

RJP1C15DWA

1200V - 200A - IGBT

R07DS1550EJ0100

Rev.1.00

Oct.25th.2024

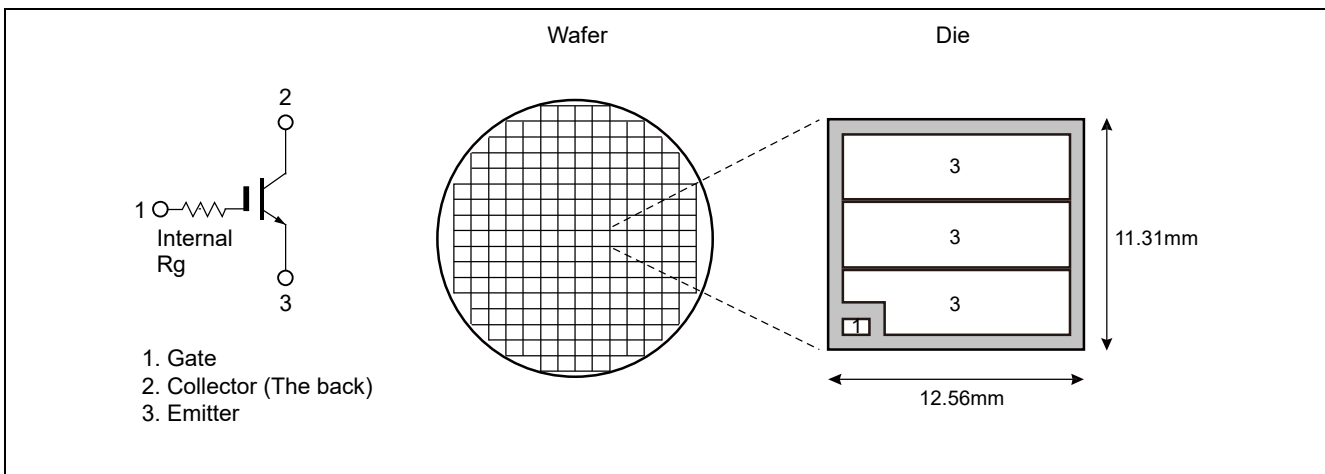
Features

- 1200V AE4 Trench & Field Stop Technology
- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.5 \text{ V typ. (at } I_C = 200 \text{ A, } V_{GE} = 15 \text{ V, } T_j = 25 \text{ °C)}$
- Low Switching loss
- Easy paralleling by internal R_g
- Applications: Inverters
- Quality grade: Standard

Key performance

Product name	V_{CE}	I_C	Die size	Package
RJP1C15DWA	1200 V	200 A	142 mm ² (12.56 mm x 11.31 mm)	Unsaun wafer

Outline



Mechanical Parameters

Parameter	Value
Die size	142 mm ² (12.56 mm x 11.31 mm)
Emitter pad size	See Die Dimension
Gate pad size	1.3 mm x 0.8 mm
Die thickness	130 μm
Wafer size	200 mm
Passivation front side	Polyimide
Pad metallization	AlSi – 5.5 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. < 6 month after packing, at an ambient temperature of 20 to 30 °C, dew-point under -30 °C

Absolute Maximum Ratings

(T_j = 25 °C unless otherwise noted)

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V _{CEs}	1200	V
Gate to emitter voltage	V _{GES}	±30	V
Collector current	I _C Notes1	—	A
Pulse collector current	I _{C(pulse)} Notes 2, 3	400	A
Junction temperature	T _j Notes4	175	°C

- Notes: 1. Depends on thermal properties of assembly, 175 °C.
 2. Not subject to product test – verified by design/characterization.
 3. PW = 10 us, Duty < 1 %
 4. Please use this device in the thermal conditions which the junction temperature does not exceed 175 °C. IGBT Application Note is disclosed about reliability test and application condition up to T_j = 175 °C.
 5. 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 1

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

Item	Symbol	Test Conditions	Min	Typ	Max	Unit
Zero gate voltage collector current	I _{CEs}	V _{CE} = 1200 V, V _{GE} = 0	—	—	10	μA
Gate to emitter leak current	I _{GES}	V _{GE} = ±30 V, V _{CE} = 0	—	—	±1	μA
Gate to emitter cutoff voltage	V _{GE(th)}	V _{CE} = 10 V, I _C = 200 mA	6.0	7.0	8.0	V
Collector to emitter saturation voltage	V _{CE(sat)}	I _C = 200 A, V _{GE} = 15 V	—	1.50	1.75	V
Internal Gate Resistor	R _g			4.0		Ω

- 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.
 7. This value is obtained by subtracting the contact resistance from the wafer test result.

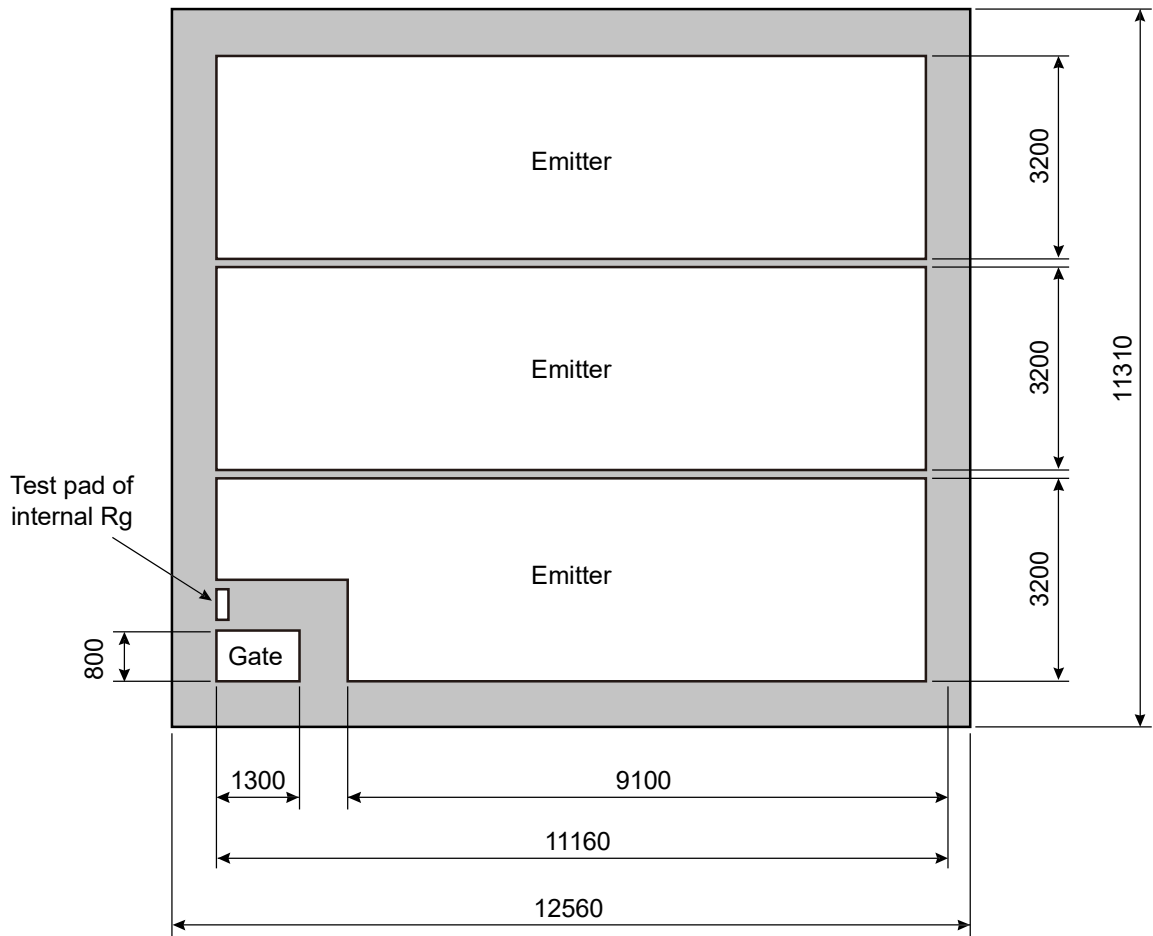
Electrical Characteristics 2

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

Item	Symbol	Test Conditions	Min	Typ	Max	Unit
Input capacitance	C _{ies} Notes7,8	V _{CE} = 25 V, V _{GE} = 0 f = 500k Hz	—	11800	—	pF
Output capacitance	C _{oes} Notes7,8		—	520	—	pF
Reveres transfer capacitance	C _{res} Notes7, 8		—	190	—	pF
Short Circuit Withstand Time	t _{sc} Notes7, 8	V _{CC} ≤ 700 V, V _{GE} = 15 V T _C = 150 °C	6			μs

- Notes 8. Designed target value on Renesas measurement condition.
 9. This value is influenced by parasitic inductance and assembly condition
 10. Switching characteristics is depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

Die Dimension



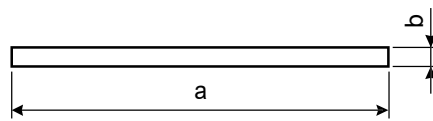
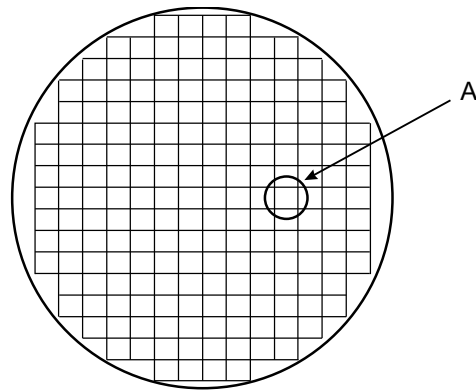
Unit: μm
 Die thickness: 130μm
 Back side: Collector

Note 1.

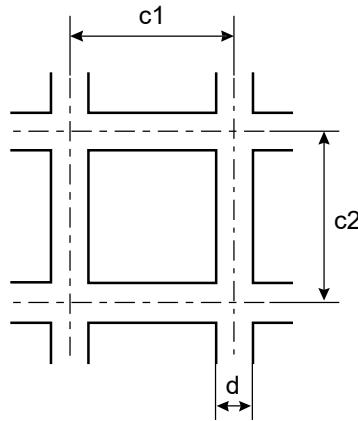
Illustration	Definition
Part of white	Bonding area (AlSi)
Part of gray	Final passivation (Polymide)

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

Wafer Dimension



A Enlargement



Item	Symbol	Dimensions (mm)
Wafer diameter	a	200
Wafer thickness	b	0.13
Chip pitch	c1	12.560
	c2	11.310
Scribe grid	d	0.130

Ordering Information

Please contact your Renesas sales representative for sample requests.

Delivery Form	Ordering Part Number	Ordering Quantity Unit
Unsawn wafer	RJP1C15DWA-00#W0	4400 (25wafers)

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. There 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.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	2024.10.25		First edition

All documents should contain the following section break and paragraph as the last item. The footers of this document refer to the paragraph in order to reference the last page of the document.

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(Rev. 5.0-1 October 2020)

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