

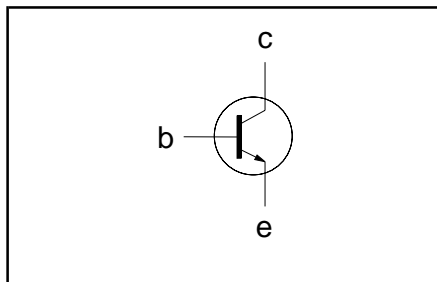
NPN high voltage Power transistor

BUX84S

FEATURES

- Fast switching
- Excellent thermal stability
- High thermal cycling performance
- Low thermal resistance
- Surface mounting package

SYMBOL



QUICK REFERENCE DATA

| |
|--|
| $V_{CESM} = 800\text{ V}$ |
| $V_{CEO} = 400\text{ V}$ |
| $I_C = 2\text{ A}$ |
| $V_{CE(SAT)} \leq 1\text{ V} (I_C = 1\text{ A})$ |
| $t_f = 0.4\text{ }\mu\text{s (typ)}$ |

GENERAL DESCRIPTION

High voltage, high speed glass passivated NPN power transistor in a plastic package.

Applications:-

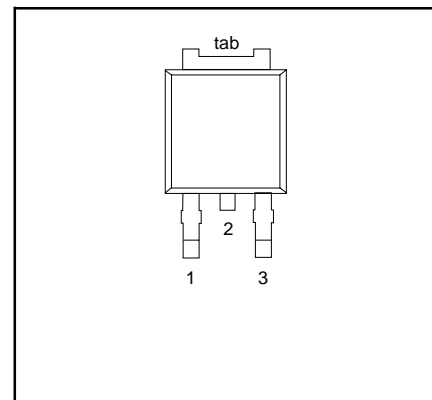
- Off-line SMPS
- TV and monitor power supplies
- Inverters
- Electronic lighting ballasts

The BUX84S is supplied in the SOT428 (DPAK) surface mounting package.

PINNING

| PIN | DESCRIPTION |
|-----|------------------------|
| 1 | base |
| 2 | collector ¹ |
| 3 | emitter |
| 4 | collector (tab) |

SOT428



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|----------------|---|-------------------------------------|------|------|------------------|
| V_{CESM} | Collector-emitter voltage (peak value) | $V_{BE} = 0\text{ V}$ | - | 800 | V |
| V_{CEO} | Collector-emitter voltage (DC) | base open circuit | - | 400 | V |
| V_{EBO} | Emitter-base voltage | collector open circuit | - | 5 | V |
| I_C | Collector current (DC) | | - | 2 | A |
| I_{CM} | Collector current (peak value) | $t_p = 2\text{ ms}$ | - | 3 | A |
| I_B | Base current (DC) | | - | 0.75 | A |
| I_{BM} | Base current (peak value) | | - | 1 | A |
| $-I_{BM}$ | Reverse base current (peak value during turn-off) | | - | 1 | A |
| P_{tot} | Total power dissipation | $T_{mb} = 25\text{ }^\circ\text{C}$ | - | 50 | W |
| T_j, T_{stg} | Operating junction and storage temperature | | - 65 | 150 | $^\circ\text{C}$ |

¹ It is not possible to make connection to pin:2 of the SOT428 package.

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THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|----------------|--|---|------|------|------|------|
| $R_{th\ j-mb}$ | Thermal resistance junction to mounting base | | - | - | 2.5 | K/W |
| $R_{th\ j-a}$ | Thermal resistance junction to ambient | pcb mounted, FR4 board, minimum footprint | - | 50 | - | K/W |

ELECTRICAL CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise specified

For characteristic curves, refer to BUX84 data sheet.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-----------------|--------------------------------------|---|----------|---------|------------|---------------------|
| $V_{CEO(sust)}$ | Collector-emitter sustaining voltage | $I_C = 100\text{ mA}; I_{B(OFF)} = 0\text{ A}; L = 25\text{ mH}$ | 400 | - | - | V |
| $V_{CE(SAT)}$ | Collector-emitter saturation voltage | $I_C = 0.3\text{ A}; I_B = 30\text{ mA}$ $I_C = 1\text{ A}; I_B = 0.2\text{ A}$ | - | - | 0.8 1 | V V |
| $V_{BE(SAT)}$ | Base-emitter saturation voltage | $I_C = 1\text{ A}; I_B = 0.2\text{ A}$ | - | - | 1.1 | V |
| I_{CES} | Collector-emitter cut-off current | $V_{CEM} = 800\text{ V}; V_{BE} = 0\text{ V}$ $V_{CEM} = 800\text{ V}; V_{BE} = 0\text{ V}; T_j = 125^\circ\text{C}$ | - | - | 200 1.5 | μA mA |
| I_{EBO} | Emitter-base cut-off current | $V_{EB} = 5\text{ V}; I_C = 0\text{ A}$ | - | - | 1 | mA |
| h_{FE} | DC current gain | $V_{CE} = 5\text{ V}; I_C = 5\text{ mA}$ $V_{CE} = 5\text{ V}; I_C = 100\text{ mA}$ | 15 20 | - 50 | - 100 | |
| f_T | Transition frequency | $V_{CE} = 10\text{ V}; I_C = 200\text{ mA}; f = 1\text{ MHz}$ | - | 20 | - | MHz |
| t_{on} | Turn-on time | $I_{C(on)} = 1\text{ A}; I_{B(on)} = 200\text{ mA}; I_{B(off)} = -400\text{ mA};$ $V_{CC} = 250\text{ V}$ | - | 0.2 | 0.5 | μs |
| t_f | Fall time | $T_j = 25^\circ\text{C}$ | - | 0.4 | - | μs |
| t_s | Storage time | $T_j = 95^\circ\text{C}$ | - | - | 1.4 | μs |
| | | | - | 2 | 3.5 | μs |

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MECHANICAL DATA

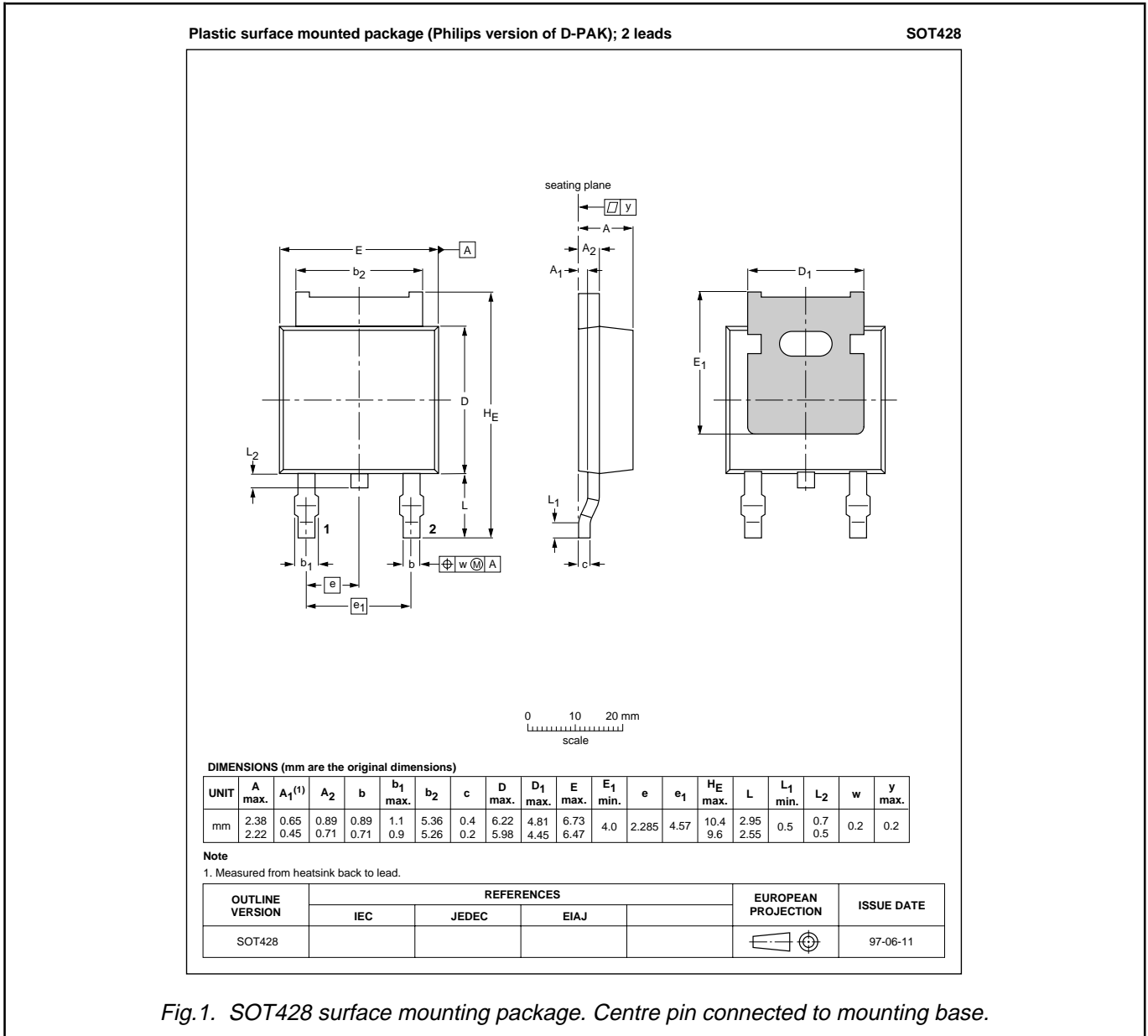


Fig.1. SOT428 surface mounting package. Centre pin connected to mounting base.

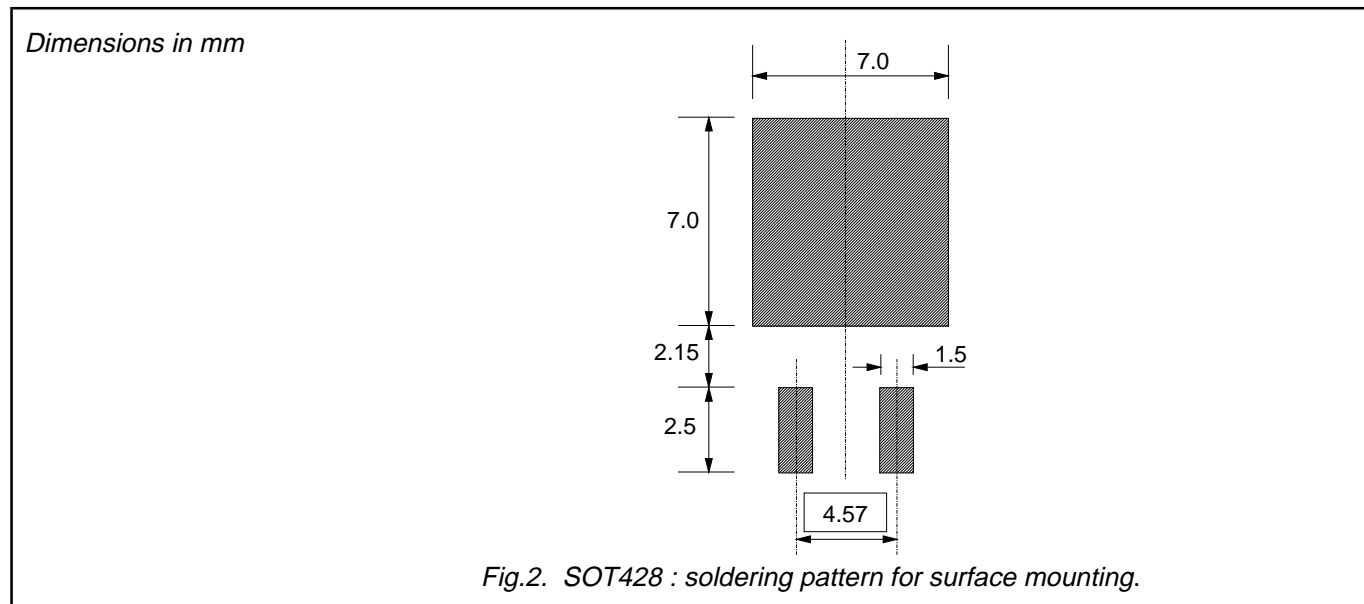
Notes

1. This product is supplied in anti-static packaging. The gate-source input must be protected against static discharge during transport or handling.
2. Refer to SMD Footprint Design and Soldering Guidelines, Data Handbook SC18.
3. Epoxy meets UL94 V0 at 1/8".

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MOUNTING INSTRUCTIONS



DEFINITIONS

| | |
|--|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |
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