

# HAT2025R

Silicon N Channel Power MOS FET  
High Speed Power Switching

# HITACHI

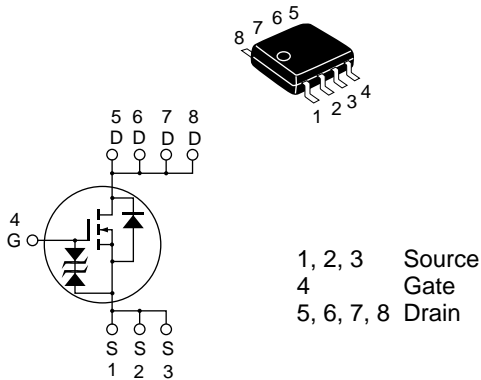
ADE-208-518C (Z)  
4th. Edition  
February 1999

## Features

- High speed switching
- Low on-resistance
- Capable of 4 V gate drive
- Low drive current
- High density mounting

## Outline

SOP-8



## Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	30	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	8	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	64	A
Body-drain diode reverse drain current	$I_{DR}$	8	A
Channel dissipation	Pch <sup>Note2</sup>	2.5	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	- 55 to + 150	°C

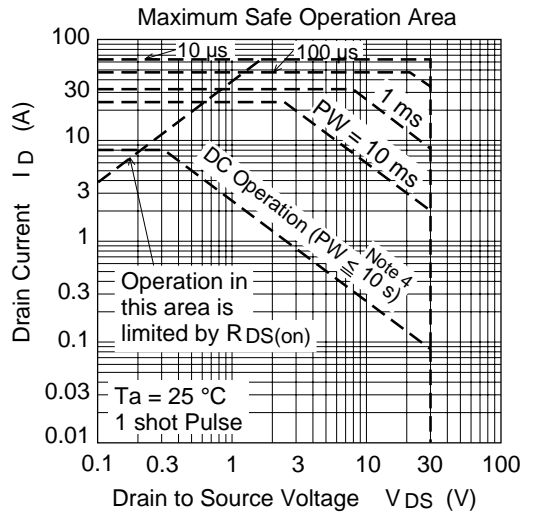
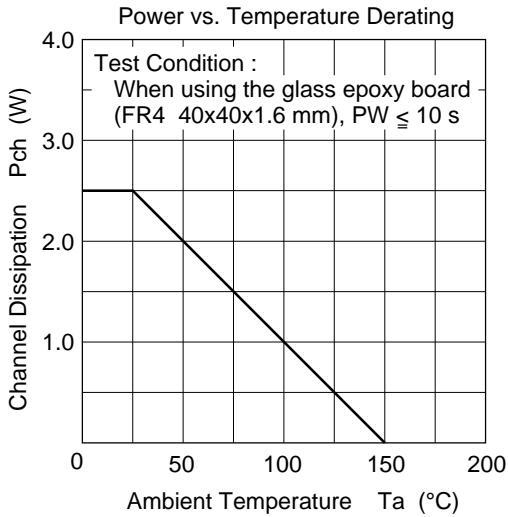
Note: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$   
 2. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm),  $PW \leq 10s$

## Electrical Characteristics (Ta = 25°C)

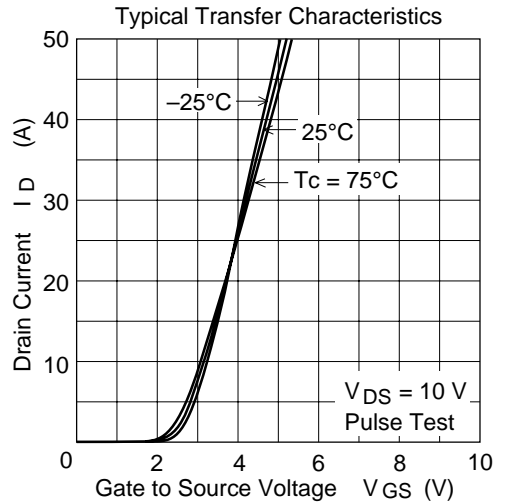
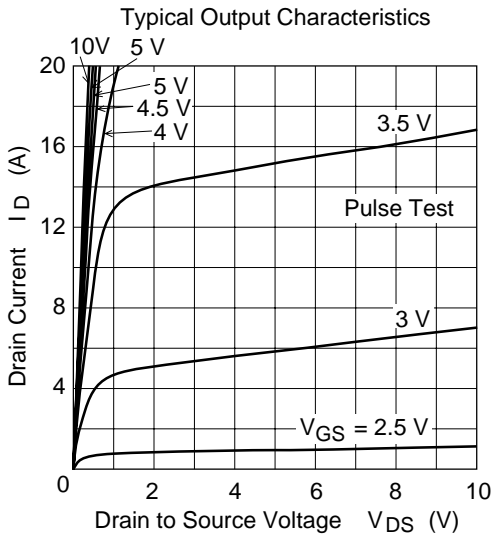
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10\text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100\ \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu A$	$V_{GS} = \pm 16\text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu A$	$V_{DS} = 30\text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.3	—	2.4	V	$V_{DS} = 10\text{ V}$ , $I_D = 1\text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.019	0.026	$\Omega$	$I_D = 4\text{ A}$ , $V_{GS} = 10\text{ V}$ <sup>Note3</sup>
	$R_{DS(on)}$	—	0.030	0.050	$\Omega$	$I_D = 4\text{ A}$ , $V_{GS} = 4.5\text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	7	11	—	S	$I_D = 4\text{ A}$ , $V_{DS} = 10\text{ V}$ <sup>Note3</sup>
Input capacitance	Ciss	—	660	—	pF	$V_{DS} = 10\text{ V}$
Output capacitance	Coss	—	510	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	130	—	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$V_{GS} = 4\text{ V}$ , $I_D = 4\text{ A}$
Rise time	$t_r$	—	265	—	ns	$V_{DD} \cong 10\text{ V}$
Turn-off delay time	$t_{d(off)}$	—	35	—	ns	
Fall time	$t_f$	—	58	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.8	1.3	V	IF = 8 A, $V_{GS} = 0$ <sup>Note3</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	55	—	ns	IF = 8 A, $V_{GS} = 0$ diF/dt = 20 A/ $\mu s$

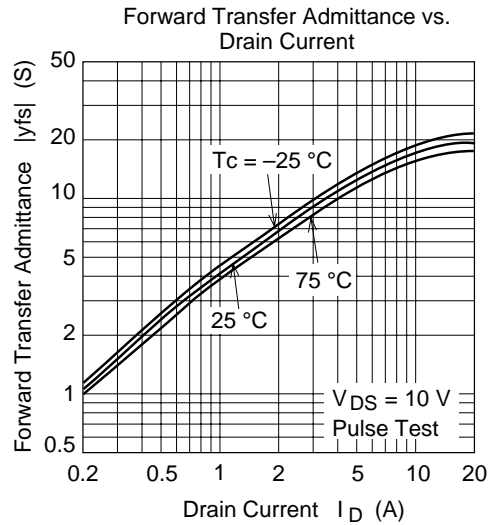
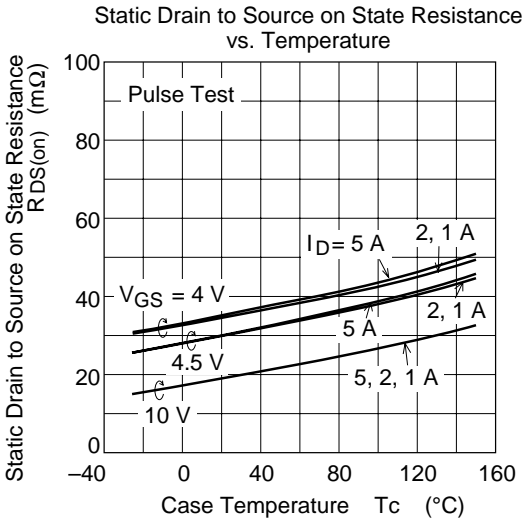
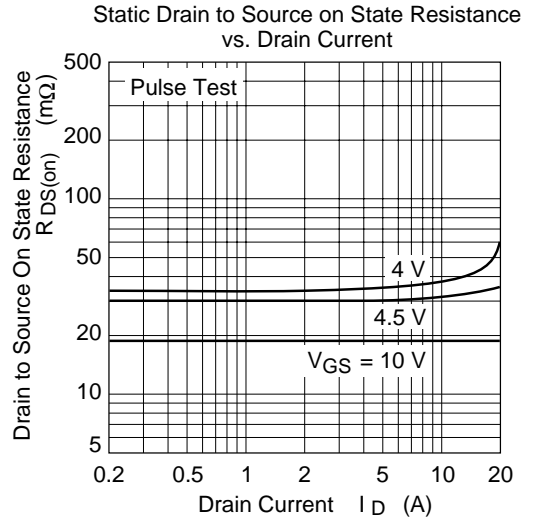
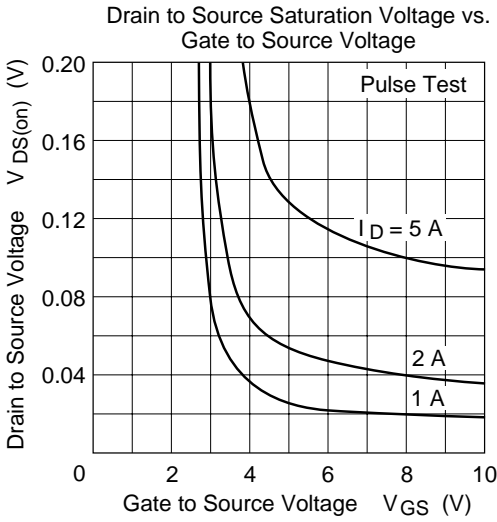
Note: 3. Pulse test

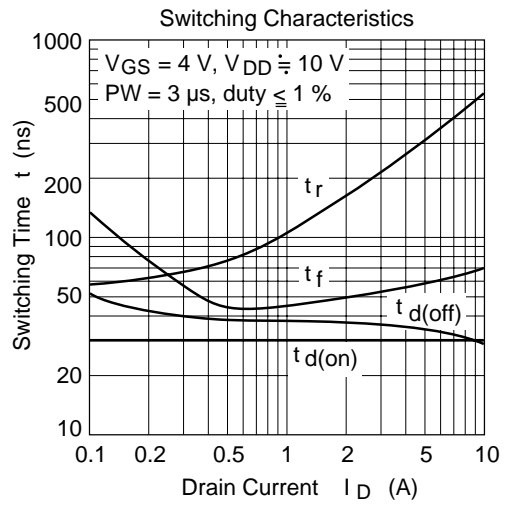
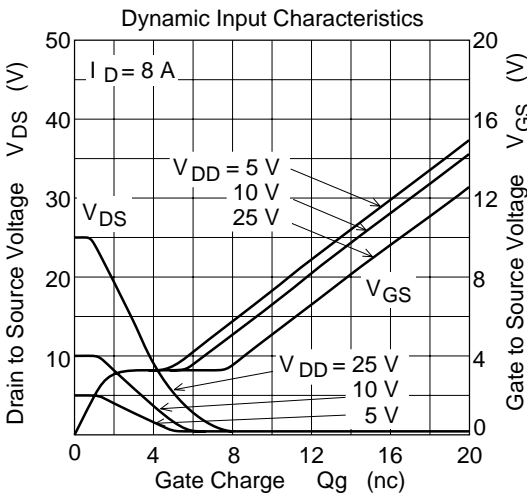
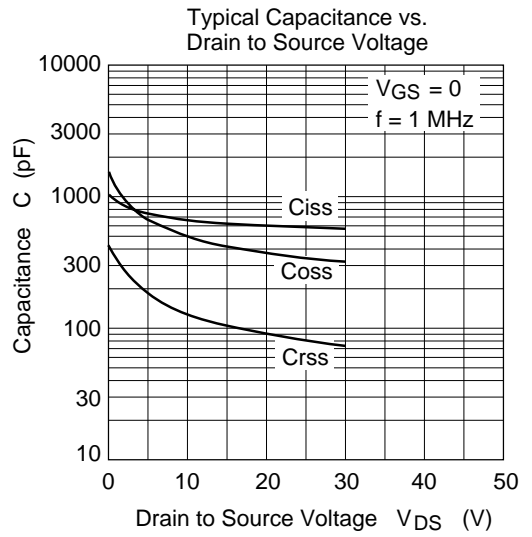
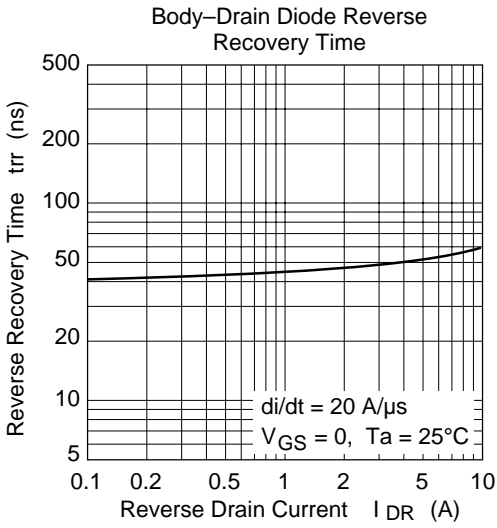
Main Characteristics

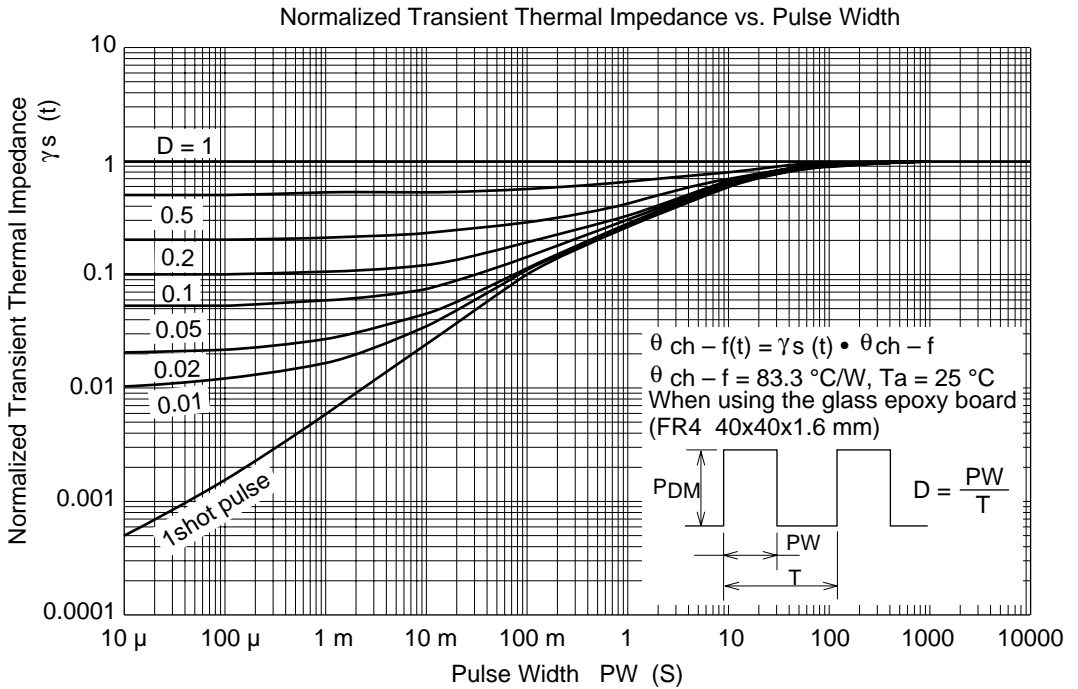
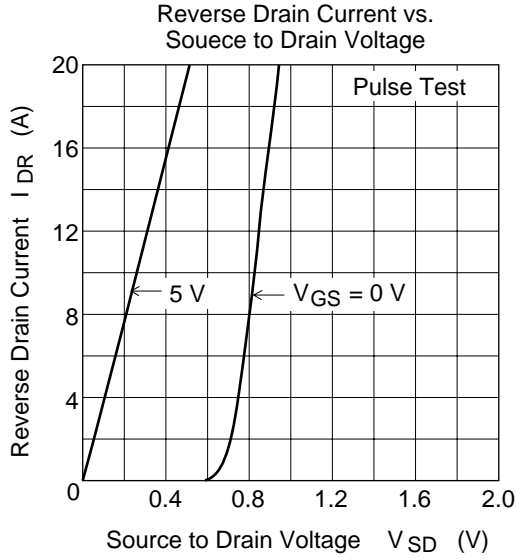


Note 4 :  
When using the glass epoxy board (FR4 40x40x1.6 mm)

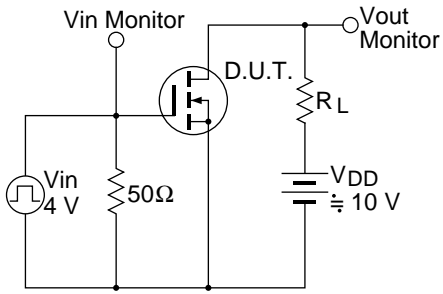




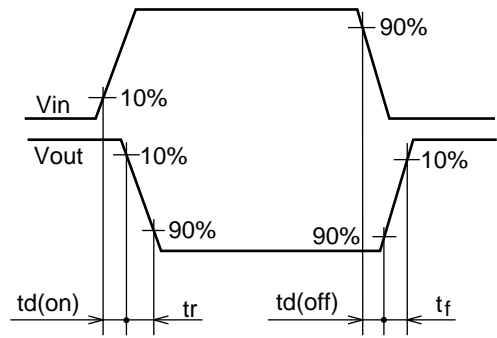




Switching Time Test Circuit

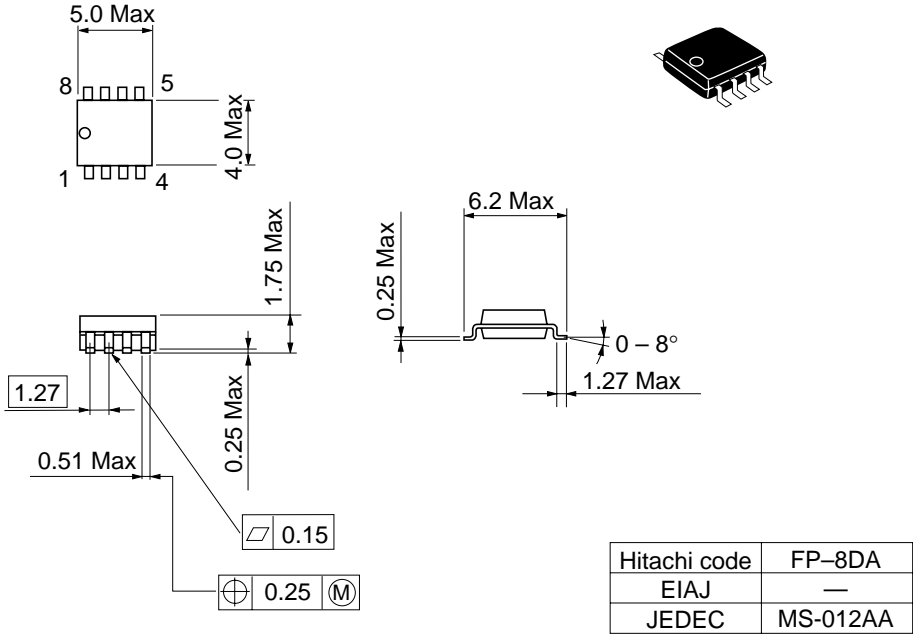


Switching Time Waveform



## Package Dimensions

Unit: mm





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