HAT1054R

Silicon P Channel Power MOS FET
High Speed Power Switching

HITACHI

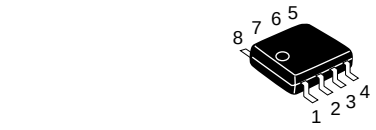
Target Specification
1st. Edition
Dec. 1999

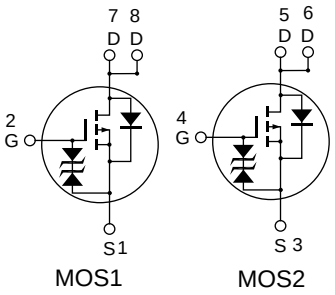
Features

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

Outline

SOP-8





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

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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	–20	V
Gate to source voltage	V_{GSS}	±12	V
Drain current	I_D	–6	A
Drain peak current	$I_{D(pulse)}$ Note1	–48	A
Body–drain diode reverse drain current	I_{DR}	–6	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

Note: 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

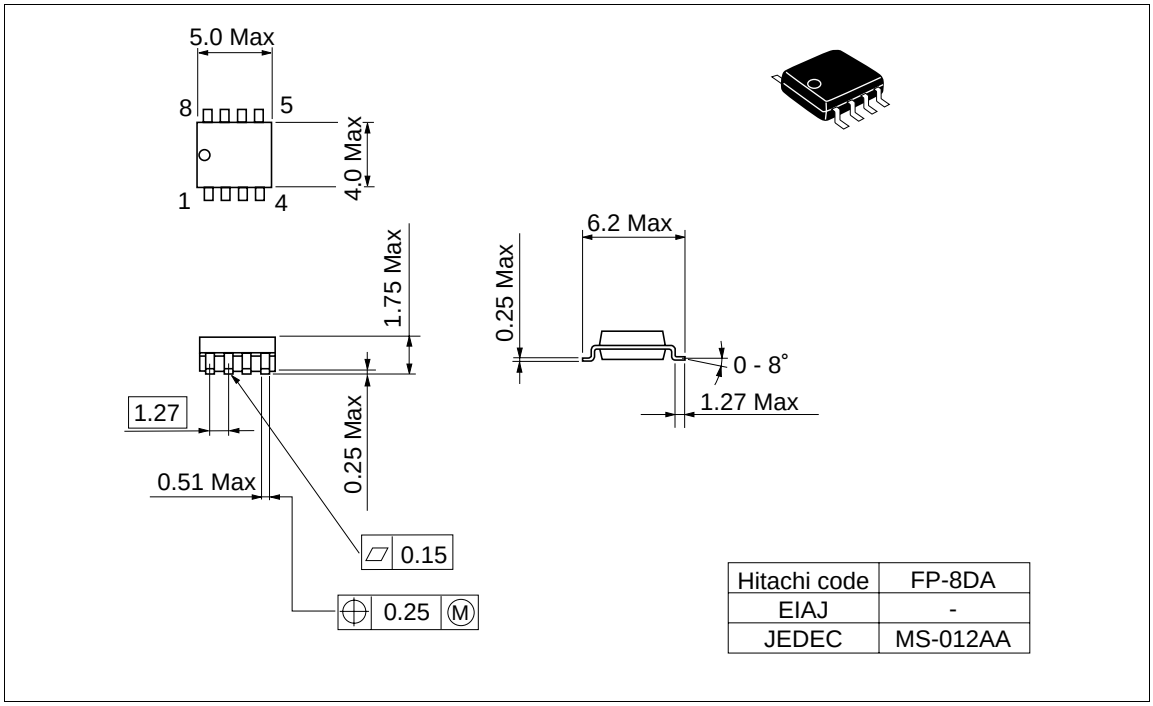
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	–20	—	—	V	I_D = –10mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±12	—	—	V	I_G = ±100µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±10V, V_{DS} = 0
Zero gate voltege drain current	I_{DSS}	—	—	–1	µA	V_{DS} = –20 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	–0.4	—	–1.4	V	V_{DS} = –10V, I_D = –1mA
Static drain to source on state resistance	$R_{DS(on)}$	—	(24)	30	mΩ	I_D =–3A,V_{GS} =–4.5V Note4
	$R_{DS(on)}$	—	(35)	50	mΩ	I_D =–3A,V_{GS} =–2.5V Note4
Forward transfer admittance	$\|y_{fs}\|$	(6)	(10)	—	S	I_D = –3A,V_{DS} = –10V Note4
Input capacitance	Ciss	—	(1550)	—	pF	V_{DS} = –10V
Output capacitance	Coss	—	(400)	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	(300)	—	pF	f = 1MHz
Total gate charge	Qg	—	(19)	—	nc	V_{DD} = –10 V
Gate to source charge	Qgs	—	(3)	—	nc	V_{GS} = –4.5 V
Gate to drain charge	Qgd	—	(7)	—	nc	I_D = –6 A
Turn-on delay time	$t_{d(on)}$	—	(14)	—	ns	V_{GS} = –4.5V, I_D = –3A
Rise time	t_r	—	(60)	—	ns	V_{DD} =–10V
Turn-off delay time	$t_{d(off)}$	—	(170)	—	ns	R_L = 3.3Ω
Fall time	t_f	—	(150)	—	ns	R_g = 4.7Ω
Body–drain diode forward voltage	V_{DF}	—	(–0.85)	(–1.11)	V	IF = –6A, V_{GS} = 0 Note4
Body–drain diode reverse recovery time	t_{rr}	—	(60)	—	ns	IF = –6A, V_{GS} = 0 diF/ dt =20A/µs

Note: 4. Pulse test

Package Dimensions

Unit: mm



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