H5N5012P

Silicon N Channel MOS FET
High Speed Power Switching

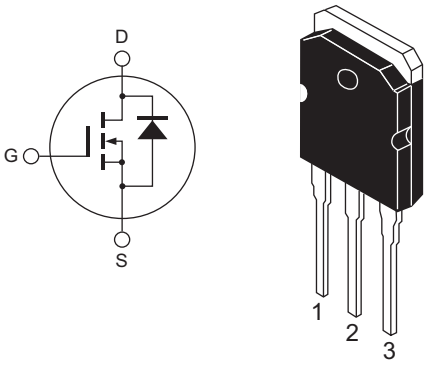
REJ03G0378-0200Z
Rev.2.00
Jun.17.2004

Features

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

Outline

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	25	A
Drain peak current	$I_{D\ (pulse)}$ Note1	100	A
Body-Drain diode reverse Drain current	I_{DR}	25	A
Avalanche current	I_{AP} Note3	7	A
Channel dissipation	Pch Note2	150	W
Channel to case thermal impedance	θch-c	0.833	°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)

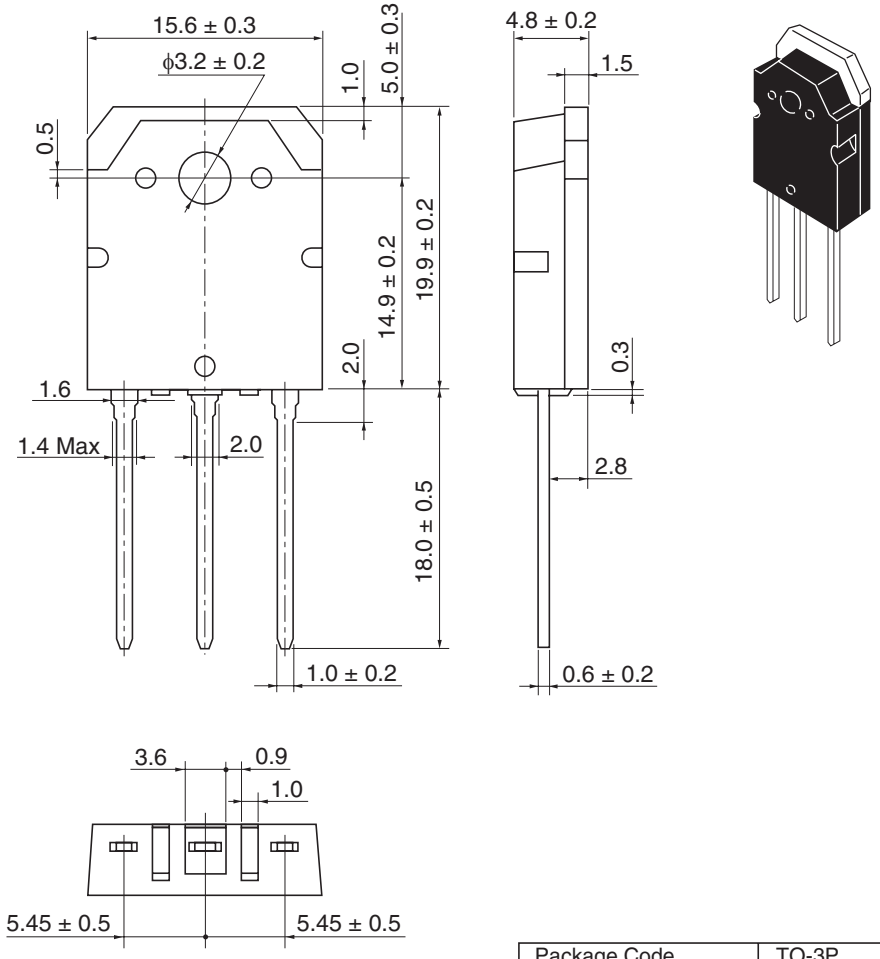
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	I_D = 10 mA, V_{GS} = 0
Zero Gate voltage drain current	I_{DSS}	—	—	10	µA	V_{DS} = 500 V, V_{GS} = 0
Gate to Source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±30 V, V_{DS} = 0
Gate to Source cutoff voltage	$V_{GS(off)}$	1.5	—	4.0	V	V_{DS} = 10 V, I_D = 1 mA
Forward transfer admittance	|yfs|	13	23	—	S	I_D = 12.5 A, V_{DS} = 10 V Note4
Static Drain to Source on state resistance	$R_{DS(on)}$	—	0.180	0.225	Ω	I_D = 12.5 A, V_{GS} = 10 V Note4
Input capacitance	Ciss	—	3600	—	pF	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	385	—	pF	
Reverse transfer capacitance	Crss	—	95	—	pF	
Turn-on delay time	$t_{d(on)}$	—	40	—	ns	I_D = 12.5 A V_{GS} = 10 V R_L = 20 Ω Rg = 10 Ω
Rise time	t_r	—	100	—	ns	
Turn-off delay time	$t_{d(off)}$	—	270	—	ns	
Fall time	t_f	—	150	—	ns	
Total Gate charge	Qg	—	145	—	nC	V_{DD} = 400 V V_{GS} = 10 V I_D = 25 A
Gate to Source charge	Qgs	—	20	—	nC	
Gate to Drain charge	Qgd	—	70	—	nC	
Body-Drain diode forward voltage	V_{DF}	—	1.0	1.5	V	I_F = 25 A, V_{GS} = 0 Note4
Body-Drain diode reverse recovery time	trr	—	170	—	ns	I_F = 25 A, V_{GS} = 0 diF/dt = 100 A/µs
Body-Drain diode reverse recovery charge	Qrr	—	1.0	—	µC	

Notes: 4. Pulse test

Package Dimensions

As of January, 2003

Unit: mm



Package Code	TO-3P
JEDEC	—
JEITA	Conforms
Mass (reference value)	5.0 g

Ordering Information

Part Name	Quantity	Shipping Container
H5N5012P-E	30 pcs	Plastic magazine

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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