

# RJK5003DPD

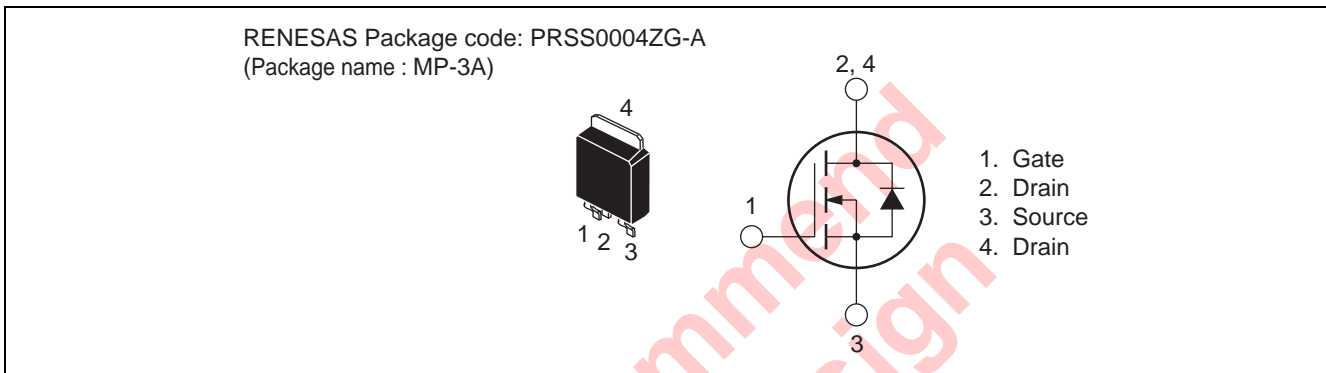
Silicon N Channel Power MOS FET  
High Speed Power Switching Use

R07DS0049EJ0400  
(Previous: REJ03G0580-0300)  
Rev.4.00  
Jul 22, 2010

## Features

- $V_{DSS}$  : 500 V
- $R_{DS(on)}$  : 1.5  $\Omega$  (MAX.)
- $I_D$  : 5 A
- Surface mount package (MP-3A)

## Outline



## Applications

- Lighting ballast, SMPS, etc.

## Maximum Ratings

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

Parameter	Symbol	Ratings	Unit	Conditions
Drain to source voltage	$V_{DSS}$	500	V	$V_{GS} = 0\text{ V}$
Gate to source voltage	$V_{GSS}$	$\pm 30$	V	$V_{DS} = 0\text{ V}$
Drain current	$I_D$	5	A	
Drain Peak current	$I_{D(pulse)}$ <sup>Note1</sup>	20	A	
Avalanche current	$I_{AP}$	5	A	$L = 200\ \mu\text{H}$
Channel dissipation	$P_{ch}$	62.5	W	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	
Channel to case thermal impedance	$\theta_{ch-c}$	2.0	$^\circ\text{C/W}$	Channel to case

Note: 1. Pulse width limited by safe operating area.

## Electrical Characteristics

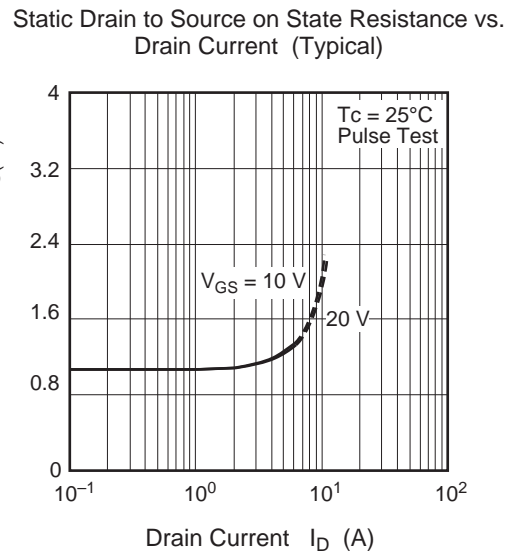
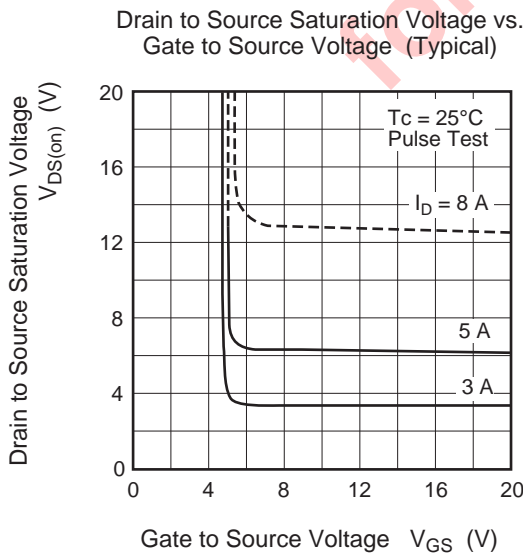
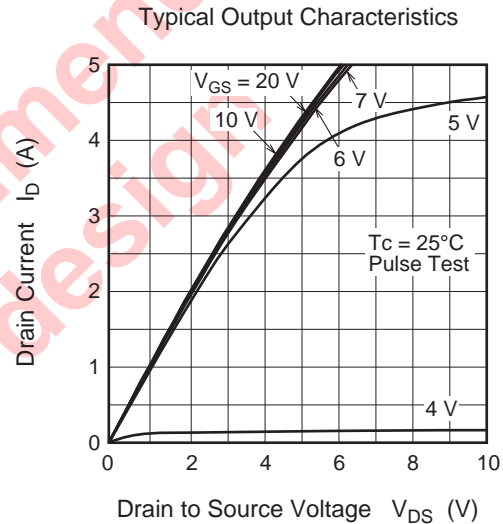
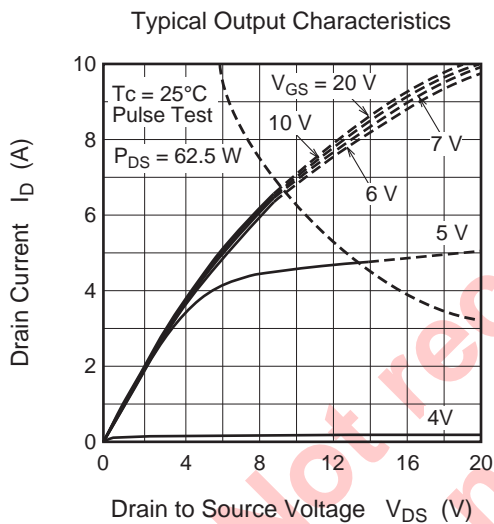
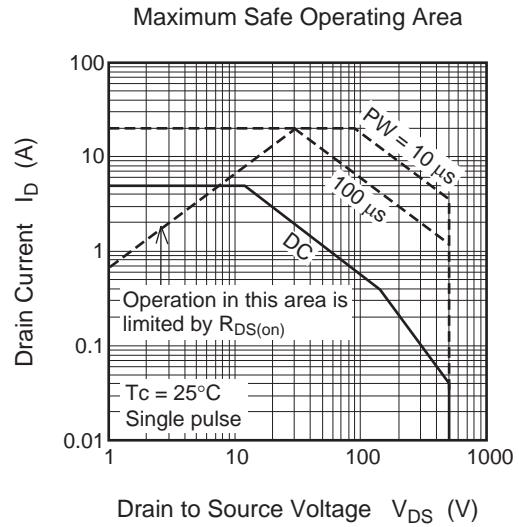
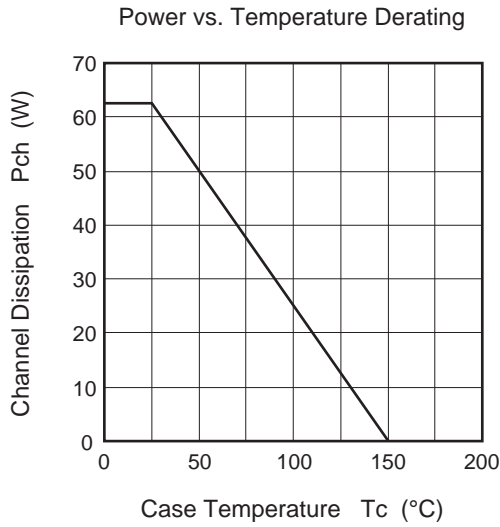
(Tch = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$I_D = 1 \text{ mA}$ , $V_{GS} = 0 \text{ V}$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	mA	$V_{DS} = 500 \text{ V}$ , $V_{GS} = 0 \text{ V}$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0 \text{ V}$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	3.5	4.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	1.3	1.5	$\Omega$	$I_D = 2 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note2</sup>
Input capacitance	$C_{iss}$	—	550	—	pF	$V_{DS} = 25 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	60	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	10	—	pF	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$V_{DD} = 200 \text{ V}$ , $I_D = 2 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_G = 25 \Omega$
Rise time	$t_r$	—	20	—	ns	
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	
Fall time	$t_f$	—	25	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	1.0	1.5	V	$I_F = 2 \text{ A}$ , $V_{GS} = 0 \text{ V}$ <sup>Note2</sup>

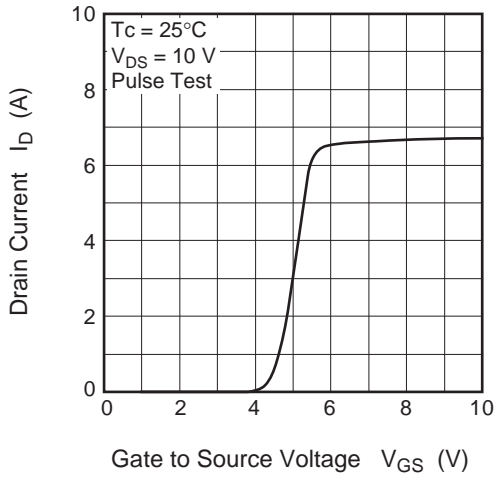
Note: 2. Pulse test

Not recommended  
for new design

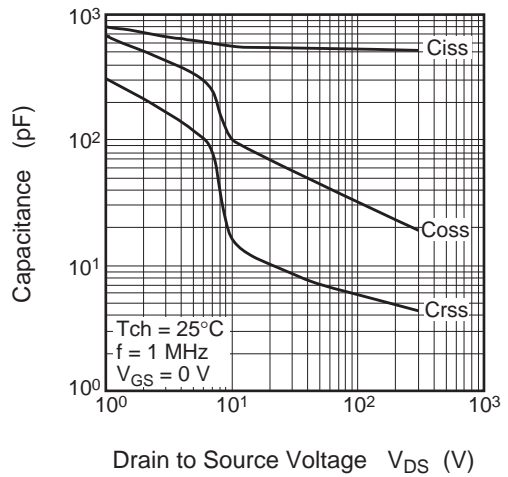
Main Characteristics



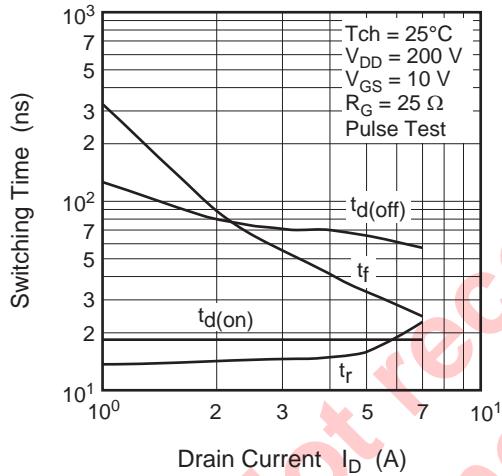
Transfer Characteristics (Typical)



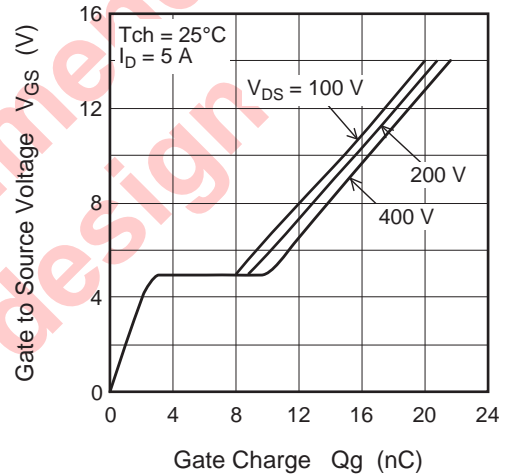
Capacitance vs. Drain to Source Voltage (Typical)



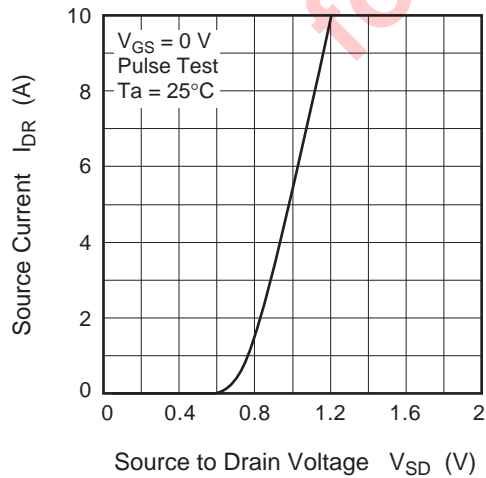
Switching Characteristics (Typical)



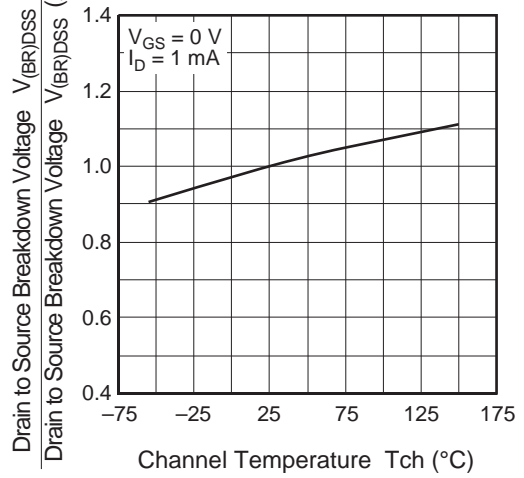
Gate to Source Voltage vs. Gate Charge (Typical)

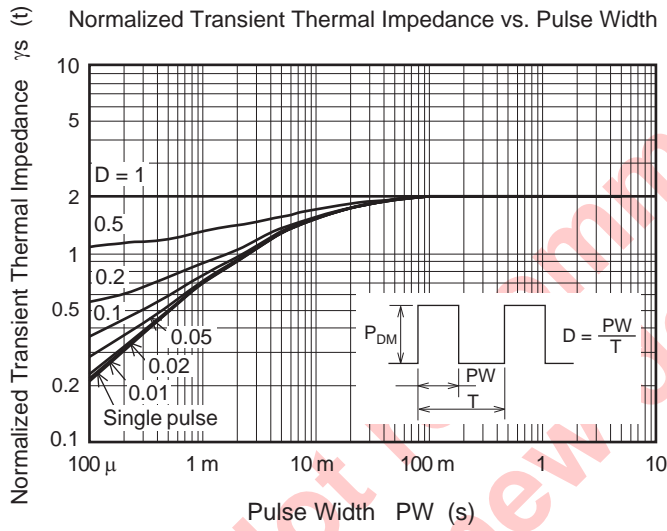
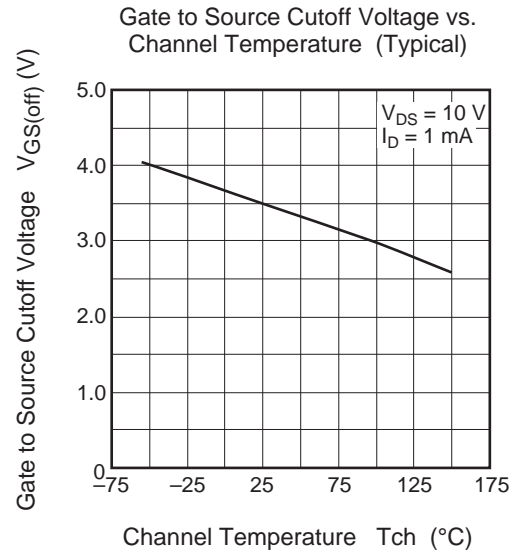
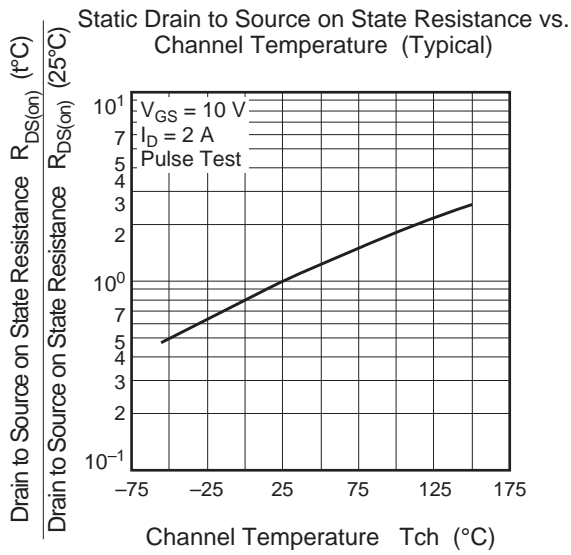


Reverse Drain Current vs. Source to Drain Voltage Characteristics (Typical)

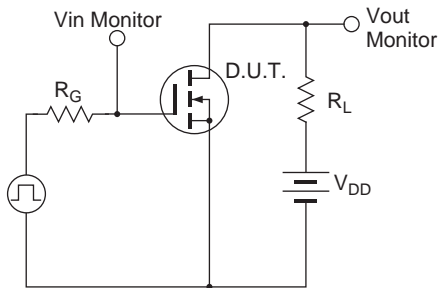


Breakdown Voltage vs. Channel Temperature (Typical)

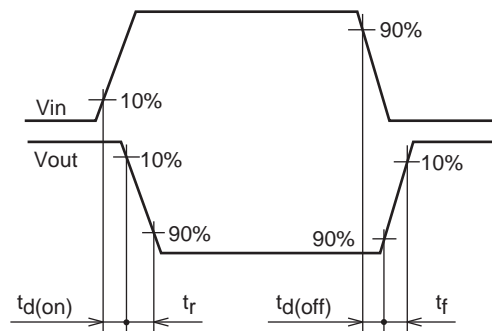




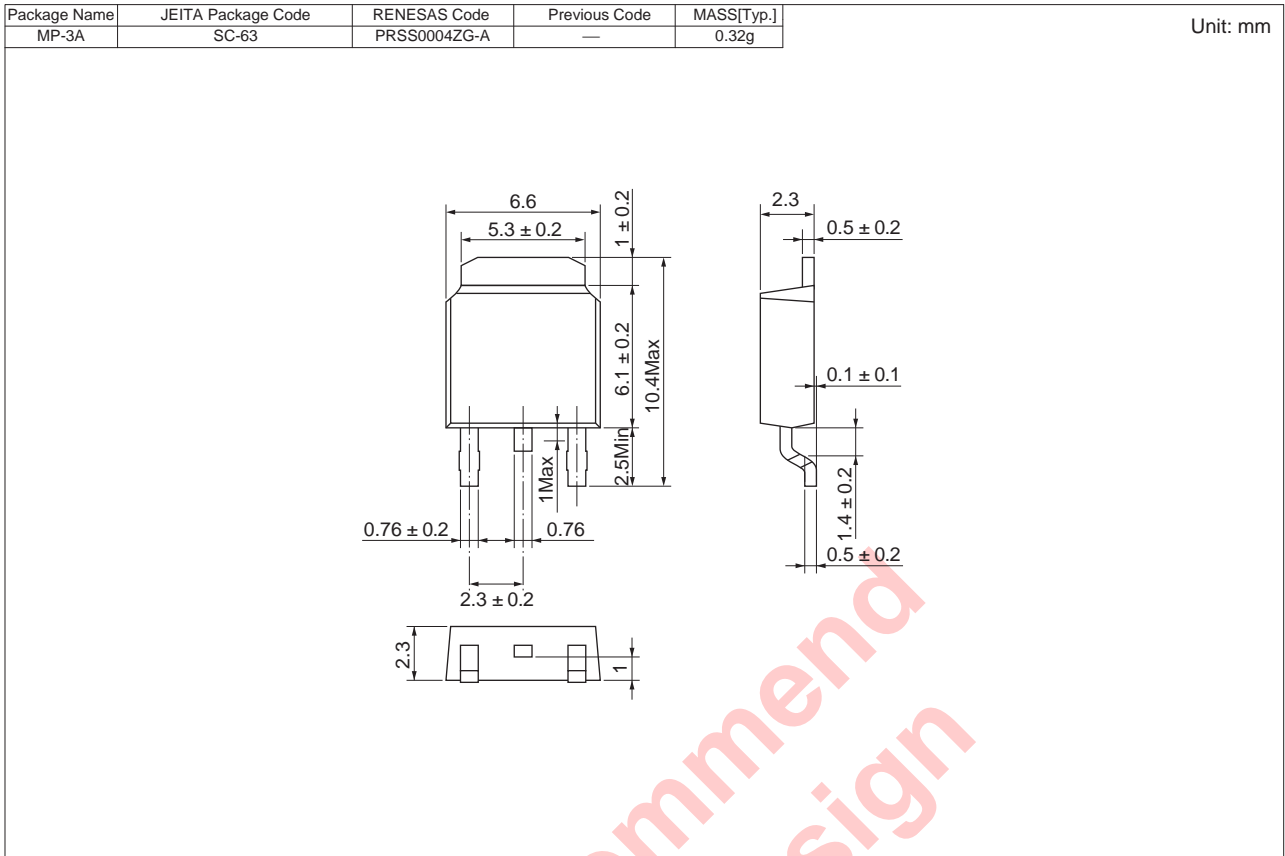
Switching Time Measurement Circuit



Switching Waveform



### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
RJK5003DPD-00-J2	3000 pcs	Taping

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