RJK5003DPD

Silicon N Channel Power MOS FET
High Speed Power Switching Use

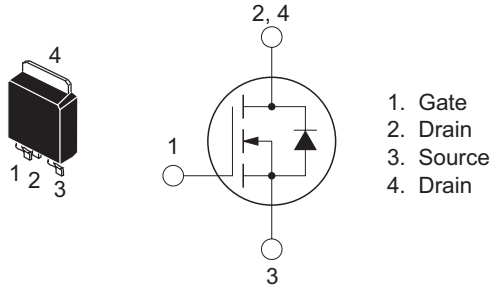
REJ03G0580-0200
Rev.2.00
Mar 14, 2006

Features

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

Outline

RENESAS Package code: PRSS0004ZA-A
(Package name : MP-3A)



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

Applications

- Lighting ballast, SMPS, etc.

Maximum Ratings

(Tc = 25°C)

Parameter	Symbol	Ratings	Unit	Conditions
Drain to source voltage	V_{DSS}	500	V	V_{GS} = 0 V
Gate to source voltage	V_{GSS}	±30	V	V_{DS} = 0 V
Drain current	I_D	5	A	
Drain Peak current	$I_{D\ (pulse)}$ Note1	20	A	
Avalanche current	I_{AP}	5	A	L = 200 µH
Channel dissipation	Pch	62.5	W	
Channel temperature	Tch	150	°C	
Storage temperature	Tstg	–55 to +150	°C	
Channel to case thermal impedance	$\theta_{ch\text{-}c}$	2.0	°C/W	Channel to case

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

Electrical Characteristics

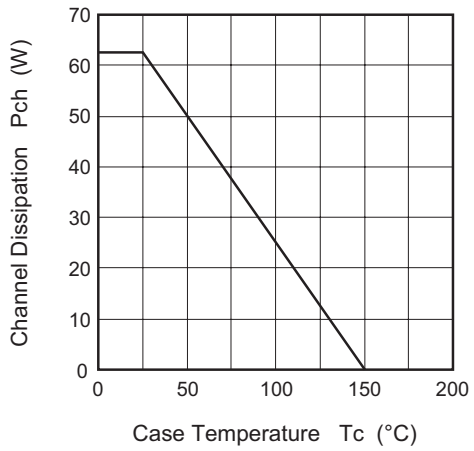
(Tch = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	I_D = 1 mA, V_{GS} = 0 V
Zero gate voltage drain current	I_{DSS}	—	—	1	mA	V_{DS} = 500 V, V_{GS} = 0 V
Gate to source leak current	I_{GSS}	—	—	±0.1	μA	V_{GS} = ±25 V, V_{DS} = 0 V
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	3.5	4.0	V	I_D = 1 mA, V_{DS} = 10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	1.3	1.5	Ω	I_D= 2 A, V_{GS} = 10 V Note2
Input capacitance	Ciss	—	550	—	pF	V_{DS} = 25 V, V_{GS}= 0 V, f = 1 MHz
Output capacitance	Coss	—	60	—	pF	
Reverse transfer capacitance	Crss	—	10	—	pF	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	V_{DD} = 200 V, I_D = 2 A, V_{GS} = 10 V R_G = 25 Ω
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 A, V_{GS} = 0 V Note2

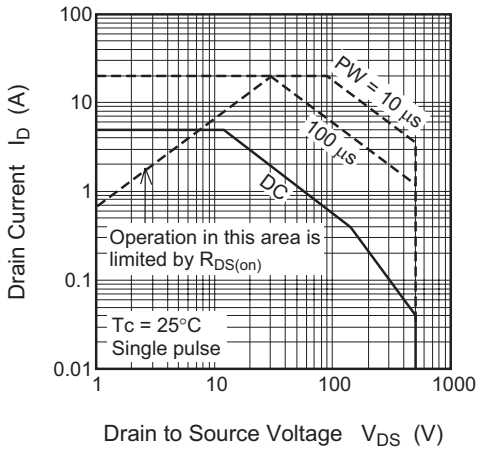
Note: 2. Pulse test

Performance Curves

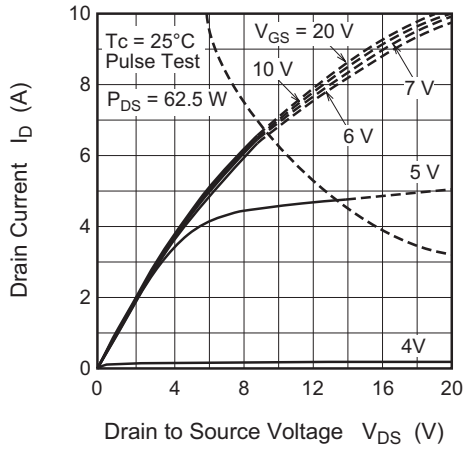
Power vs. Temperature Derating



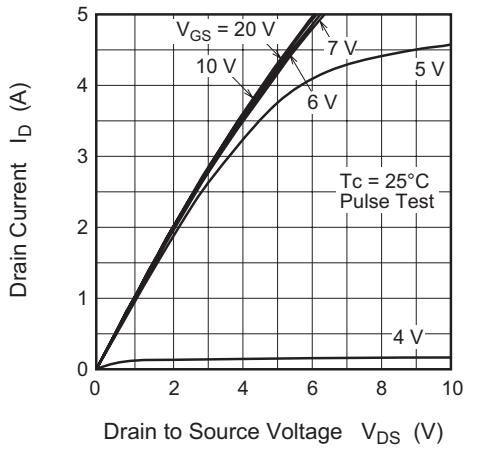
Maximum Safe Operating Area



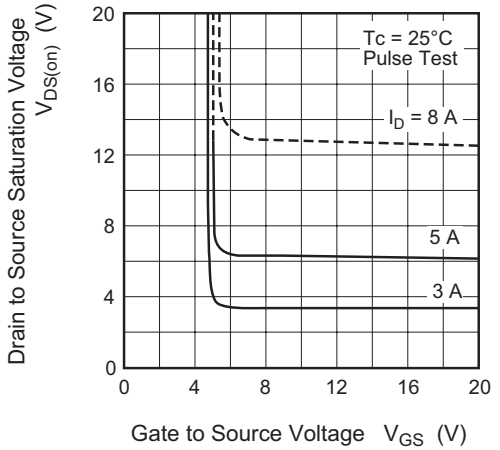
Typical Output Characteristics



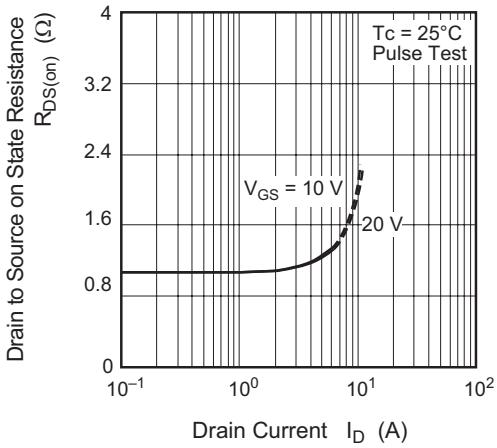
Typical Output Characteristics



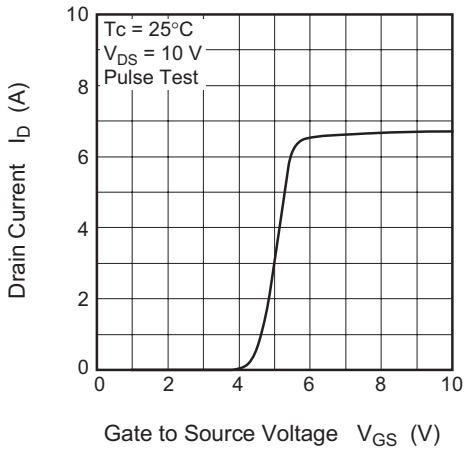
Drain to Source Saturation Voltage vs. Gate to Source Voltage (Typical)



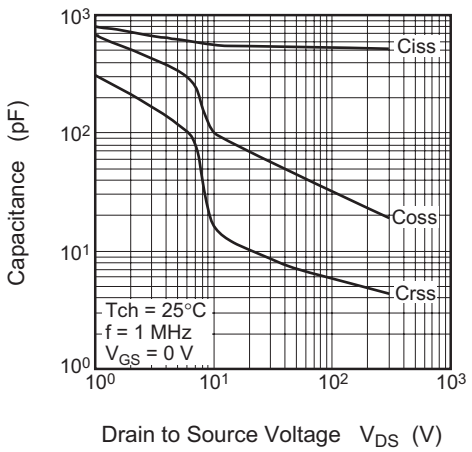
Static Drain to Source on State Resistance vs. Drain Current (Typical)



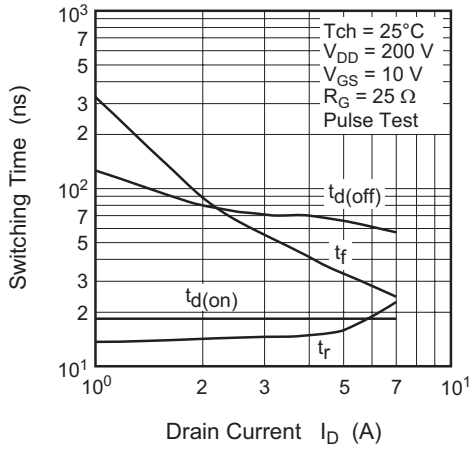
Transfer Characteristics (Typical)



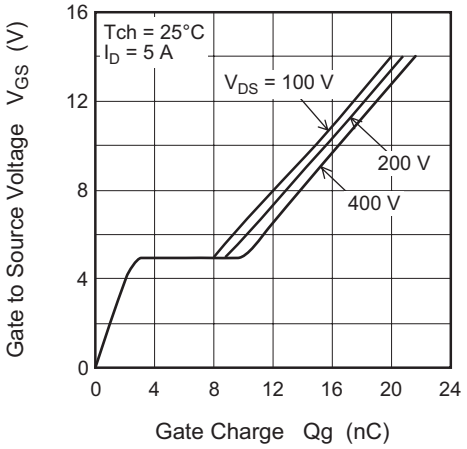
Capacitance vs.
Drain to Source Voltage (Typical)



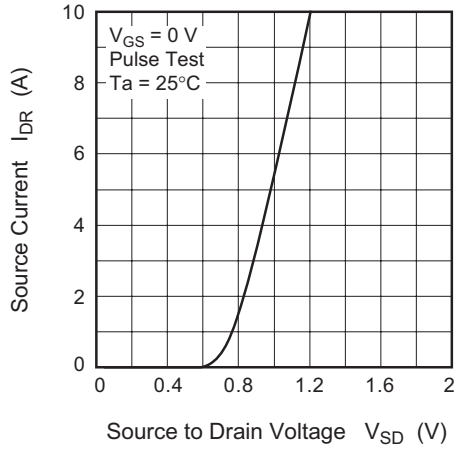
Switching Characteristics (Typical)



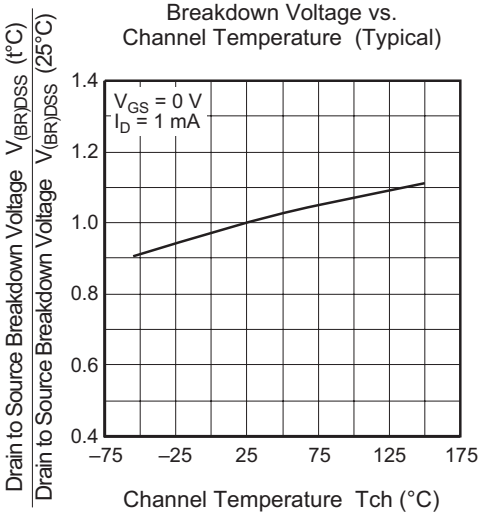
Gate to Source Voltage vs.
Gate Charge (Typical)



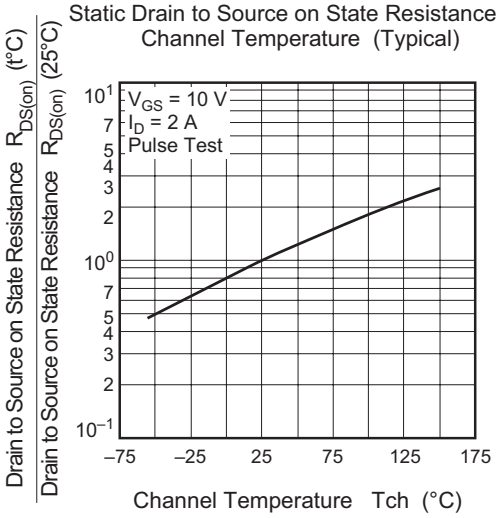
Reverse Drain Current vs.
Source to Drain Voltage Characteristics
(Typical)



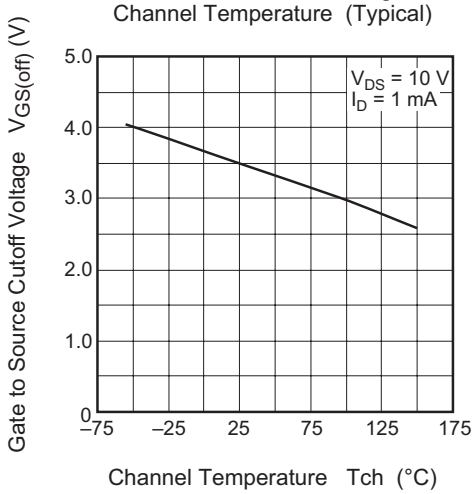
Breakdown Voltage vs.
Channel Temperature (Typical)



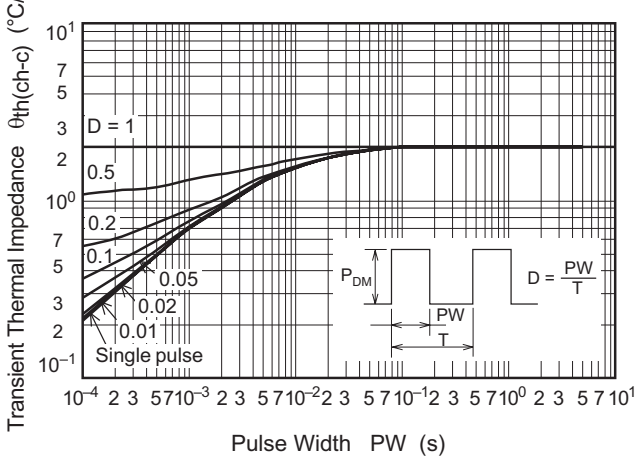
Static Drain to Source on State Resistance vs. Channel Temperature (Typical)



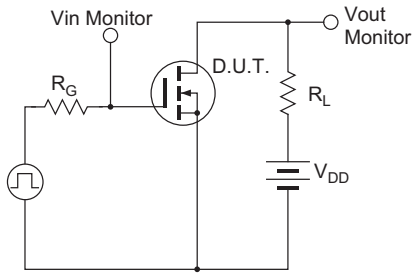
Gate to Source Cutoff Voltage vs. Channel Temperature (Typical)



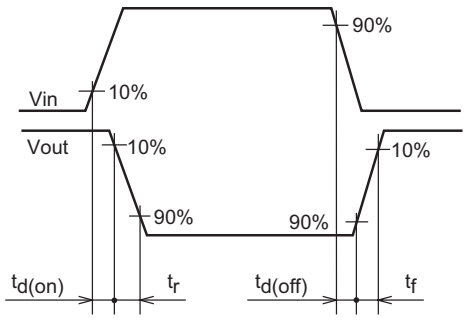
Transient Thermal Impedance vs. Pulse Width



Switching Time Measurement Circuit



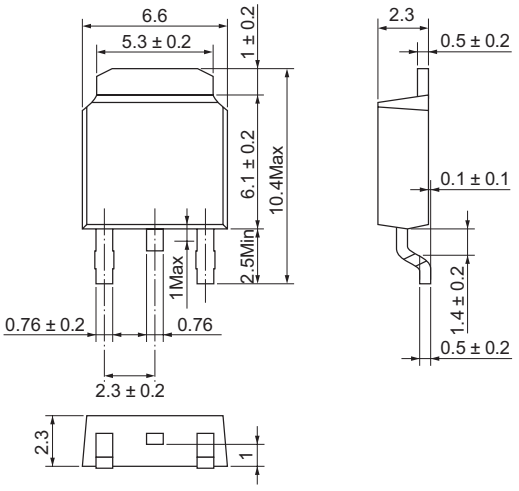
Switching Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
MP-3A	SC-63	PRSS0004ZA-A	—	0.32g

Unit: mm



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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