



WNB111C5APTS

Hyperfast power diode - Bare die

29 October 2017

Product data sheet

1. General description

Hyperfast power diode bare die

2. Features and benefits

- Fast switching
- Low leakage current
- Low forward voltage drop
- Soft recovery characteristic
- Bare die

3. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------------------|---------------------------------|--|-----|-----|-----|------|
| V_{RRM}^* | repetitive peak reverse voltage | | - | - | 600 | V |
| $I_{F(AV)}^{**}$ | average forward current | $\delta = 0.5$; square-wave pulse | - | - | 15 | A |
| Static characteristics | | | | | | |
| V_F^{**} | forward voltage | $I_F = 15\text{ A}$; $T_j = 150\text{ °C}$ | - | 1.4 | 2 | V |
| Dynamic characteristics | | | | | | |
| t_{rr}^{**} | reverse recovery time | $I_F = 1\text{ A}$; $V_R = 30\text{ V}$; $di_F/dt = 200\text{ A}/\mu\text{s}$; $T_j = 25\text{ °C}$ | - | 13 | 18 | ns |

4. Ordering information

Table 2. Ordering information

| Type number | Package | | |
|--------------|---------|-------------------|---------|
| | Name | Description | Version |
| WNB111C5APTS | Wafer | Bare die on wafer | Die |

5. Limiting values

Table 3. Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|------------------|-------------------------------------|---|-----|-----|------------------|
| V_{RRM}^* | repetitive peak reverse voltage | | - | 600 | V |
| V_{RWM}^* | crest working reverse voltage | | - | 600 | V |
| V_R^* | reverse voltage | DC | - | 600 | V |
| $I_{F(AV)}^{**}$ | average forward current | $\delta = 0.5$; square-wave pulse | - | 15 | A |
| I_{FRM}^{**} | repetitive peak forward current | $\delta = 0.5$; $t_p = 25 \mu s$; square-wave pulse | - | 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 | - | 180 | A |
| | | $t_p = 8.3 \text{ ms}$; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$; sine-wave pulse | - | 200 | A |
| T_{stg}^{**} | storage temperature | | -65 | 175 | $^\circ\text{C}$ |
| T_j^{**} | junction temperature | | - | 175 | $^\circ\text{C}$ |

6. Characteristics

Table 4. Characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------------------|-----------------------|---|-----|-----|-----|---------------|
| Static characteristics | | | | | | |
| V_F^{**} | forward voltage | $I_F = 5A; T_j = 25\text{ }^\circ\text{C}$ | - | - | 2.3 | V |
| | | $I_F = 15\text{ A}; T_j = 25\text{ }^\circ\text{C}$ | - | 2.7 | 3.2 | V |
| | | $I_F = 15\text{ A}; T_j = 150\text{ }^\circ\text{C}$ | - | 1.4 | 2 | V |
| I_R | reverse current | $V_R = 600\text{ V}; T_j = 25\text{ }^\circ\text{C}$ | - | 1 | 10 | μA |
| | | $V_R = 600\text{ V}; T_j = 150\text{ }^\circ\text{C}$ | - | - | 1 | mA |
| Dynamic characteristics | | | | | | |
| t_{rr}^{**} | reverse recovery time | $I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 25\text{ }^\circ\text{C}$ | - | 13 | 18 | ns |
| | | $I_F = 15\text{ A}; V_R = 400\text{ V}; dI_F/dt = 500\text{ A}/\mu\text{s}; T_j = 25\text{ }^\circ\text{C}$ | - | 22 | - | ns |
| | | $I_F = 15\text{ A}; V_R = 200\text{ V}; dI_F/dt = 200\text{ A}/\mu\text{s}; T_j = 25\text{ }^\circ\text{C}$ | - | 28 | - | ns |

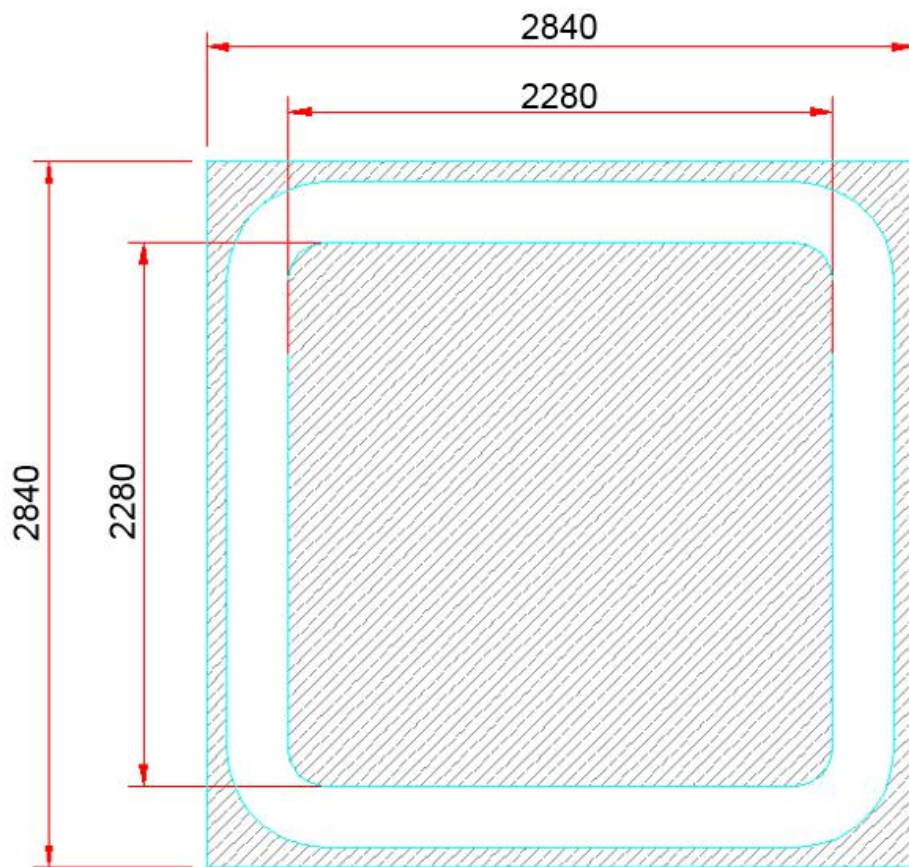
Notes:

- (1) * mean that parameter are 100% test at $T_{amb} = 25^\circ\text{C}$
- (2) ** means that the guaranteed ratings and parameter limits will depend on the assembled structure. When correctly assembled with suitable die bonding and wire bonding, the device will have ratings and characteristics guaranteed in this data sheet, similar to the assembled devices such as BYC15-600P.

MECHANICAL PARAMETER

| | | |
|------------------------------|-------------|-----------------|
| Chip size | 2.84 x 2.84 | mm ² |
| Anode pad size | 2.28 x 2.28 | mm ² |
| Area total /active | 8.07 / 5.20 | mm ² |
| Thickness | 300 | μm |
| Wafer size | 125 | mm |
| Max possible chips per wafer | 1371 | pcs |
| Passivation | Glass | |
| Front metal | Al | |
| Back metal | Ti Ni Ag | |

CHIP LAYOUT



Die size: 2840um x 2840um
Bond pad size: 2280um x 2280um

7. 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. |

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- [2] The term 'short data sheet' is explained in section "Definitions".
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