

RJP1CS04DWA / RJP1CS04DWS

1250V - 50A - IGBT

R07DS0827EJ0400

Application: Inverter

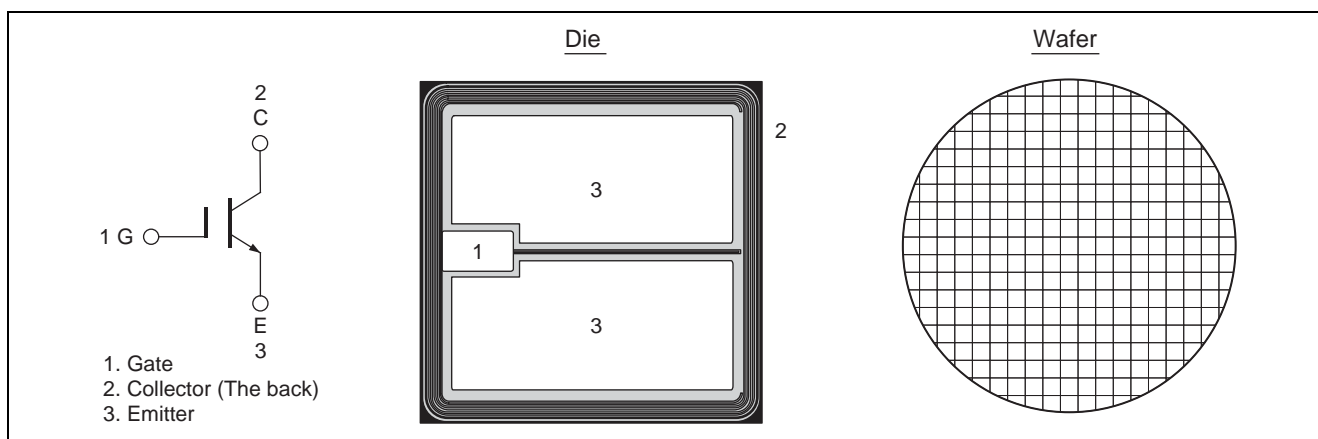
Rev.4.00

Sep 30, 2015

Features

- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 1.8 \text{ V typ. (at } I_C = 50 \text{ A, } V_{GE} = 15 \text{ V, } T_C = 25^\circ\text{C)}$
- High speed switching
- Short circuit withstands time (10 μs 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	100	A
	$T_C = 100^\circ\text{C}$	I_C	50	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°C .
 IGBT Application Note is disclosed about reliability test and application condition up to $T_j = 175^\circ\text{C}$.

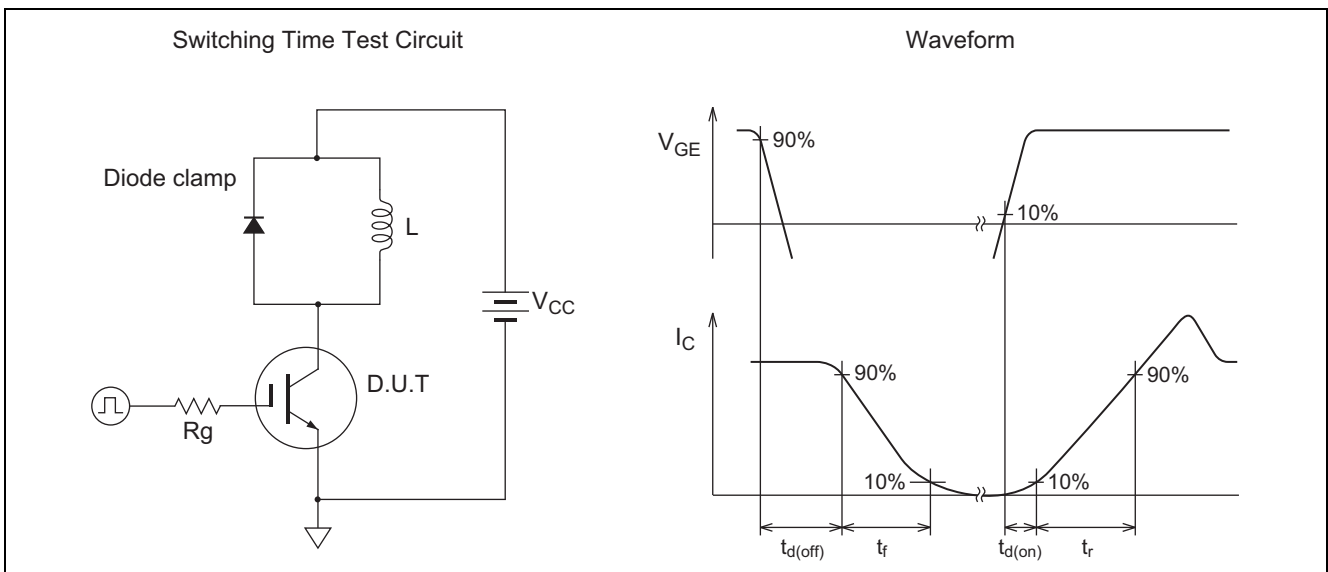
Electrical Characteristics (These data are actual measurement values in an evaluation package.)(T_c = 25°C unless otherwise noted)

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} = ±30 V, V _{CE} = 0
Gate to emitter cutoff voltage	V _{GE(off)}	5.0	—	6.8	V	V _{CE} = 10 V, I _C = 1.7 mA
Collector to emitter saturation voltage	V _{CE(sat)}	—	1.80	2.25	V	I _C = 50 A, V _{GE} = 15 V ^{Note2}
Input capacitance	C _{ies}	—	5.3	—	nF	V _{CE} = 25 V
Output capacitance	C _{oes}	—	0.16	—	nF	V _{GE} = 0
Reveres transfer capacitance	C _{res}	—	0.12	—	nF	f = 1 MHz
Total gate charge	Q _g	—	290	—	nC	V _{GE} = 15 V
Gate to emitter charge	Q _{ge}	—	50	—	nC	V _{CE} = 600 V
Gate to collector charge	Q _{gc}	—	155	—	nC	I _C = 50 A
Switching time ^{Note3}	t _{d(on)}	—	30	—	ns	V _{CC} = 600 V
	t _r	—	30	—	ns	I _C = 50 A
	t _{d(off)}	—	290	—	ns	V _{GE} = ±15 V
	t _f	—	160	—	ns	R _g = 10 Ω, T _c = 150 °C Inductive load
Short circuit withstand time ^{Note4}	t _{sc}	10	—	—	μs	V _{CC} ≤ 720 V, V _{GE} = 15 V T _c = 150 °C

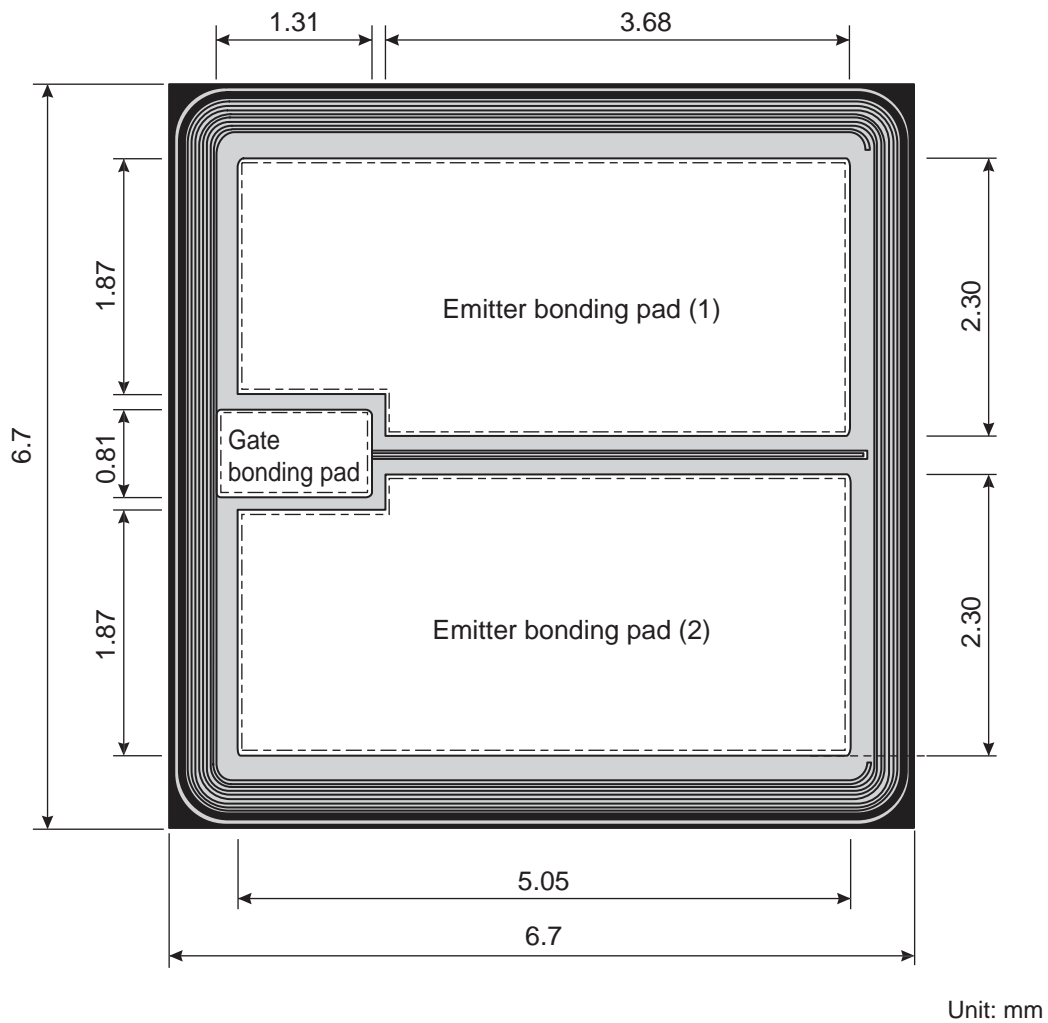
Notes: 2. Pulse test.

3. Switching time test circuit and waveform are shown below.

4. Verified by design.



Die Dimension



Unit: mm

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
RJP1CS04DWA-80#W0	Unsaun wafer
RJP1CS04DWS-80#W0	Saun wafer

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