

RJK0358DPA

Silicon N Channel Power MOS FET Power Switching

REJ03G1651-0400

Rev.4.00

Apr 10, 2008

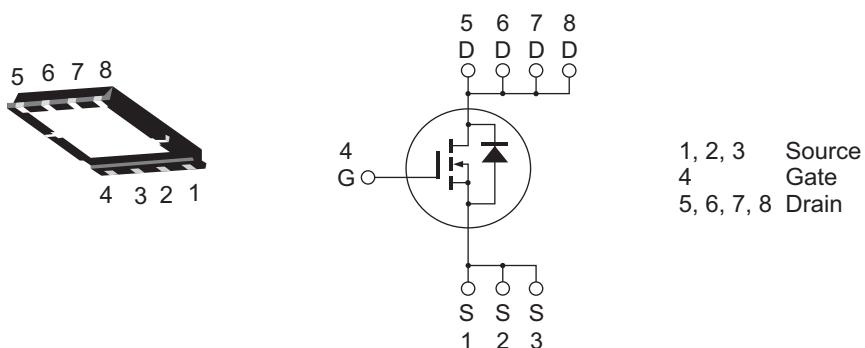
Features

- High speed switching
- Capable of 5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance

$R_{DS(on)} = 2.6 \text{ m}\Omega \text{ typ. (at } V_{GS} = 10 \text{ V)}$

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}	30	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	38	A
Drain peak current	$I_{D(\text{pulse})}$ ^{Note 1}	152	A
Body-drain diode reverse drain current	I_{DR}	38	A
Avalanche current	I_{AP} ^{Note 2}	19	A
Avalanche energy	E_{AR} ^{Note 2}	36.1	mJ
Channel dissipation	P_{ch} ^{Note 3}	45	W
Channel to ambient thermal impedance	θ_{ch-c} ^{Note 3}	2.78	°C/W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at $T_{ch} = 25^\circ\text{C}$, $R_g \geq 50 \Omega$ 3. $T_c = 25^\circ\text{C}$

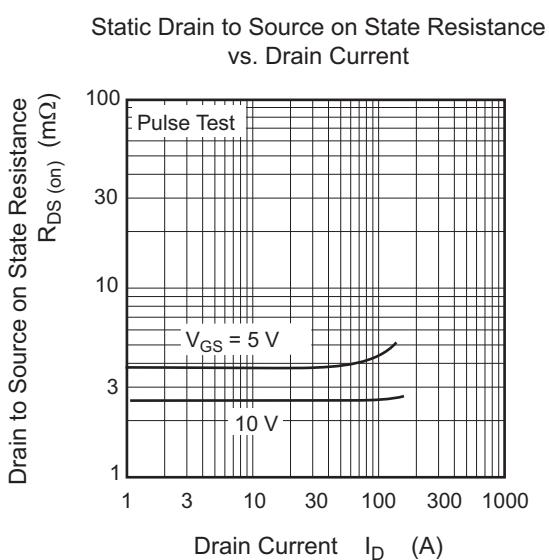
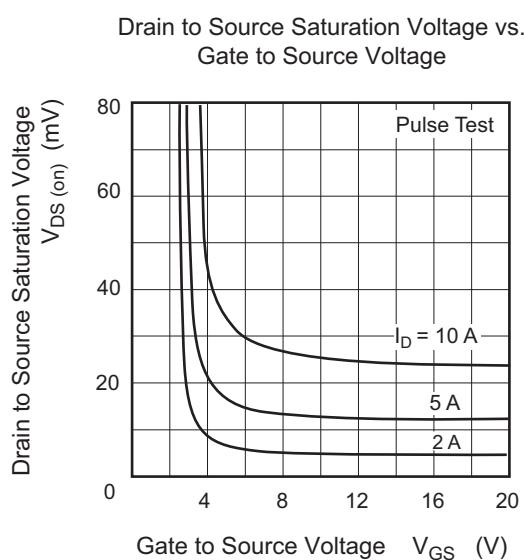
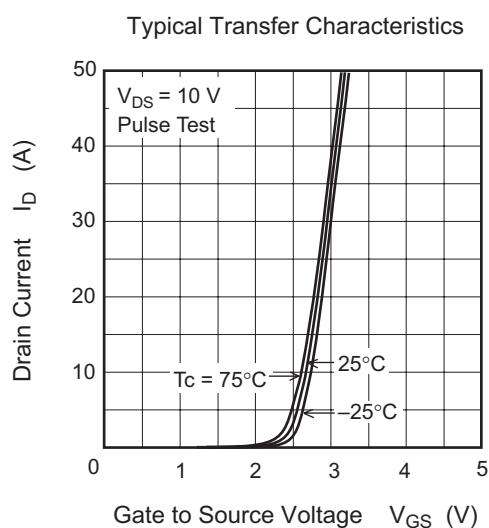
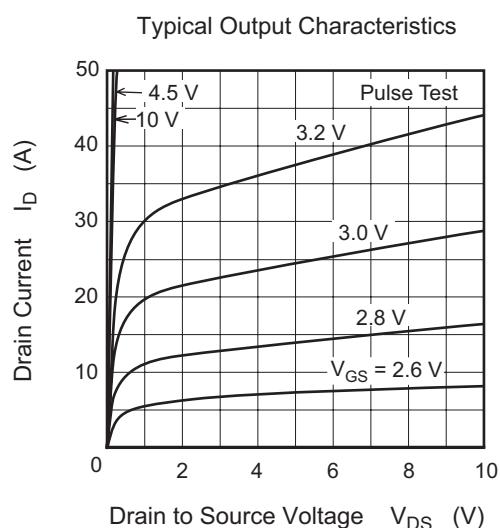
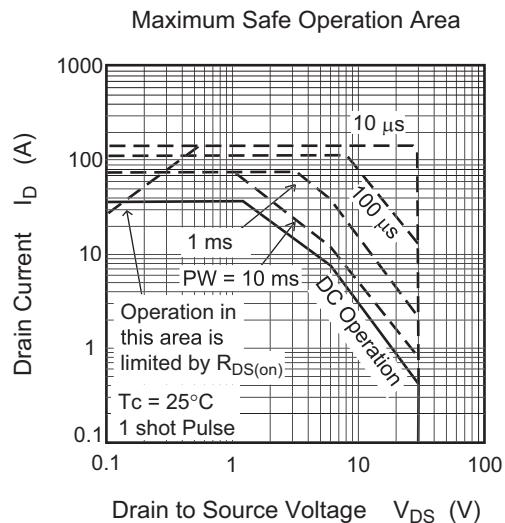
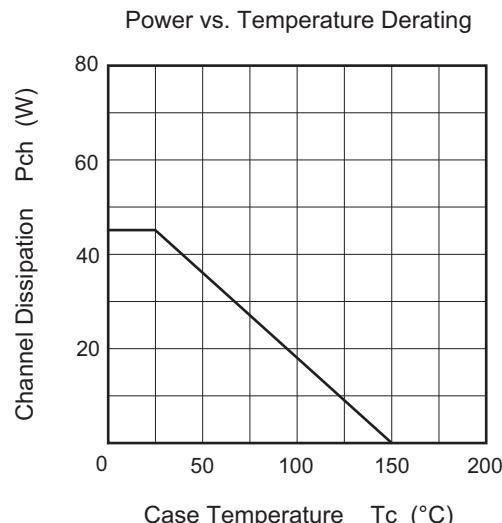
Electrical Characteristics

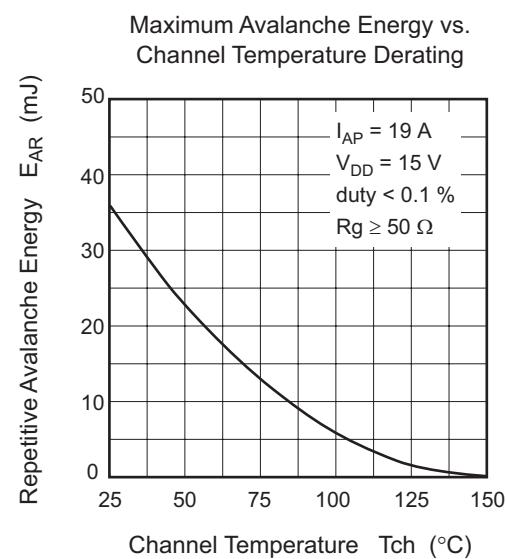
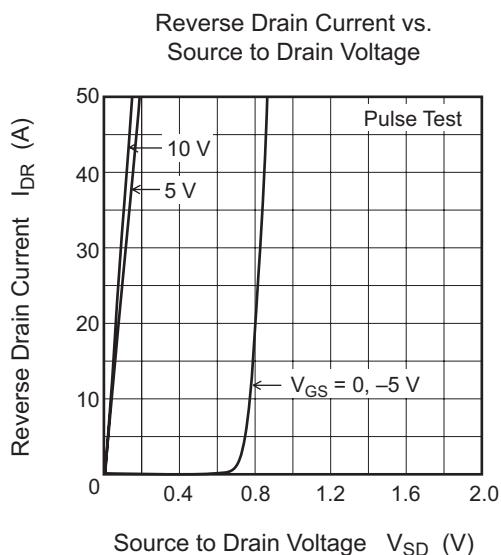
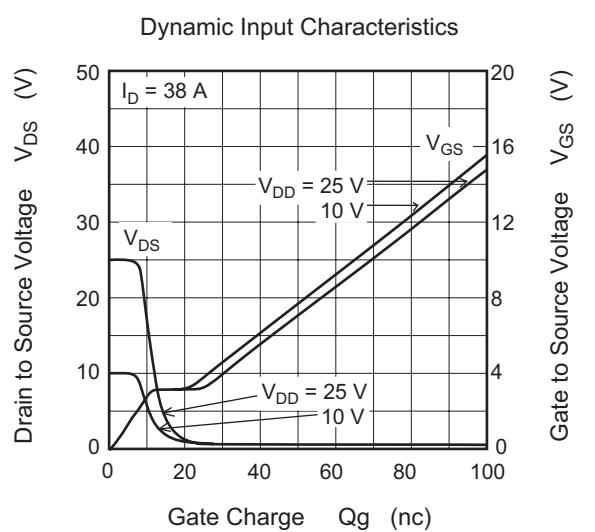
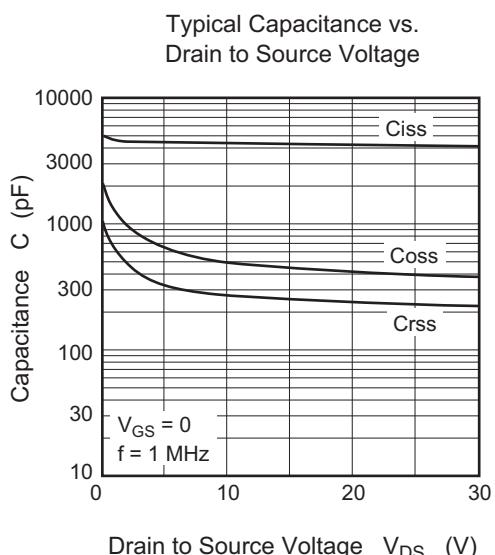
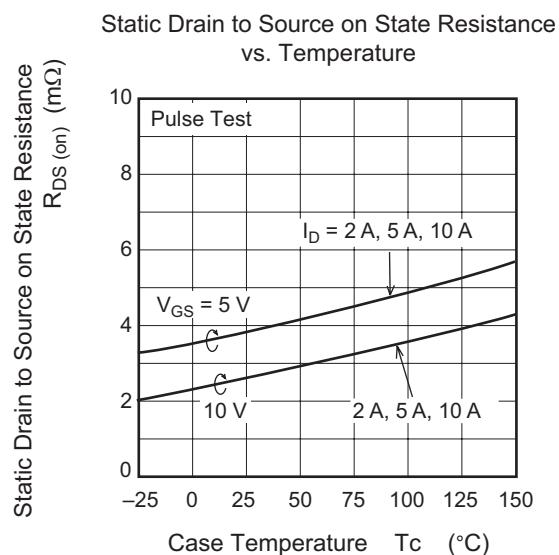
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	30	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	± 0.1	µA	V _{GS} = ±20 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	µA	V _{DS} = 30 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.0	—	2.5	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DS(on)}	—	2.6	3.4	mΩ	I _D = 19 A, V _{GS} = 10 V ^{Note4}
	R _{DS(on)}	—	3.8	5.4	mΩ	I _D = 19 A, V _{GS} = 5 V ^{Note4}
Forward transfer admittance	y _{fs}	—	50	—	S	I _D = 19 A, V _{DS} = 10 V ^{Note4}
Input capacitance	C _{iss}	—	4300	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	500	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	280	—	pF	f = 1 MHz
Total gate charge	Q _g	—	33	—	nC	V _{DD} = 10 V
Gate to source charge	Q _{gs}	—	13	—	nC	V _{GS} = 5 V
Gate to drain charge	Q _{gd}	—	8	—	nC	I _D = 38 A
Turn-on delay time	t _{d(on)}	—	11	—	ns	V _{GS} = 10 V, I _D = 19 A
Rise time	t _r	—	5.8	—	ns	V _{DD} ≈ 10 V
Turn-off delay time	t _{d(off)}	—	68	—	ns	R _L = 0.53 Ω
Fall time	t _f	—	12	—	ns	R _g = 4.7 Ω
Body-drain diode forward voltage	V _{DF}	—	0.84	1.10	V	I _F = 38 A, V _{GS} = 0 ^{Note4}
Body-drain diode reverse recovery time	t _{rr}	—	30	—	ns	I _F = 38 A, V _{GS} = 0 di _F /dt = 100 A/µs

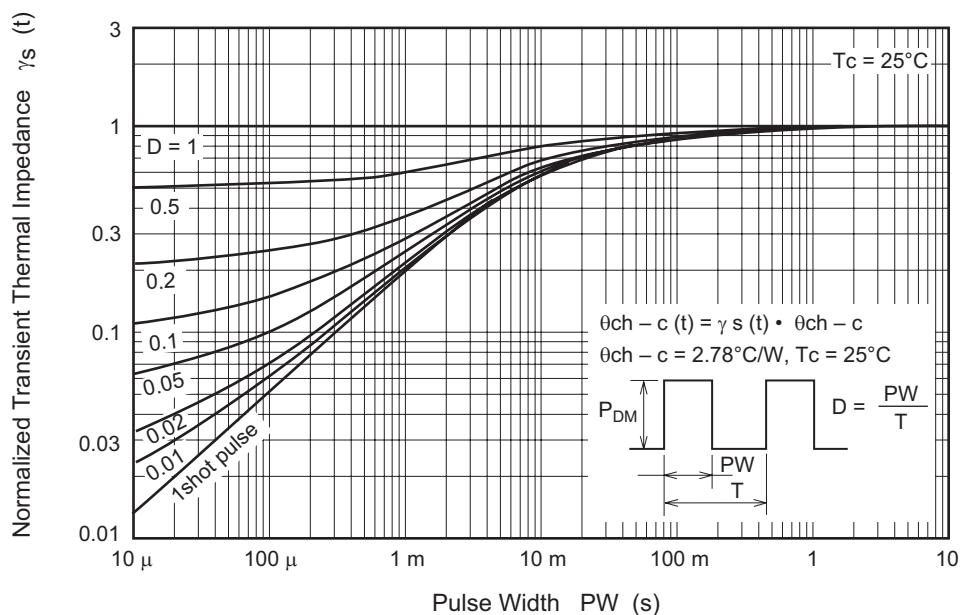
Notes: 4. Pulse test

Main Characteristics

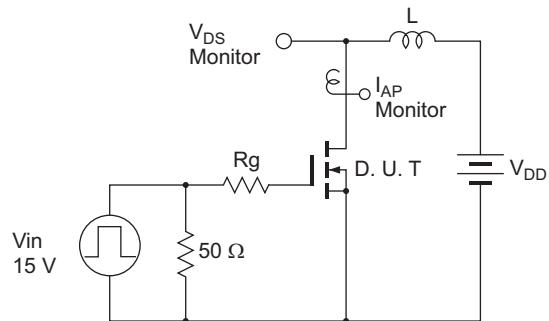




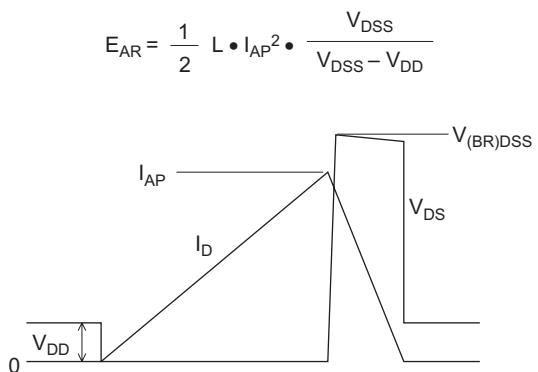
Normalized Transient Thermal Impedance vs. Pulse Width



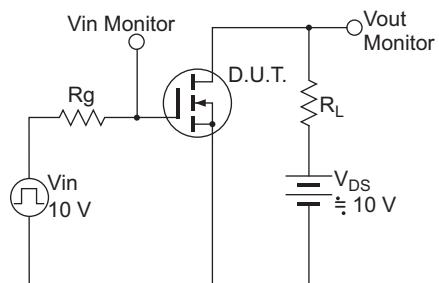
Avalanche Test Circuit



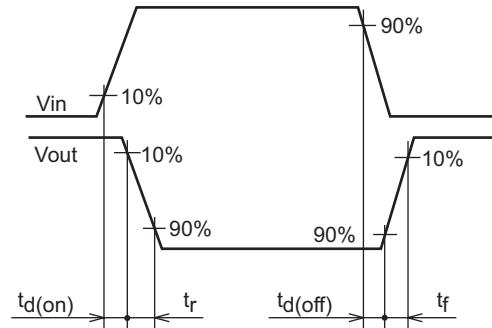
Avalanche Waveform



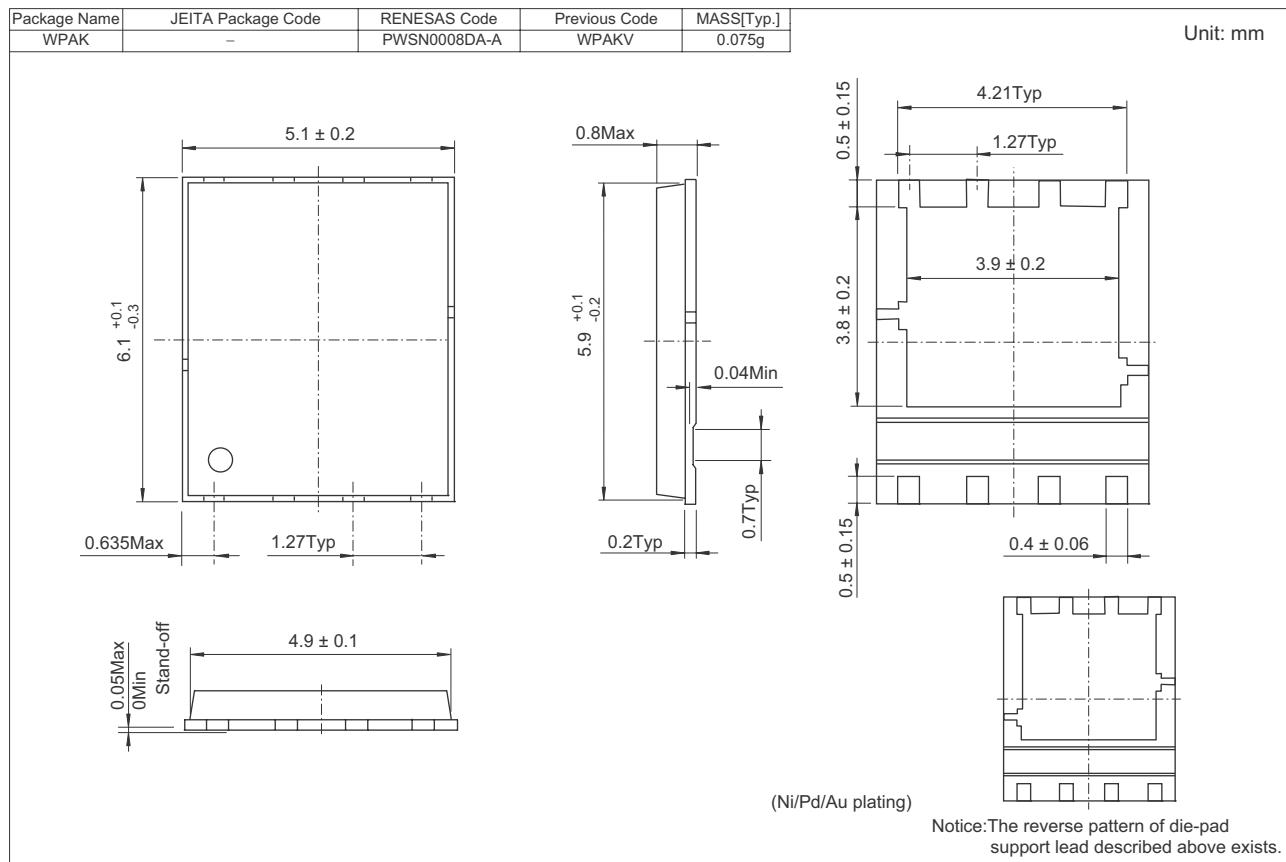
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
RJK0358DPA-00-J0	2500 pcs	Taping

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