

RJL5014DPK

Silicon N Channel MOS FET High Speed Power Switching

REJ03G1798-0100

Rev.1.00

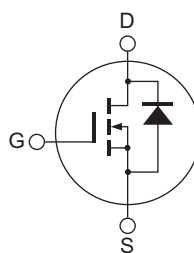
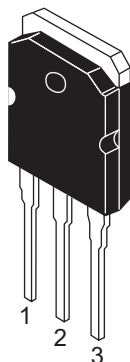
Jun 30, 2009

Features

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

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name:TO-3P)



1. Gate
2. Drain (Flange)
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	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}	150	W
Channel to case thermal impedance	θ_{ch-c}	0.833	°C/W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$

2. Value at $T_c = 25^\circ C$

3. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 500 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.32	0.40	Ω	$I_D = 9.5 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	1700	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	190	—	pF	
Reverse transfer capacitance	C_{rss}	—	23	—	pF	
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$I_D = 9.5 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 26.3 \Omega$ $R_g = 10 \Omega$
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	$V_{DD} = 400 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 19 \text{ A}$
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	$I_F = 19 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	160	—	ns	$I_F = 19 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 4. Pulse test

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