

H5N5012P

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G0378-0200Z

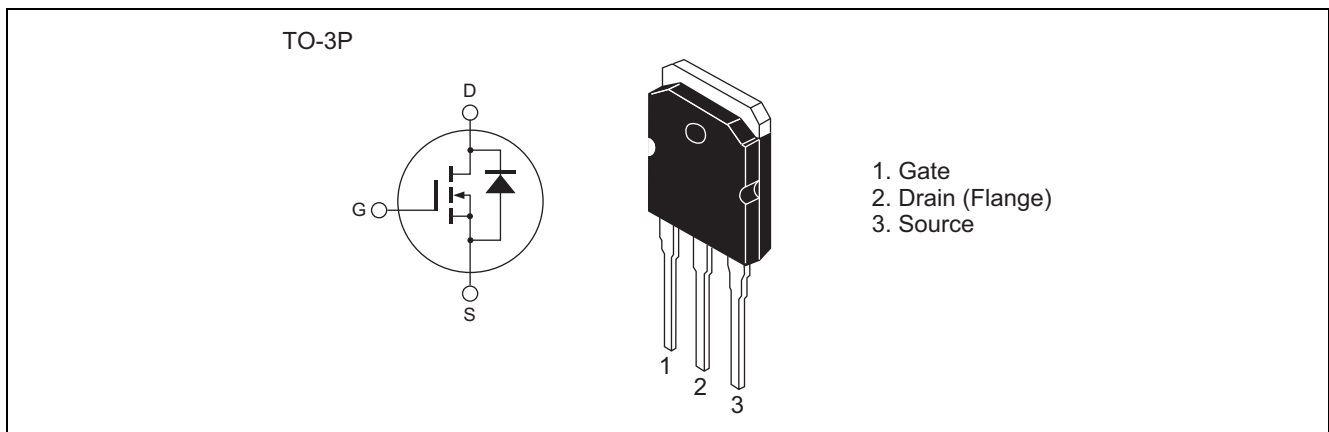
Rev.2.00

Jun.17.2004

Features

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

Outline



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to Source voltage	V_{DS}	500	V
Gate to Source voltage	V_{GS}	± 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	P_{ch} ^{Note2}	150	W
Channel to case thermal impedance	θ_{ch-c}	0.833	°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. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

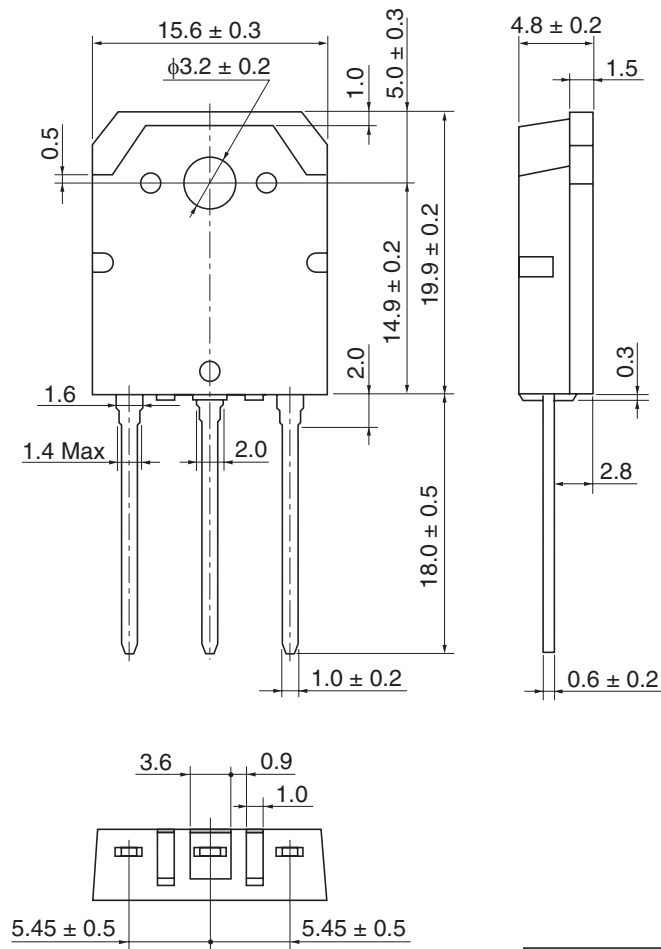
Electrical Characteristics

(Ta = 25°C)

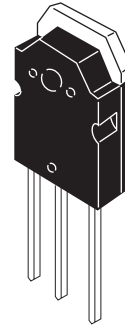
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Zero Gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 500 \text{ V}$, $V_{GS} = 0$
Gate to Source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Gate to Source cutoff voltage	$V_{GS(off)}$	1.5	—	4.0	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	13	23	—	S	$I_D = 12.5 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4}
Static Drain to Source on state resistance	$R_{DS(on)}$	—	0.180	0.225	Ω	$I_D = 12.5 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	3600	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	385	—	pF	
Reverse transfer capacitance	C_{rss}	—	95	—	pF	
Turn-on delay time	$t_{d(on)}$	—	40	—	ns	$I_D = 12.5 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 20 \Omega$ $R_g = 10 \Omega$
Rise time	t_r	—	100	—	ns	
Turn-off delay time	$t_{d(off)}$	—	270	—	ns	
Fall time	t_f	—	150	—	ns	
Total Gate charge	Q_g	—	145	—	nC	$V_{DD} = 400 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 25 \text{ A}$
Gate to Source charge	Q_{gs}	—	20	—	nC	
Gate to Drain charge	Q_{gd}	—	70	—	nC	
Body-Drain diode forward voltage	V_{DF}	—	1.0	1.5	V	$I_F = 25 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-Drain diode reverse recovery time	t_{rr}	—	170	—	ns	$I_F = 25 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$
Body-Drain diode reverse recovery charge	Q_{rr}	—	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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