

## 1. General description

Dual common cathode power Schottky diode in TO263 (D2PAK) package.



## 2. Features and benefits

- High junction temperature up to 175 °C
- Low forward voltage drop, negligible switching losses
- High efficiency

## 3. Applications

- DC to DC converters
- Freewheeling diode
- OR-ing diode
- Switched mode power supply rectifier

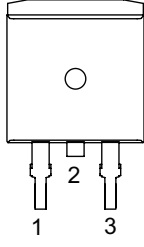
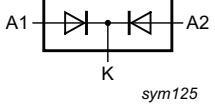
## 4. Quick reference data

Table 1. Quick reference data

| Symbol                         | Parameter                       | Conditions  | Notes | Values |      |      | Unit    |
|--------------------------------|---------------------------------|---|-------|--------|------|------|---------|
| <b>Absolute maximum rating</b> |                                 |   |       |        |      |      |         |
| $V_{RRM}$                      | repetitive peak reverse voltage |   |       | 150    |      |      | V       |
| $I_{F(AV)}$                    | average forward current         | $\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 155$ °C; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a> |       | 10     |      |      | A       |
| $I_{O(AV)}$                    | average output current          | $\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 153$ °C; both diodes conducting  |       | 20     |      |      | A       |
| Symbol                         | Parameter                       | Conditions  | Notes | Min    | Typ  | Max  | Unit    |
| <b>Static characteristics</b>  |                                 |   |       |        |      |      |         |
| $V_F$                          | forward voltage                 | $I_F = 10$ A; $T_j = 25$ °C; per diode; <a href="#">Fig. 6</a>  |       | -      | 0.84 | 0.93 | V       |
| $I_R$                          | reverse current                 | $V_R = 150$ V; $T_j = 25$ °C; per diode; <a href="#">Fig. 7</a>   |       | -      | 0.04 | 5    | $\mu$ A |

## 5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description                         | Simplified outline   | Graphic symbol  |
|-----|--------|-------------------------------------|--|---|
| 1   | A1     | anode 1                             |  | <br>sym125 |
| 2   | K      | cathode                             |  |   |
| 3   | A2     | anode 2                             |  |   |
| mb  | K      | mounting base; connected to cathode |  |   |

## 6. Ordering information

Table 3. Ordering information

| Type number  | Package name | Orderable part number | Packing method | Small packing quantity | Package version | Package issue date |
|--------------|--------------|-----------------------|----------------|------------------------|-----------------|--------------------|
| WN3S20150CBT | TO263        | WN3S20150CBTJ         | Reel           | 800                    | TO263d          | 17-Mar-2023        |

## 7. Marking

Table 4. Marking codes

| Type number  | Marking codes    |
|--------------|------------------|
| WN3S20150CBT | WN3S20<br>150CBT |

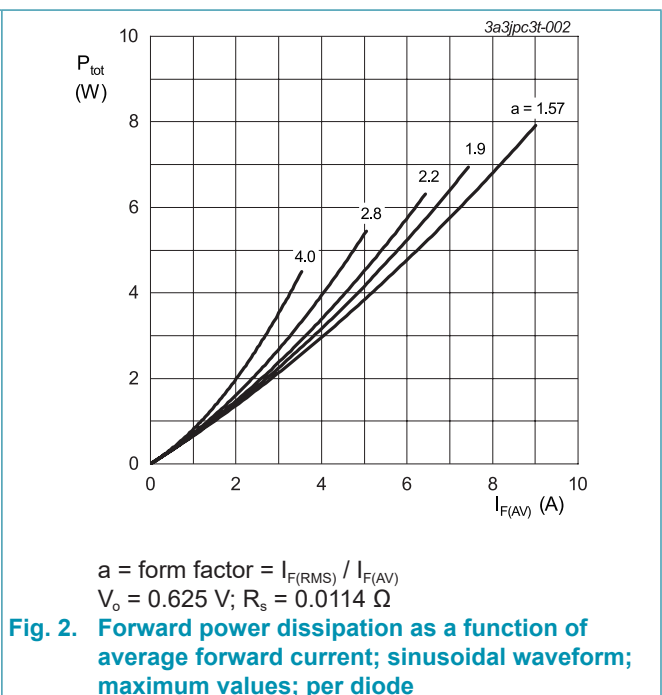
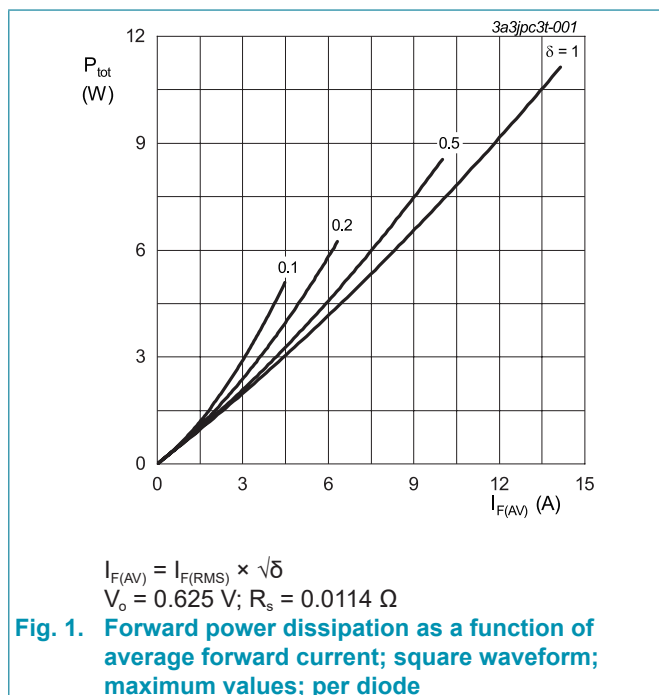
## 8. Limiting values

**Table 5. Limiting values**

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

| Symbol      | Parameter                           | Conditions  | Notes | Values     | Unit             |
|-------------|-------------------------------------|---|-------|------------|------------------|
| $V_{RRM}$   | repetitive peak reverse voltage     |   |       | 150        | V                |
| $V_{RWM}$   | crest working reverse voltage       |   |       | 150        | V                |
| $V_R$       | reverse voltage                     | DC  |       | 150        | V                |
| $I_{F(AV)}$ | average forward current             | $\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 155\text{ }^\circ\text{C}$ ; per diode; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a> |       | 10         | A                |
| $I_{O(AV)}$ | average output current              | $\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 153\text{ }^\circ\text{C}$ ; both diodes conducting  |       | 20         | A                |
| $I_{FSM}$   | non-repetitive peak forward current | $t_p = 10\text{ ms}$ ; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$ ; sine-wave pulse; per diode; <a href="#">Fig. 4</a>                                       |       | 180        | A                |
|             |                                     | $t_p = 8.3\text{ ms}$ ; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$ ; sine-wave pulse; per diode  |       | 198        | A                |
| $T_{stg}$   | storage temperature                 |   |       | -40 to 175 | $^\circ\text{C}$ |
| $T_j$       | junction temperature                |   | [1]   | -40 to 175 | $^\circ\text{C}$ |

[1] The heat generated must be less than the thermal conductivity from Junction to Ambient:  $dP_{tot}/dT_j < 1/R_{th(j-a)}$



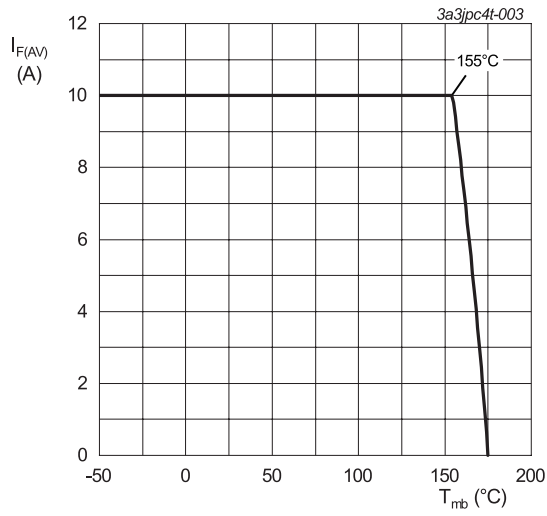


Fig. 3. Average forward current as a function of mounting base temperature; maximum values; per diode

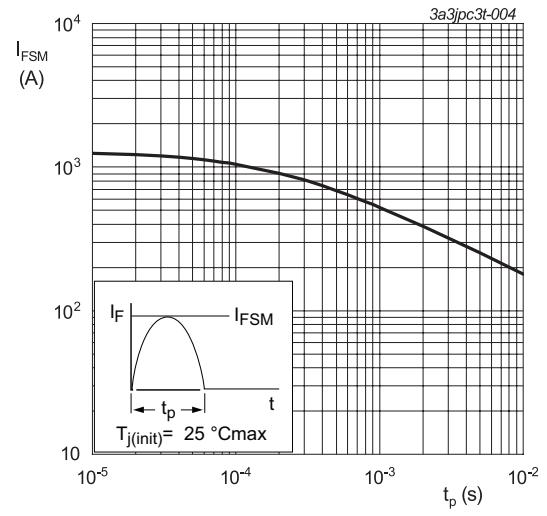


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

## 9. Thermal characteristics

Table 6. Thermal characteristics

| Symbol         | Parameter  | Conditions                        | Notes | Min | Typ | Max | Unit |
|----------------|--|-----------------------------------|-------|-----|-----|-----|------|
| $R_{th(j-mb)}$ | thermal resistance from junction to mounting base    | per diode; <a href="#">Fig. 5</a> |       | -   | -   | 2.4 | K/W  |
|                |  | both diodes conducting            |       | -   | -   | 1.3 | K/W  |
| $R_{th(j-a)}$  | thermal resistance from junction to ambient free air | in free air                       |       | -   | 50  | -   | K/W  |

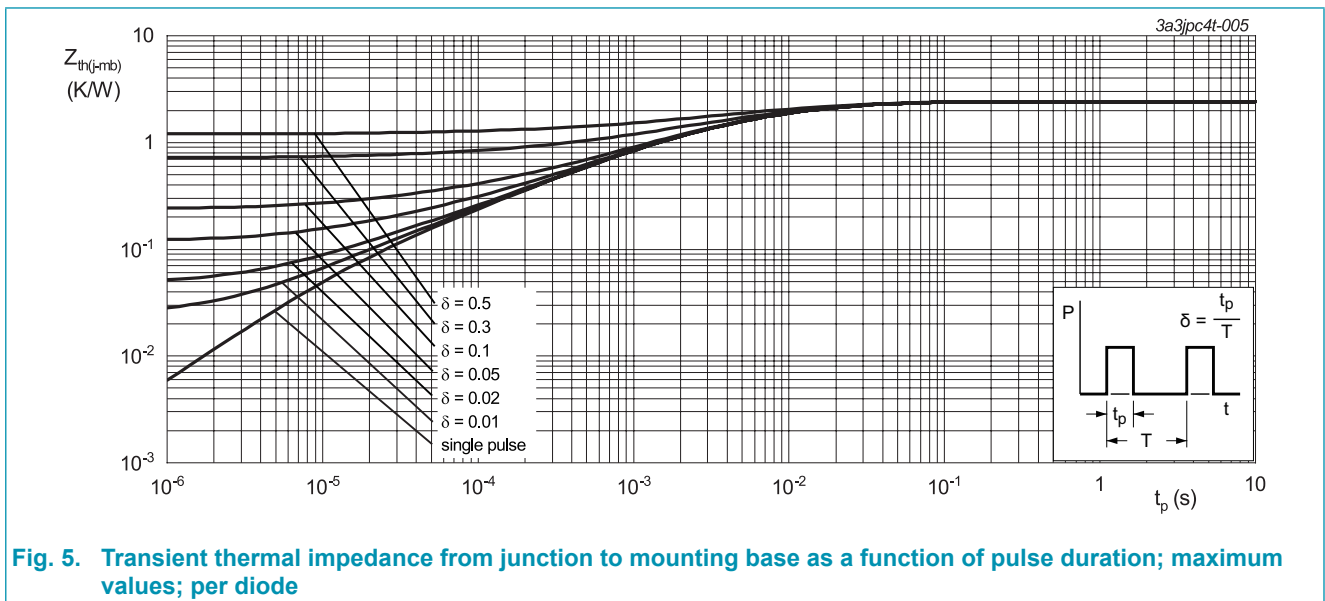
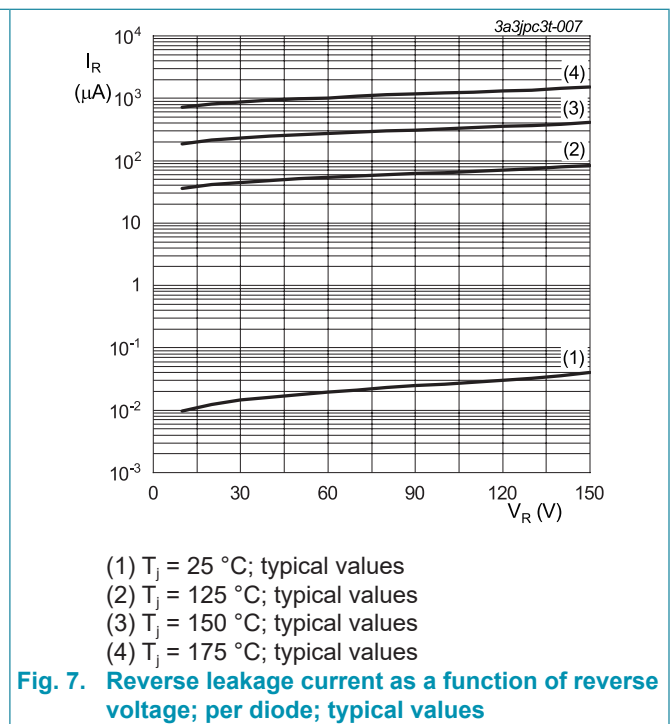
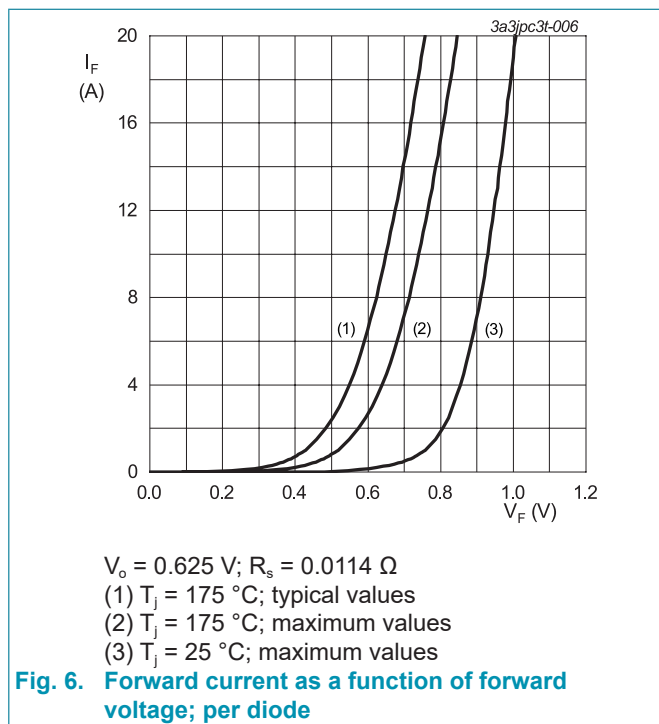


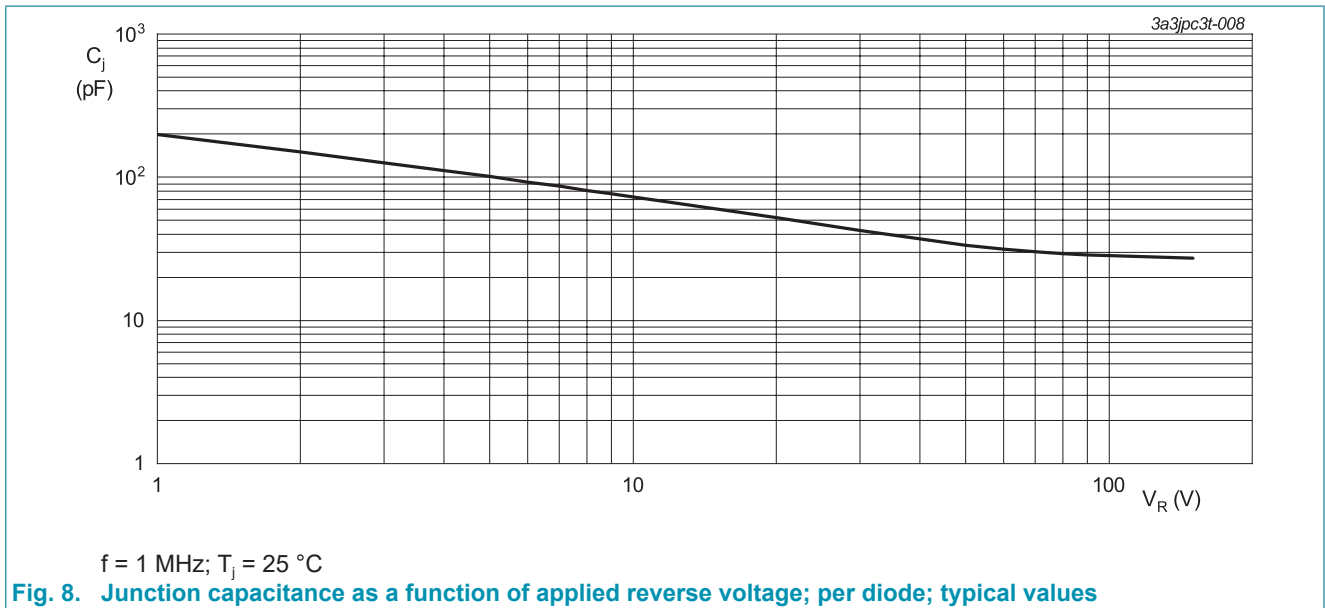
Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values; per diode

### 10. Characteristics

Table 7. Characteristics

| Symbol                        | Parameter       | Conditions   | Notes | 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>   |       | -   | 0.84 | 0.93 | V             |
|                               |                 | $I_F = 10\text{ A}; T_j = 125\text{ °C};$ per diode                          |       | -   | 0.72 | -    | V             |
|                               |                 | $I_F = 10\text{ A}; T_j = 175\text{ °C};$ per diode; <a href="#">Fig. 6</a>  |       | -   | 0.65 | 0.74 | V             |
| $I_R$                         | reverse current | $V_R = 150\text{ V}; T_j = 25\text{ °C};$ per diode; <a href="#">Fig. 7</a>  |       | -   | 0.04 | 5    | $\mu\text{A}$ |
|                               |                 | $V_R = 150\text{ V}; T_j = 125\text{ °C};$ per diode; <a href="#">Fig. 7</a> |       | -   | 0.09 | -    | mA            |

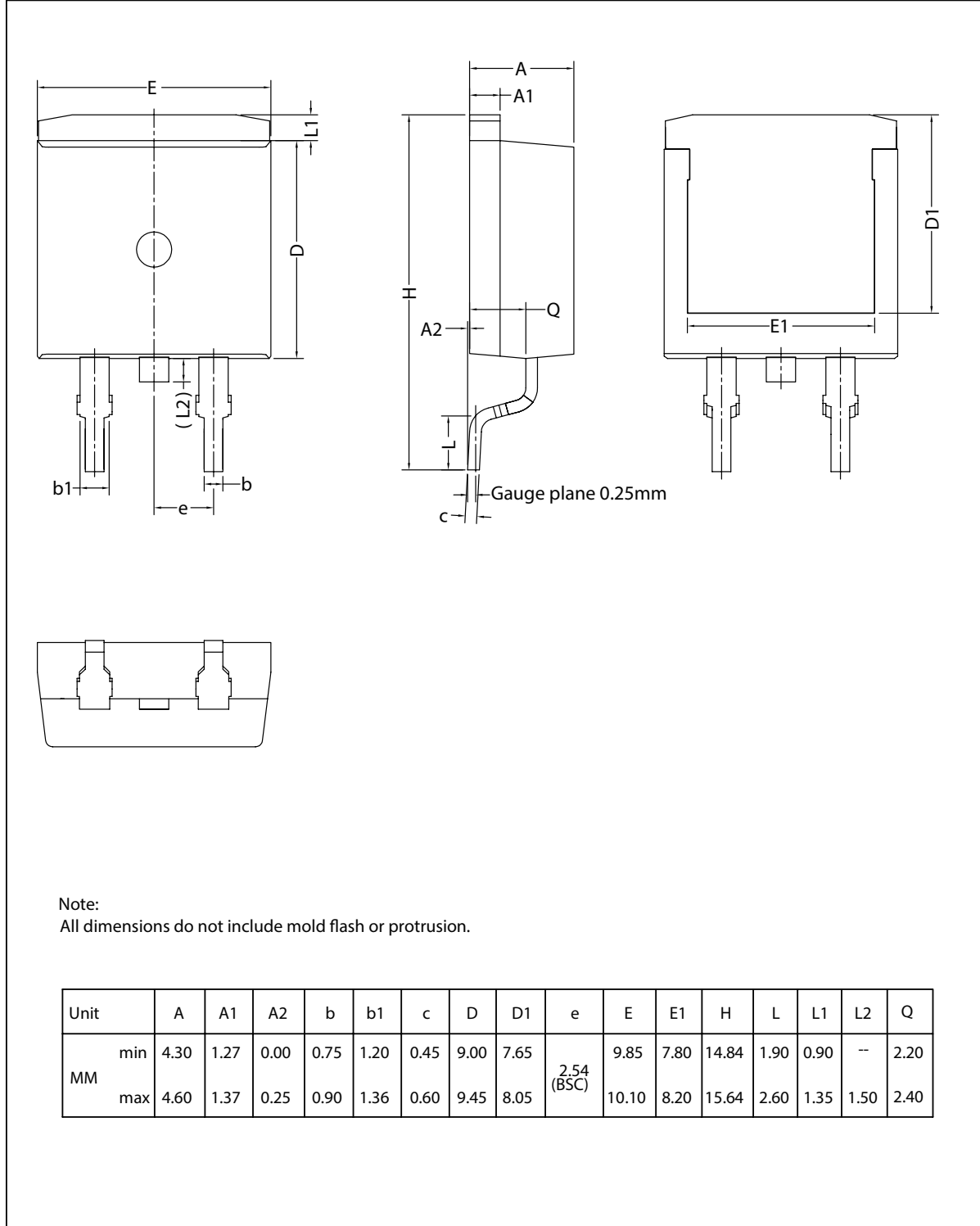




### 11. Package outline

Plastic single-ended surface-mounted package (D2PAK);

TO263





## 12. 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. |
| Preliminary [short] data sheet | Qualification      | This document contains data from the preliminary specification.                       |
| Product [short] data sheet     | Production         | This document contains the product specification.                                     |

- [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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