

RJK5003DPD

Silicon N Channel Power MOS FET
High Speed Power Switching Use

REJ03G0580-0200

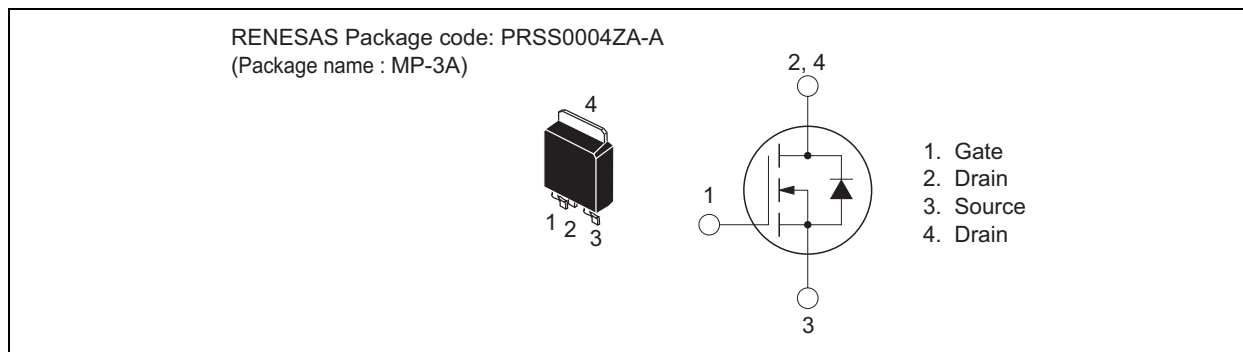
Rev.2.00

Mar 14, 2006

Features

- V_{DSS} : 500 V
- $R_{DS(on)}$: 1.5 Ω (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}	± 30	V	$V_{DS} = 0\text{ V}$
Drain current	I_D	5	A	
Drain Peak current	$I_{D(pulse)}$ ^{Note1}	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	θ_{ch-c}	2.0	$^\circ\text{C/W}$	Channel to case

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

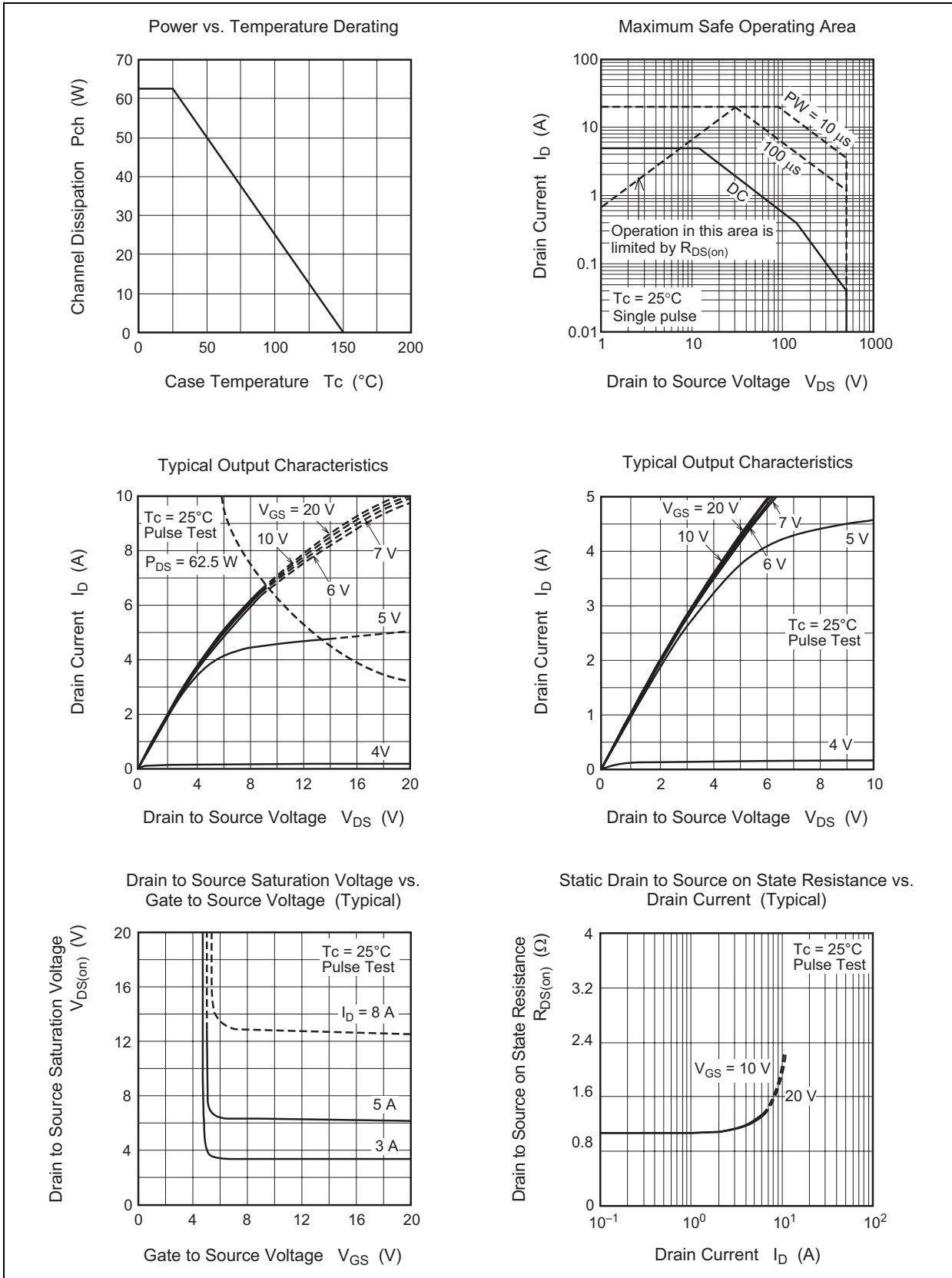
Electrical Characteristics

(Tch = 25°C)

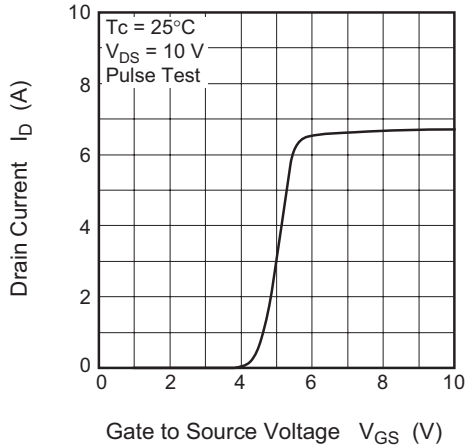
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$I_D = 1 \text{ mA}$, $V_{GS} = 0 \text{ V}$
Zero gate voltage drain current	I_{DSS}	—	—	1	mA	$V_{DS} = 500 \text{ V}$, $V_{GS} = 0 \text{ V}$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0 \text{ V}$
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	Ω	$I_D = 2 \text{ A}$, $V_{GS} = 10 \text{ V}^{\text{Note2}}$
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	$I_F = 2 \text{ A}$, $V_{GS} = 0 \text{ V}^{\text{Note2}}$

Note: 2. Pulse test

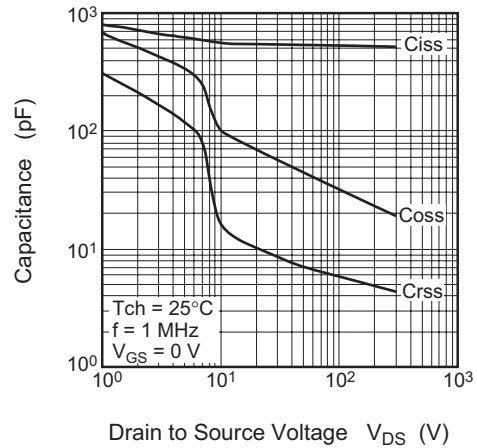
Performance Curves



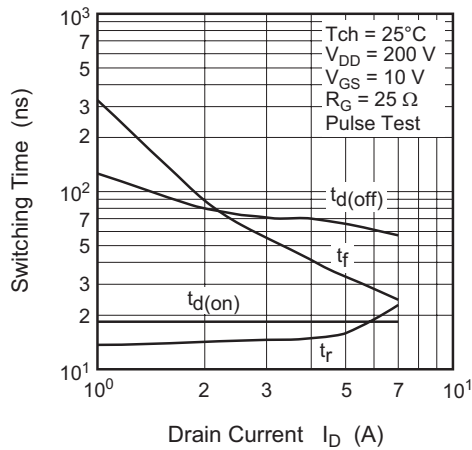
Transfer Characteristics (Typical)



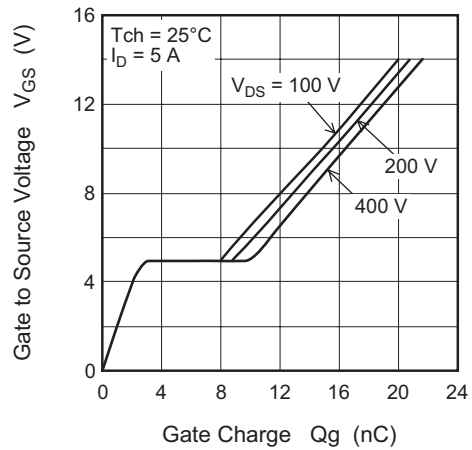
Capacitance vs. Drain to Source Voltage (Typical)



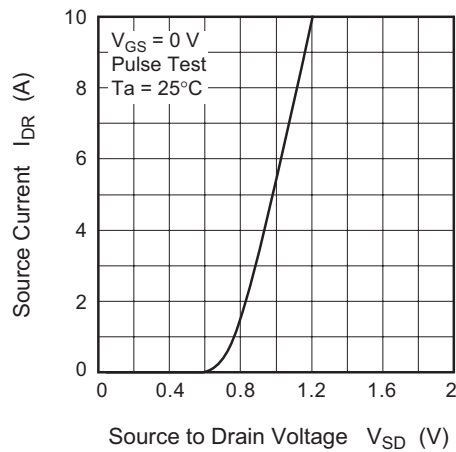
Switching Characteristics (Typical)



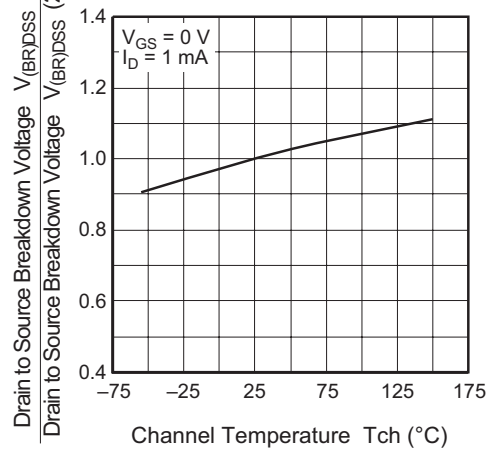
Gate to Source Voltage vs. Gate Charge (Typical)

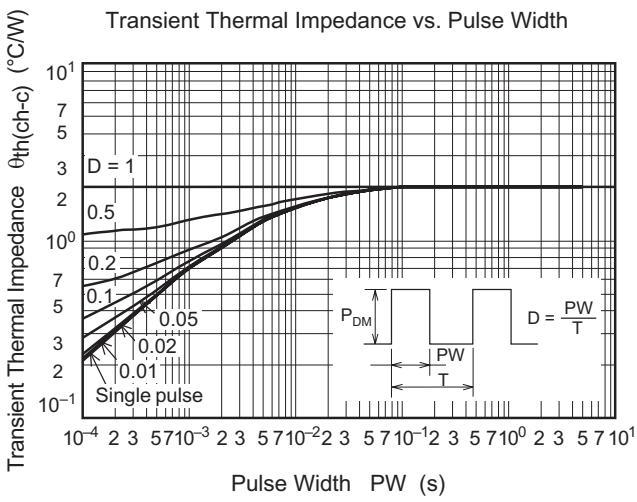
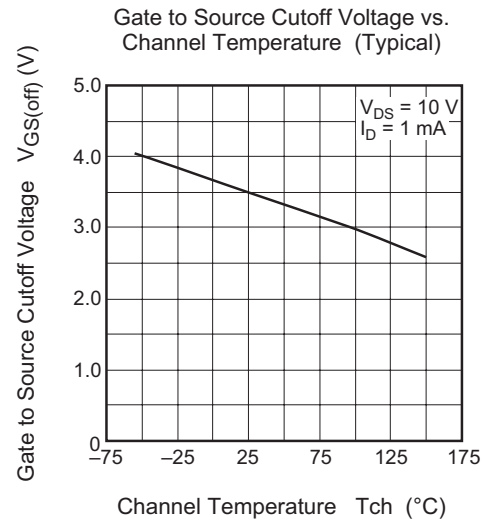
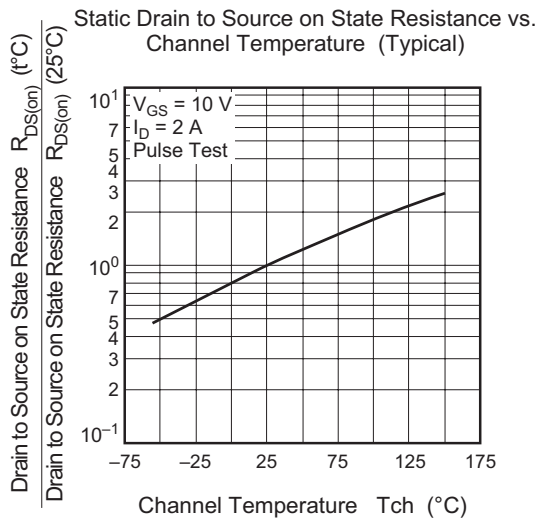


Reverse Drain Current vs. Source to Drain Voltage Characteristics (Typical)

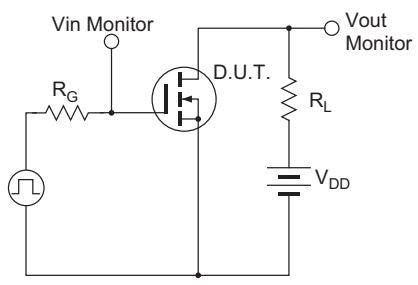


Breakdown Voltage vs. Channel Temperature (Typical)

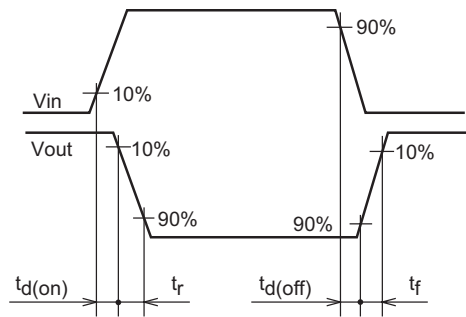




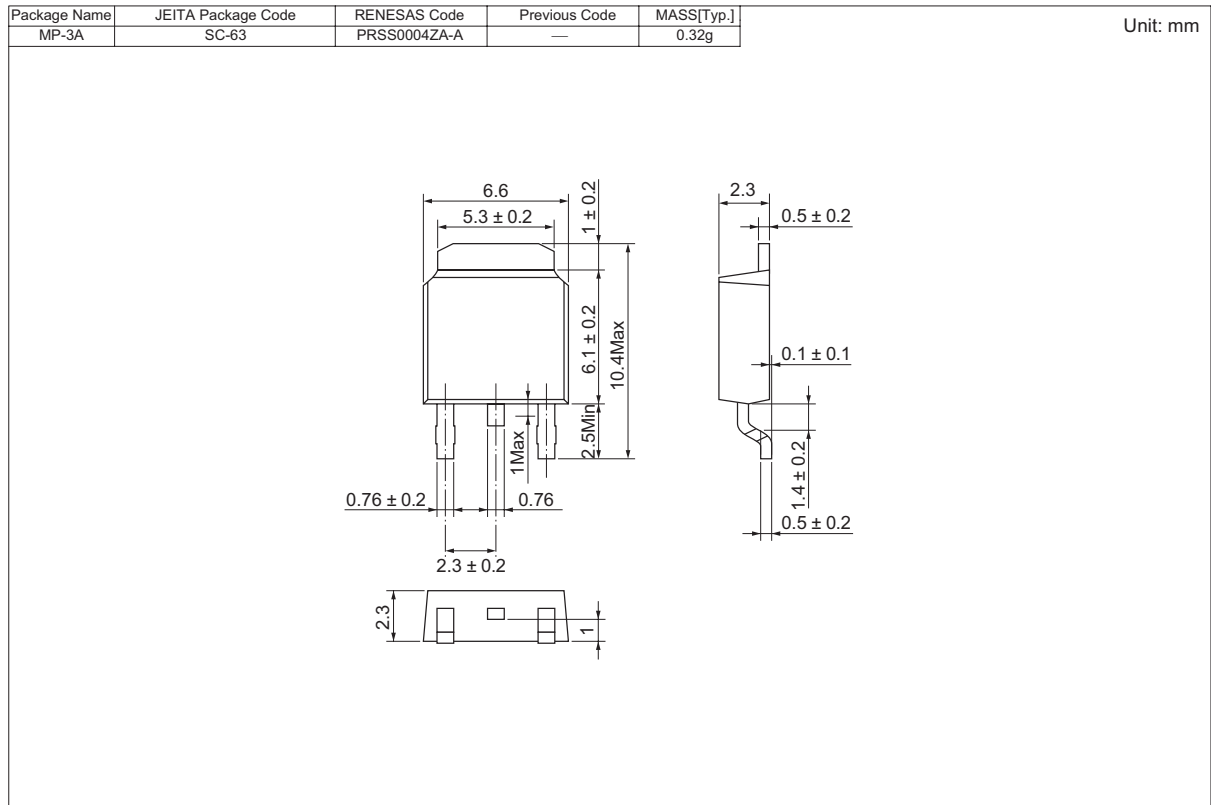
Switching Time Measurement Circuit



Switching Waveform



Package Dimensions



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Taping	3000	Type name - 00 - direction (J or Q) - 2	RJK5003DPD-00-J2

Note: It is the case of a standard. In addition, please confirm the packing specification for every product about the contents of packing.

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