

## 1. General description

Dual common cathode power Schottky diode designed for high frequency switched mode power supplies in a TO220F "full pack" plastic package.



## 2. Features and benefits

- Trench structure
- High junction temperature up to 150°C
- Low forward voltage drop
- Negligible switching losses
- High efficiency

## 3. Applications

- DC to DC converters
- Freewheeling diode
- OR-ing diode

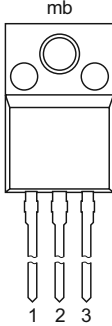
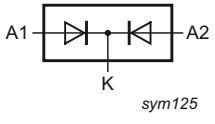
## 4. Quick reference data

Table 1. Quick reference data

| Symbol                         | Parameter                       | Conditions  | Values |      |      | Unit          |
|--------------------------------|---------------------------------|---|--------|------|------|---------------|
| <b>Absolute maximum rating</b> |                                 |   |        |      |      |               |
| $V_{RRM}$                      | repetitive peak reverse voltage |   | 100    |      |      | V             |
| $I_{F(AV)}$                    | average forward current         | $\delta = 0.5$ ; square-wave pulse; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a> | 15     |      |      | A             |
| $I_{O(AV)}$                    | average output current          | $\delta = 0.5$ ; square-wave pulse; both diodes conducting  | 30     |      |      | A             |
| Symbol                         | Parameter                       | Conditions  | Min    | Typ  | Max  | Unit          |
| <b>Static characteristics</b>  |                                 |   |        |      |      |               |
| $V_F$                          | forward voltage                 | $I_F = 10\text{ A}$ ; $T_j = 25\text{ °C}$ ; per diode; <a href="#">Fig. 6</a>  | -      | 0.58 | 0.63 | V             |
|                                |                                 | $I_F = 10\text{ A}$ ; $T_j = 125\text{ °C}$ ; per diode; <a href="#">Fig. 6</a>   | -      | 0.55 | 0.6  | V             |
|                                |                                 | $I_F = 15\text{ A}$ ; $T_j = 25\text{ °C}$ ; per diode; <a href="#">Fig. 6</a>  | -      | 0.66 | 0.71 | V             |
|                                |                                 | $I_F = 15\text{ A}$ ; $T_j = 125\text{ °C}$ ; per diode; <a href="#">Fig. 6</a>   | -      | 0.62 | 0.67 | V             |
| $I_R$                          | reverse current                 | $V_R = 100\text{ V}$ ; $T_j = 25\text{ °C}$ ; per diode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>                | -      | -    | 50   | $\mu\text{A}$ |
|                                |                                 | $V_R = 100\text{ V}$ ; $T_j = 125\text{ °C}$ ; per diode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>               | -      | -    | 30   | mA            |

## 5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description             | Simplified outline  | Graphic symbol  |
|-----|--------|-------------------------|---|---|
| 1   | A1     | anode 1                 |  |  |
| 2   | K      | cathode                 |   |   |
| 3   | A2     | anode 2                 |   |   |
| mb  | n.c.   | mounting base; isolated |   |   |

## 6. Ordering information

Table 3. Ordering information

| Type number  | Package name | Orderable part number | Packing method | Small packing quantity | Package version | Package issue date |
|--------------|--------------|-----------------------|----------------|------------------------|-----------------|--------------------|
| WN3S30H100CX | TO220F       | WN3S30H100CXQ         | Tube           | 50                     | SOT186A         | 14-Nov-2013        |

## 7. Marking

Table 4. Marking codes

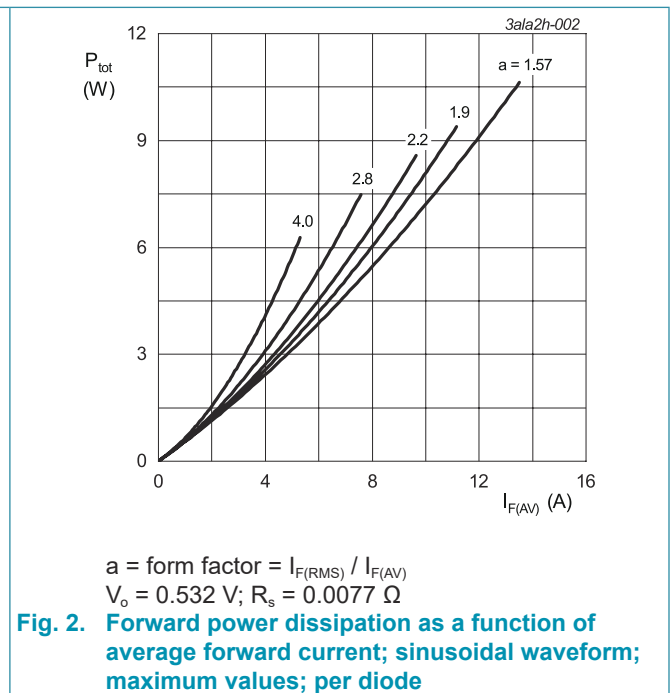
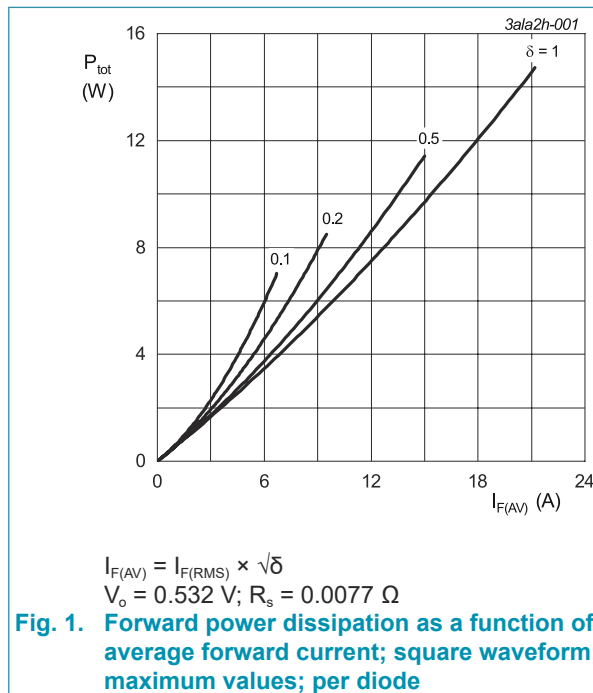
| Type number  | Marking codes    |
|--------------|------------------|
| WN3S30H100CX | WN3S<br>30H100CX |

## 8. Limiting values

**Table 5. Limiting values**

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol      | Parameter                           | Conditions  | Values     | Unit |
|-------------|-------------------------------------|---|------------|------|
| $V_{RRM}$   | repetitive peak reverse voltage     |   | 100        | V    |
| $V_{RWM}$   | crest working reverse voltage       |   | 100        | V    |
| $V_R$       | reverse voltage                     | DC  | 100        | V    |
| $I_{F(AV)}$ | average forward current             | $\delta = 0.5$ ; square-wave pulse; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a> | 15         | A    |
| $I_{O(AV)}$ | average output current              | $\delta = 0.5$ ; square-wave pulse; both diodes conducting  | 30         | A    |
| $I_{FSM}$   | non-repetitive peak forward current | $t_p = 10$ ms; $T_{j(\text{init})} = 25$ °C; sine-wave pulse; per diode; <a href="#">Fig. 4</a>                         | 330        | A    |
|             |                                     | $t_p = 8.3$ ms; $T_{j(\text{init})} = 25$ °C; sine-wave pulse; per diode  | 363        | A    |
| $T_{stg}$   | storage temperature                 |   | -40 to 150 | °C   |
| $T_j$       | junction temperature                |   | 150        | °C   |



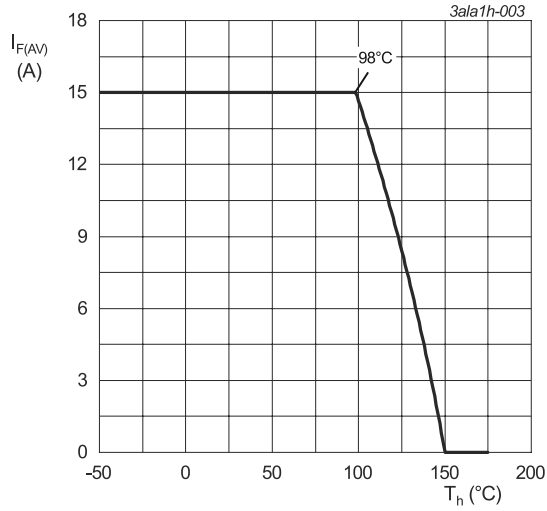


Fig. 3. Average forward current as a function of heatsink temperature; maximum values; per diode

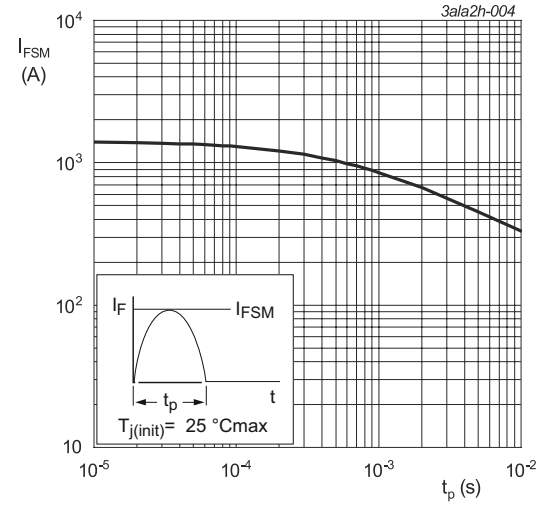
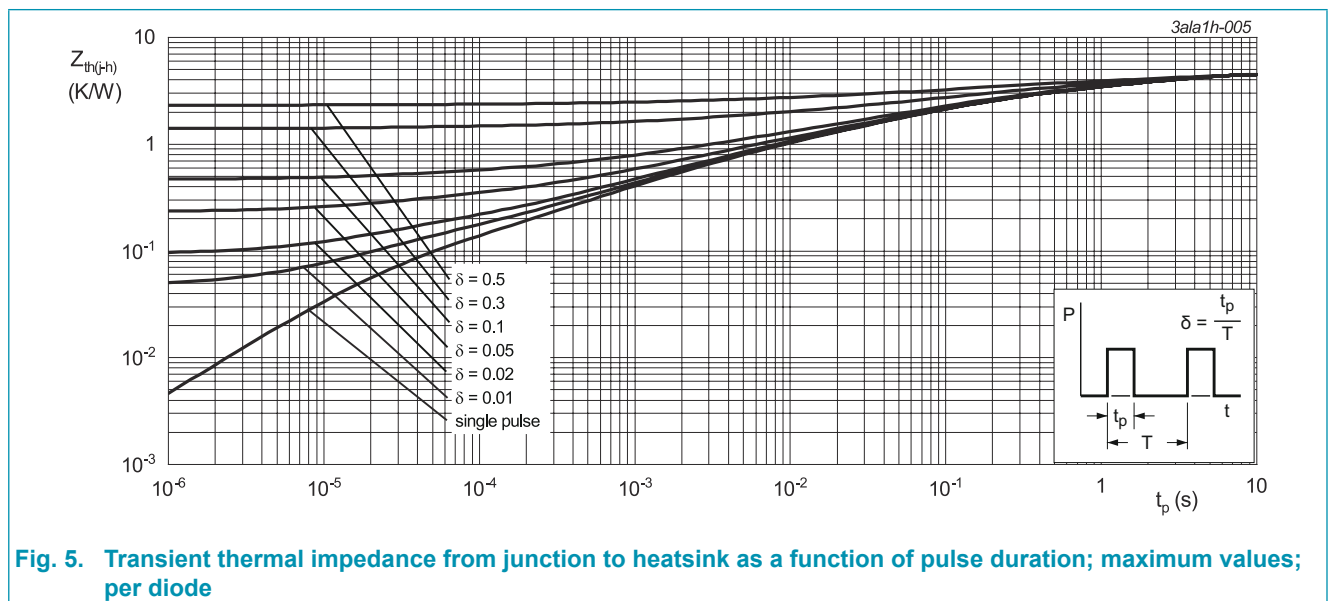


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

## 9. Thermal characteristics

Table 6. Thermal characteristics

| Symbol        | Parameter  | Conditions   | Min | Typ | Max | Unit |
|---------------|--|--|-----|-----|-----|------|
| $R_{th(j-h)}$ | thermal resistance from junction to heatsink         | with heatsink compound; per diode;<br><a href="#">Fig. 5</a> | -   | -   | 4.5 | K/W  |
|               |  | with heatsink compound; both diodes conducting               | -   | -   | 3.5 | K/W  |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient free air | in free air  | -   | 65  | -   | K/W  |



## 10. Isolation characteristics

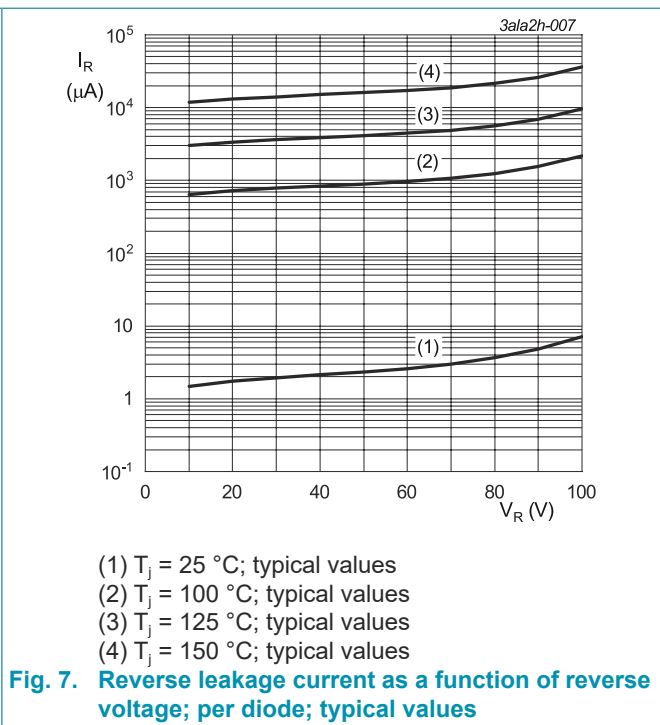
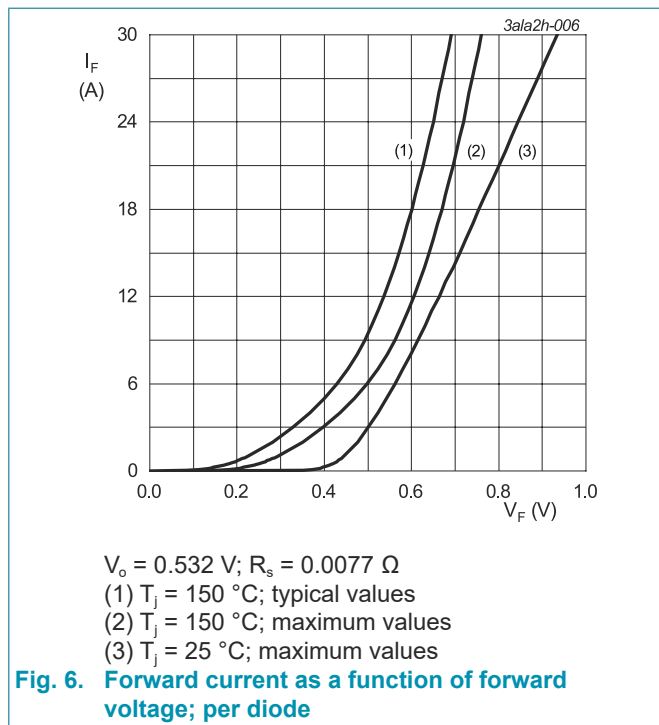
Table 7. Isolation characteristics

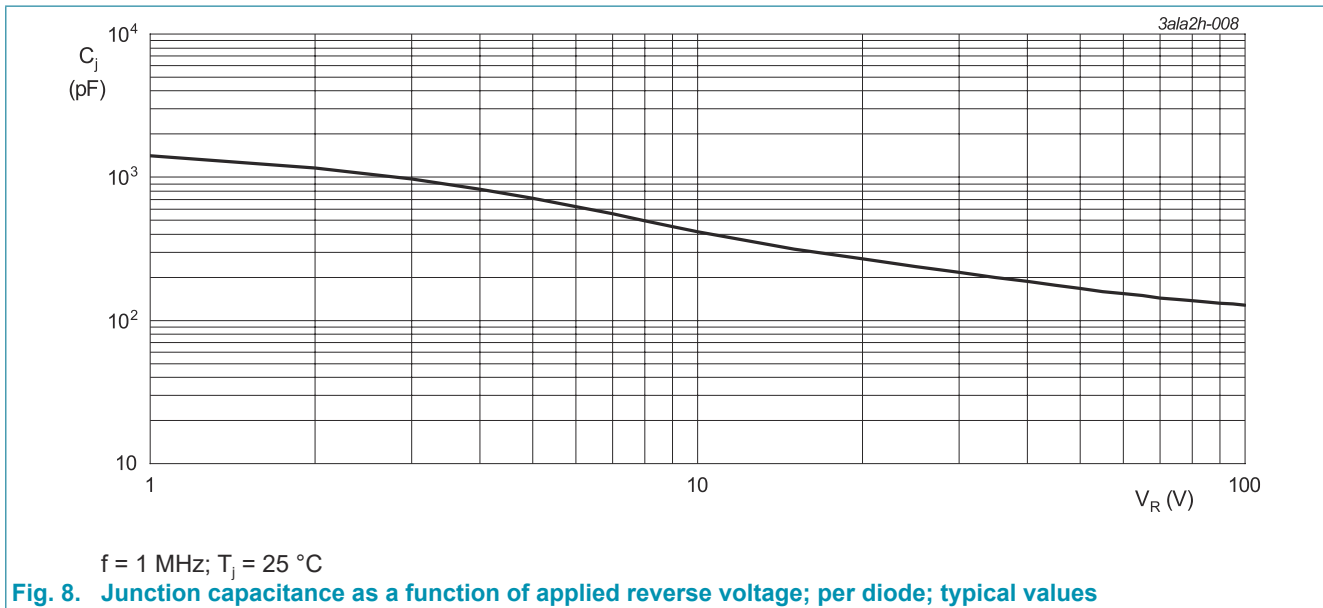
| Symbol          | Parameter             | Conditions  | Min | Typ | Max  | Unit |
|-----------------|-----------------------|---|-----|-----|------|------|
| $V_{isol(RMS)}$ | RMS isolation voltage | from all terminals to external heatsink; sinusoidal waveform; clean and dust free; 50 Hz ≤ f ≤ 60 Hz; T <sub>h</sub> = 25 °C; RH ≤ 65 % | -   | -   | 2500 | V    |

### 11. Characteristics

Table 8. Characteristics

| Symbol                        | Parameter       | Conditions  | Min | Typ  | Max  | Unit          |
|-------------------------------|-----------------|---|-----|------|------|---------------|
| <b>Static characteristics</b> |                 |   |     |      |      |               |
| $V_F$                         | forward voltage | $I_F = 5 \text{ A}; T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>                             | -   | 0.49 | 0.55 | V             |
|                               |                 | $I_F = 5 \text{ A}; T_j = 125 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>                            | -   | 0.43 | 0.48 | V             |
|                               |                 | $I_F = 10 \text{ A}; T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>                            | -   | 0.58 | 0.63 | V             |
|                               |                 | $I_F = 10 \text{ A}; T_j = 125 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>                           | -   | 0.55 | 0.6  | V             |
|                               |                 | $I_F = 15 \text{ A}; T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>                            | -   | 0.66 | 0.71 | V             |
|                               |                 | $I_F = 15 \text{ A}; T_j = 125 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 6</a>                           | -   | 0.62 | 0.67 | V             |
| $I_R$                         | reverse current | $V_R = 100 \text{ V}; T_j = 25 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a>  | -   | -    | 50   | $\mu\text{A}$ |
|                               |                 | $V_R = 100 \text{ V}; T_j = 125 \text{ }^\circ\text{C};$ per diode; <a href="#">Fig. 7</a> ; <a href="#">Fig. 8</a> | -   | -    | 30   | mA            |

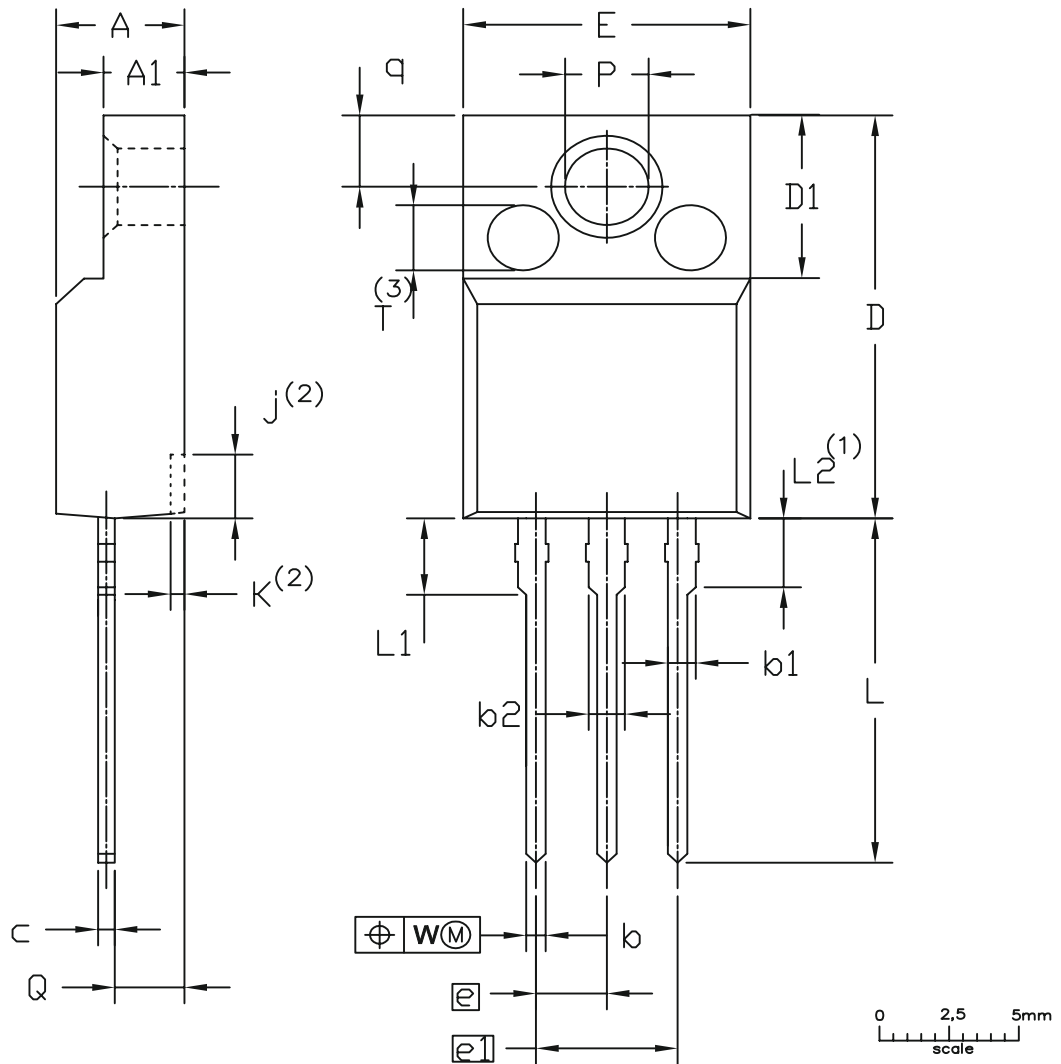




### 12. Package outline

Plastic single-ended package; isolated heatsink mounted; 1 mounting hole; 3-lead TO-220 "full pack"

SOT186A



| UNIT | A   | A <sub>1</sub> | b   | b <sub>1</sub> | b <sub>2</sub> | c   | D    | D <sub>1</sub> | E    | e    | e <sub>1</sub> | j <sup>(2)</sup> | k <sup>(2)</sup> | L    | L <sub>1</sub> | L <sub>2</sub> <sup>(1)</sup><br>max. | P   | Q   | q   | W   | T <sup>(3)</sup> |
|------|-----|----------------|-----|----------------|----------------|-----|------|----------------|------|------|----------------|------------------|------------------|------|----------------|---------------------------------------|-----|-----|-----|-----|------------------|
| mm   | 4.6 | 2.9            | 0.9 | 1.1            | 1.4            | 0.7 | 15.8 | 6.5            | 10.3 | 2.54 | 5.08           | 2.7              | 0.6              | 14.4 | 3.30           | 3                                     | 3.2 | 2.6 | 3.0 | 0.4 | 2.5              |
|      | 4.0 | 2.5            | 0.7 | 0.9            | 1.0            | 0.4 | 15.2 | 6.3            | 9.7  |      |                | 1.7              | 0.4              | 13.5 | 2.79           |                                       | 3.0 | 2.3 | 2.6 |     |                  |

Notes

1. Terminal dimensions within this zone are uncontrolled
2. Dot lines area designs may vary
3. Eject pin mark is for reference only

| OUTLINE<br>VERSION | REFERENCES |                |       | EUROPEAN<br>PROJECTION | ISSUE DATE |
|--------------------|------------|----------------|-------|------------------------|------------|
|                    | IEC        | JEDEC          | JEITA |                        |            |
| SOT186A            |            | 3 LEADS TO220F |       |                        | 2013-11-14 |



## 13. Legal information

### Data sheet status

| Document status [1][2]         | Product status [3] | Definition  |
|--------------------------------|--------------------|---|
| Objective [short] data sheet   | Development        | This document contains data from the objective specification for product development. |
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- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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