

RJK6024DPD

600V - 0.4A - MOS FET
High Speed Power Switching

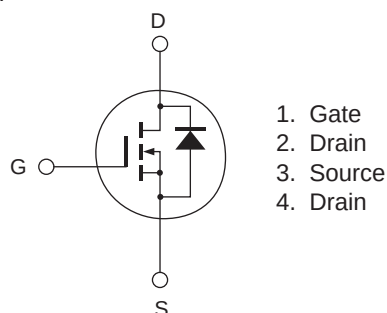
R07DS0688EJ0200
(Previous: REJ03G1936-0100)
Rev.2.00
Feb 27, 2012

Features

- Low on-resistance
 $R_{DS(on)} = 28 \Omega$ typ. (at $I_D = 0.2 \text{ A}$, $V_{GS} = 10 \text{ V}$, $T_a = 25^\circ\text{C}$)
- Low drive current
- High density mounting

Outline

RENESAS Package code: PRSS0004ZG-A
(Package name : MP-3A)



Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	600	V
Gate to source voltage	V_{GSS}	± 30	V
Drain current	I_D	0.4	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	0.6	A
Body-drain diode reverse drain current	I_{DR}	0.4	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ ^{Note1}	0.6	A
Channel dissipation	P_{ch} ^{Note2}	27.2	W
Channel to case thermal impedance	θ_{ch-c}	4.58	$^\circ\text{C/W}$
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ\text{C}$

Electrical Characteristics

(Ta = 25°C)

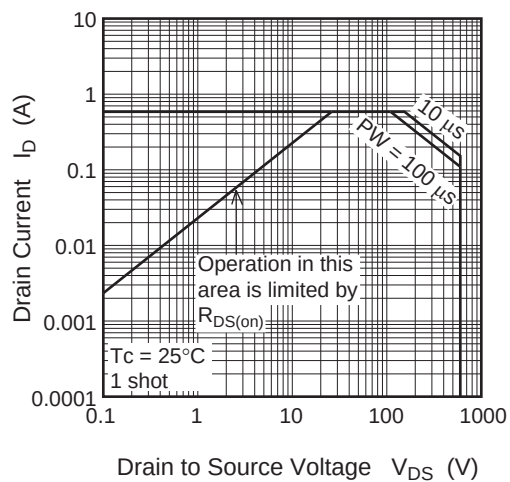
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	600	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 600 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3	—	5	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	28	42	Ω	$I_D = 0.2 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note3}
Input capacitance	C_{iss}	—	37.5	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	7.5	—	pF	
Reverse transfer capacitance	C_{rss}	—	0.9	—	pF	
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$I_D = 0.2 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 1500 \Omega$ $R_g = 10 \Omega$
Rise time	t_r	—	14.5	—	ns	
Turn-off delay time	$t_{d(off)}$	—	48	—	ns	
Fall time	t_f	—	77	—	ns	
Total gate charge	Q_g	—	4.3	—	nC	$V_{DD} = 480 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 0.15 \text{ A}$
Gate to source charge	Q_{gs}	—	0.5	—	nC	
Gate to drain charge	Q_{gd}	—	3.2	—	nC	
Body-drain diode forward voltage	V_{DF}	—	0.85	1.45	V	$I_F = 0.4 \text{ A}$, $V_{GS} = 0$ ^{Note3}
Body-drain diode reverse recovery time	t_{rr}	—	230	—	ns	$I_F = 0.4 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 3. Pulse test

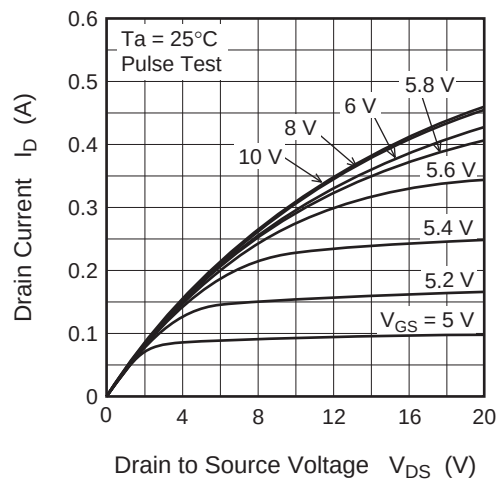
4. Since this device is equipped with high voltage FET chip ($V_{DSS} \geq 600 \text{ V}$), high voltage may be supplied. Therefore, please be sure to confirm about Electric discharge between Drain terminal and other terminal.
5. This device is sensitive to electrostatic discharge.
It is recommended to adopt appropriate cautions when handling this product.

Main Characteristics

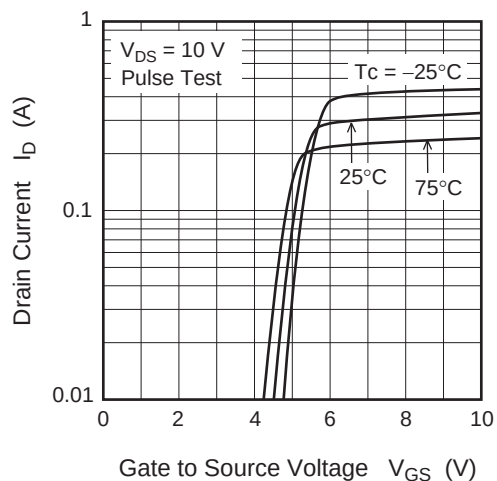
Maximum Safe Operation Area



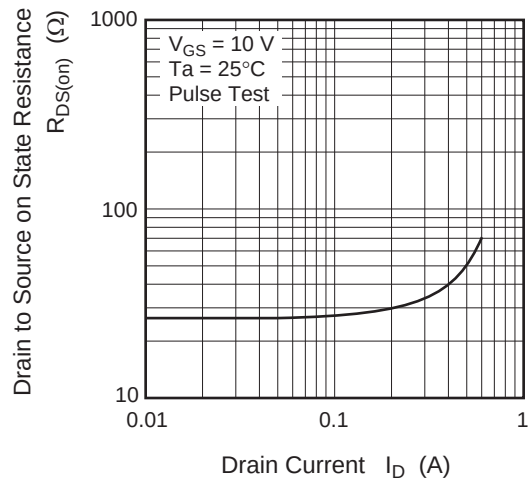
Typical Output Characteristics



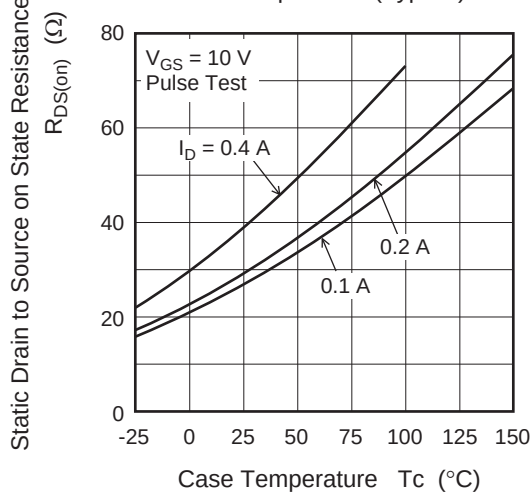
Typical Transfer Characteristics



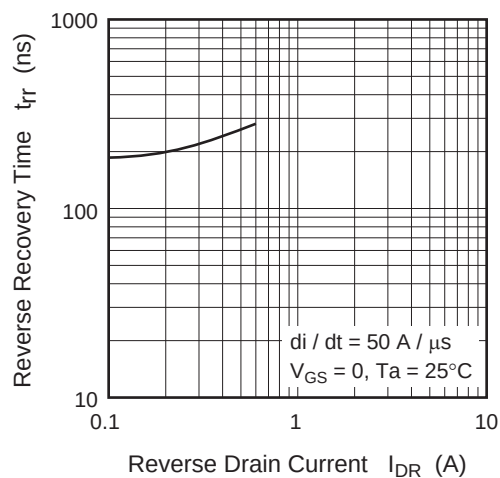
Static Drain to Source on State Resistance vs. Drain Current (Typical)



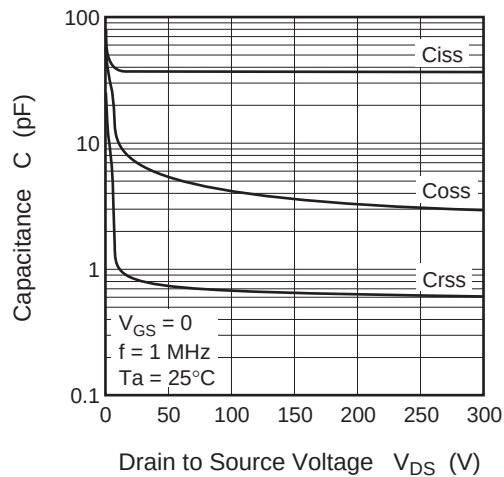
Static Drain to Source on State Resistance vs. Temperature (Typical)



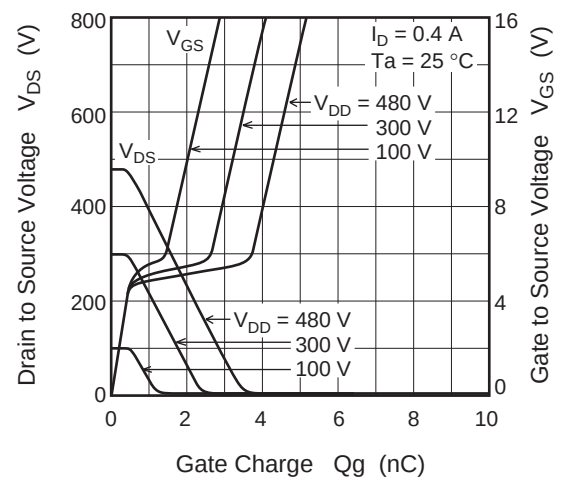
Body-Drain Diode Reverse Recovery Time (Typical)



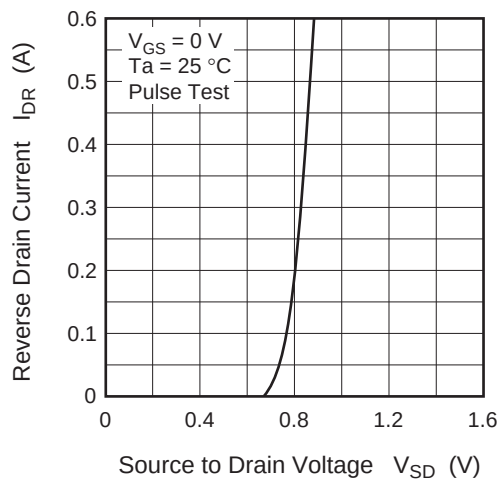
Typical Capacitance vs.
Drain to Source Voltage (Typical)



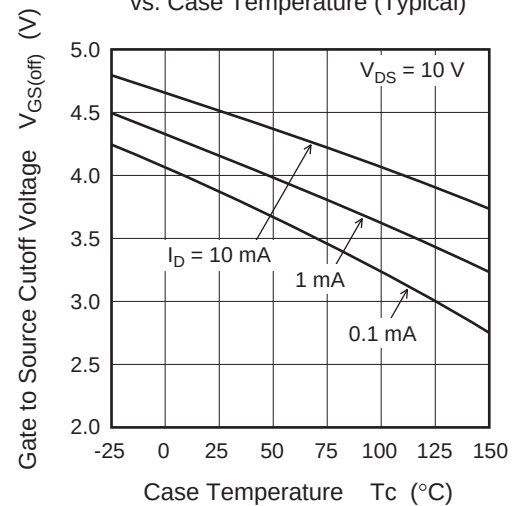
Dynamic Input Characteristics (Typical)



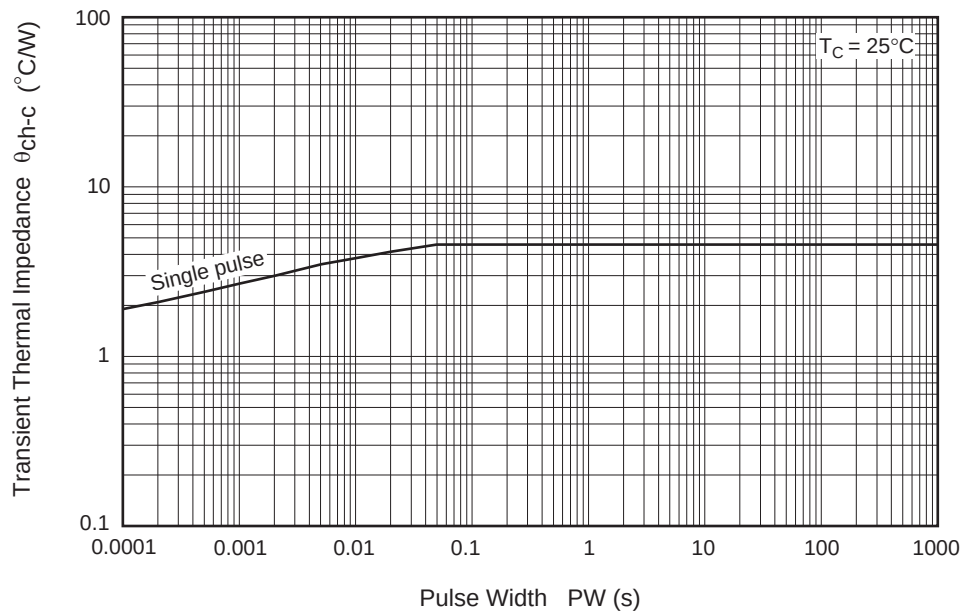
Reverse Drain Current vs.
Source to Drain Voltage (Typical)



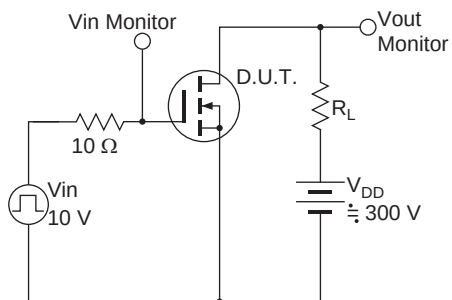
Gate to Source Cutoff Voltage
vs. Case Temperature (Typical)



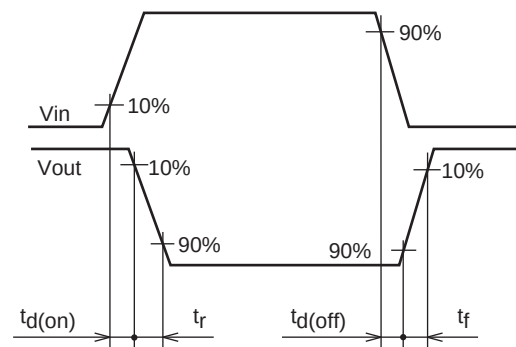
Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
MP-3A	SC-63	PRSS0004ZG-A	TMP3	0.32g	

The drawing shows three views of the package with the following dimensions (all in mm):

- Top View:** Overall width 6.6, internal width 5.3 ± 0.2 , height 1 ± 0.2 . The central body has a height of 6.1 ± 0.2 and a maximum height of 10.4. The mounting pads have a width of 0.76 ± 0.2 and a spacing of 2.3 ± 0.2 . The pad thickness is 1.0.
- Side View:** Pad thickness 2.3, top flange width 0.5 ± 0.2 , central body height 0.1 ± 0.1 , mounting pad height 1.4 ± 0.2 , and bottom flange width 0.5 ± 0.2 .
- Bottom View:** Shows the mounting pads with a width of 0.76 ± 0.2 and a spacing of 2.3 ± 0.2 .

Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJK6024DPD-00#J2	3000 pcs	Taping

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