

To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Cautions

Keep safety first in your circuit designs!

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Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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H5N0301SM

Silicon N Channel Power MOS FET Power Switching



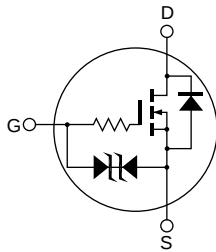
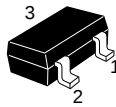
ADE-208-954 (Z)
1st. Edition
Dec. 2000

Features

- Low on-resistance
- Low drive current
- High density mounting
- 2.5 V gate drive device

Outline

SMPAK



1. Source
2. Gate
3. Drain

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	±10	V
Drain current	I_D	50	mA
Drain peak current	$I_{D(pulse)}$ ^{Note 1}	200	mA
Channel dissipation	$P_{ch(pulse)}$ ^{Note 2}	100	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$

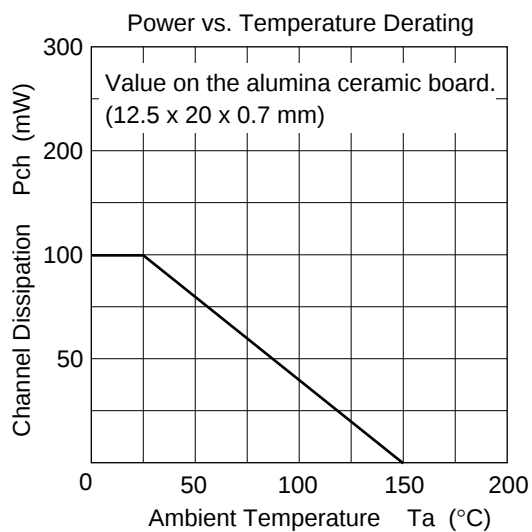
2. Value on the alumina ceramic board (12.5 x 20 x 0.7 mm)

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 100 \mu A$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±10	—	—	V	$I_G = \pm 10 \mu A$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±5	μA	$V_{GS} = \pm 8 V$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 30 V$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.8	—	1.8	V	$I_D = 10 \mu A$, $V_{DS} = -5 V$
Static drain to source on state resistance	$R_{DS(on)}$	—	6	7.2	Ω	$I_D = 25m A$, $V_{GS} = 4 V$ ^{Note 1}
		—	9	13	Ω	$I_D = 10mA$, $V_{GS} = 2.5 V$ ^{Note 1}
Forward transfer admittance	$ y_{fs} $	65	85	—	mS	$I_D = 25mA$, $V_{DS} = 10 V$ ^{Note 1}
Input capacitance	Ciss	—	12	—	pF	$V_{DS} = 10 V$
Output capacitance	Coss	—	8	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	3	—	pF	f = 1 MHz
Turn-on delay time	$t_{d(on)}$	—	40	—	ns	$V_{GS} = 4 V$, $I_D = 25m A$
Rise time	t_r	—	115	—	ns	$R_L = 400 \Omega$
Turn-off delay time	$t_{d(off)}$	—	120	—	ns	
Fall time	t_f	—	125	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.82	1.23	V	$I_F = 50m A$, $V_{GS} = 0$ ^{Note 1}

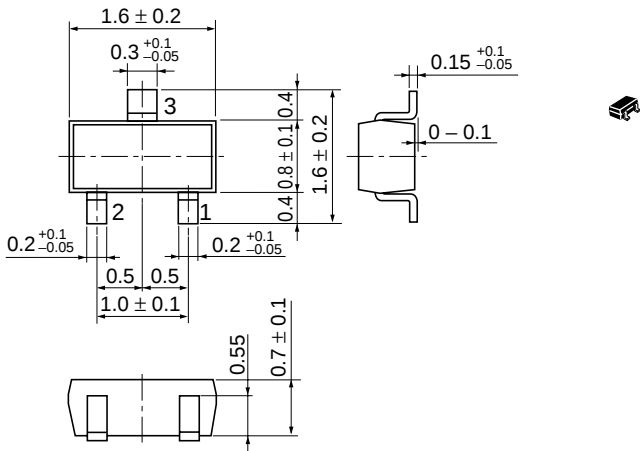
Note: 1. Pulse test

Main Characteristics



Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	SMPAK
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.003 g

Cautions

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