
| F    | 1.1  |      | 1.3  | 0.043 |       | 0.051 |
| G    | 10.8 |      | 11.1 | 0.425 |       | 0.437 |
| H    | 14.7 |      | 15.2 | 0.578 |       | 0.598 |
| L2   | –    |      | 16.2 | –     |       | 0.637 |
| L3   |      | 18   |      |       | 0.708 |       |
| L5   | 3.95 |      | 4.15 | 0.155 |       | 0.163 |
| L6   |      | 31   |      |       | 1.220 |       |
| R    | –    |      | 12.2 | –     |       | 0.480 |
| Ø    | 4    |      | 4.1  | 0.157 |       | 0.161 |



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