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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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RJK1008DPE

N-Channel Power MOSFET High-Speed Switching Use

REJ03G1629-0100

Rev.1.00

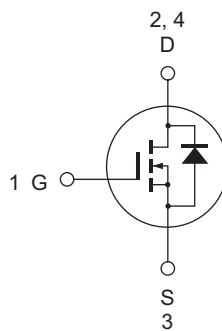
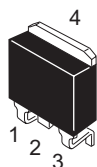
Apr 03, 2008

Features

- V_{DSS} : 100 V
- $R_{DS(on)}$: 11 m Ω (Max)
- I_D : 80 A

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LPAK(S)-(1))



1. Gate
2. Drain
3. Source
4. Drain

Application

- Motor control, Lighting control, Solenoid control, DC-DC converter, etc.

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	100	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	80	A
Drain peak current	$I_{D(pulse)}$	160	A
Body-drain diode reverse drain current	I_{DR}	80	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$	160	A
Avalanche current	I_{AP} ^{Note2}	40	A
Channel dissipation	P_{ch} ^{Note1}	125	W
Channel to case thermal impedance	θ_{ch-c}	1.0	°C/W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Notes: 1. Value at $T_c = 25^\circ\text{C}$

2. $ST_{ch} = 25^\circ\text{C}$, $T_{ch} \leq 150^\circ\text{C}$, $L = 100 \mu\text{H}$

Electrical Characteristics

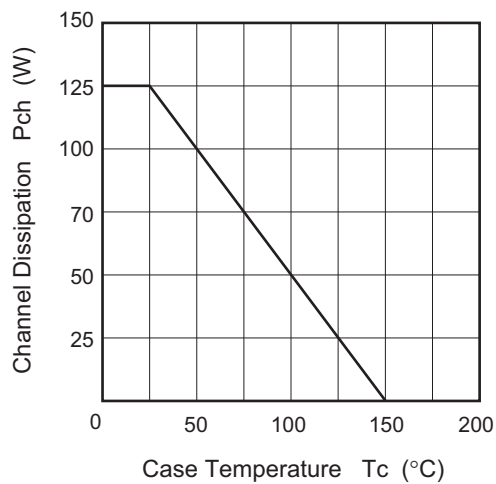
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	100	—	—	V	$I_D = 1 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 100 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	3.0	4.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ ^{Note3}
Static drain to source on state voltage	$V_{DS(on)}$	—	0.34	0.44	V	$I_D = 40 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note3}
Static drain to source on state resistance	$R_{DS(on)}$	—	8.5	11	$\text{m}\Omega$	$I_D = 40 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note3}
Input capacitance	C_{iss}	—	5200	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	820	—	pF	
Reverse transfer capacitance	C_{rss}	—	220	—	pF	
Turn-on delay time	$t_{d(on)}$	—	52	—	ns	$V_{DD} = 50 \text{ V}$ $I_D = 40 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_G = 25 \Omega$
Rise time	t_r	—	100	—	ns	
Turn-off delay time	$t_{d(off)}$	—	230	—	ns	
Fall time	t_f	—	125	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	1.5	V	$I_F = 40 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	70	—	ns	$I_F = 80 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

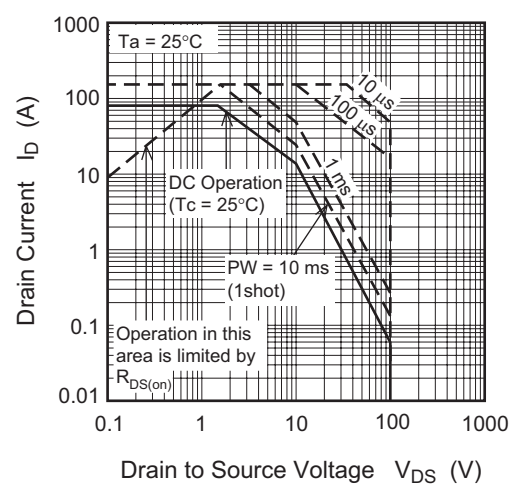
Notes: 3. Pulse test

Main Characteristics

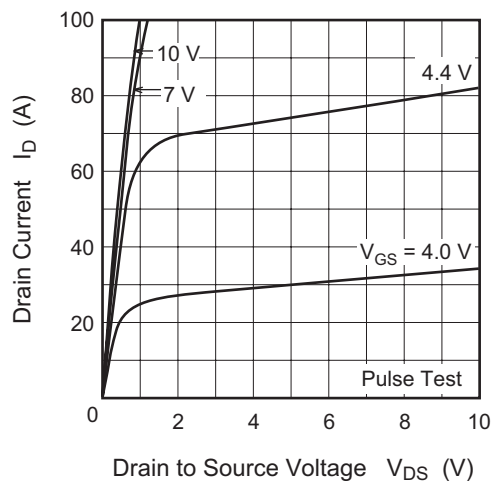
Power vs. Temperature Derating



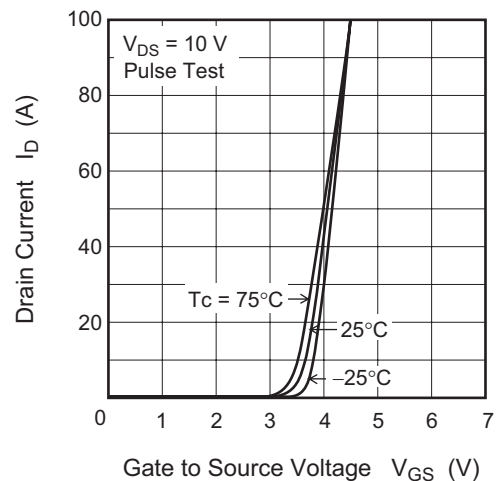
Maximum Safe Operation Area



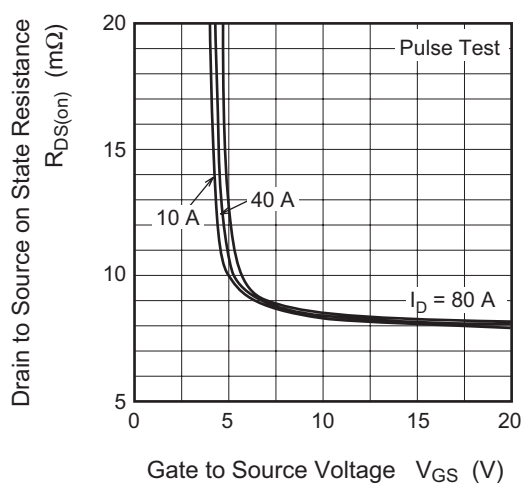
Typical Output Characteristics



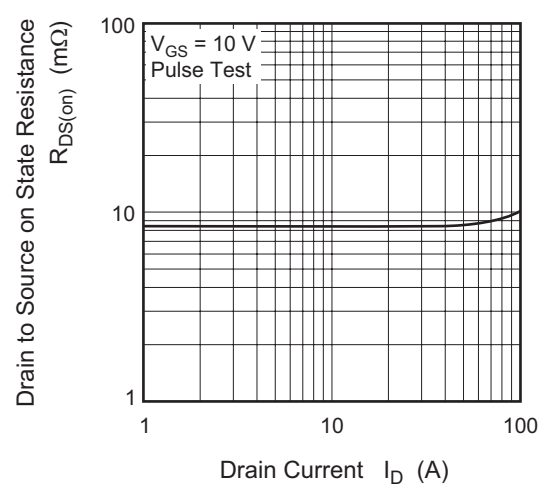
Typical Transfer Characteristics

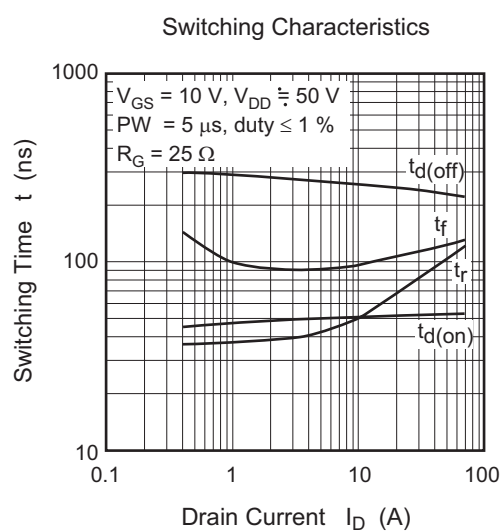
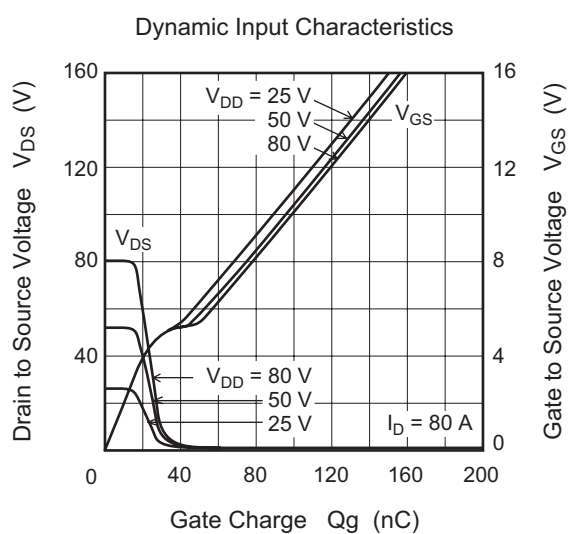
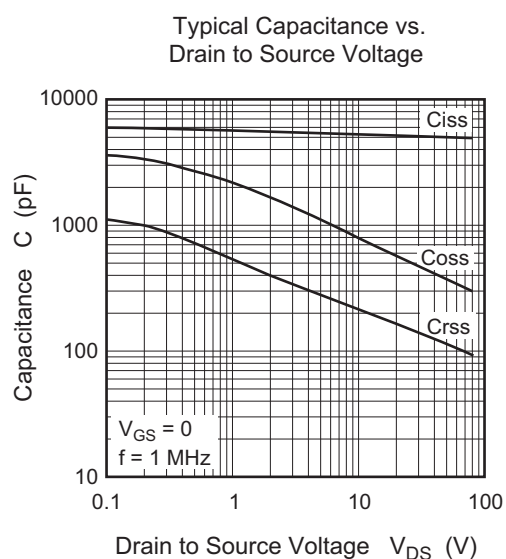
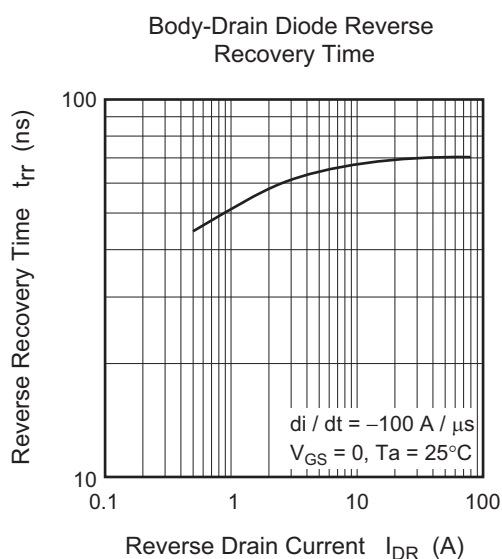
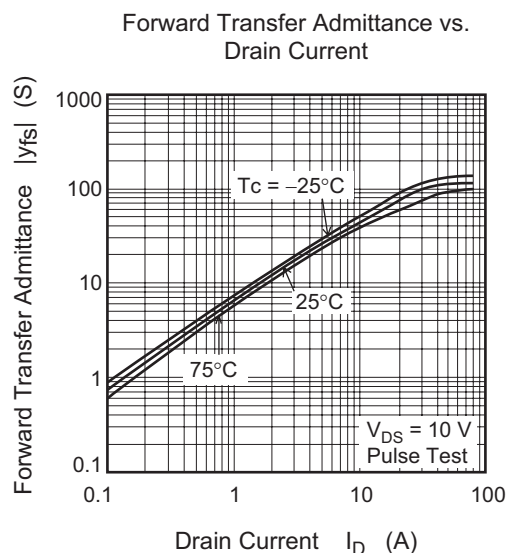
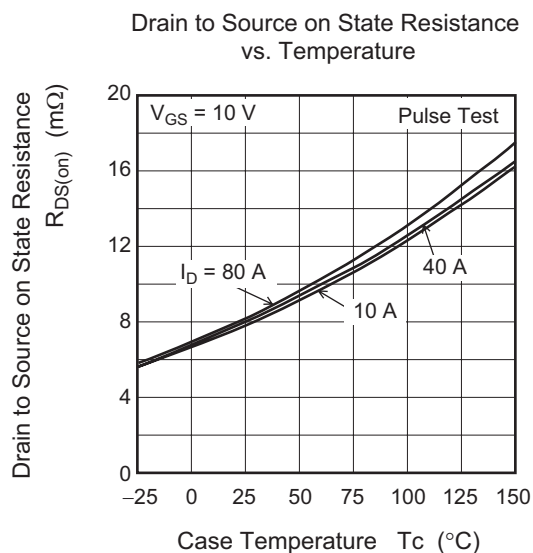


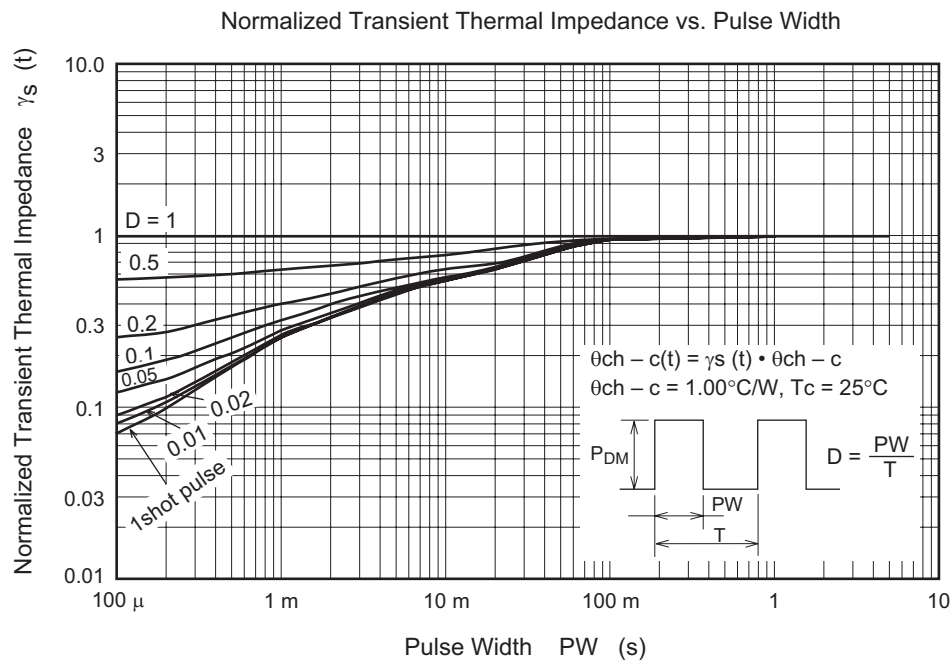
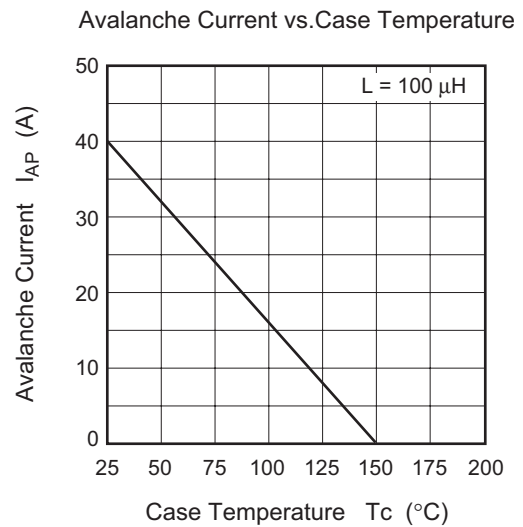
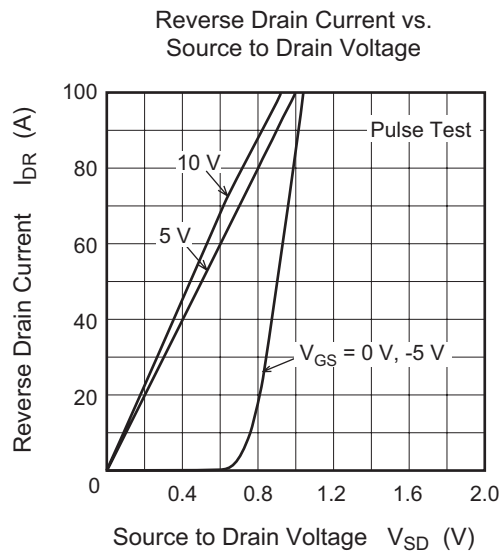
Drain to Source on State Resistance vs. Gate to Source Voltage



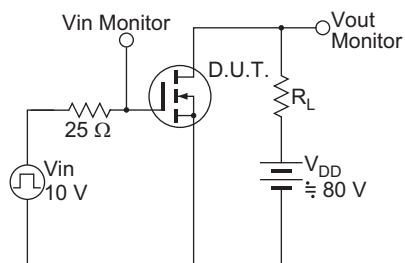
Drain to Source on State Resistance vs. Drain Current



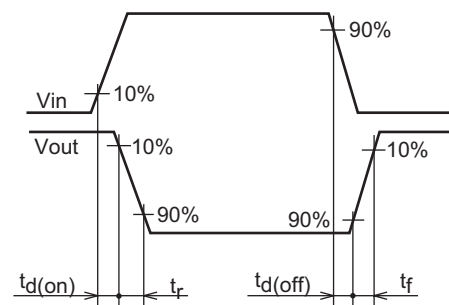




Switching Time Test Circuit



Waveform



Notes:

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