RBC50A65B1UFWA

650V - 50A - Fast Recovery Diode

R07DS1506EJ0120
Rev.1.20
Oct.18th.2024

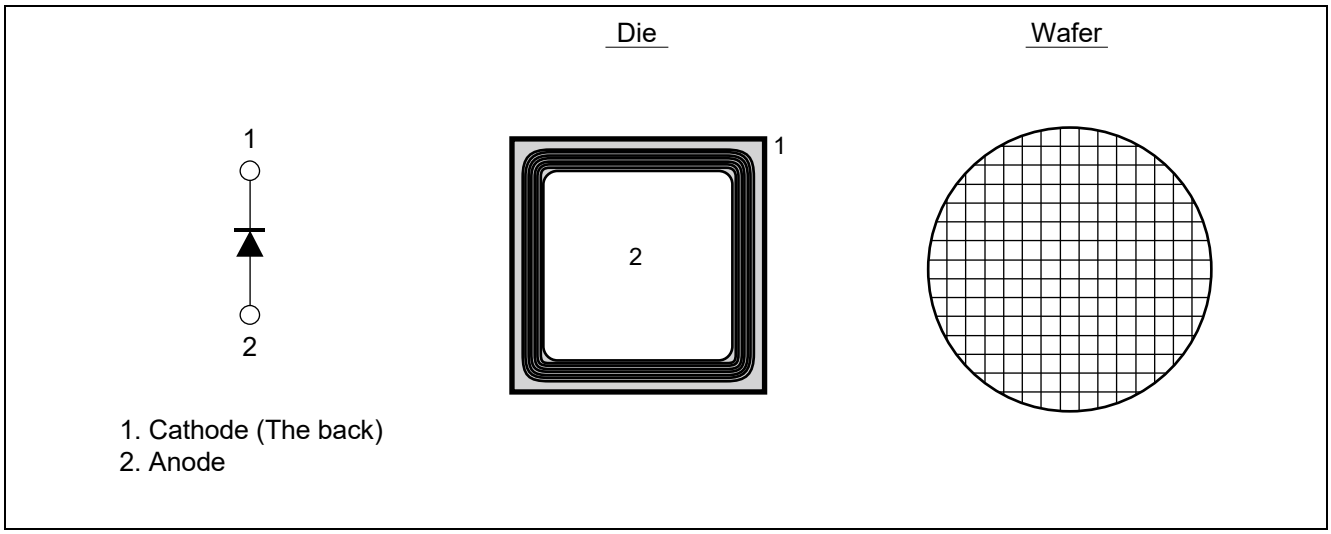
Features

- Forward voltage: V_F = 1.7 V typ. (at I_F = 50 A)
- High speed switching
- Applications: UPS, Welding, photovoltaic inverters, Power converter system
- Unsawn wafer Wafer size = 200 mm
- Quality grade: Standard

Key performance

Product name	V_R	I_F	Die size	Package
RBC50A65B1UFWA	650 V	50 A	16.0 mm^2 (4.0 mm x 4.0 mm)	Unsawn wafer

Outline



1. Cathode (The back)
2. Anode

Mechanical parameter

Die size	4.00 x 4.00	mm
Area total	16.00	mm^2
Thickness	0.077 typ.	mm
Wafer size	193.9	mm
Passivation front side	Polyimide	
Pad metal	AlSi – 5.2 μm	
Backside metal	Ni/Au	

Absolute Maximum Ratings

(Tj = 25 °C unless otherwise noted)

Item	Symbol	Ratings	Unit
Maximum reverse voltage	V_{RM}	650	V
Forward current	I_F	— Notes1	A
Junction temperature	T_j Notes2	175 Notes2	°C

Notes: 1. Depends on thermal properties of assembly. Tj = 175 °C.
2. Please use this device in the thermal conditions which the junction temperature does not exceed 175 °C.
3. Continuous heavy condition (e.g. high temperature/voltage/current or high variation of temperature) may affect a 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.

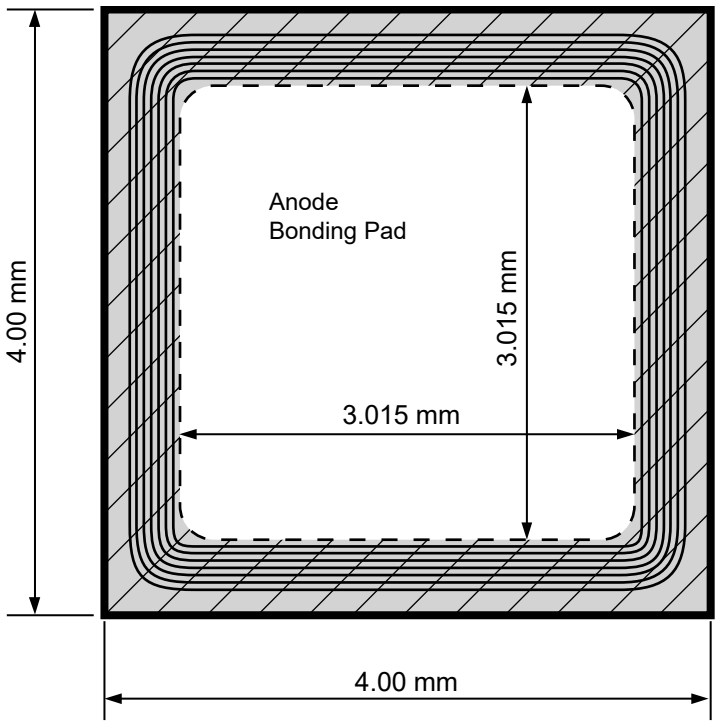
Electrical Characteristics

(Tj = 25 °C unless otherwise noted)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Forward voltage	V_F	—	1.7	2.2	V	I_F = 50 A Notes5, 6, 7
Reverse current	I_R	—	—	10	μA	V_{CE} = 650 V Notes4
Reverse voltage	V_R	650	—	—	V	I_R = 100 μA Notes4, 5

Notes: 4. Tested on wafer
5. Pulse test
6. Designed target value on Renesas measurement condition. (Not tested)
7. Characteristic value on TO-247 package
8. Characteristic items prescribed in this document will guarantee the electrical characteristics in chip state but not the characteristic fluctuations or characteristic defects that occur in the processes after assembling.
9. Switching characteristics is depending strongly on module design and mounting technology and can therefore not be specified for a bare die.
10. Please refer to “R07DS1383 RBN75H65T1FPQ-A0 Data sheet” for packaged product datasheet.

Die Dimension



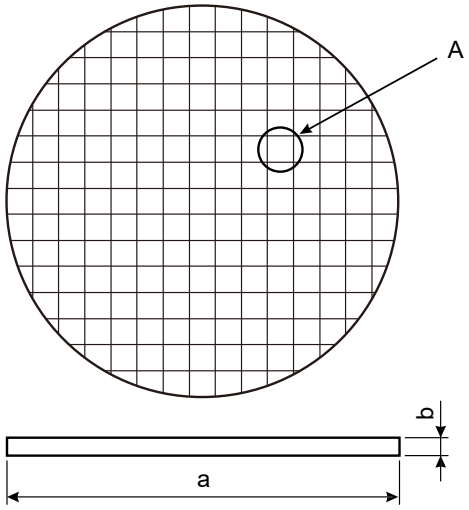
Notes 1:

Illustration	Definition
Part of dotted line	Bonding area
Part of gray	Final passivation

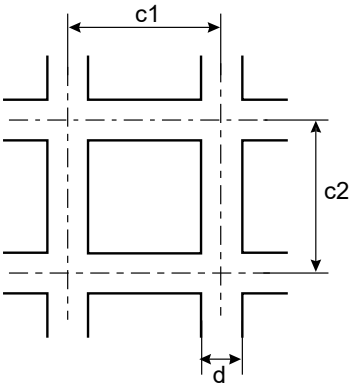
Notes 2: Recognition, target and any other patterns which are not related to FRD operation, may be changed without notice.

Wafer Dimension

Wafer dimension

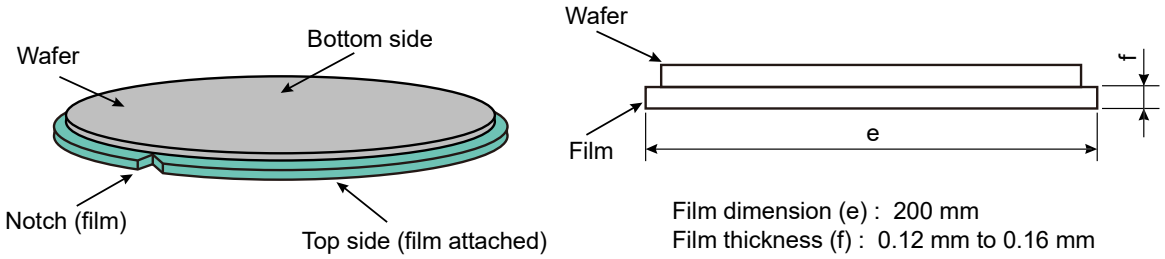


A Enlargement



Item	Symbol	Dimensions (mm)
Wafer diameter	a	193.9
Wafer thickness	b	0.077
Chip pitch	c1	4.00
	c2	4.00
Scribe grid	d	0.076

Outline of film attached Wafer (at delivery)



Film dimension (e) : 200 mm
Film thickness (f) : 0.12 mm to 0.16 mm

Ordering Information

Please contact your Renesas sales representative for sample requests.

Delivery Form	Ordering Part Number	Ordering Quantity Unit
Unsawn wafer	RBC50A65B1UFWA-030#FF0	2724 (3 wafers)
Unsawn wafer	RBC50A65B1UFWA-0F0#FF0	11804 (13 wafers)

Note. The order quantities indicate the maximum quantity of chips for each part number, and the actual quantity of chips shipped will be reduced due to yield. These is also a possibility that the number of wafers may decrease during the manufacturing process. The quantity shipped will be indicated on the label as the number of good chips.

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