# WNS30H100C

## Dual power Schottky diode

8 April 2018 Product data sheet

## 1. General description

Dual common cathode power Schottky diode designed for high frequency switched mode power supplies in a TO-220 plastic package.

## 2. Features and benefits

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

## 3. Applications

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

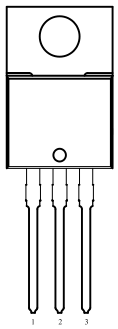
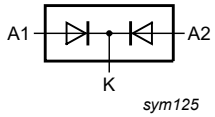
## 4. Quick reference data

**Table 1. Quick reference data**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{RRM}$ | repetitive peak reverse voltage | | | - | - | 100 | V |
| $I_{F(AV)}$ | average forward current | δ = 0.5 ; $T_{mb}$ ≤ 134 °C; square-wave pulse; per diode; Fig. 1; Fig. 2; Fig. 3 | | - | - | 15 | A |
| $I_{O(AV)}$ | average output current | δ = 0.5 ; $T_{mb}$ ≤ 133 °C; square-wave pulse; both diodes conducting | | - | - | 30 | A |
| **Static characteristics** | | | | | | | |
| $V_F$ | forward voltage | $I_F$ = 5 A; $T_j$ = 25 °C; Fig. 6; per diode | | - | 0.48 | 0.55 | V |
| | | $I_F$ = 5 A; $T_j$ = 125 °C; Fig. 6; per diode | | - | 0.41 | 0.48 | V |
| | | $I_F$ = 10 A; $T_j$ = 25 °C; Fig. 6; per diode | | - | 0.56 | 0.63 | V |
| | | $I_F$ = 10 A; $T_j$ = 125 °C; Fig. 6; per diode | | - | 0.53 | 0.6 | V |
| | | $I_F$ = 15 A; $T_j$ = 25 °C; Fig. 6; per diode | | - | 0.64 | 0.71 | V |
| | | $I_F$ = 15 A; $T_j$ = 125 °C; Fig. 6; per diode | | - | 0.6 | 0.67 | V |
| $I_R$ | reverse current | $V_R$ = 100 V; $T_j$ = 25 °C; Fig. 7; Fig. 8; per diode | | - | - | 50 | µA |
| | | $V_R$ = 100 V; $T_j$ = 125 °C; Fig. 7; Fig. 8; per diode | | - | - | 30 | mA |

## 5. Pinning information

**Table 2. Pinning information**

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|---|---|---|---|---|
| 1 | A1 | anode 1 |  TO-220E |   |
| 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 | Description | Version |
| WNS30H100C | TO-220E | plastic single-ended package; heatsink mounted; 1 mounting hole; 3-lead TO-220AB | TO-220E |


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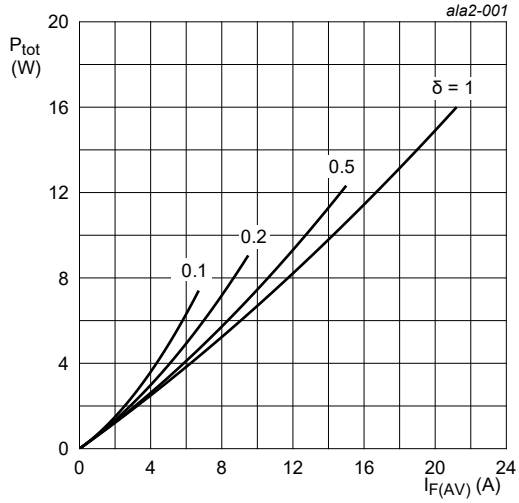
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# 7. Limiting values

**Table 4. Limiting values**

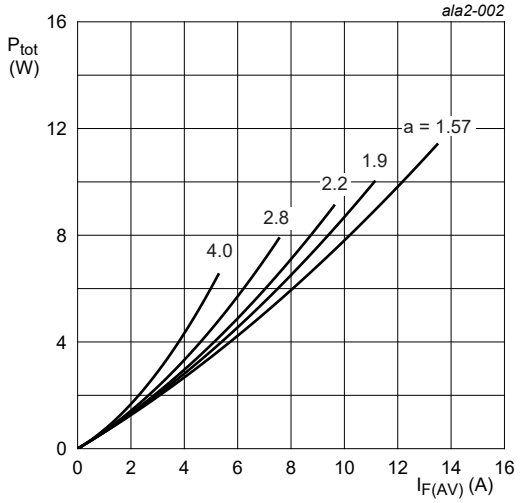
*In accordance with the Absolute Maximum Rating System (IEC 60134).*

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{RRM}$ | repetitive peak reverse voltage | | | - | 100 | V |
| $V_{RWM}$ | limiting crest working reverse voltage | | | - | 100 | V |
| $V_R$ | limiting reverse voltage | DC | | - | 100 | V |
| $I_{F(AV)}$ | average forward current | δ = 0.5 ; $T_{mb}$ ≤ 134 °C; square-wave pulse; per diode; Fig. 1; Fig. 2; Fig. 3 | | - | 15 | A |
| $I_{O(AV)}$ | average output current | δ = 0.5 ; $T_{mb}$ ≤ 133 °C; square-wave pulse; both diodes conducting | | - | 30 | A |
| $I_{FSM}$ | non-repetitive peak forward current | $t_p$ = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode; Fig. 4 | | - | 330 | A |
| | | $t_p$ = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode | | - | 363 | A |
| $T_{stg}$ | storage temperature | | | -40 | 150 | °C |
| $T_j$ | junction temperature | | | - | 150 | °C |




$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$
$V_o$ = 0.593 V; $R_s$ = 0.0076 Ω

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




a = form factor = $I_{F(RMS)} / I_{F(AV)}$
$V_o$ = 0.593 V; $R_s$ = 0.0076 Ω

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


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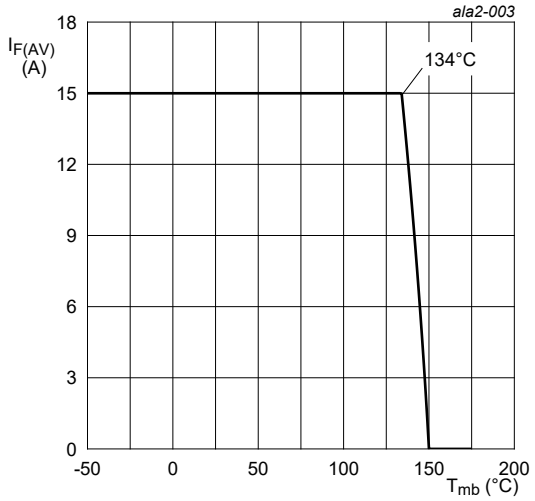



**Fig. 3. Average forward current as a function of mounting base temperature; maximum values; per diode**

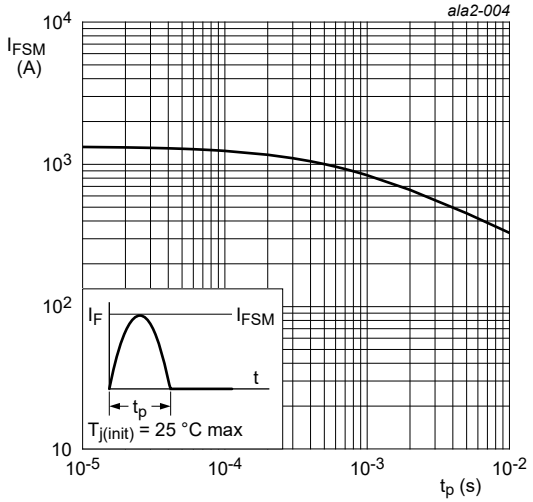



**Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode**


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# 8. Thermal characteristics

**Table 5. Thermal characteristics**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $R_{th(j\text{-}mb)}$ | thermal resistance from junction to mounting base | per diode; Fig. 5 | | - | - | 1.3 | K/W |
| | | both diodes conducting | | - | - | 0.7 | K/W |
| $R_{th(j\text{-}a)}$ | thermal resistance from junction to ambient | in free air | | - | 60 | - | K/W |

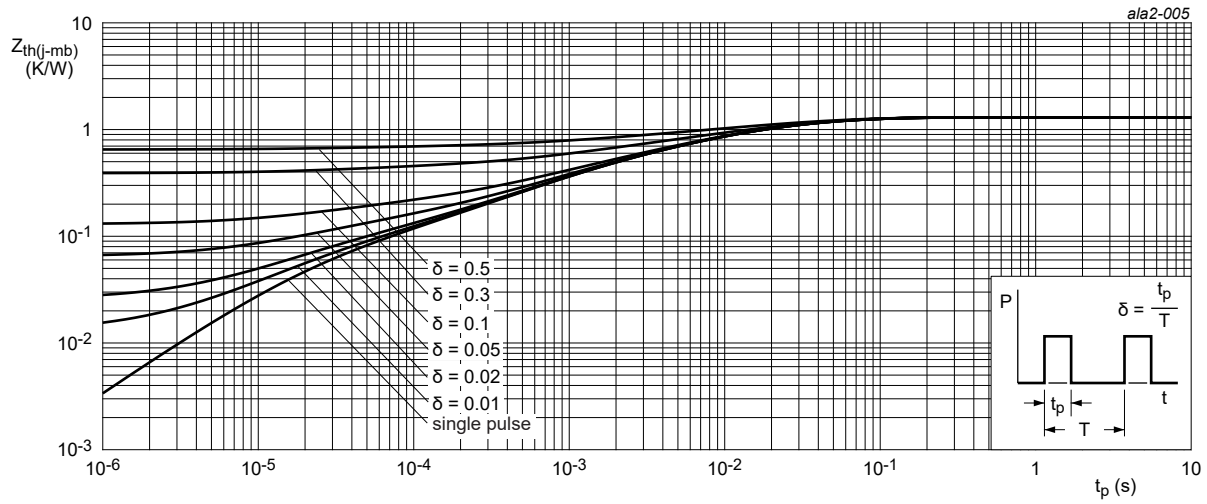



**Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values; per diode**

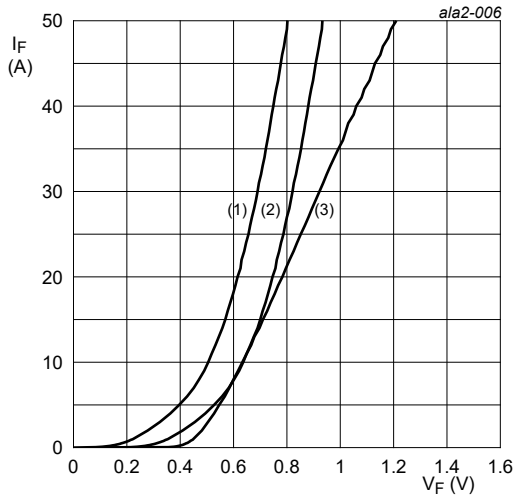

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# 9. Characteristics

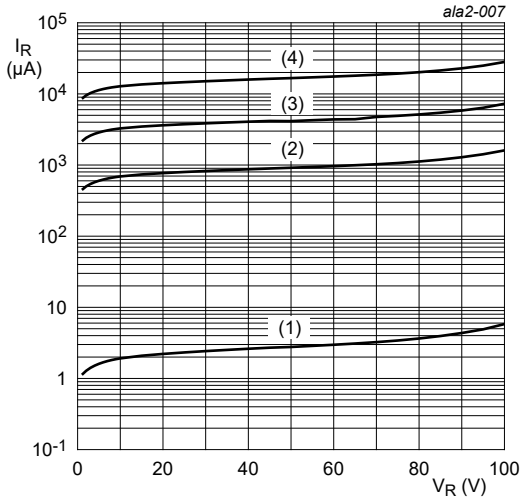
**Table 6. Characteristics**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Static characteristics** | | | | | | | |
| $V_F$ | forward voltage | $I_F$ = 5 A; $T_j$ = 25 °C; Fig. 6; per diode | | - | 0.48 | 0.55 | V |
| | | $I_F$ = 5 A; $T_j$ = 125 °C; Fig. 6; per diode | | - | 0.41 | 0.48 | V |
| | | $I_F$ = 10 A; $T_j$ = 25 °C; Fig. 6; per diode | | - | 0.56 | 0.63 | V |
| | | $I_F$ = 10 A; $T_j$ = 125 °C; Fig. 6; per diode | | - | 0.53 | 0.6 | V |
| | | $I_F$ = 15 A; $T_j$ = 25 °C; Fig. 6; per diode | | - | 0.64 | 0.71 | V |
| | | $I_F$ = 15 A; $T_j$ = 125 °C; Fig. 6; per diode | | - | 0.6 | 0.67 | V |
| $I_R$ | reverse current | $V_R$ = 100 V; $T_j$ = 25 °C; Fig. 7; Fig. 8; per diode | | - | - | 50 | µA |
| | | $V_R$ = 100 V; $T_j$ = 125 °C; Fig. 7; Fig. 8; per diode | | - | - | 30 | mA |




$V_o$ = 0.593 V; $R_s$ = 0.0076 Ω
(1) $T_j$ = 150 °C; typical values
(2) $T_j$ = 150 °C; maximum values
(3) $T_j$ = 25 °C; maximum values

**Fig. 6. Forward current as a function of forward voltage; per diode**

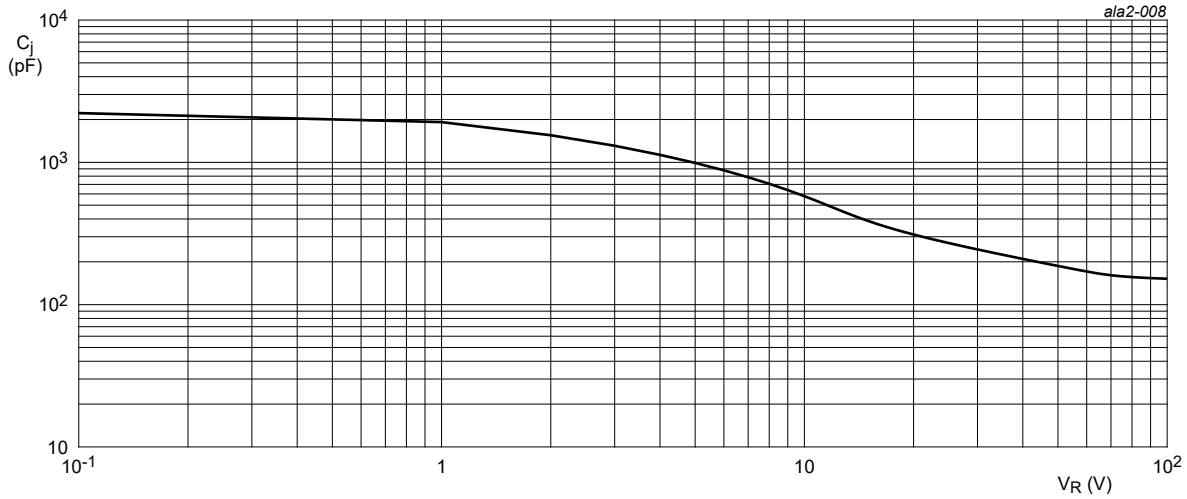



(1) $T_j$ = 25 °C; typical values
(2) $T_j$ = 100 °C; typical values
(3) $T_j$ = 125 °C; typical values
(4) $T_j$ = 150 °C; typical values

**Fig. 7. Reverse leakage current as a function of reverse voltage; per diode; typical values**


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f = 1 MHz; $T_j$ = 25 °C

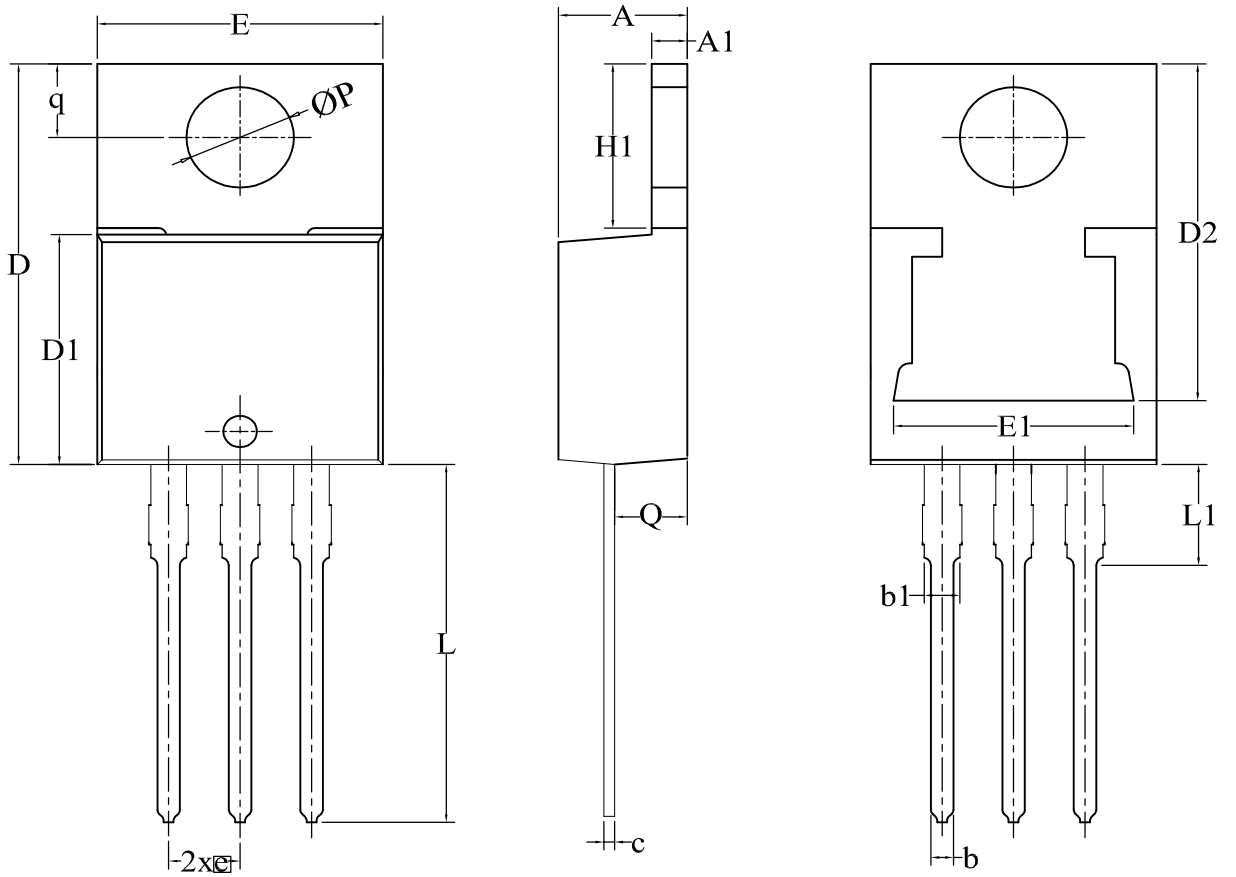
**Fig. 8. Junction capacitance as a function of applied reverse voltage; per diode; typical values**


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## 10. Package outline

Plastic single-ended package;heatsink mounted;1 mounting hole; 3 leads TO-220AB TO220




| Unit | | A | A1 | b | b1 | c | D | D1 | D2 | E | E1 | e | H1 | L | L1 | P | Q | q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM | min | 4.35 | 1.14 | 0.69 | 1.08 | 0.36 | 14.95 | 8.50 | 12.20 | 10.00 | 8.25 | 2.54 (BSC) | 6.00 | 13.00 | 3.40 | 3.70 | 2.40 | 2.60 |
| | max | 4.75 | 1.40 | 1.01 | 1.67 | 0.61 | 15.55 | 9.02 | 12.88 | 10.40 | 8.89 | | 6.40 | 14.00 | 3.80 | 3.95 | 2.80 | 3.00 |

**Fig. 9. Package outline TO-220E**


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**Date of release: 8 April 2018**