

# RJU6832PJWS

750V - 300A - Diode Chip  
Applications: Automotive

R07DS1578EJ0100  
Rev.1.00  
Nov.22nd.2024

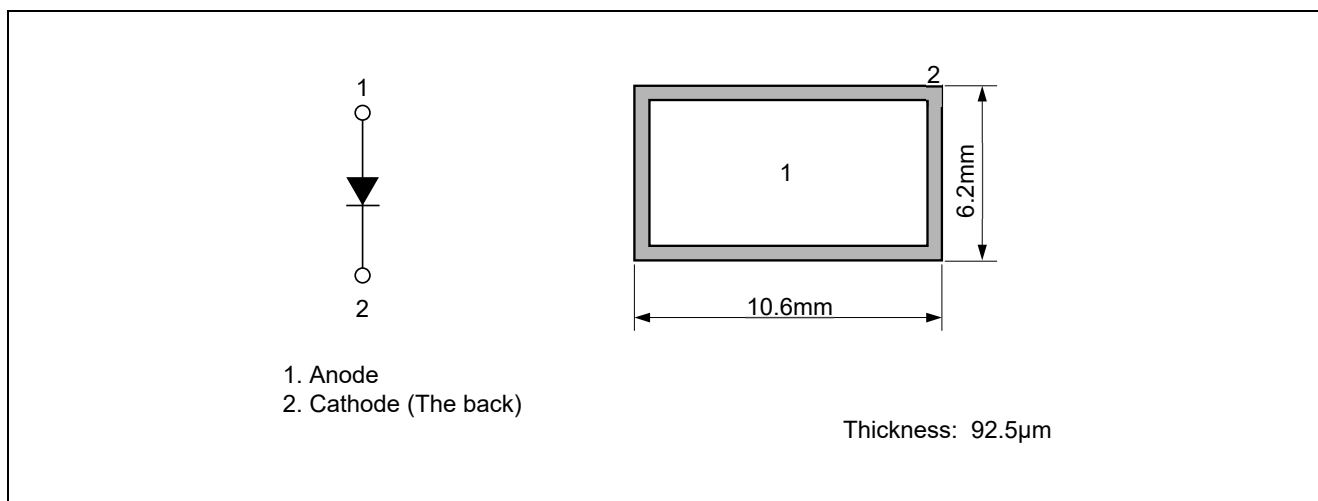
## Features

- Fast Recovery Diode technology
- Low Forward voltage  
 $V_F = 1.5 \text{ V typ. (at } I_F = 300 \text{ A, } T_j = 25 \text{ °C)}$
- AEC Q101 (HTRB) qualified
- Applications: Hybrid and electric vehicle inverter

## Key performance

| Product name | $V_{CES}$ | $I_c$ | Die size                                    | Package    |
|--------------|-----------|-------|---------------------------------------------|------------|
| RJU6832PJWS  | 750 V     | 300 A | 65.72 mm <sup>2</sup><br>(10.5 mm x 6.2 mm) | Sawn wafer |

## Outline



## Mechanical Parameters

| Parameter                       | value                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Die size                        | 65.72 mm <sup>2</sup> (10.6 mm x 6.2 mm)                                                                                                            |
| Anode pad size                  | 9.6 mm x 5.2 mm                                                                                                                                     |
| Die thickness                   | 92.5 µm                                                                                                                                             |
| Passivation front side          | Polyimide                                                                                                                                           |
| Pad metallization               | Ni / Au – 2.5 µm / 0.035 µm                                                                                                                         |
| Backside metallization          | Ni / Au - 0.6 µm / 0.1 µm                                                                                                                           |
| Die attach recommendation       | Solder                                                                                                                                              |
| Wire bond recommendation        | Al wire ≤ 500 µm                                                                                                                                    |
| Recommended storage environment | Stored in original container, in dry air or nitrogen.<br>15 months after packing, at an ambient temperature of 20 to 30 °C, dew-point under -30 °C. |

## Absolute Maximum Ratings

(Tj = 25 °C unless otherwise noted)

| Item                  |             | Symbol    | Ratings       | Unit |
|-----------------------|-------------|-----------|---------------|------|
| Reverse Voltage       | Tj = -40 °C | VR        | 650 Notes1    | V    |
|                       | Tj = 25 °C  |           | 750           | V    |
|                       | Tj = 175 °C |           | 750 Notes1    | V    |
| Forward current (DC)  |             | IF        | _ Notes2      | A    |
| Pulse forward current |             | IF(pulse) | 900 Notes1, 4 | A    |
| Junction temperature  |             | Tj        | 175 Notes3    | °C   |

Notes: 1. Not subject to production test – verified by design/characterization.  
 2. Depending on thermal properties of assembly, Tj ≤ 175 °C.  
 3. AEC-Q101 complaint. HTRB is carried out to determine.  
 4. PW = 10 μs, Duty < 1 %  
 5. Continuous heavy condition (e.g. high temperature/voltage/current or high variation of temperature) may affect reliability even if it is within the absolute maximum ratings. Please consider derating condition for appropriate reliability in reference Renesas Semiconductor Reliability Handbook (Recommendation for Handling and Usage of Semiconductor Devices) and individual reliability data.

## Electrical Characteristics 1

(Tested on wafer, Tj = 25 °C unless otherwise noted)

| Item                    | Symbol              | Test Conditions         | Min | Typ | Max | Unit |
|-------------------------|---------------------|-------------------------|-----|-----|-----|------|
| Breakdown voltage       | V <sub>(BR)R1</sub> | I <sub>R</sub> = 100 μA | 750 | —   | —   | V    |
| Reverse leakage current | I <sub>R</sub>      | V <sub>R</sub> = 750 V  | —   | —   | 17  | μA   |

Notes: 6. The characteristic items specified in this table guarantee the electrical characteristics in the wafer state but do not the characteristic fluctuations or characteristic defects that occur in the processes after assembling.

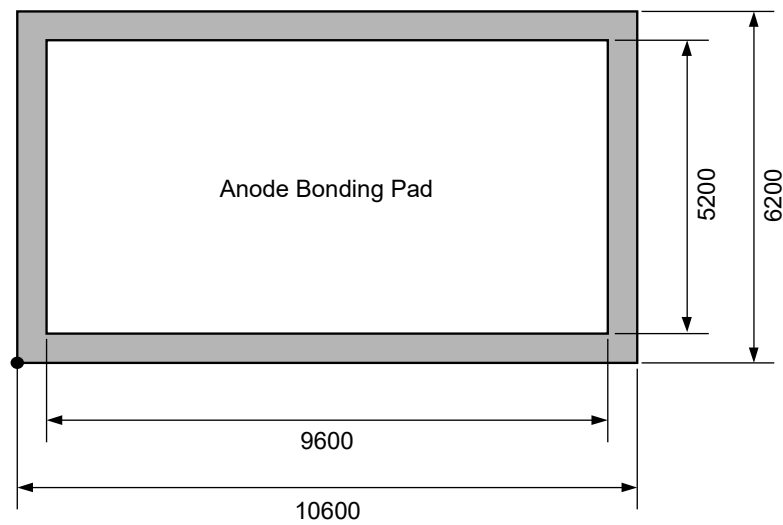
## Electrical Characteristics 2

(Not subject to production test, designed target value, Tj = 25 °C unless otherwise noted)

| Item                     | Symbol              | Test Conditions                                           | Min | Typ  | Max  | Unit |
|--------------------------|---------------------|-----------------------------------------------------------|-----|------|------|------|
| Breakdown voltage        | V <sub>(BR)R2</sub> | I <sub>R</sub> = 100 μA, Tj = -40 °C<br><sup>Notes7</sup> | 650 | —    | —    | V    |
|                          | V <sub>(BR)R3</sub> | I <sub>R</sub> = 10 mA, Tj = 175 °C<br><sup>Notes7</sup>  | 750 | —    | —    | V    |
| Forward voltage          | V <sub>F</sub>      | I <sub>F</sub> = 300 A <sup>Notes7</sup>                  | —   | 1.50 | 1.85 | V    |
| Reverse recovery current | I <sub>rr</sub>     | V <sub>CC</sub> = 475 V, I <sub>F</sub> = 300 A           | —   | 218  | —    | A    |
| Reverse recovery charge  | Q <sub>rr</sub>     | diF/dt = 8900 A/μs                                        | —   | 19   | —    | μC   |
| Reverse recovery energy  | E <sub>rr</sub>     | Inductive load <sup>Notes7, 8</sup>                       | —   | 4.5  | —    | mJ   |

Notes: 7. Designed target value on Renesas measurement condition.  
 8. This value is influenced by parasitic inductance and assembly condition.

## Die Dimension



Unit:  $\mu\text{m}$   
 Die thickness: 92.5  $\mu\text{m}$   
 Back side: Cathode

Notes 1:

| Illustration  | Definition                    |
|---------------|-------------------------------|
| Part of gray  | Final passivation (Polyimide) |
| Part of white | Bonding area (Ni/Au)          |

Notes 2: Recognition, target and any other patterns which are not related to FRD operation, may be changed without notice.

## Ordering Information

Please contact your Renesas sales representative for sample requests.

| Delivery Form      | Ordering Part Number | Remark |
|--------------------|----------------------|--------|
| Sawn wafer on foil | RJU6832PJWS-00#W0    |        |

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## Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
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