

RJL5014DPP

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1690-0300

Rev.3.00

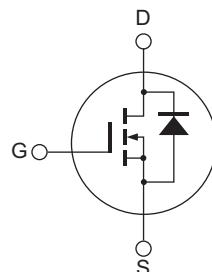
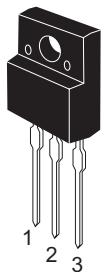
Jun 13, 2008

Features

- Built-in fast recovery diode
- Low on-resistance
- Low leakage current
- High speed switching

Outline

RENESAS Package code: PRSS0003AB-A
(Package name: TO-220FN)



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	500	V
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D ^{Note4}	19	A
Drain peak current	I _D (pulse) ^{Note1}	57	A
Body-drain diode reverse drain current	I _{DR}	19	A
Body-drain diode reverse drain peak current	I _{DR} (pulse) ^{Note1}	57	A
Avalanche current	I _{AP} ^{Note3}	4	A
Avalanche energy	E _{AR} ^{Note3}	0.88	mJ
Channel dissipation	P _{ch} ^{Note2}	35	W
Channel to case thermal impedance	θ _{ch-c}	3.57	°C/W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at T_c = 25°C
3. ST_{ch} = 25°C, T_{ch} ≤ 150°C
4. Limited by maximum safe operation area

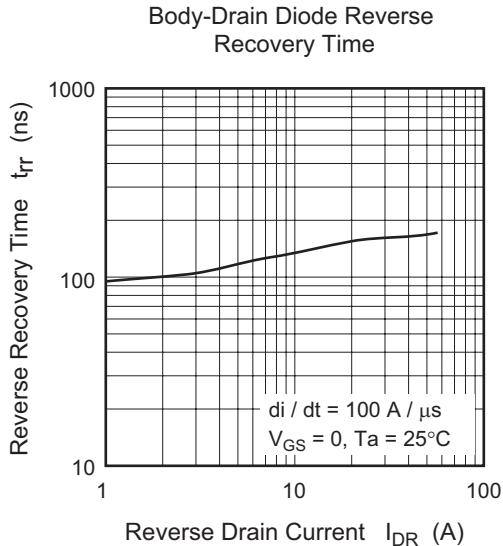
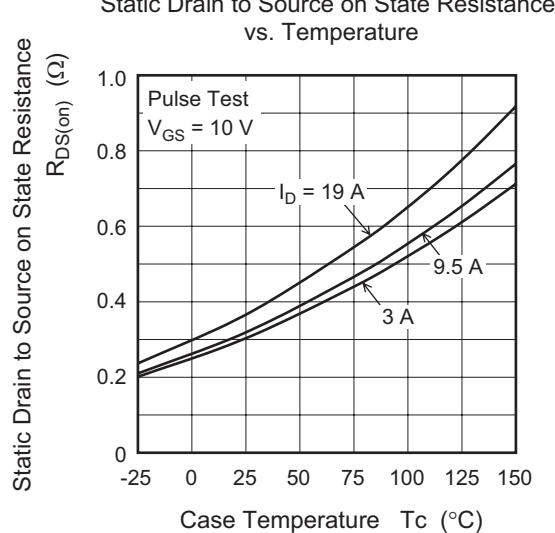
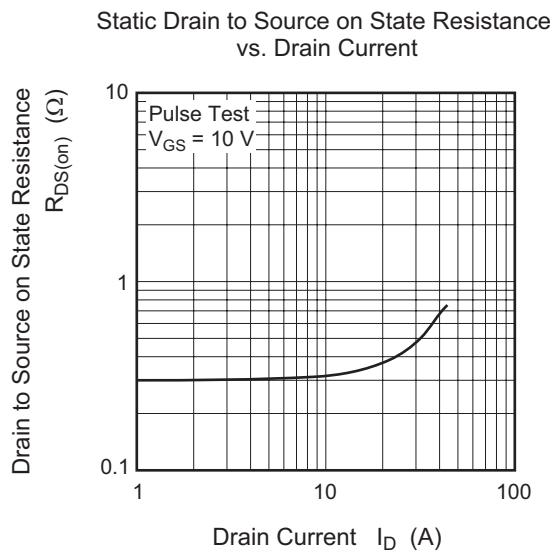
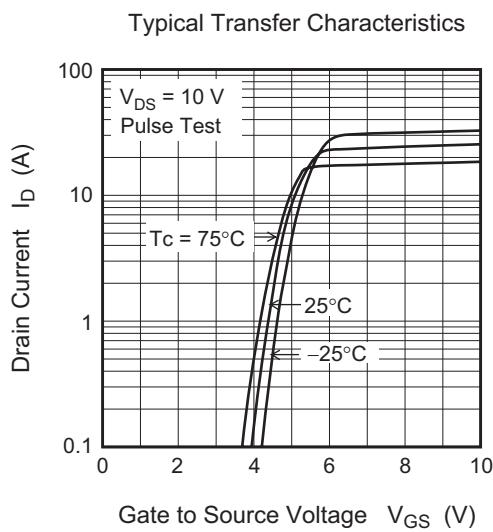
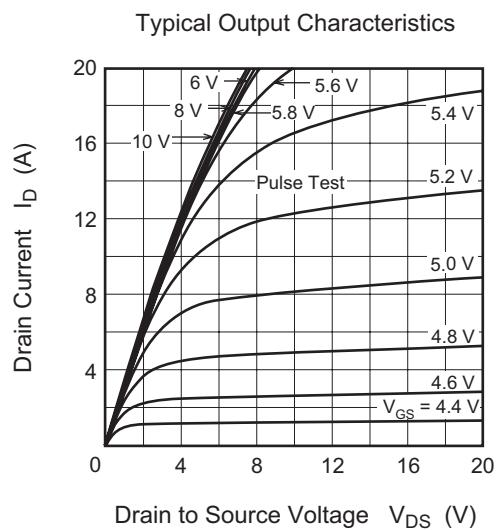
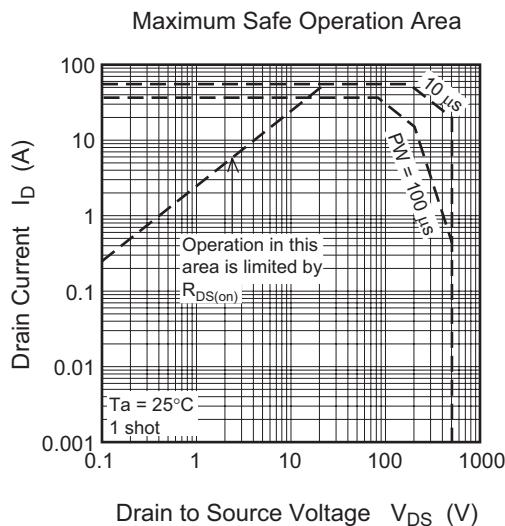
Electrical Characteristics

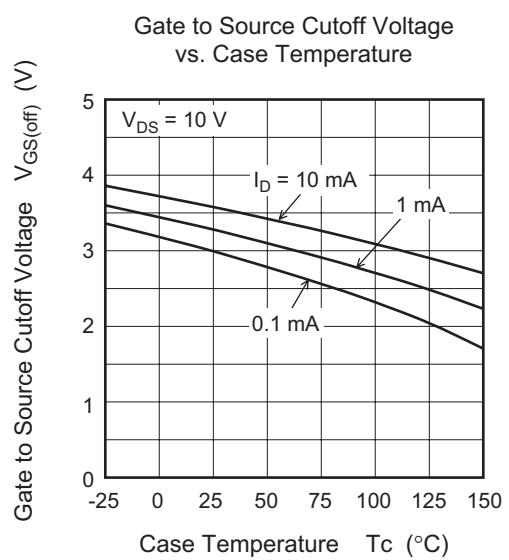
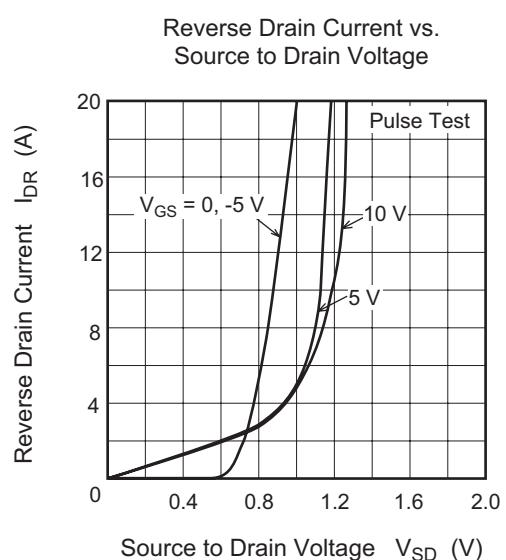
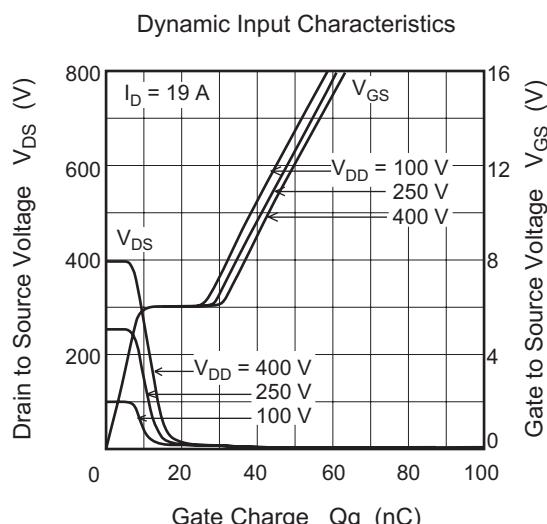
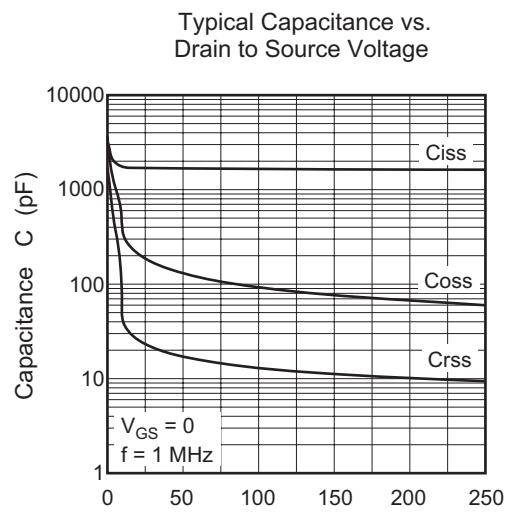
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	V _{(BR)DSS}	500	—	—	V	I _D = 10 mA, V _{GS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 500 V, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±30 V, V _{DS} = 0
Gate to source cutoff voltage	V _{GS(off)}	2.0	—	4.0	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DSS(on)}	—	0.32	0.40	Ω	I _D = 9.5 A, V _{GS} = 10 V ^{Note5}
Input capacitance	C _{iss}	—	1700	—	pF	V _{DS} = 25 V V _{GS} = 0 f = 1 MHz
Output capacitance	C _{oss}	—	190	—	pF	
Reverse transfer capacitance	C _{rss}	—	23	—	pF	
Turn-on delay time	t _{d(on)}	—	32	—	ns	I _D = 9.5 A V _{GS} = 10 V R _L = 26.3 Ω R _g = 10 Ω
Rise time	t _r	—	27	—	ns	
Turn-off delay time	t _{d(off)}	—	95	—	ns	
Fall time	t _f	—	20	—	ns	
Total gate charge	Q _g	—	43	—	nC	V _{DD} = 400 V V _{GS} = 10 V I _D = 19 A
Gate to source charge	Q _{gs}	—	8.2	—	nC	
Gate to drain charge	Q _{gd}	—	21.8	—	nC	
Body-drain diode forward voltage	V _{DF}	—	1.00	1.65	V	I _F = 19 A, V _{GS} = 0 ^{Note5}
Body-drain diode reverse recovery time	t _{rr}	—	160	—	ns	I _F = 19 A, V _{GS} = 0 di _F /dt = 100 A/μs

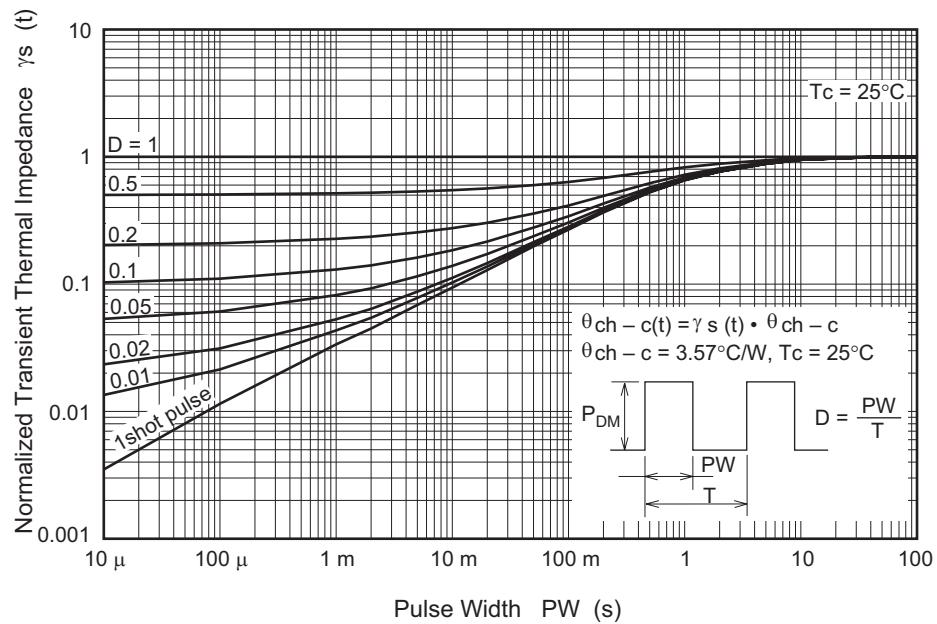
Notes: 5. Pulse test

Main Characteristics

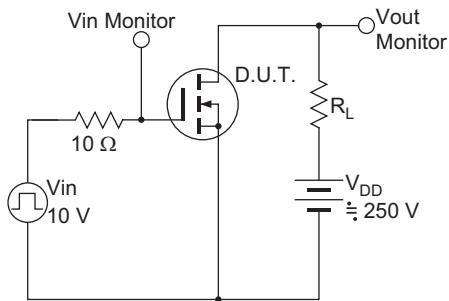




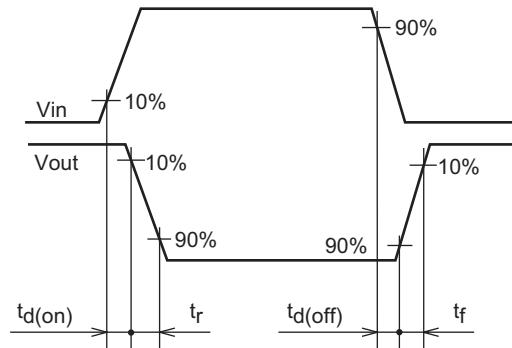
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
TO-220FN	—	PRSS003AB-A	—	2.0g	

Ordering Information

Part No.	Quantity	Shipping Container
RJL5014DPP-00-T2	1050 pcs	Box (Tube)

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