

H5N5004PL

Silicon N Channel MOS FET
High Speed Power Switching

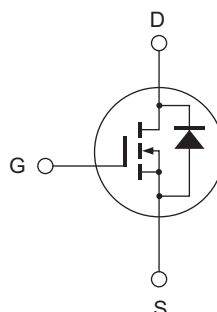
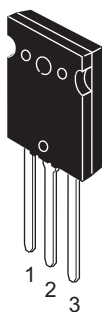
REJ03G1113-0200
(Previous: ADE-208-1381)
Rev.2.00
Sep 07, 2005

Features

- Low on-resistance: $R_{DS(on)} = 0.09 \Omega$ typ.
- Low leakage current: $I_{DSS} = 10 \mu A$ max (at $V_{DS} = 500 V$)
- High speed switching: $t_f = 280 ns$ typ (at $V_{GS} = 10 V$, $V_{DD} = 250 V$, $I_D = 25 A$)
- Low gate charge: $Q_g = 220 nC$ typ (at $V_{DD} = 400 V$, $V_{GS} = 10 V$, $I_D = 50 A$)
- Avalanche ratings
- Built-in fast recovery diode: $trr = 190 ns$ typ

Outline

RENESAS Package code: PRSS0004ZF-A
(Package name: TO-3PL)



1. Gate
2. Drain (Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	500	V
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	50	A
Drain peak current	I _{D (pulse)} ^{Note 1}	200	A
Body-drain diode reverse drain current	I _{DR}	50	A
Body-drain diode reverse drain peak current	I _{DR (pulse)} ^{Note 1}	200	A
Avalanche current	I _{AP} ^{Note 3}	15	A
Channel dissipation	P _{ch} ^{Note 2}	250	W
Channel to case thermal Impedance	θ _{ch-c}	0.5	°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. T_{ch} ≤ 150°C

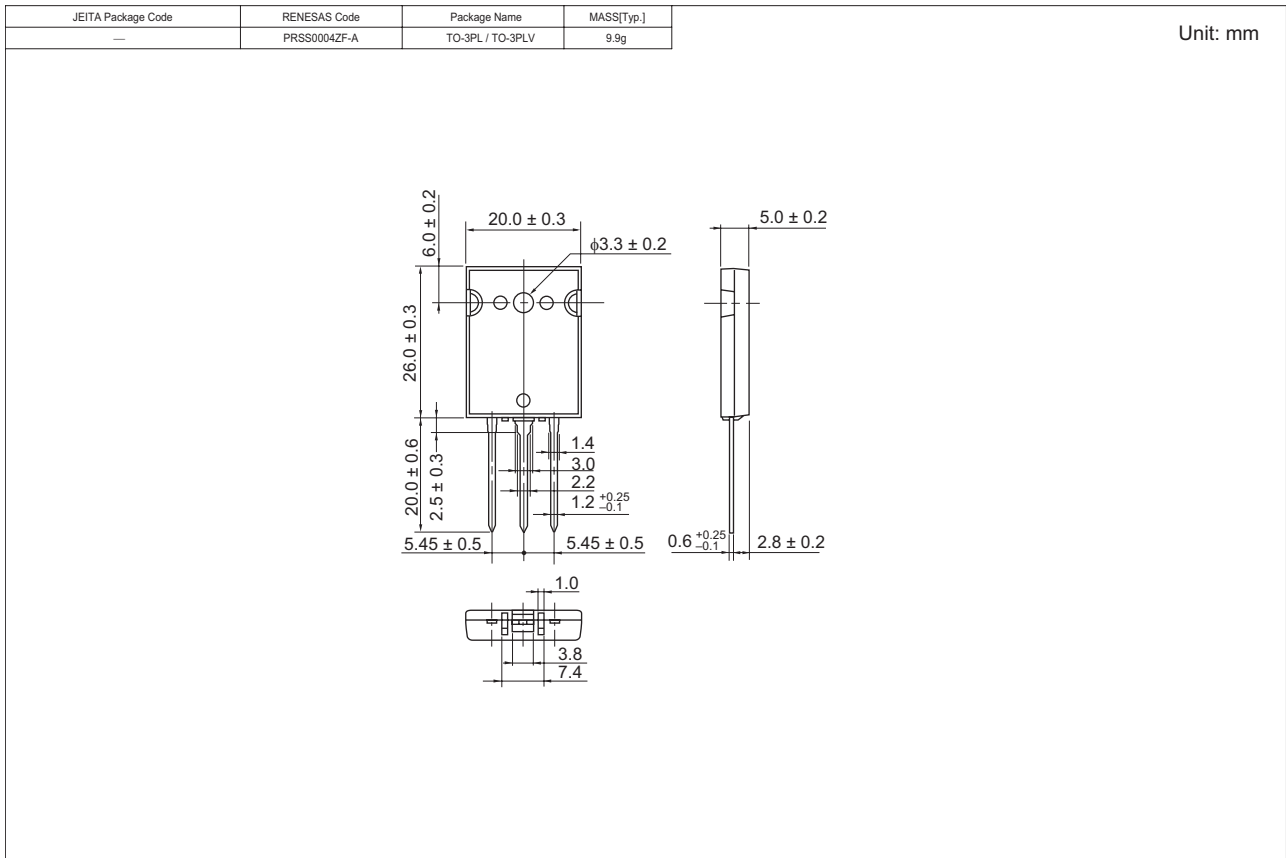
Electrical Characteristics

(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
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±30 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 500 V, V _{GS} = 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 _{DS (on)}	—	0.09	0.11	Ω	I _D = 25 A, V _{GS} = 10 V ^{Note 4}
Forward transfer admittance	y _{fs}	27	45	—	S	I _D = 25 A, V _{DS} = 10 V ^{Note 4}
Input capacitance	C _{iss}	—	7630	—	pF	V _{DS} = 25 V
Output capacitance	C _{oss}	—	770	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	160	—	pF	f = 1 MHz
Turn-on delay time	t _{d (on)}	—	90	—	ns	I _D = 25 A
Rise time	t _r	—	340	—	ns	V _{GS} = 10 V
Turn-off delay time	t _{d (off)}	—	370	—	ns	R _L = 10 Ω
Fall time	t _f	—	280	—	ns	R _g = 10 Ω
Total gate charge	Q _g	—	220	—	nC	V _{DD} = 400 V
Gate to source charge	Q _{gs}	—	30	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	110	—	nC	I _D = 50 A
Body-drain diode forward voltage	V _{DF}	—	0.98	1.5	V	I _F = 50 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	190	—	ns	I _F = 50 A, V _{GS} = 0
Body-drain diode reverse recovery charge	Q _{rr}	—	1.3	—	μC	di _F /dt = 100 A/μs

Note: 4. Pulse test

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
H5N5004PL-E	500 pcs	Box (Case)

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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