

# RBN150N180S2HFWA

1800V - 300A/150A - IGBT

R07DS1454EJ0100

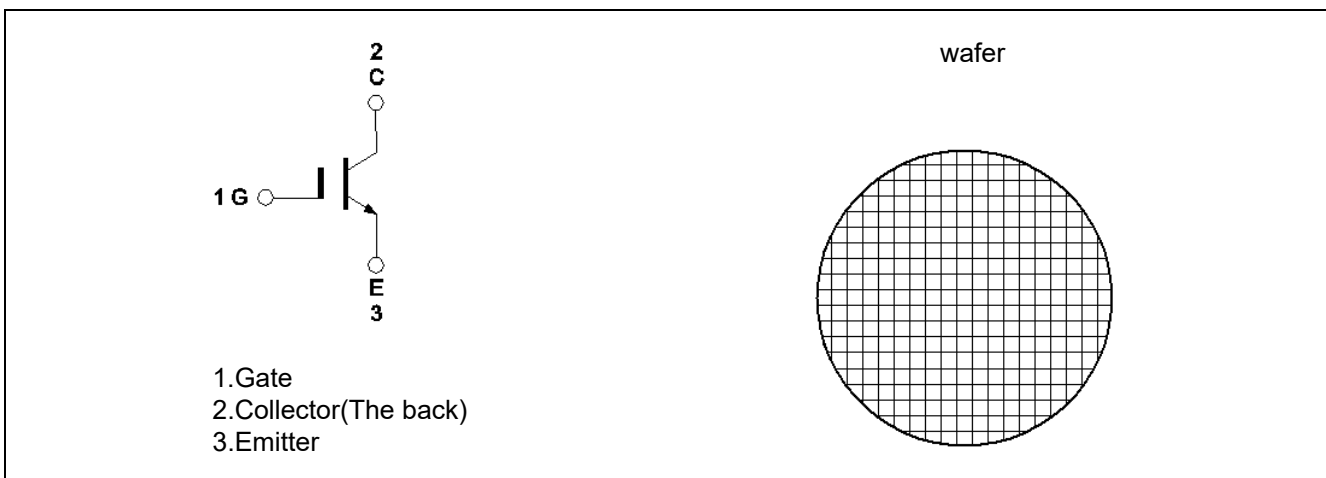
Rev.1.00

Apr 11th, 2023

## Features

- Renesas generation 8<sup>th</sup> Trench IGBT
- Short circuit withstands time (10  $\mu$ s min.)
- Optimized for high power application
- Unseen wafer Wafer size = 200 mm
- Quality grade: Standard

## Outline



## Absolute Maximum Ratings

(T<sub>j</sub> = 25°C unless otherwise noted)

Item	Symbol	Ratings	Unit
Collector to emitter voltage	V <sub>CES</sub>	1800	V
Gate to emitter voltage	V <sub>GES</sub>	±30	V
Collector current	T <sub>c</sub> = 25°C	300 <sup>Notes1</sup>	A
	T <sub>c</sub> = 100°C	150 <sup>Notes1</sup>	A
Junction temperature	T <sub>j</sub>	175 <sup>Notes2</sup>	°C

- Notes:
1. Depends on thermal properties of assembly.
  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** (Data below are measured values on a package configuration.)(T<sub>j</sub> = 25 °C unless otherwise noted)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I <sub>CES</sub>	—	—	4.0	μA	V <sub>CE</sub> = 1800 V, V <sub>GE</sub> = 0 V <sup>Notes4</sup>
Gate to emitter leak current	I <sub>GES</sub>	—	—	±450	nA	V <sub>GE</sub> = ±30 V, V <sub>CE</sub> = 0 V <sup>Notes4</sup>
Gate to emitter threshold voltage	V <sub>GE(th)</sub>	5.0	5.8	6.5	V	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 6.0 mA <sup>Notes4</sup>
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	—	1.60	1.90	V	I <sub>C</sub> = 150 A, V <sub>GE</sub> = 15 V Notes4, Notes5
Input capacitance	C <sub>ies</sub>	—	12500	—	pF	V <sub>CE</sub> = 25 V
Output capacitance	C <sub>oes</sub>	—	490	—	pF	V <sub>GE</sub> = 0 V
Reveres transfer capacitance	C <sub>res</sub>	—	210	—	pF	f = 1 MHz <sup>Notes6</sup>
Short circuit withstand time	t <sub>sc</sub>	10	—	—	μs	V <sub>CC</sub> = 900 V, V <sub>GE</sub> = 15 V T <sub>j</sub> ≤ 150 °C <sup>Notes6</sup>
Short circuit collector saturation current	I <sub>c,sc</sub>	450	—	—	A	V <sub>CC</sub> = 900 V, V <sub>GE</sub> = 15 V T <sub>j</sub> ≤ 150 °C <sup>Notes6</sup>
Reverse bias safe operating area (RBSOA)	I <sub>C,max</sub>	300	—	—	A	V <sub>CE,max</sub> = 1700 V, T <sub>j</sub> ≤ 175°C <sup>Notes6</sup>
Chip gate resistor	R <sub>g_chip</sub>	—	6.5	—	Ω	Notes6

Notes: 4. Tested on wafer.

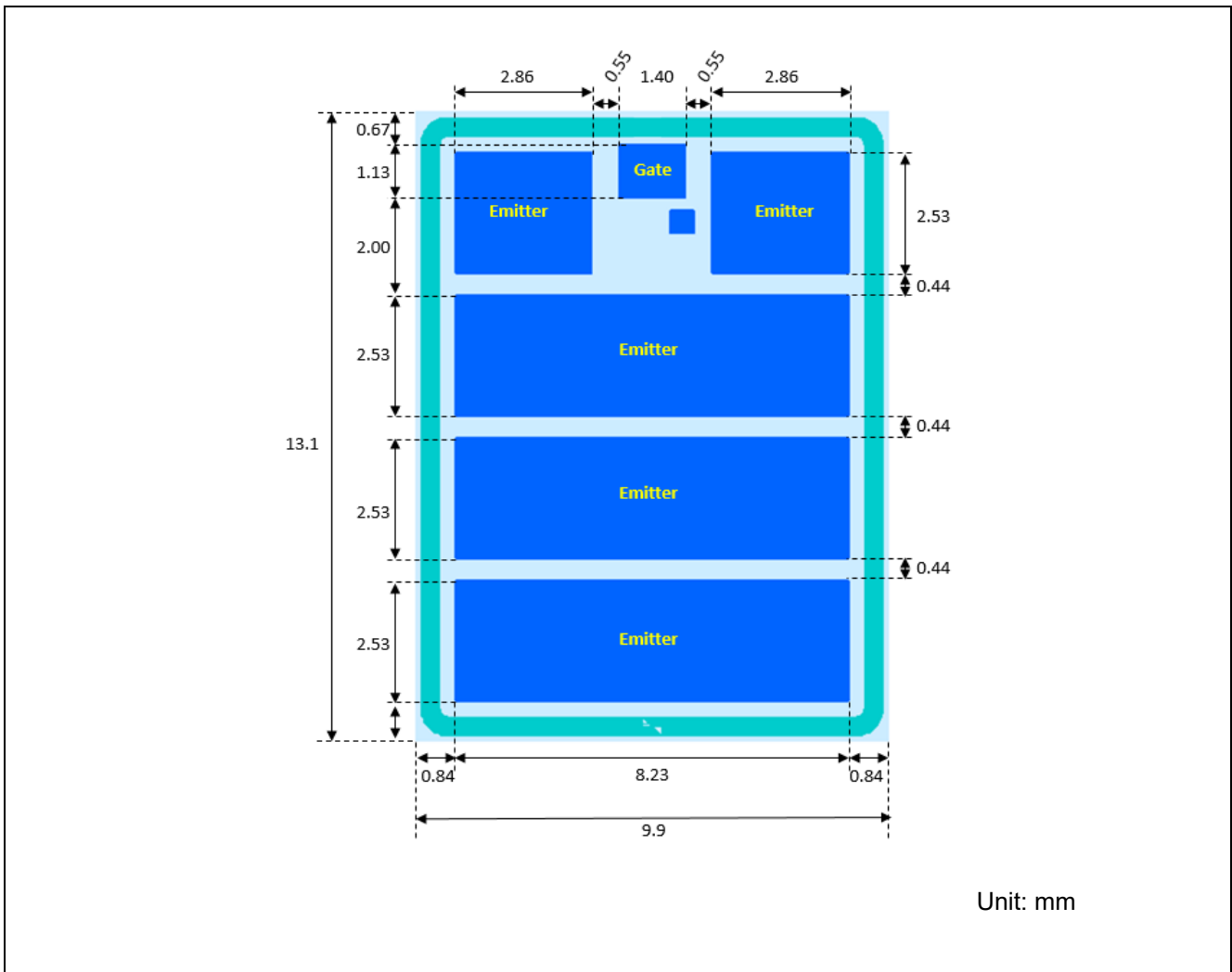
5. Pulse test.

6. Designed target value on Renesas measurement condition. (Not tested)

7. 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.

8. Switching characteristics is depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

## Die Dimension



## Ordering Information

Please contact your Renesas sales representative for sample requests.

Delivery form	Ordering Part Number	Ordering quantity unit
Unsaun wafer	RBN150N180S2HFWA-850#FF0	960 (5wafers)
Unsaun wafer	RBN150N180S2HFWA-8F0#FF0	4800 (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.

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