

1. General description

Power Schottky diode in TO252 (DPAK) surface-mountable plastic 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

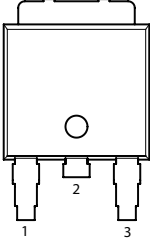
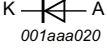
4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Notes | Values | | | Unit |
|--------------------------------|---------------------------------|--|-------|--------|------|------|------|
| Absolute maximum rating | | | | | | | |
| V_{RRM} | repetitive peak reverse voltage | | | 200 | | | V |
| $I_{F(AV)}$ | average forward current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 145$ °C; Fig. 1 ; Fig. 2 ; Fig. 3 | | 30 | | | A |
| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
| Static characteristics | | | | | | | |
| V_F | forward voltage | $I_F = 30$ A; $T_J = 25$ °C; Fig. 6 | | - | 0.93 | 1.03 | V |
| I_R | reverse current | $V_R = 200$ V; $T_J = 25$ °C | | - | 0.1 | 5 | μA |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------------------------------|--|---|
| 1 | A | anode |  |  |
| 2 | K | cathode | | |
| 3 | A | anode | | |
| 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 |
|-------------|--------------|-----------------------|----------------|------------------------|-----------------|--------------------|
| WN3S30200DT | TO252 | WN3S30200DTJ | Reel | 2500 | TO252d | 07-Sep-2022 |

7. Marking

Table 4. Marking codes

| Type number | Marking codes |
|-------------|-----------------|
| WN3S30200DT | WN3S30 200DT |

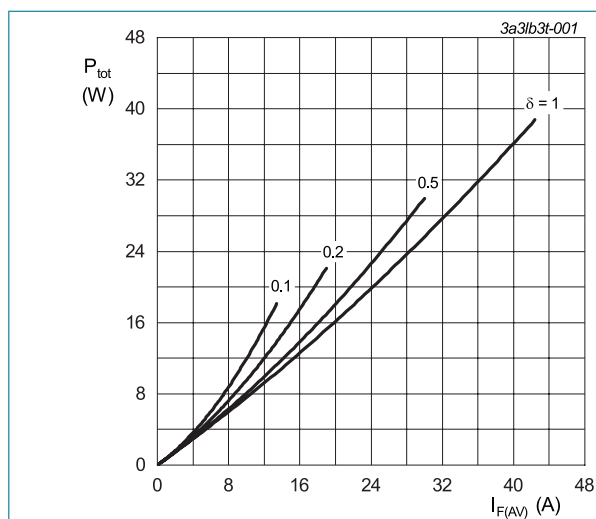
8. Limiting values

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 | | | 200 | V |
| V_{RWM} | crest working reverse voltage | | | 200 | V |
| V_R | reverse voltage | DC | | 200 | V |
| $I_{F(AV)}$ | average forward current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 145\text{ }^\circ\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3 | | 30 | 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; Fig. 4 | | 300 | A |
| | | $t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse | | 330 | A |
| T_{stg} | storage temperature | | | -40 to 175 | $^\circ\text{C}$ |
| T_j | junction temperature | | [1] | -40 to 175 | $^\circ\text{C}$ |

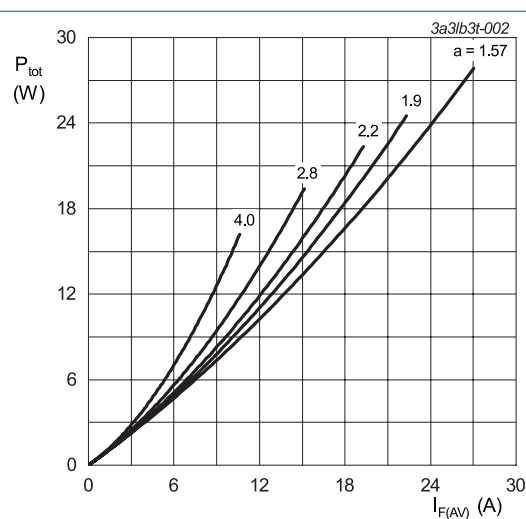
[1] The heat generated must be less than the thermal conductivity from Junction to Ambient: $dP_{tot}/dT_j < 1/R_{th(j-a)}$



$$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$$

$$V_o = 0.711\text{ V}; R_s = 0.0048\ \Omega$$

Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values



$$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$$

$$V_o = 0.711\text{ V}; R_s = 0.0048\ \Omega$$

Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values

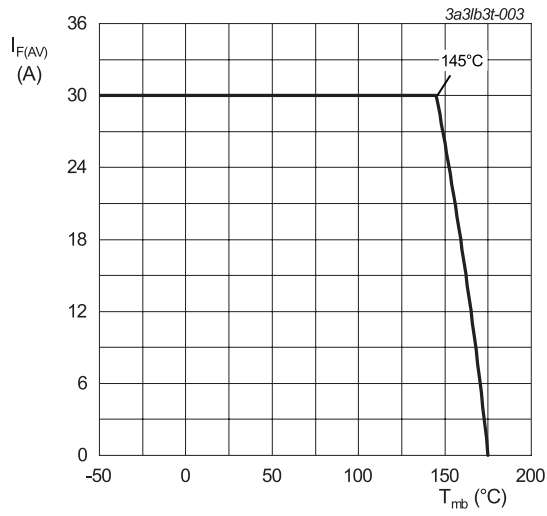


Fig. 3. Average forward current as a function of mounting base temperature; maximum values

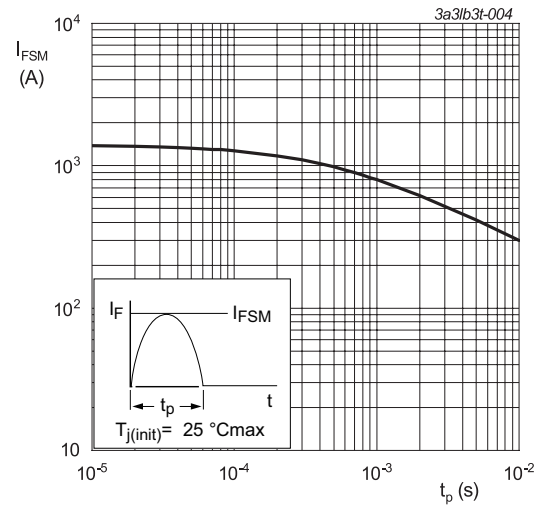


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

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 | Fig. 5 | | - | - | 1 | K/W |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | | - | 50 | - | K/W |

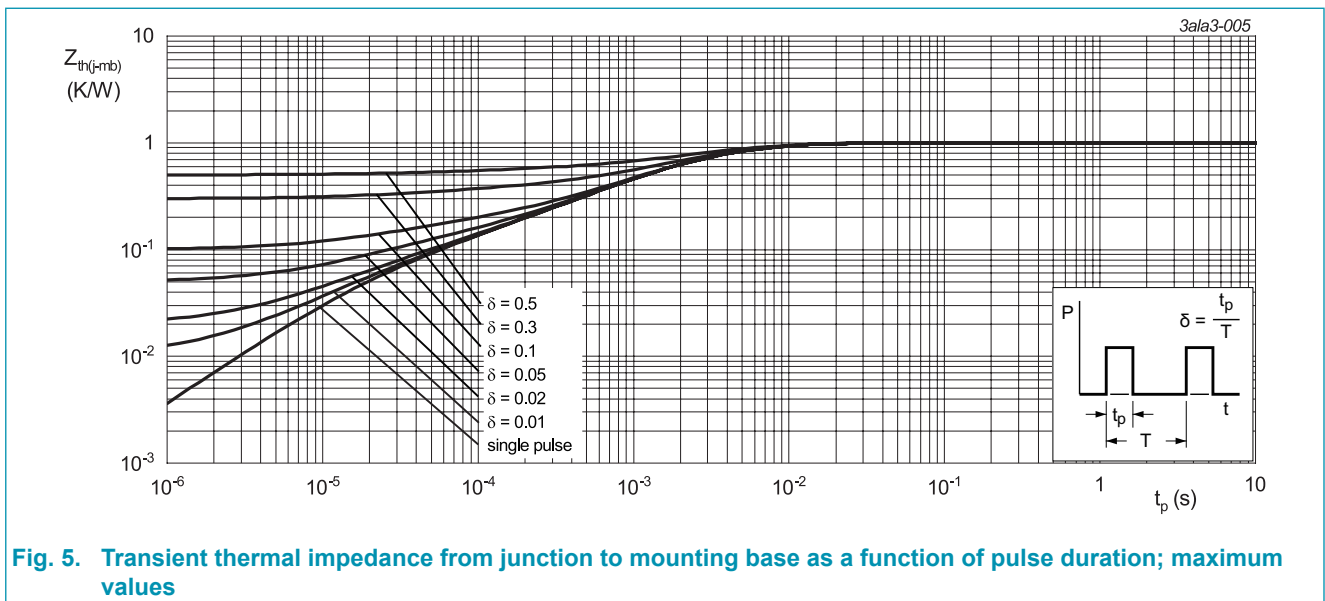
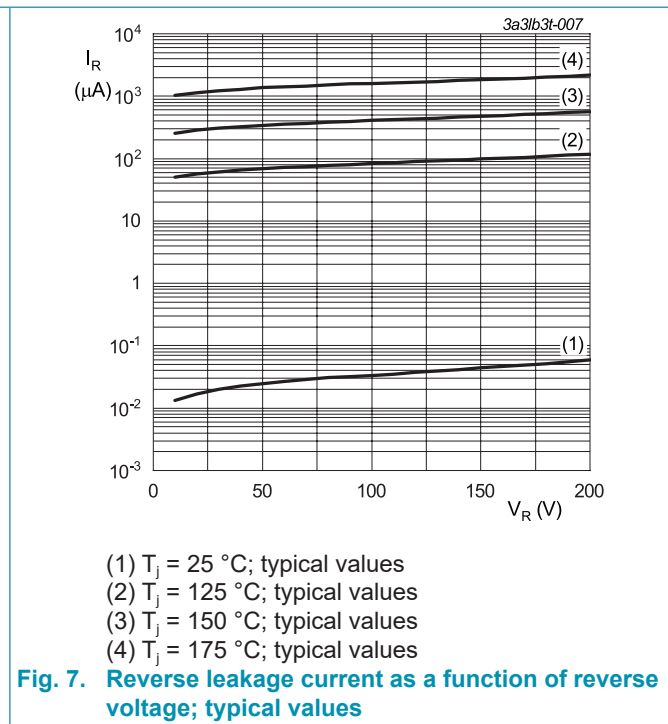
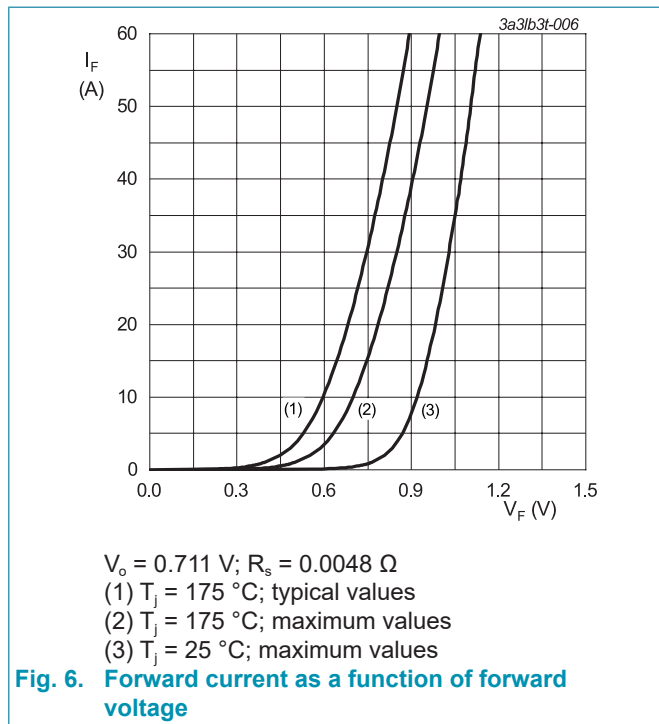


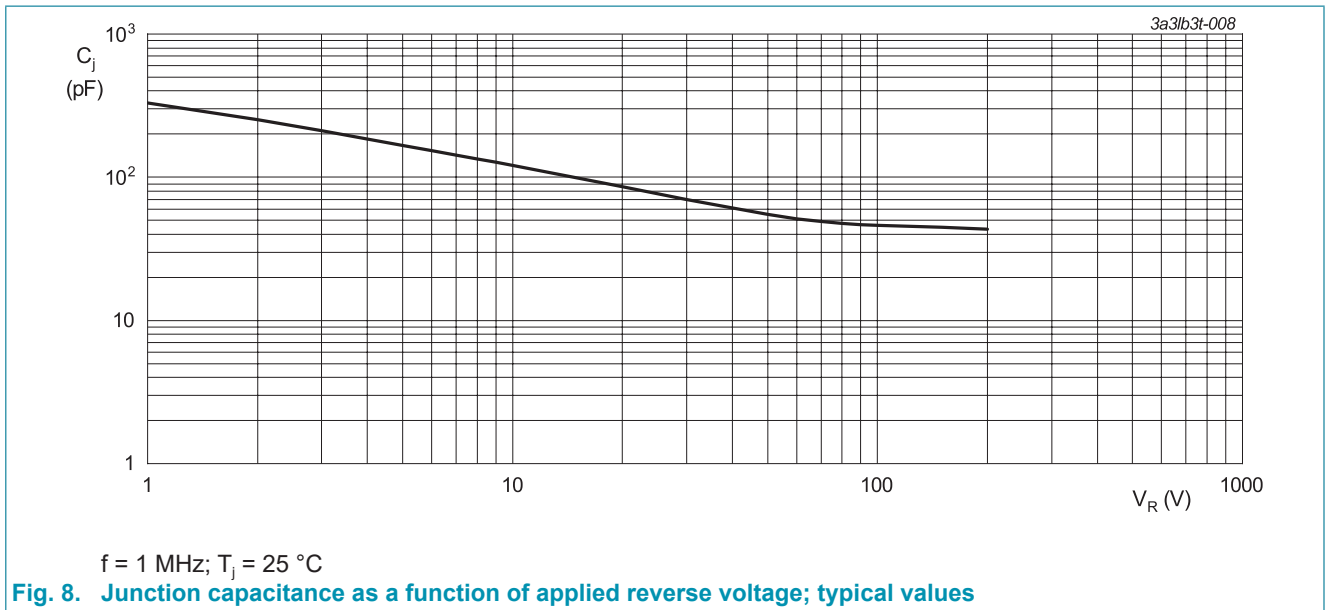
Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values

10. Characteristics

Table 7. Characteristics

| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|-------------------------------|-----------------|--|-------|-----|------|------|------|
| Static characteristics | | | | | | | |
| V _F | forward voltage | I _F = 30 A; T _J = 25 °C; Fig. 6 | | - | 0.93 | 1.03 | V |
| | | I _F = 30 A; T _J = 125 °C; Fig. 6 | | - | 0.80 | - | V |
| | | I _F = 10 A; T _J = 25 °C; Fig. 6 | | - | 0.80 | - | V |
| | | I _F = 10 A; T _J = 125 °C; Fig. 6 | | - | 0.67 | - | V |
| | | I _F = 5 A; T _J = 25 °C; Fig. 6 | | - | 0.75 | - | V |
| | | I _F = 5 A; T _J = 125 °C; Fig. 6 | | - | 0.60 | - | V |
| I _R | reverse current | V _R = 200 V; T _J = 25 °C; Fig. 7 ; Fig. 8 | | - | 0.1 | 5 | μA |
| | | V _R = 200 V; T _J = 125 °C; Fig. 7 ; Fig. 8 | | - | 0.2 | - | mA |

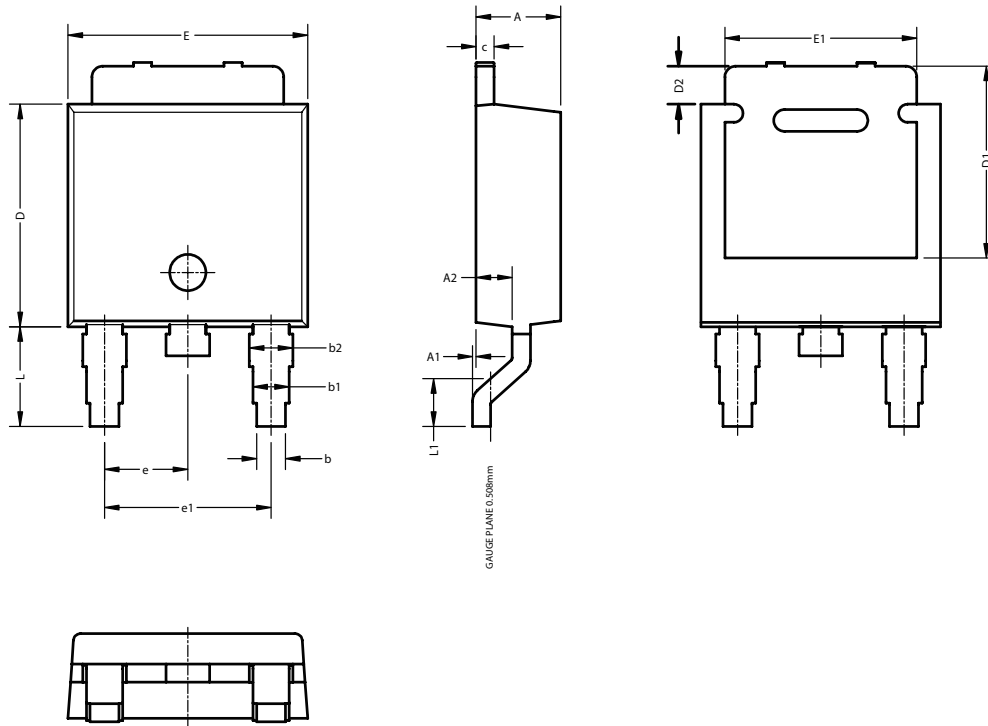




11. Package outline

Plastic single-ended surface-mounted package (DPAK); 3 leads (one lead cropped)

TO252



Note:

1. All dimensions do not include mold flash & gate remain and metal protrusion.

| Unit | A | A1 | A2 | b | b1 | b2 | c | D | D1 | D2 | E | E1 | e | e1 | L | L1 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| min | 2.16 | 0.00 | 0.90 | 0.70 | 0.86 | 1.06 | 0.46 | 5.97 | 5.05 | 0.98 | 6.45 | 5.20 | 2.30 | 4.60 | 2.60 | 1.25 |
| nom | | | | | | | | | | | | | | | | |
| max | 2.41 | 0.10 | 1.10 | 0.90 | 1.11 | 1.32 | 0.58 | 6.22 | 5.35 | 1.18 | 6.75 | 5.40 | | | 2.90 | 1.65 |

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| 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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