To all our customers

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

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Renesas Technology Corp.

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Keep safety first in your circuit designs!

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HAT2057RA

Silicon N Channel Power MOS FET
High Speed Power Switching

ADE-208-1636 (Z)

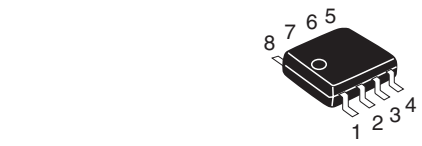
1st. Edition
Feb. 2003

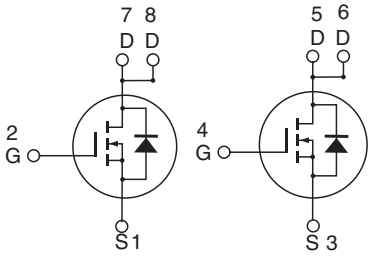
Features

- Low on-resistance
- Capable of 1.5 V gate drive
- Low drive current
- High density mounting

Outline

SOP-8





1, 3	Source
2, 4	Gate
5, 6, 7, 8	Drain

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	20	V
Gate to source voltage	V_{GSS}	+6,-3	V
Drain current	I_D	4	A
Drain peak current	$I_{D(pulse)}$ Note1	32	A
Body–drain diode reverse drain current	I_{DR}	4	A
Channel dissipation	Pch Note2	2	W
Channel dissipation	Pch Note3	3	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10µs, duty cycle ≤ 1 %
2. 1 Drive operation: When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW≤ 10s
3. 2 Drive operation: When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW≤ 10s

Electrical Characteristics

(Ta = 25°C)

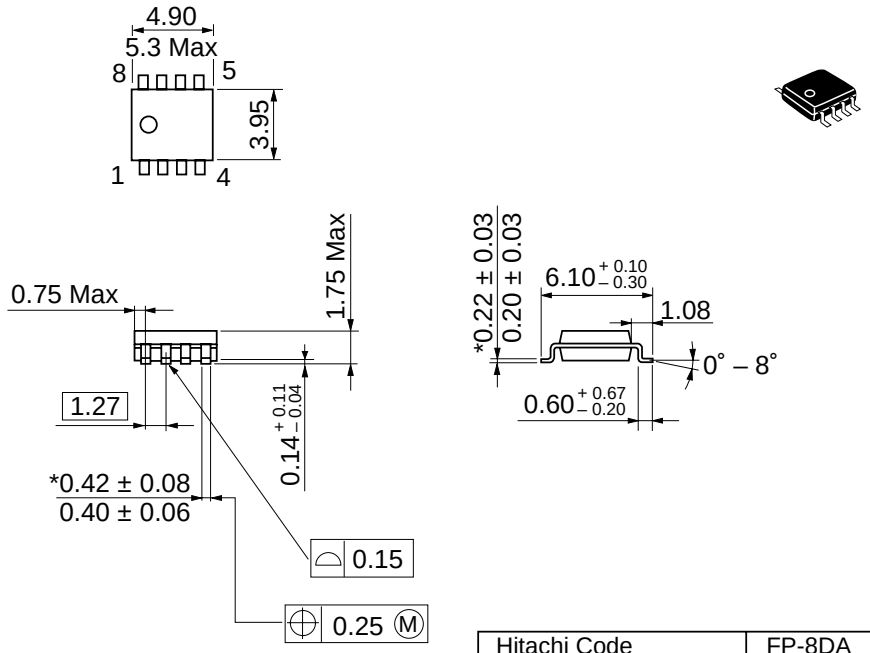
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±0.2	µA	V_{GS} = +6 V, -3V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	10	µA	V_{DS} = 10 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	0.15	—	0.90	V	V_{DS} = 10 V, I_D = 1mA
Static drain to source on state resistance	$R_{DS(on)}$	—	26	33	mΩ	I_D = 2 A,V_{GS} = 4 V Note4
	$R_{DS(on)}$	—	40	60	mΩ	I_D = 2 A,V_{GS} = 1.5 V Note4
Forward transfer admittance	$\|y_{fs}\|$	8	13	—	S	I_D = 2 A,V_{DS} = 10 V Note4
Input capacitance	Ciss	—	1100	—	pF	V_{DS} = 10 V
Output capacitance	Coss	—	155	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	125	—	pF	f = 1 MHz
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	V_{GS} = 4 V, I_D = 2 A
Rise time	t_r	—	25	—	ns	V_{DD} ≅ 10 V
Turn-off delay time	$t_{d(off)}$	—	65	—	ns	R_g = 4.7 Ω
Fall time	t_f	—	13	—	ns	R_L = 5 Ω
Body–drain diode forward voltage	V_{DF}	—	0.80	1.04	V	IF = 4 , V_{GS} = 0 Note4
Body–drain diode reverse recovery time	t_{rr}	—	40	—	ns	IF = 4A, V_{GS} = 0 diF/ dt =20 A/µs

Notes: 4. Pulse test

Package Dimensions

As of July, 2002

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-8DA
JEDEC	Conforms
JEITA	—
Mass (reference value)	0.085 g

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