

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# RJK2055DPA

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1735-0200

Rev.2.00

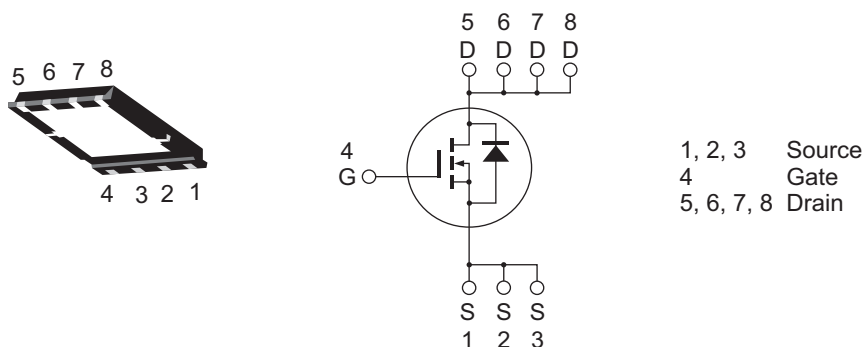
Dec 24, 2008

## Features

- Low on-resistance
- Low drive current
- High density mounting

## Outline

RENESAS Package code: PWSN0008DA-A  
(Package name: WPAK)



## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	200	V
Gate to source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	20	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	40	A
Body-drain diode reverse drain current	$I_{DR}$	20	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ <sup>Note1</sup>	40	A
Avalanche current	$I_{AP}$ <sup>Note3</sup>	9	A
Avalanche energy	$E_{AR}$ <sup>Note3</sup>	5.4	mJ
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	30	W
Channel to case thermal impedance	$\theta_{ch-c}$	4.17	°C/W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Notes: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$

2. Value at  $T_c = 25^\circ C$

3.  $STch = 25^\circ C$ ,  $T_{ch} \leq 150^\circ C$

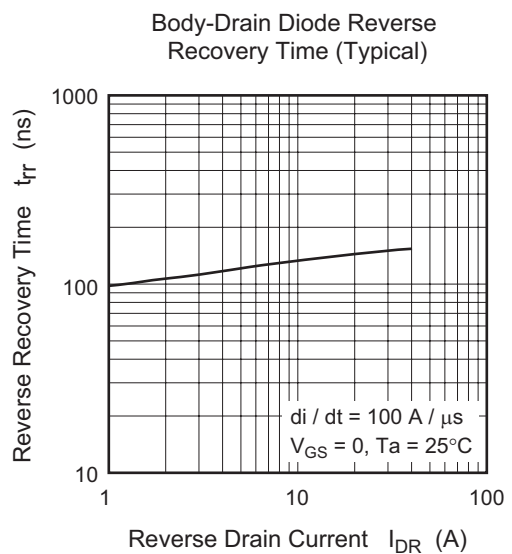
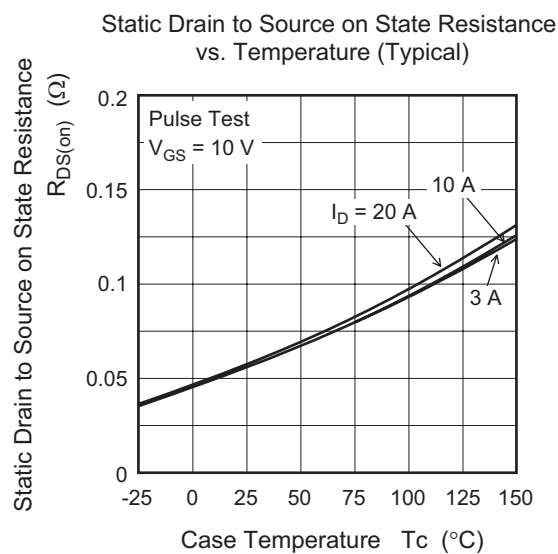
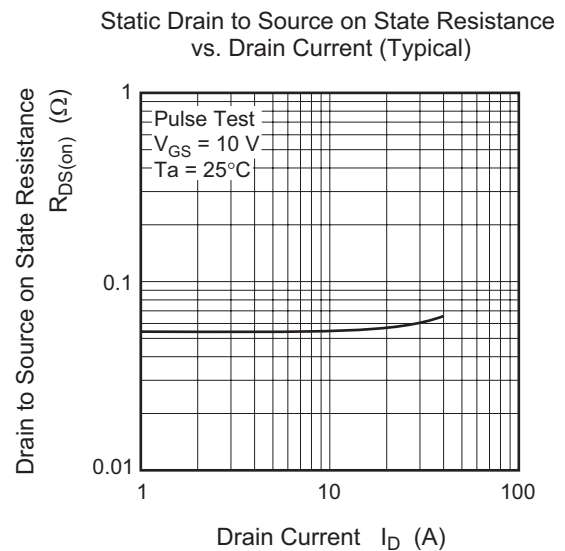
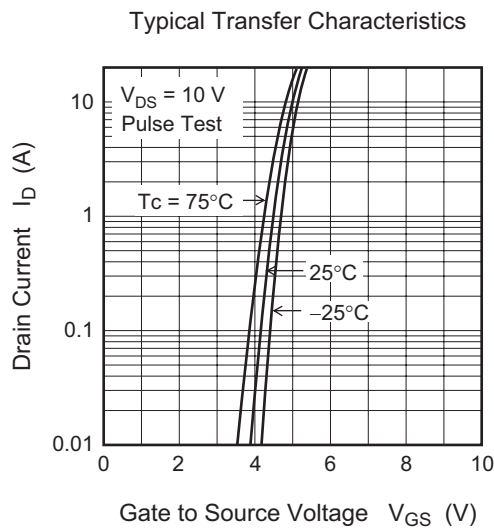
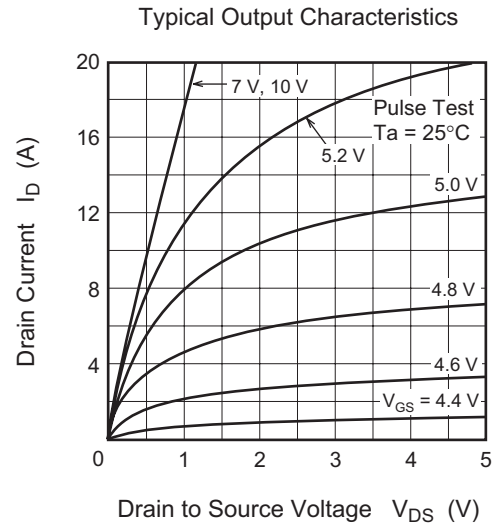
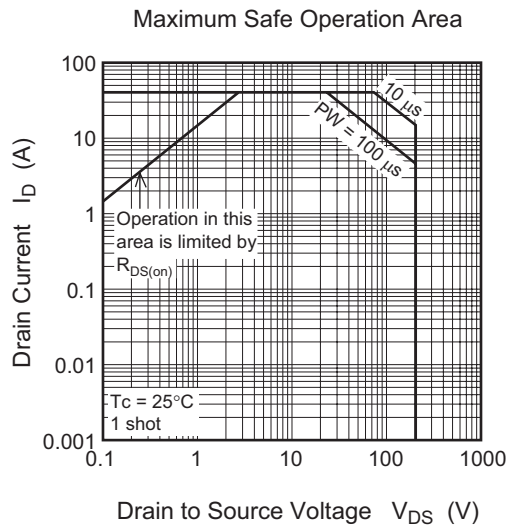
## Electrical Characteristics

(Ta = 25°C)

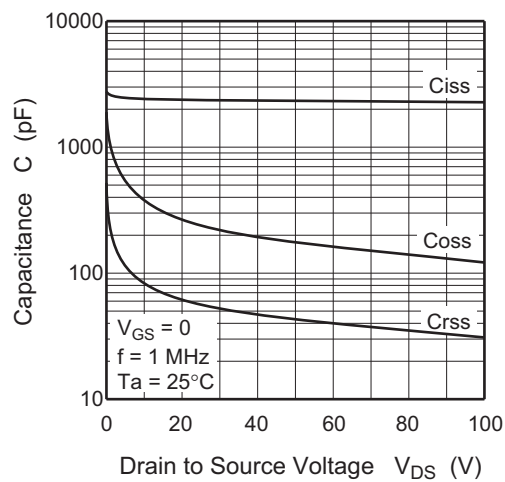
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 200 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.5	—	4.5	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.054	0.069	$\Omega$	$I_D = 10 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	2400	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	245	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	55	—	pF	
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$I_D = 10 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 10 \Omega$ $R_g = 10 \Omega$
Rise time	$t_r$	—	50	—	ns	
Turn-off delay time	$t_{d(off)}$	—	54	—	ns	
Fall time	$t_f$	—	37	—	ns	
Total gate charge	$Q_g$	—	38	—	nC	$V_{DD} = 160 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 20 \text{ A}$
Gate to source charge	$Q_{gs}$	—	11.5	—	nC	
Gate to drain charge	$Q_{gd}$	—	9	—	nC	
Body-drain diode forward voltage	$V_{DF}$	—	0.91	1.40	V	$I_F = 20 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	145	—	ns	$I_F = 20 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 4. Pulse test

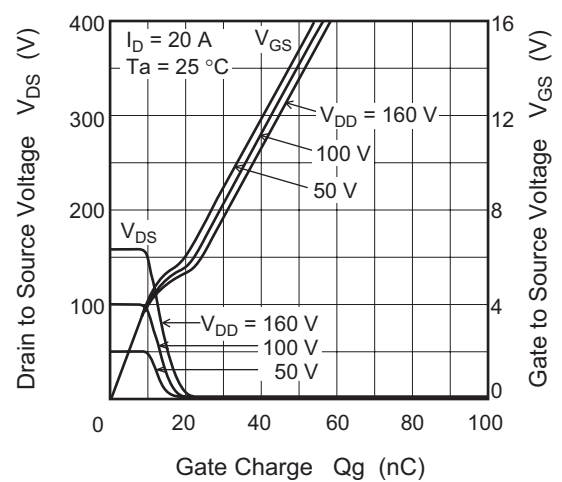
## Main Characteristics



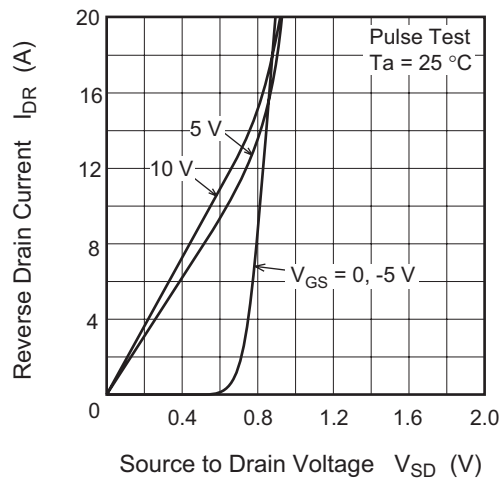
Typical Capacitance vs.  
Drain to Source Voltage (Typical)



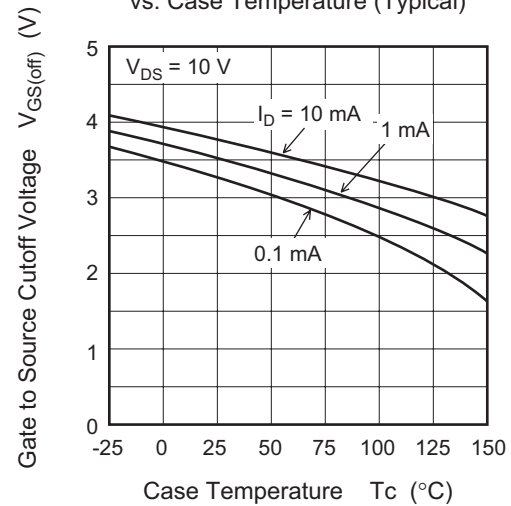
Dynamic Input Characteristics (Typical)

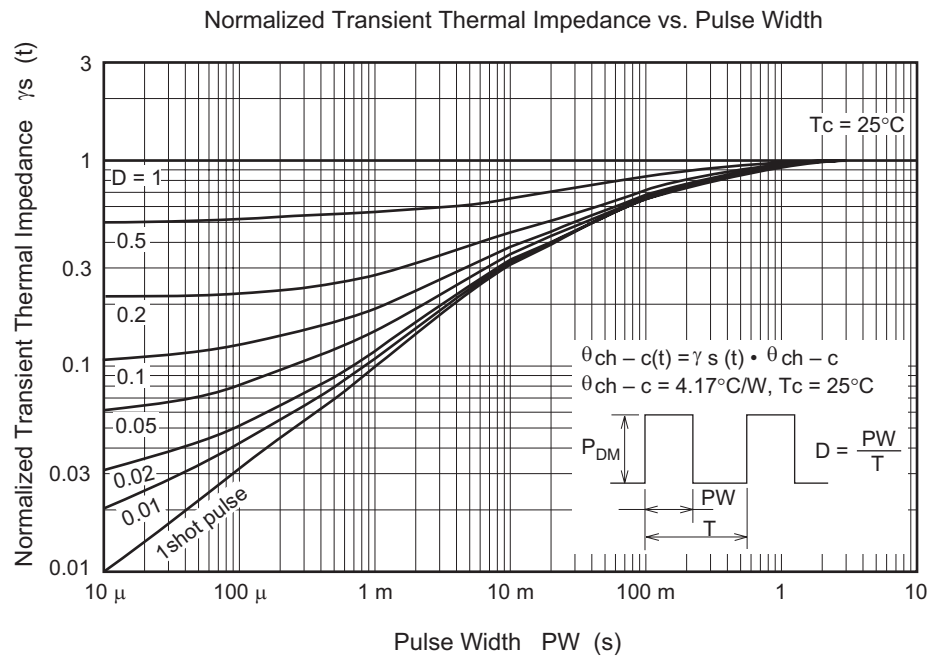


Reverse Drain Current vs.  
Source to Drain Voltage (Typical)

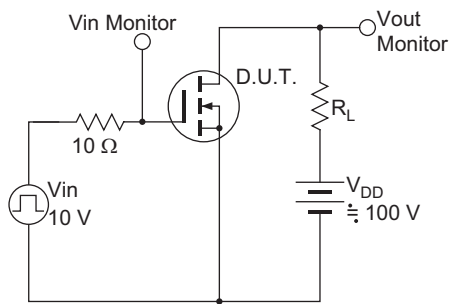


Gate to Source Cutoff Voltage  
vs. Case Temperature (Typical)

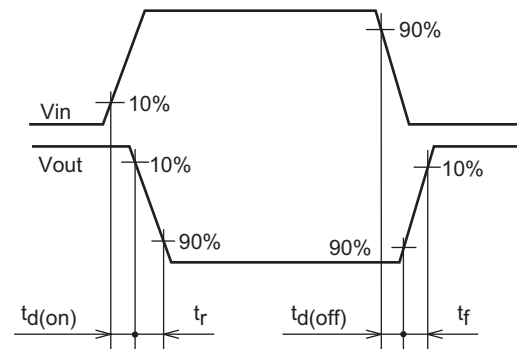




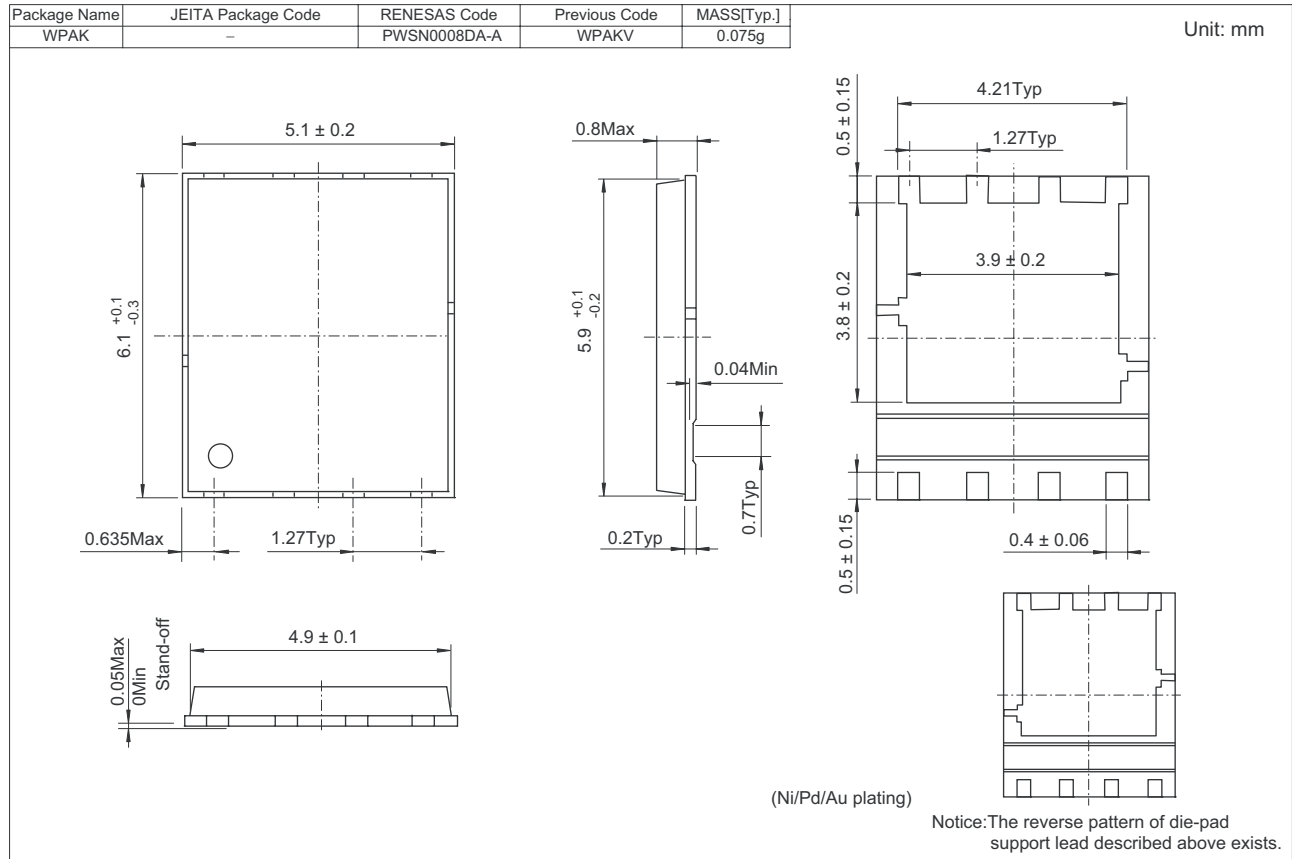
Switching Time Test Circuit



Waveform



## Package Dimensions



## Ordering Information

Part No.	Quantity	Shipping Container
RJK2055DPA-00-J0	2500 pcs	Taping



Notes:

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Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**  
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

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Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120  
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7858/7898

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**Renesas Technology Malaysia Sdn. Bhd**  
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
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