RJL5020DPK

Silicon N Channel MOS FET
High Speed Power Switching

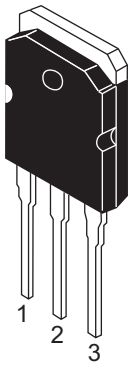
REJ03G1733-0400
Rev.4.00
Aug 29, 2008

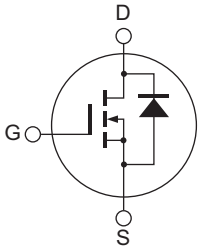
Features

- 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	$I_{D\ (pulse)}^{Note1}$	114	A
Body-drain diode reverse drain current	I_{DR}	38	A
Body-drain diode reverse drain peak current	$I_{DR\ (pulse)}^{Note1}$	114	A
Avalanche current	I_{AP}^{Note3}	12.5	A
Avalanche energy	E_{AR}^{Note3}	8.6	mJ
Channel dissipation	Pch^{Note2}	200	W
Channel to case thermal impedance	θch-c	0.625	°C/W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. STch = 25°C, Tch ≤ 150°C

Electrical Characteristics

(Ta = 25°C)

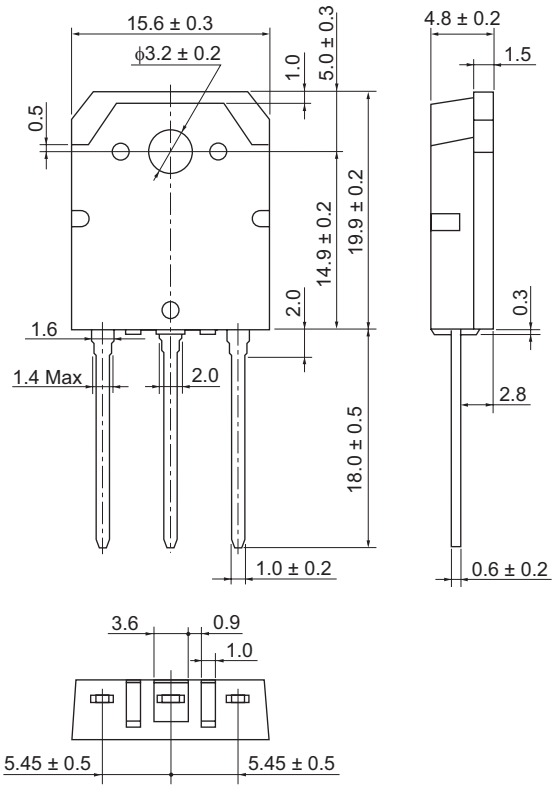
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	I_D = 10 mA, V_{GS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	10	µA	V_{DS} = 500 V, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±30 V, V_{DS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	4.0	V	V_{DS} = 10 V, I_D = 1 mA
Static drain to source on state resistance	$R_{DS(on)}$	—	0.105	0.135	Ω	I_D = 19 A, V_{GS} = 10 V Note4
Input capacitance	Ciss	—	4750	—	pF	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	520	—	pF	
Reverse transfer capacitance	Crss	—	61	—	pF	
Turn-on delay time	$t_{d(on)}$	—	45	—	ns	I_D = 19 A V_{GS} = 10 V R_L = 13.2 Ω Rg = 10 Ω
Rise time	t_r	—	90	—	ns	
Turn-off delay time	$t_{d(off)}$	—	215	—	ns	
Fall time	t_f	—	154	—	ns	
Total gate charge	Qg	—	140	—	nC	V_{DD} = 400 V V_{GS} = 10 V I_D = 38 A
Gate to source charge	Qgs	—	19	—	nC	
Gate to drain charge	Qgd	—	57	—	nC	
Body-drain diode forward voltage	V_{DF}	—	0.94	1.60	V	I_F = 38 A, V_{GS} = 0 Note4
Body-drain diode reverse recovery time	t_{rr}	—	170	—	ns	I_F = 38 A, V_{GS} = 0 di_F/dt = 100 A/µs

Notes: 4. Pulse test

Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-3P	SC-65	PRSS0004ZE-A	TO-3P / TO-3PV	5.0g

Unit: mm



Ordering Information

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

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