

RJP1CS27DWA / RJP1CS27DWS

1250V - 150A - IGBT

R07DS1305EJ0100

Application: Inverter

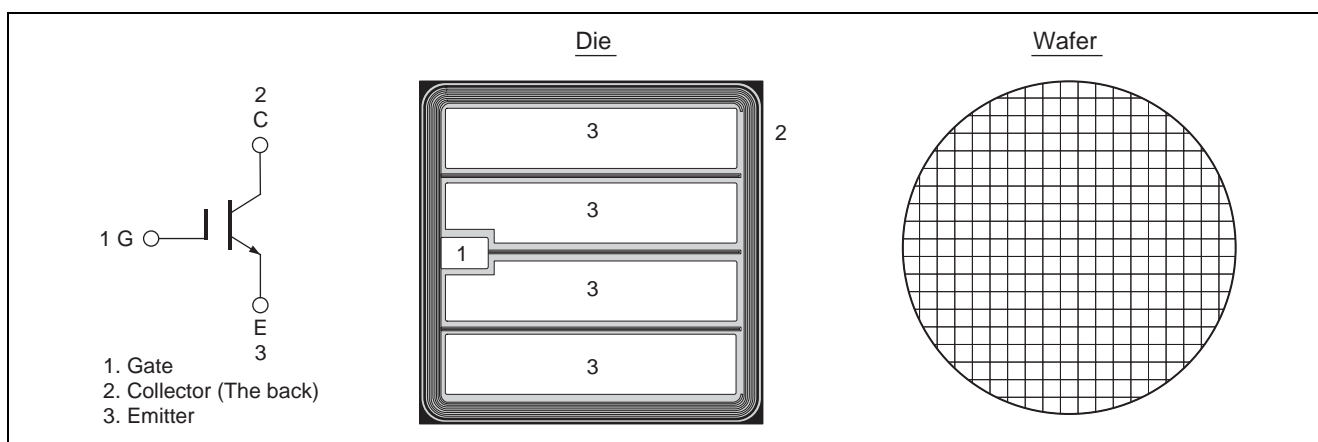
Rev.1.00

Sep 30, 2015

Features

- Renesas generation 7th Trench IGBT
- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.55 \text{ V typ. (at } I_c = 150 \text{ A, } V_{GE} = 15 \text{ V, } T_c = 25^\circ\text{C)}$
- Moderate speed switching
- Short circuit withstands time (10 $\mu\text{s min.}$)

Outline



Absolute Maximum Ratings

($T_c = 25^\circ\text{C}$ unless otherwise noted)

Item	Symbol	Ratings	Unit	
Collector to emitter voltage	V_{CES}	1250	V	
Gate to emitter voltage	V_{GES}	± 30	V	
Collector current	$T_c = 25^\circ\text{C}$	I_c	300	A
	$T_c = 100^\circ\text{C}$	I_c	150	A
Junction temperature	T_j	175 ^{Note1}	$^\circ\text{C}$	

Notes: 1. Please use this device in the thermal conditions where the junction temperature does not exceed 175 $^\circ\text{C}$.

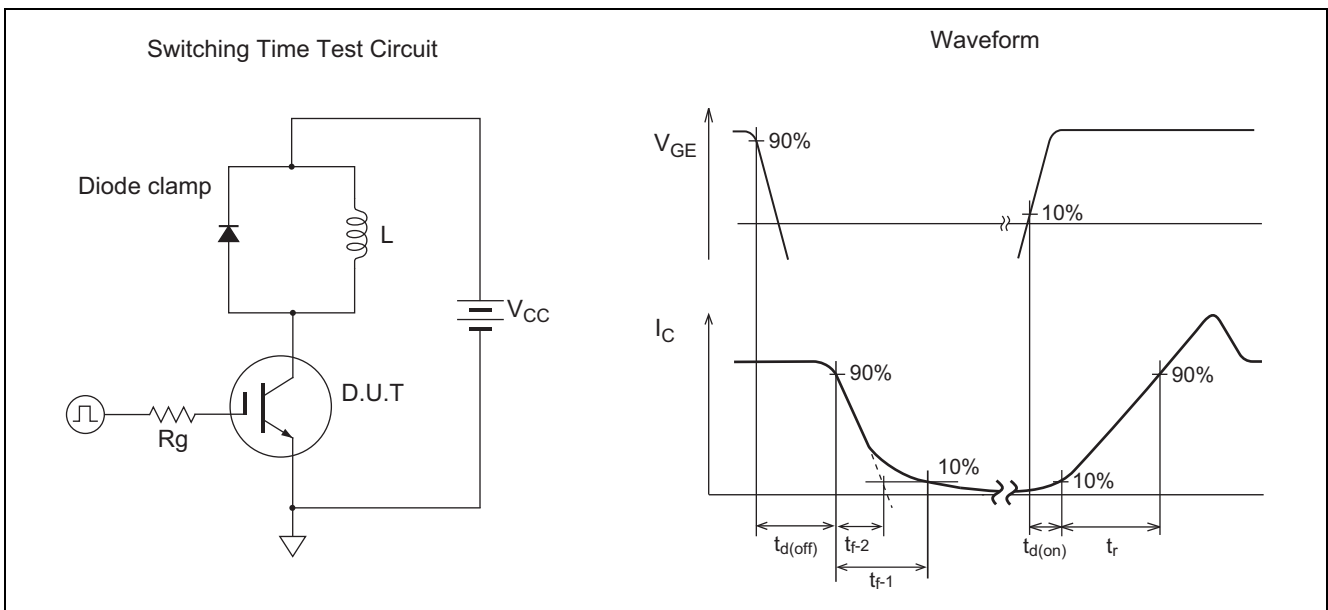
IGBT Application Note is disclosed about reliability test and application condition up to $T_j = 175^\circ\text{C}$.

Electrical Characteristics (These data are actual measurement values in an evaluation package.)

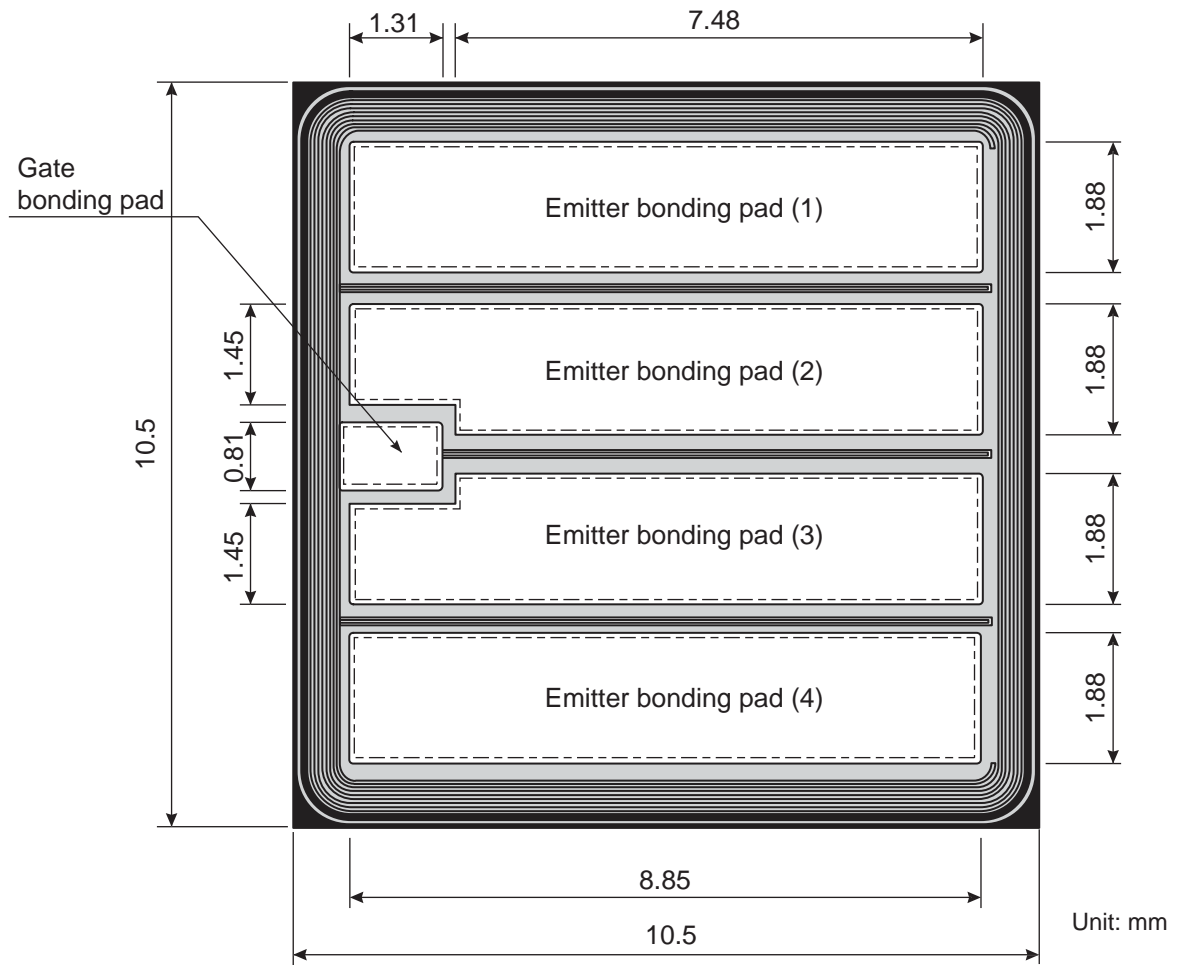
(Tc = 25°C unless otherwise noted)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	1	μA	$V_{CE} = 1250 V, V_{GE} = 0$
Gate to emitter leak current	I_{GES}	—	—	± 1	μA	$V_{GE} = \pm 30 V, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	5.0	—	6.8	V	$V_{CE} = 10 V, I_C = 5.0 mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.55	2.0	V	$I_C = 150 A, V_{GE} = 15 V$ ^{Note2}
Input capacitance	C_{ies}	—	15.0	—	nF	$V_{CE} = 25 V$
Output capacitance	C_{oes}	—	0.40	—	nF	$V_{GE} = 0$
Reveres transfer capacitance	C_{res}	—	0.32	—	nF	$f = 1 MHz$
Total gate charge	Q_g	—	910	—	nC	$V_{GE} = 15 V$
Gate to emitter charge	Q_{ge}	—	130	—	nC	$V_{CE} = 600 V$
Gate to collector charge	Q_{gc}	—	490	—	nC	$I_C = 150 A$
Switching time ^{Note3}	$t_{d(on)}$	—	95	—	ns	$V_{CC} = 600 V$
	t_r	—	70	—	ns	$I_C = 150 A$
	$t_{d(off)}$	—	600	—	ns	$V_{GE} = \pm 15 V$
	t_{f-1}	—	320	—	ns	$R_g = 10 \Omega, T_c = 150 \text{ }^\circ C$
	t_{f-2}	—	160	—	ns	Inductive load
Short circuit withstand time ^{Note4}	t_{sc}	10	—	—	μs	$V_{CC} \leq 720 V, V_{GE} = 15 V$ $T_c = 150 \text{ }^\circ C$

- Notes: 2. Pulse test.
- 3. Switching time test circuit and waveform are shown below.
- 4. Verified by design



Die Dimension



Note 1.

Illustration	Definition
Part of white	Al pattern
Part of dotted line	Bonding area
Part of gray	Final passivation

Note 2. The back of the chip is processed with Au evaporation.

Note 3. Recognition, target and any other patterns which are not related to IGBT operation, may be changed without notice.

Ordering Information

Orderable Part Number	Shipment form
RJP1CS27DWA-80#W0	Unsawn wafer
RJP1CS27DWS-80#W0	Sawn wafer

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