

# RJK0353DPA

## Silicon N Channel Power MOS FET Power Switching

REJ03G1647-0300

Rev.3.00

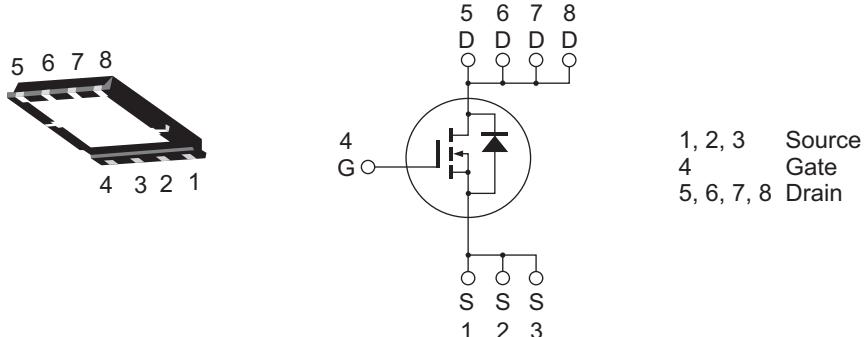
Apr 10, 2008

### Features

- High speed switching
- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
- $R_{DS(on)} = 4.0 \text{ m}\Omega \text{ typ. (at } V_{GS} = 10 \text{ V)}$
- Pb-free

### Outline

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



### Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	30	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	35	A
Drain peak current	I <sub>D(pulse)</sub> <sup>Note 1</sup>	140	A
Body-drain diode reverse drain current	I <sub>DR</sub>	35	A
Avalanche current	I <sub>AP</sub> <sup>Note 2</sup>	16	A
Avalanche energy	E <sub>AR</sub> <sup>Note 2</sup>	25.6	mJ
Channel dissipation	P <sub>ch</sub> <sup>Note 3</sup>	40	W
Channel to Case Thermal Resistance	θ <sub>ch-C</sub>	3.13	°C/W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T<sub>ch</sub> = 25°C, R<sub>g</sub> ≥ 50 Ω3. T<sub>c</sub> = 25°C

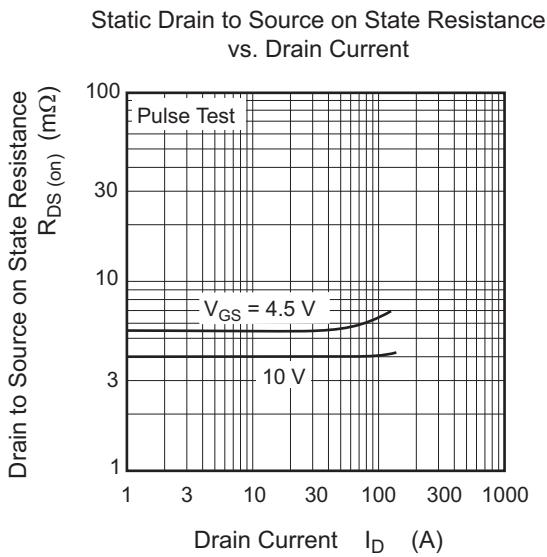
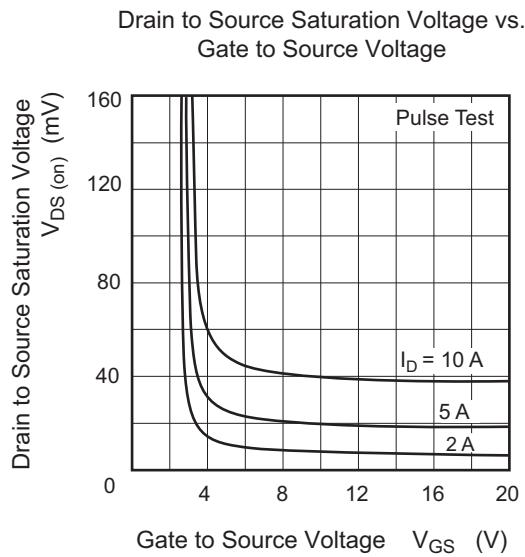
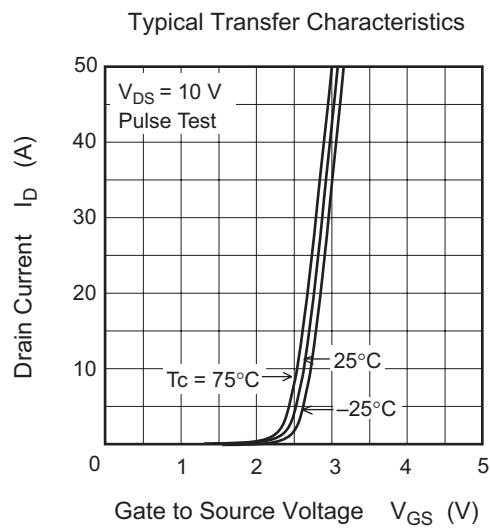
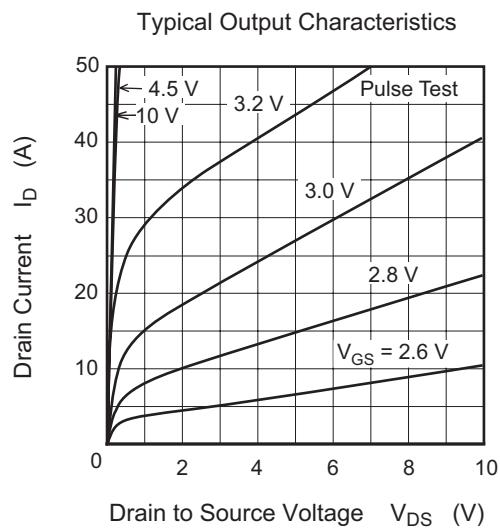
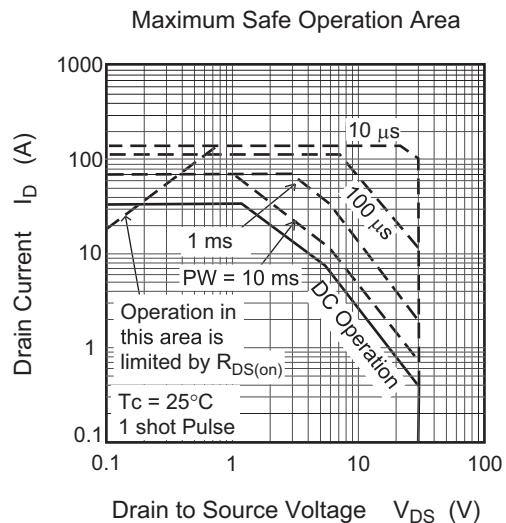
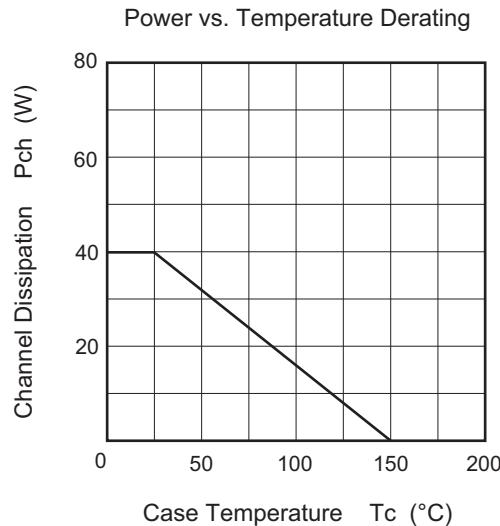
## Electrical Characteristics

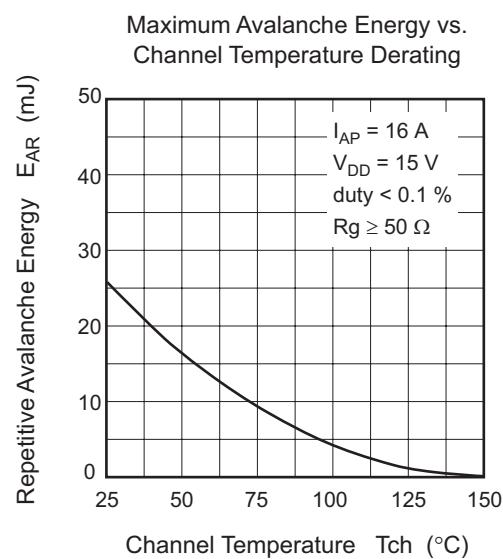
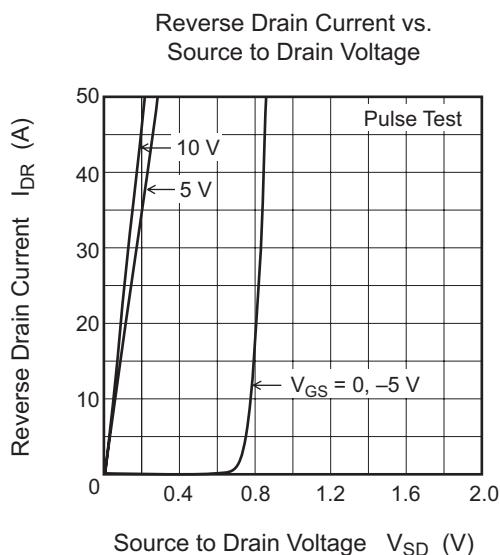
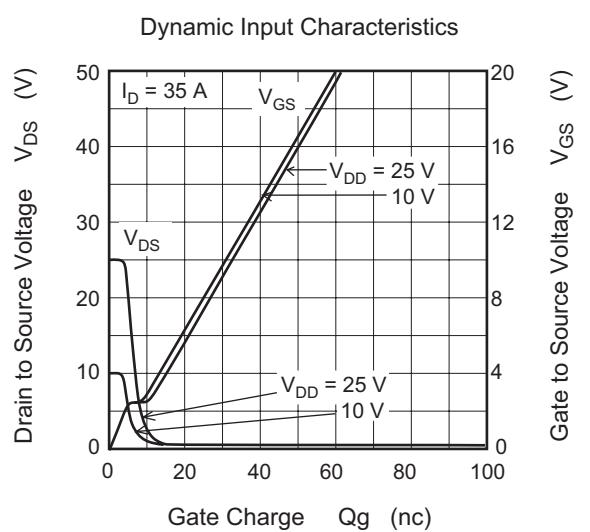
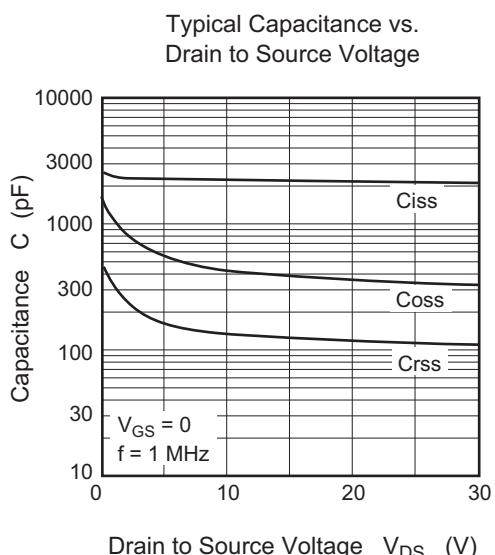
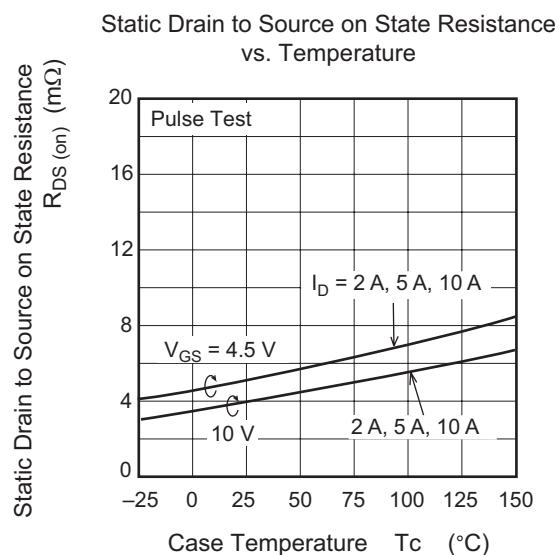
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 30 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(\text{off})}$	1.2	—	2.5	V	$V_{DS} = 10 \text{ V}, I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(\text{on})}$	—	4.0	5.2	$\text{m}\Omega$	$I_D = 17.5 \text{ A}, V_{GS} = 10 \text{ V}^{\text{Note4}}$
	$R_{DS(\text{on})}$	—	5.4	7.6	$\text{m}\Omega$	$I_D = 17.5 \text{ A}, V_{GS} = 4.5 \text{ V}^{\text{Note4}}$
Forward transfer admittance	$ y_{fs} $	—	70	—	S	$I_D = 17.5 \text{ A}, V_{DS} = 10 \text{ V}^{\text{Note4}}$
Input capacitance	$C_{iss}$	—	2180	—	$\text{pF}$	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	420	—	$\text{pF}$	
Reverse transfer capacitance	$C_{rss}$	—	135	—	$\text{pF}$	
Gate Resistance	$R_g$	—	2.0	—	$\Omega$	
Total gate charge	$Q_g$	—	14	—	$\text{nC}$	$V_{DD} = 10 \text{ V}, V_{GS} = 4.5 \text{ V},$ $I_D = 35 \text{ A}$
Gate to source charge	$Q_{gs}$	—	6.0	—	$\text{nC}$	
Gate to drain charge	$Q_{gd}$	—	3.0	—	$\text{nC}$	
Turn-on delay time	$t_{d(\text{on})}$	—	8.5	—	ns	$V_{GS} = 10 \text{ V}, I_D = 17.5 \text{ A},$ $V_{DD} \geq 10 \text{ V}, R_L = 0.57 \Omega,$ $R_g = 4.7 \Omega$
Rise time	$t_r$	—	4.8	—	ns	
Turn-off delay time	$t_{d(\text{off})}$	—	47.5	—	ns	
Fall time	$t_f$	—	6.0	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.83	1.08	V	$I_F = 35 \text{ A}, V_{GS} = 0^{\text{Note4}}$
Body-drain diode reverse recovery time	$t_{rr}$	—	25	—	ns	$I_F = 35 \text{ A}, V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

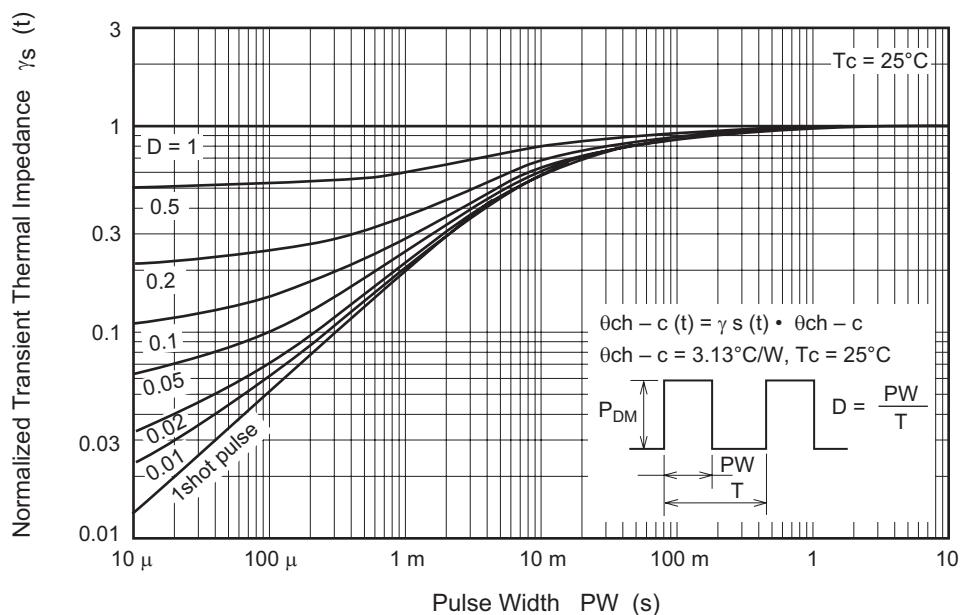
Notes: 4. Pulse test

## Main Characteristics

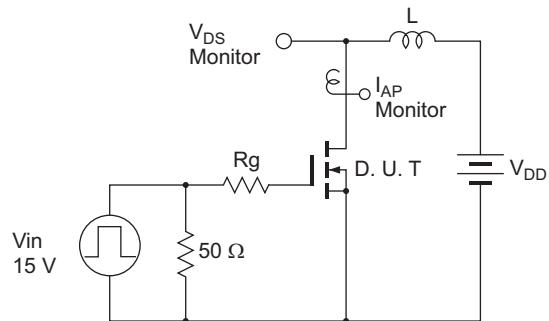




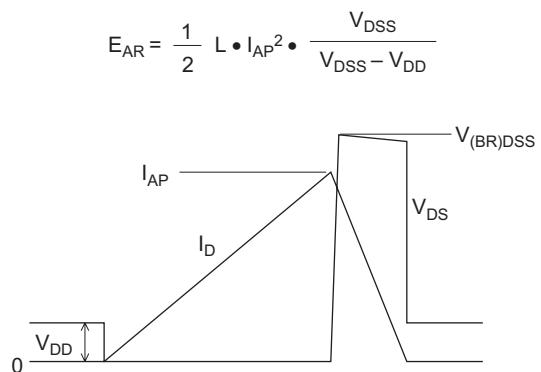
Normalized Transient Thermal Impedance vs. Pulse Width



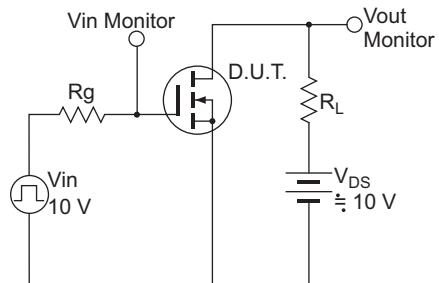
Avalanche Test Circuit



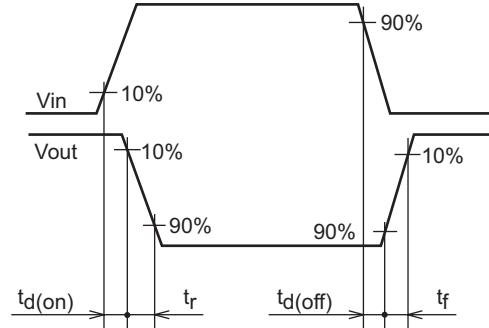
Avalanche Waveform



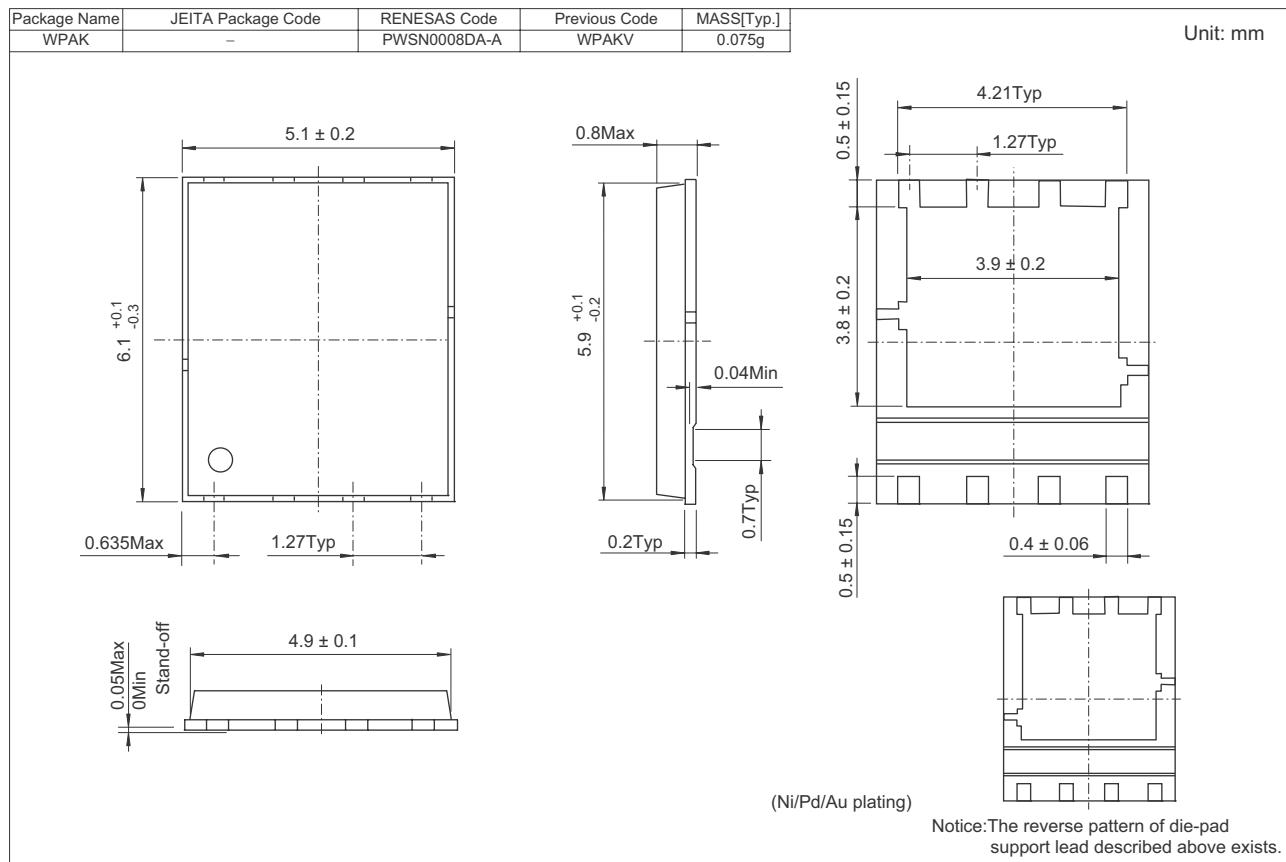
Switching Time Test Circuit



Switching Time Waveform



## Package Dimensions



## Ordering Information

Part No.	Quantity	Shipping Container
RJK0353DPA-00-J0	2500 pcs	Taping

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