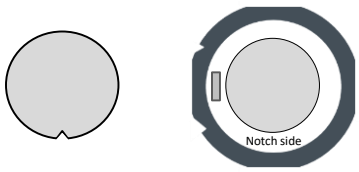
SG8407WN

1200V 100A Insulated Gate Bipolar Transistor Datasheet

V_{CES}	1200V
$I_{C\ (Nominal)}$	100A
$V_{CE(sat)}$ (Typ.)	1.55V
Max. Possible Chips per Wafer	284pcs

●Outline

Wafer (W05) Unsawn on foil (U03)



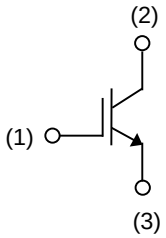
●Features

1) Trench Light Punch Through Type

2) Low Collector - Emitter Saturation Voltage

3) Short Circuit Withstand Time 10μs

●Inner Circuit



(1) Gate
(2) Collector
(3) Emitter

●Application

General Inverter

for Automotive and Industrial Use

Heater for Automotive

Exciter for Automotive

●Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector - Emitter Voltage, T_j = 25°C	V_{CES}	1200	V
Gate - Emitter Voltage	V_{GES}	±30	V
Collector Current	I_C *1	*1)	A
Pulsed Collector Current	I_{CP} *2	300	A
Operating Junction Temperature	T_j	-40 to +175	°C

*1 Depending on thermal properties of assembly

*2 Pulse width limited by $T_{jmax.}$

●Design Assurance

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Short Circuit Withstand Time	t_{sc} *3	V_{GE} = 15V, T_j = 25°C $V_{CC} \leq$ 800V $V_{CC} \leq$ 850V	 10 9	 - -	 - -	μs
Short Circuit Withstand Time	t_{sc} *3	V_{GE} = 15V, T_j = 150°C $V_{CC} \leq$ 800V $V_{CC} \leq$ 850V	 8 7	 - -	 - -	μs
Reverse Bias Safe Operating Area	RBSOA *3	I_C = 300A,V_{CC} = 940V, V_P = 1200V,V_{GE} = 15V, R_G = 50Ω,T_j = 175°C	FULL SQUARE			-

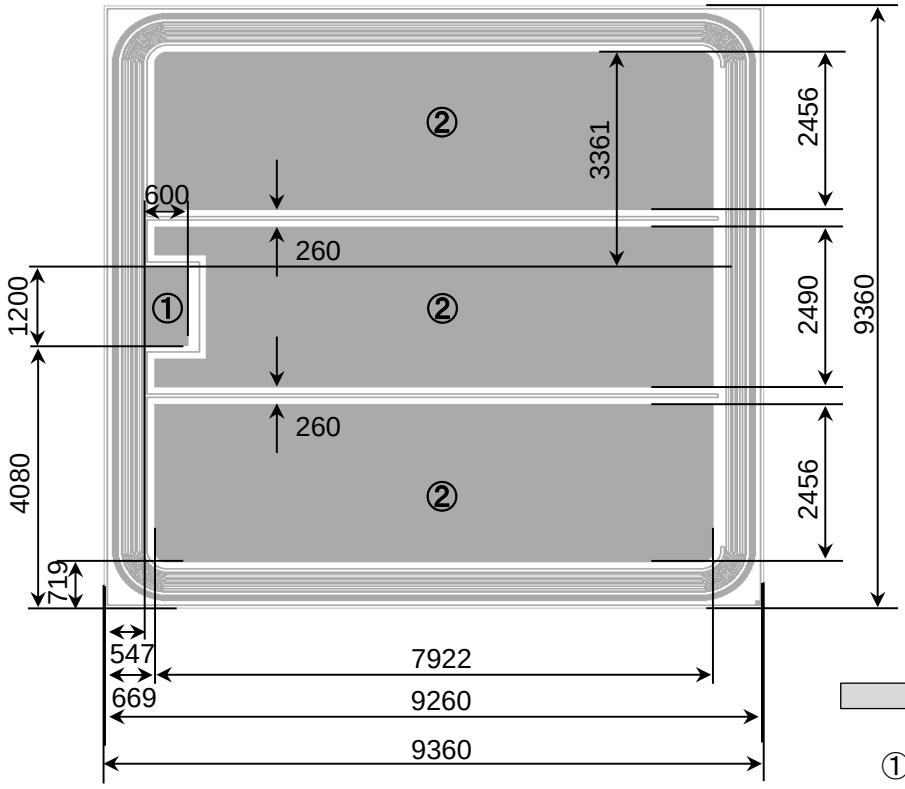
*3 Design assurance without measurement

●Electrical Characteristics (at T_j = 25°C unless otherwise specified)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector - Emitter Breakdown Voltage	BV_{CES}	I_C = 10μA, V_{GE} = 0V	1200	-	-	V
Collector Cut - off Current	I_{CES}	V_{CE} = 1200V, V_{GE} = 0V	-	-	10	μA
Gate - Emitter Leakage Current	I_{GES}	V_{GE} = ±30V, V_{CE} = 0V	-	-	±500	nA
Gate - Emitter Threshold Voltage	$V_{GE(th)}$	V_{CE} = 5V, I_C = 11.7mA	5.5	6.3	7.1	V
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$ *3	I_C = 100A, V_{GE} = 15V, T_j = 25°C T_j = 150°C	 - -	 1.55 1.95	 1.95 -	V
Input Capacitance	C_{ies}	V_{CE} = 30V,	-	16720	-	pF
Output Capacitance	C_{oes}	V_{GE} = 0V,	-	380	-	
Reverse transfer Capacitance	C_{res}	f = 1MHz	-	140	-	
Total Gate Charge	Q_g	V_{CE} = 600V,	-	605	-	nC
Gate - Emitter Charge	Q_{ge}	I_C = 100A,	-	104	-	
Gate - Collector Charge	Q_{gc}	V_{GE} = 15V	-	346	-	
Gate Input Resistance	$R_{G(int)}$	f = 1MHz, open collector	-	0.4	-	Ω
Integrated Gate Resistor	R_G	f = 1MHz, open collector	-	None	-	Ω

*3 Design assurance without measurement

●Chip Information



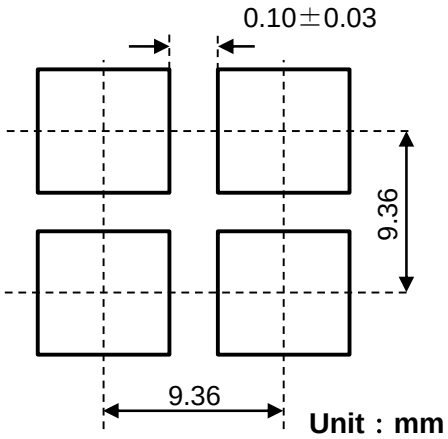
Unit : μm

: Pad Area

① : Gate Bonding Pad

② : Emitter Bonding Pad

Backside : Collector



Unit : mm

Wafer Size	200mm
Wafer Thickness	0.13±0.01mm
Chip Size	9.36mm×9.36mm
Cut Line Width	0.10±0.03mm
Top Side Metallization	AlCu:4.4μm
Back Side Metallization	Ti/Ni:0.4μm/Au:0.05μm
Passivation	Polyimide
Active Area Total	64.01mm^2

●Further Electrical Characteristics

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

This chip data sheet refers to the device data sheet	-

Technology planning to qualify in TO-247-4L package.

Notes

1) The information contained herein is subject to change without notice.

2) Before you use our Products, please contact our sales representative and verify the latest specifications.

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products specified in this document are not designed to be radiation tolerant.

7) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, and power transmission systems.

8) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

9) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

10) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.

11) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.

12) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.

13) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.

ROHM SEMICONDUCTOR

Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available, please contact us.

ROHM Customer Support System

http://www.rohm.com/contact/

General Precaution

1. Before you use our Products, you are requested to carefully read this document and fully understand its contents. ROHM shall not be in any way responsible or liable for failure, malfunction or accident arising from the use of any ROHM's Products against warning, caution or note contained in this document.

2. All information contained in this document is current as of the issuing date and subject to change without any prior notice. Before purchasing or using ROHM's Products, please confirm the latest information with a ROHM sales representative.

3. The information contained in this document is provided on an "as is" basis and ROHM does not warrant that all information contained in this document is accurate and/or error-free. ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties resulting from inaccuracy or errors of or concerning such information.