

RJK5013DPE

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1488-0200

Rev.2.00

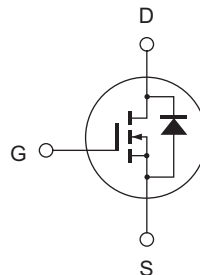
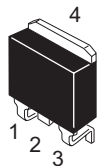
Nov 29, 2006

Features

- Low on-resistance
- Low leakage current
- High speed switching

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDPAK(S)-(1))



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

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	14	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	42	A
Body-drain diode reverse drain current	I_{DR}	14	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ ^{Note1}	42	A
Avalanche current	I_{AP} ^{Note3}	4	A
Avalanche energy	E_{AR} ^{Note3}	0.88	mJ
Channel dissipation	P_{ch} ^{Note2}	100	W
Channel to case thermal impedance	θ_{ch-c}	1.25	°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. $ST_{ch} = 25^\circ C$, $T_{ch} \leq 150^\circ C$

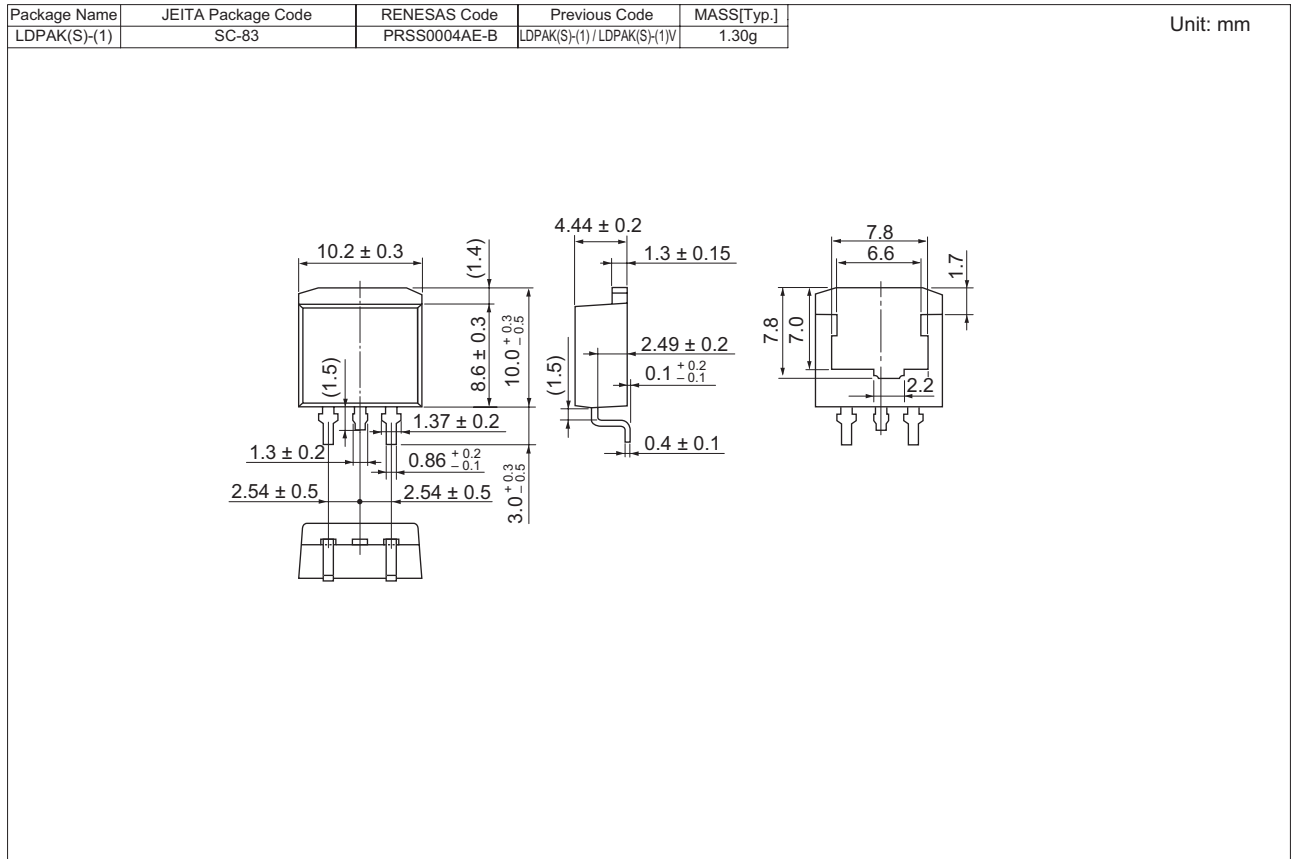
Electrical Characteristics

(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}	—	—	1	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	$V_{GS(off)}$	3.0	—	4.5	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.385	0.465	Ω	$I_D = 7 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	1450	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	155	—	pF	
Reverse transfer capacitance	C_{rss}	—	19	—	pF	
Turn-on delay time	$t_{d(on)}$	—	34	—	ns	$I_D = 7 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 35.7 \Omega$ $R_g = 10 \Omega$
Rise time	t_r	—	24	—	ns	
Turn-off delay time	$t_{d(off)}$	—	86	—	ns	
Fall time	t_f	—	16	—	ns	
Total gate charge	Q_g	—	38	—	nC	$V_{DD} = 400 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 14 \text{ A}$
Gate to source charge	Q_{gs}	—	8	—	nC	
Gate to drain charge	Q_{gd}	—	17	—	nC	
Body-drain diode forward voltage	V_{DF}	—	0.9	1.5	V	$I_F = 14 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	310	—	ns	$I_F = 14 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 4. Pulse test

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
RJK5013DPE-00-J3	1000 pcs	Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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