

HAT2088R

Silicon N Channel MOS FET
High Speed Power Switching

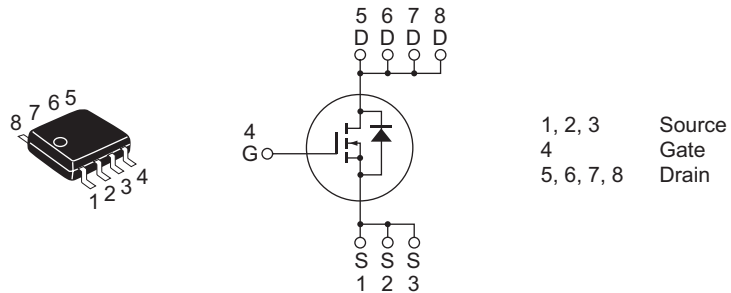
REJ03G1183-0200
(Previous: ADE-208-1234)
Rev.2.00
Sep 07, 2005

Features

- Low on-resistance
- Low leakage current
- High density mounting

Outline

RENESAS Package code: PRSP0008DD-D
(Package name: SOP-8 <FP-8DAV>)



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V_{DSS}	200	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	2	A
Drain peak current	$I_{D(pulse)}$ ^{Note 1}	16	A
Body-drain diode reverse drain current	I_{DR}	2	A
Channel dissipation	P_{ch} ^{Note 2}	2.5	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. When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), $PW \leq 10 s$

Electrical Characteristics

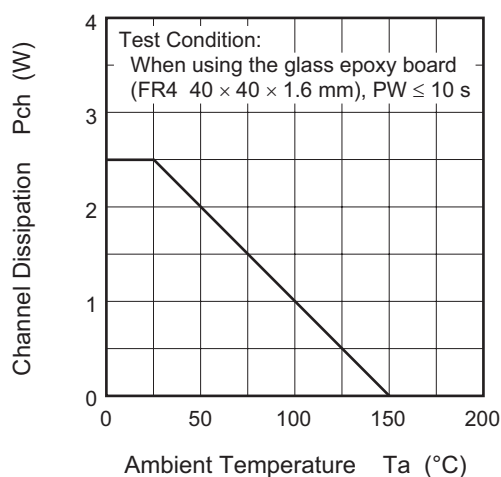
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 200 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.35	0.44	Ω	$I_D = 1 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note 3}
Forward transfer admittance	$ y_{fs} $	1.5	2.5	—	S	$I_D = 1 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note 3}
Input capacitance	C_{iss}	—	450	—	pF	$V_{DS} = 25 \text{ V}$, $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	65	—	pF	
Reverse transfer capacitance	C_{rss}	—	13	—	pF	
Total gate charge	Q_g	—	13	—	nC	$V_{DD} = 160 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 2 \text{ A}$
Gate to source charge	Q_{gs}	—	2	—	nC	
Gate to drain charge	Q_{gd}	—	6	—	nC	
Turn-on delay time	$t_{d(on)}$	—	19	—	ns	$V_{GS} = 10 \text{ V}$, $I_D = 1 \text{ A}$ $V_{DD} \cong 100 \text{ V}$ $R_L = 100 \Omega$ $R_g = 10 \Omega$
Rise time	t_r	—	8.5	—	ns	
Turn-off delay time	$t_{d(off)}$	—	48	—	ns	
Fall time	t_f	—	11	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.8	1.2	V	$I_F = 2 \text{ A}$, $V_{GS} = 0$ ^{Note 3}
Body-drain diode reverse recovery time	t_{rr}	—	65	—	ns	$I_F = 2 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu s$

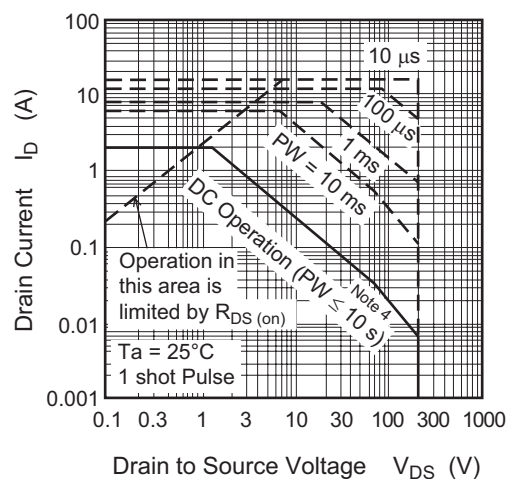
Note: 3. Pulse test

Main Characteristics

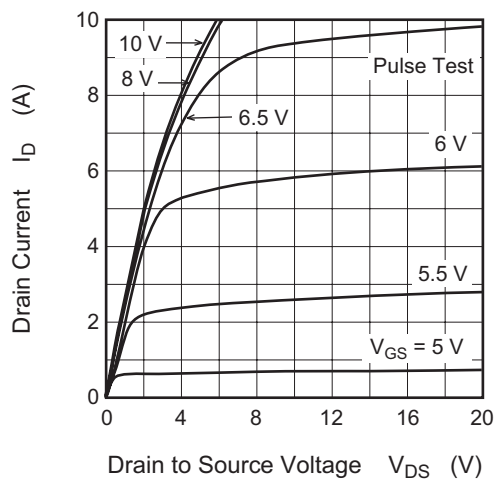
Power vs. Temperature Derating



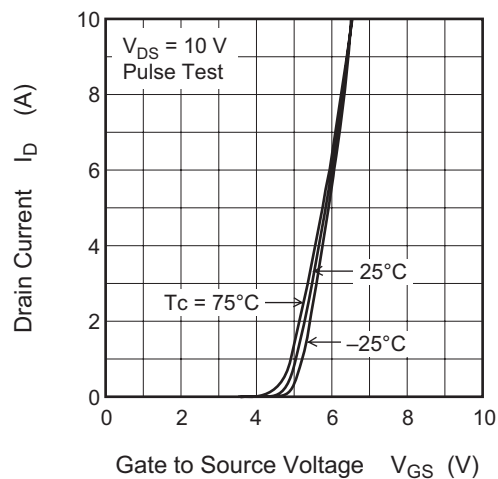
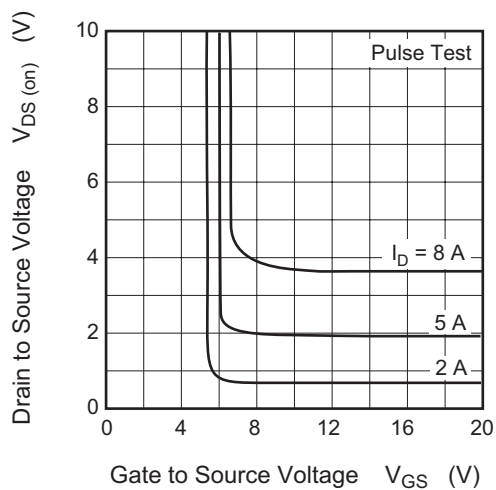
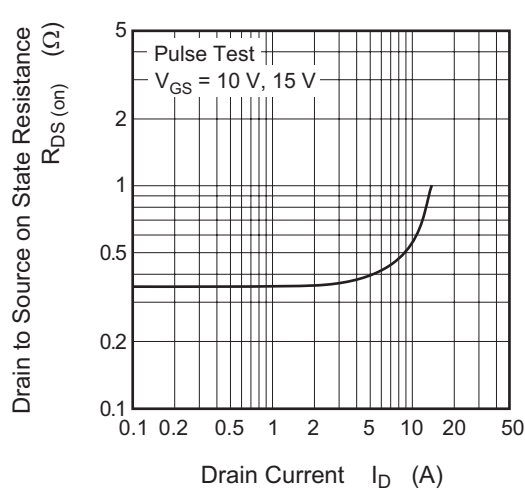
Maximum Safe Operation Area



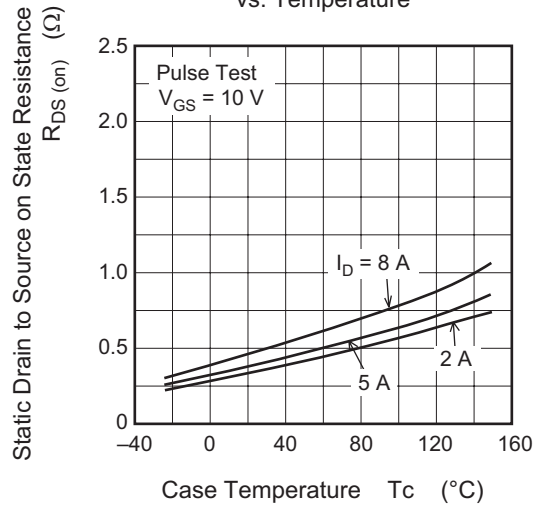
Typical Output Characteristics



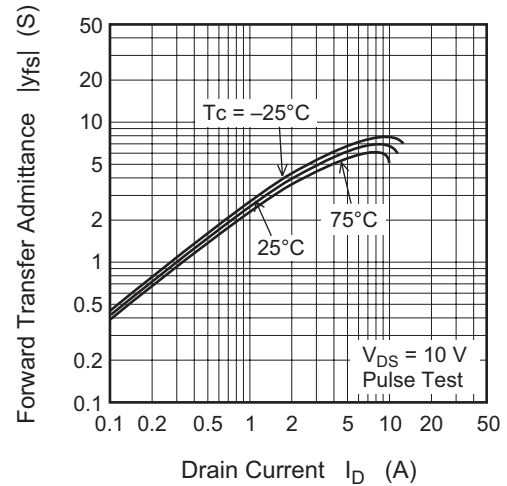
Typical Transfer Characteristics

Drain to Source Saturation Voltage vs.
Gate to Source VoltageStatic Drain to Source on State Resistance
vs. Drain Current

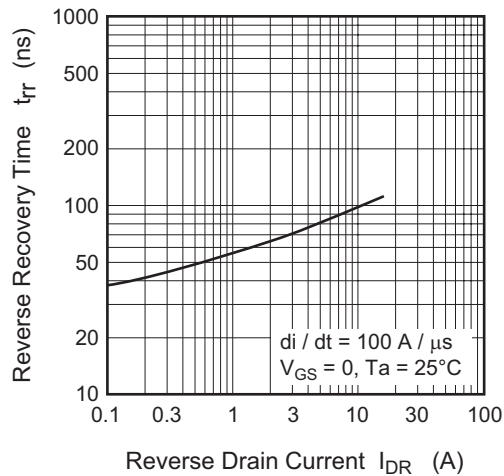
Static Drain to Source on State Resistance vs. Temperature



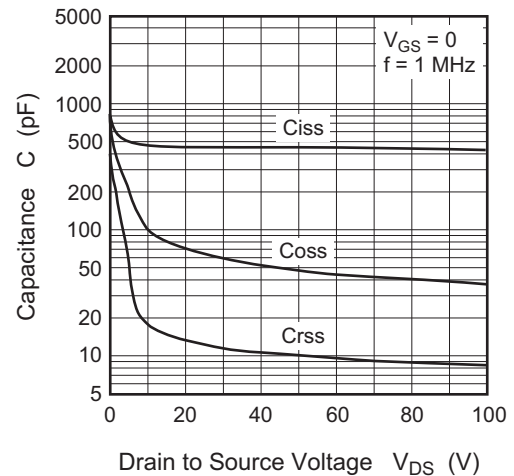
Forward Transfer Admittance vs. Drain Current



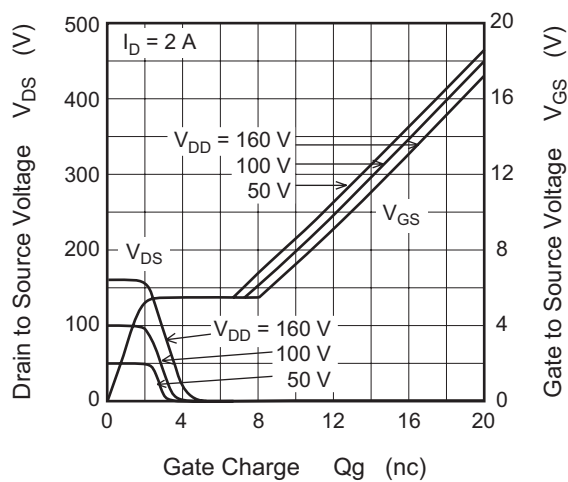
Body-Drain Diode Reverse Recovery Time



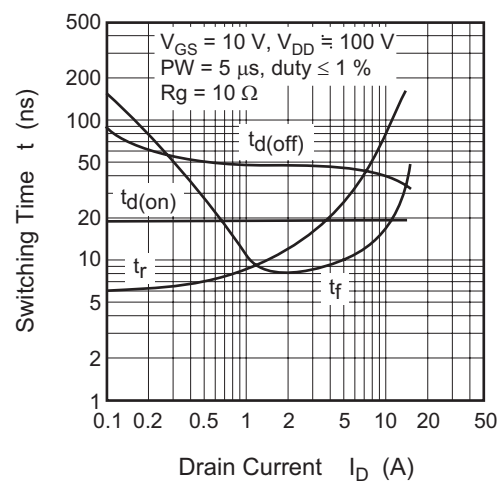
Typical Capacitance vs. Drain to Source Voltage

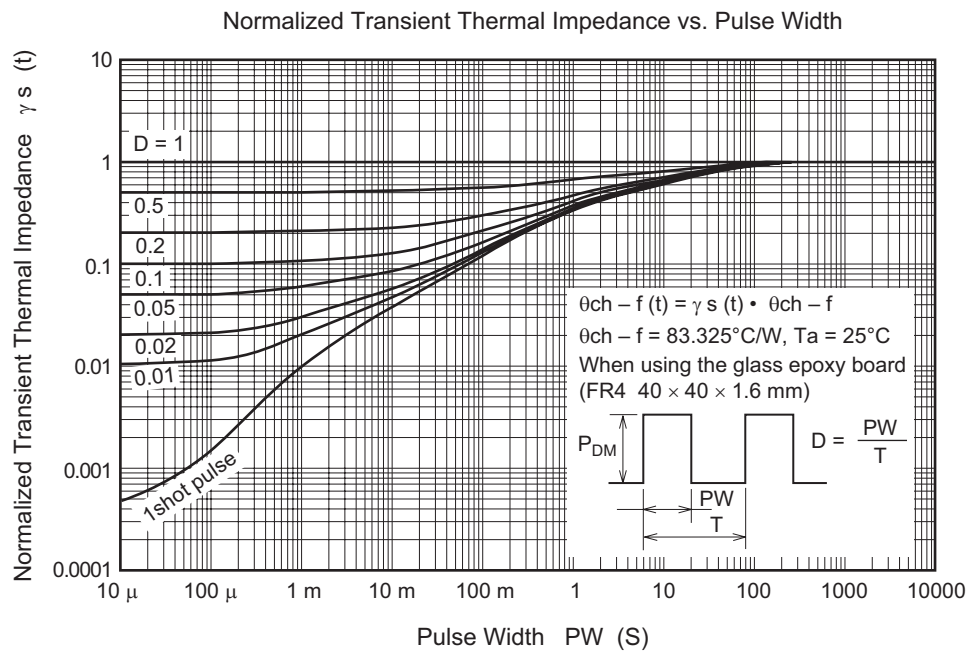
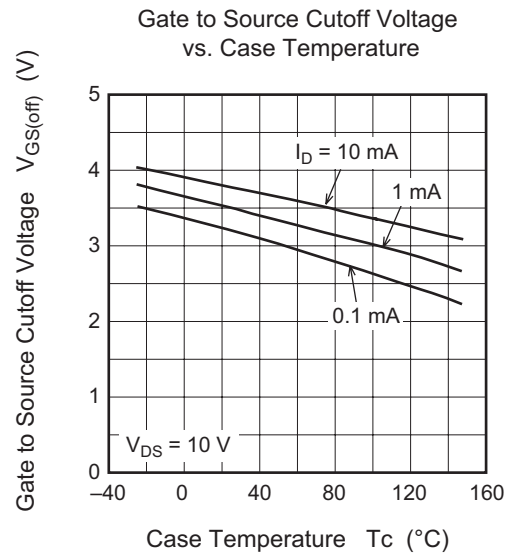
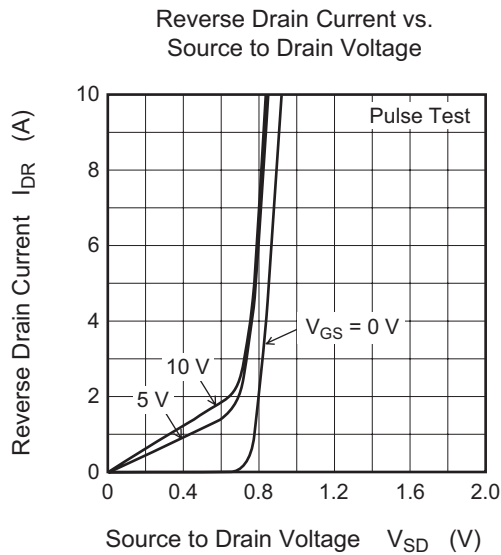


Dynamic Input Characteristics

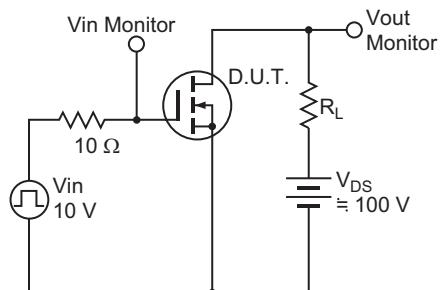


Switching Characteristics

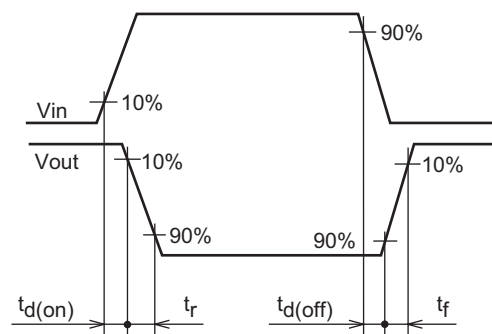




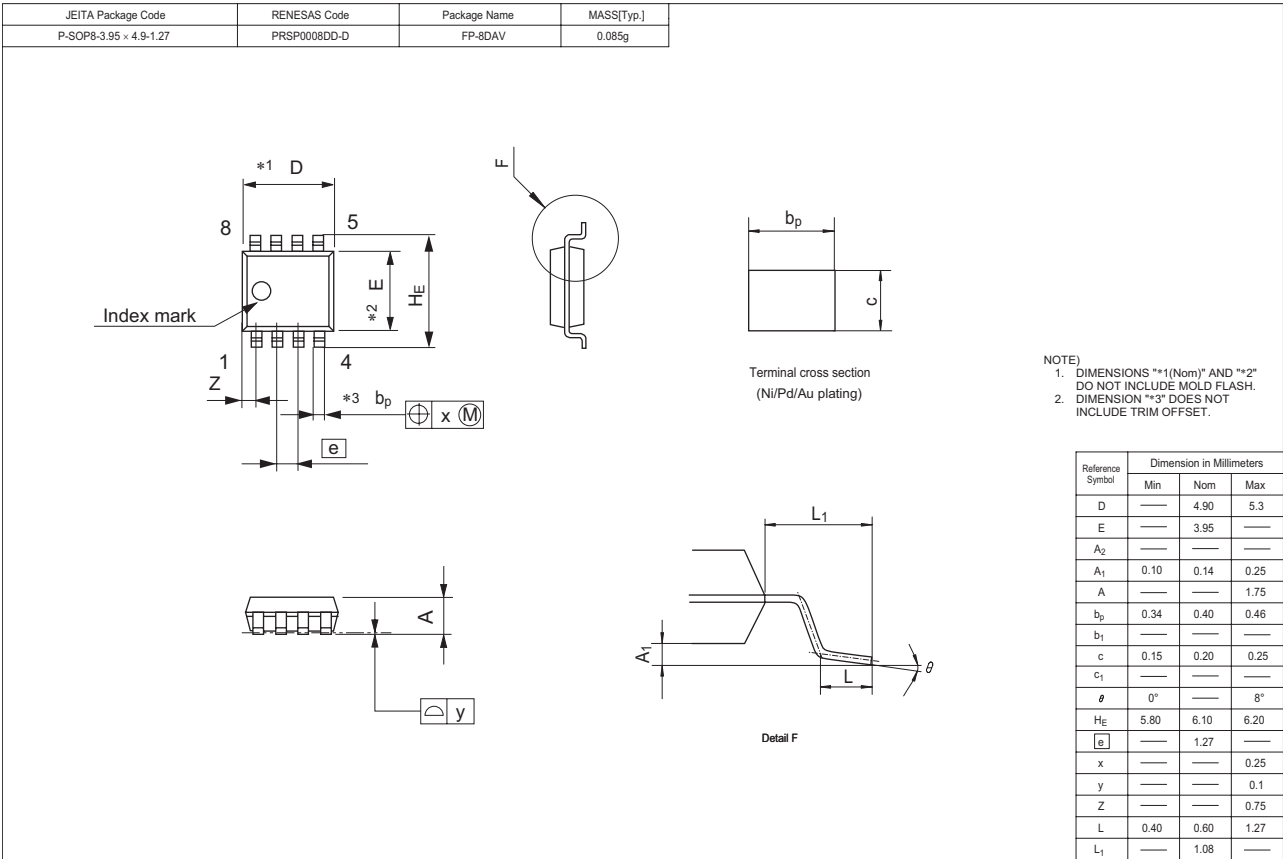
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2088R-EL-E	2500 pcs	Taping

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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