

# RJP65S03DWA / RJP65S03DWS

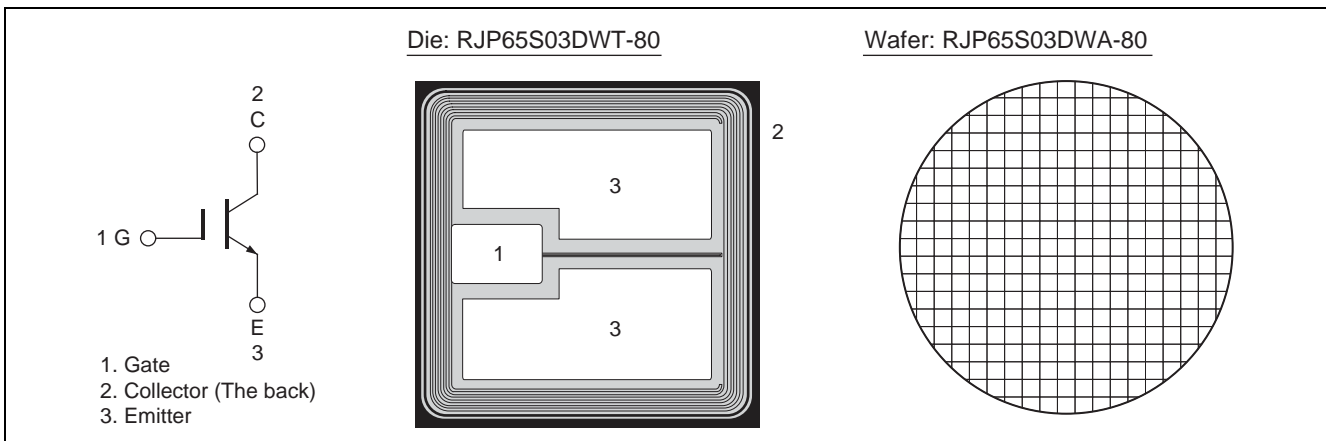
650V - 30A - IGBT  
 Application: Inverter

R07DS0820EJ0400  
 Rev.4.00  
 Nov. 06, 2015

## Features

- Low collector to emitter saturation voltage  
 $V_{CE(sat)} = 1.5 \text{ V typ. (at } I_C = 30 \text{ A, } V_{GE} = 15 \text{ V, } T_c = 25^\circ\text{C)}$
- High 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	$V_{CES}$	650	V
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V
Collector current	$T_c = 25^\circ\text{C}$	$I_c$	60 A
	$T_c = 100^\circ\text{C}$	$I_c$	30 A
Junction temperature	$T_j$	175 <sup>Note1</sup>	$^\circ\text{C}$

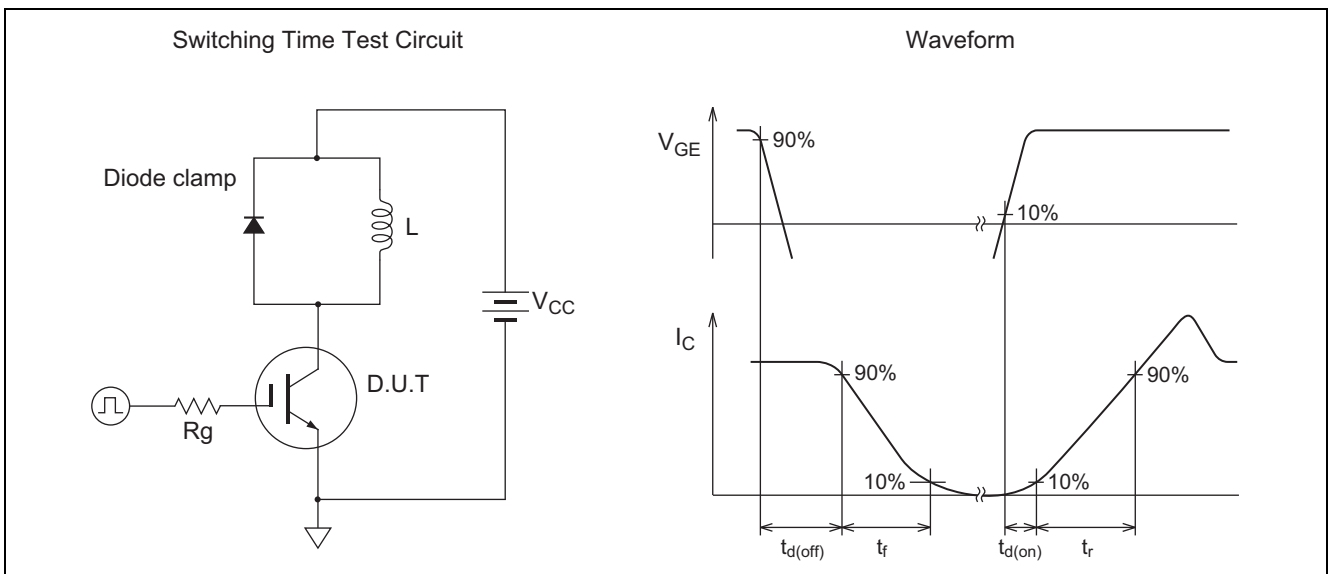
Notes: 1. Please use this device in the thermal conditions where the junction temperature does not exceed  $175^\circ\text{C}$ .  
 IGBT Application Note is disclosed about reliability test and application condition up to  $T_j = 175^\circ\text{C}$ .

**Electrical Characteristics** (Datas below are measured values on a package configuration.)

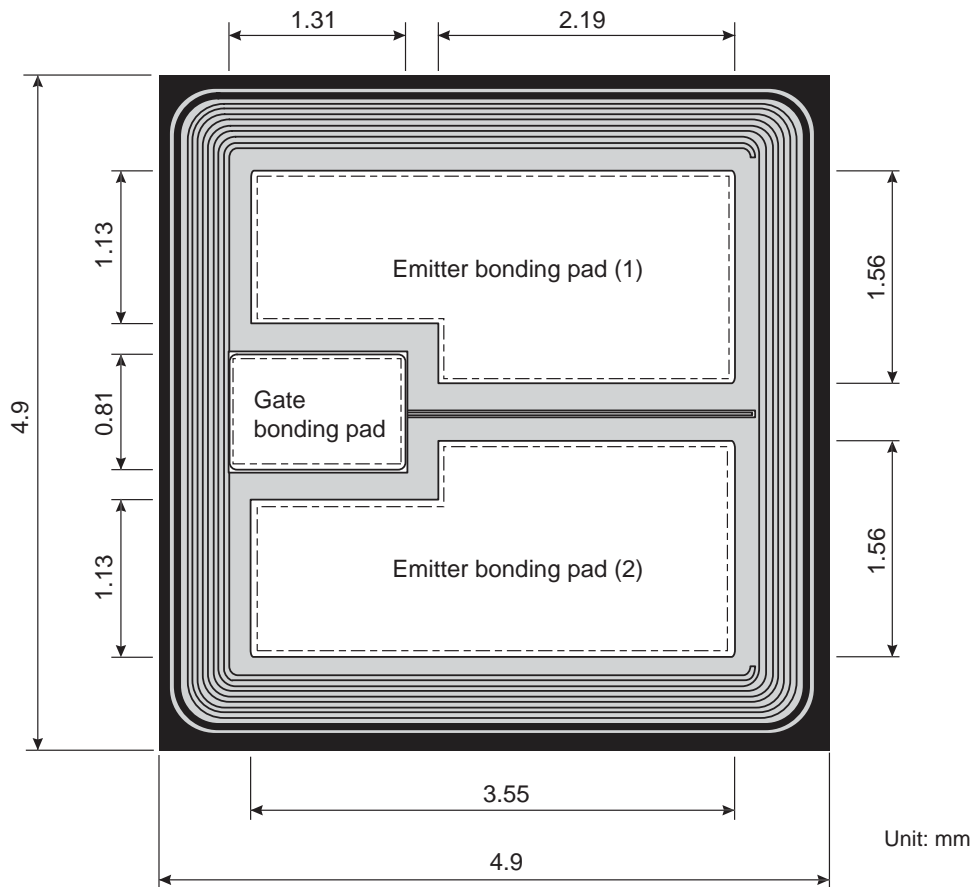
(Tc = 25°C unless otherwise noted)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	$I_{CES}$	—	—	1	$\mu\text{A}$	$V_{CE} = 650\text{ V}, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	$\pm 1$	$\mu\text{A}$	$V_{GE} = \pm 30\text{ V}, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	5.0	—	6.8	V	$V_{CE} = 10\text{ V}, I_C = 0.6\text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.50	1.80	V	$I_C = 30\text{ A}, V_{GE} = 15\text{ V}$ <sup>Note2</sup>
Input capacitance	$C_{ies}$	—	2800	—	pF	$V_{CE} = 25\text{ V}$
Output capacitance	$C_{oes}$	—	130	—	pF	$V_{GE} = 0$
Reveres transfer capacitance	$C_{res}$	—	90	—	pF	$f = 1\text{ MHz}$
Total gate charge	$Q_g$	—	140	—	nC	$V_{GE} = 15\text{ V}$
Gate to emitter charge	$Q_{ge}$	—	30	—	nC	$V_{CE} = 300\text{ V}$
Gate to collector charge	$Q_{gc}$	—	75	—	nC	$I_C = 30\text{ A}$
Switching time <sup>Note3</sup>	$t_{d(on)}$	—	20	—	ns	$V_{CC} = 300\text{ V}$
	$t_r$	—	20	—	ns	$I_C = 30\text{ A}$
	$t_{d(off)}$	—	170	—	ns	$V_{GE} = \pm 15\text{ V}$
	$t_f$	—	100	—	ns	$R_g = 10\ \Omega, T_c = 150\ \text{°C}$ Inductive load
Short circuit withstand time <sup>Note4</sup>	$t_{sc}$	10	—	—	$\mu\text{s}$	$V_{CC} \leq 360\text{ V}, V_{GE} = 15\text{ V}$ $T_c = 150\ \text{°C}$

- 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 Diode operation, may be changed without notice.

**Ordering Information**

Orderable Part Number	Shipment form
RJP65S03DWA-80#W0	Unsawn wafer
RJP65S03DWS-80#W0	Sawn wafer

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