

# RJL5020DPK

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1733-0400

Rev.4.00

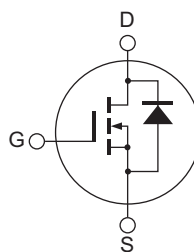
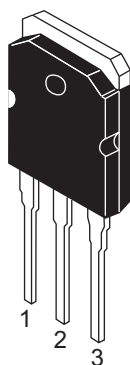
Aug 29, 2008

## 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	$I_D$	38	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	114	A
Body-drain diode reverse drain current	$I_{DR}$	38	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ <sup>Note1</sup>	114	A
Avalanche current	$I_{AP}$ <sup>Note3</sup>	12.5	A
Avalanche energy	$E_{AR}$ <sup>Note3</sup>	8.6	mJ
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	200	W
Channel to case thermal impedance	$\theta_{ch-c}$	0.625	°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.  $STch = 25^\circ C$ ,  $T_{ch} \leq 150^\circ C$

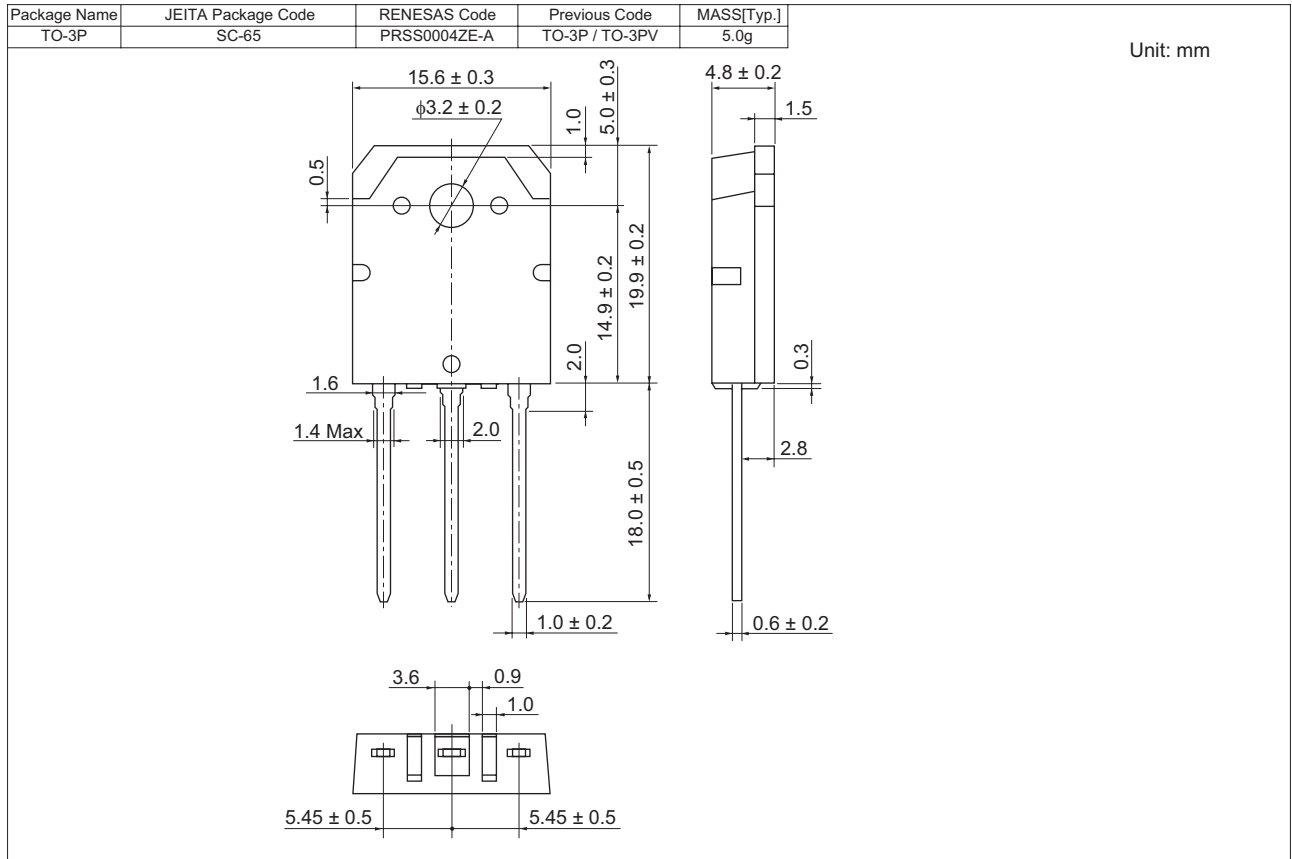
## Electrical Characteristics

(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	$\mu\text{A}$	$V_{DS} = 500 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	4.0	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.105	0.135	$\Omega$	$I_D = 19 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	4750	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	$C_{oss}$	—	520	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	61	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	45	—	ns	$I_D = 19 \text{ A}$
Rise time	$t_r$	—	90	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	215	—	ns	$R_L = 13.2 \Omega$
Fall time	$t_f$	—	154	—	ns	$R_g = 10 \Omega$
Total gate charge	$Q_g$	—	140	—	nC	$V_{DD} = 400 \text{ V}$
Gate to source charge	$Q_{gs}$	—	19	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	57	—	nC	$I_D = 38 \text{ A}$
Body-drain diode forward voltage	$V_{DF}$	—	0.94	1.60	V	$I_F = 38 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	170	—	ns	$I_F = 38 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 4. Pulse test

### Package Dimensions



### Ordering Information

Part No.	Quantity	Shipping Container
RJL5020DPK-00-T0	360 pcs	Box (Tube)

Notes:

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Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**  
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

**Renesas Technology (Shanghai) Co., Ltd.**  
Unit 204, 205, AZIACenter, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120  
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7858/7898

**Renesas Technology Hong Kong Ltd.**  
7th Floor, North Tower, World Finance Centre, Harbour City, Canton Road, Tsimshatsui, Kowloon, Hong Kong  
Tel: <852> 2265-6688, Fax: <852> 2377-3473

**Renesas Technology Taiwan Co., Ltd.**  
10th Floor, No.99, Fushing North Road, Taipei, Taiwan  
Tel: <886> (2) 2715-2888, Fax: <886> (2) 3518-3399

**Renesas Technology Singapore Pte. Ltd.**  
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001

**Renesas Technology Korea Co., Ltd.**  
Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

**Renesas Technology Malaysia Sdn. Bhd**  
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510