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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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HAT2087R

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1182-0300

Rev.3.00

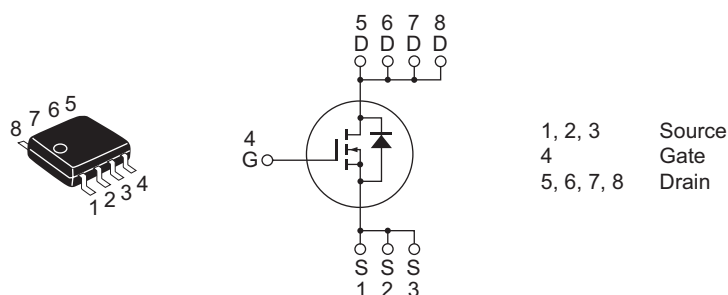
Feb 06, 2009

Features

- Low on-resistance
- Low drive 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}	250	V
Gate to source voltage	V_{GSS}	± 30	V
Drain current	I_D	2.5	A
Drain peak current	$I_{D(pulse)}$ ^{Note 1}	20	A
Body to drain diode reverse drain current	I_{DR}	2.5	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), $PW \leq 10 s$

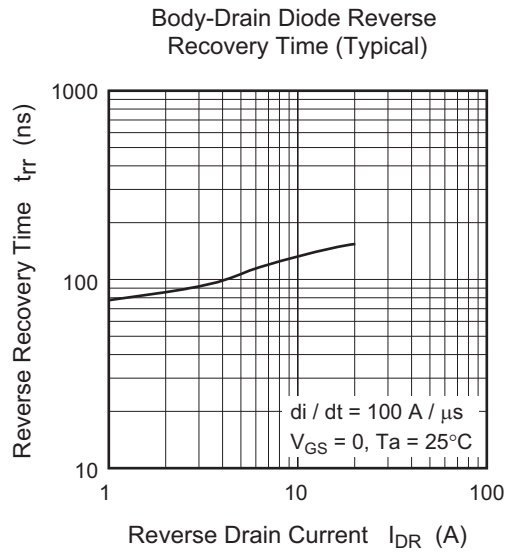
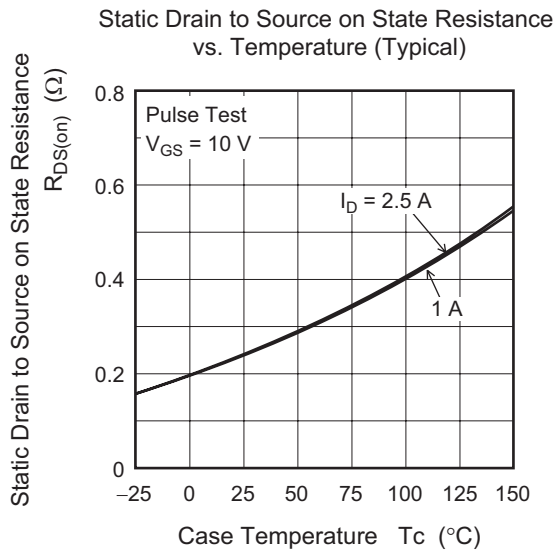
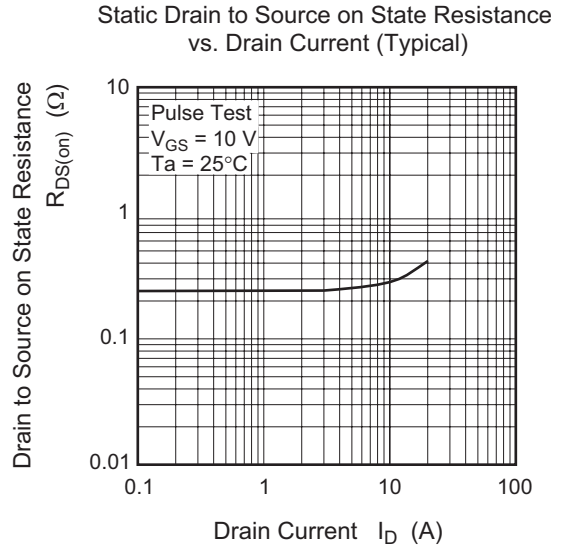
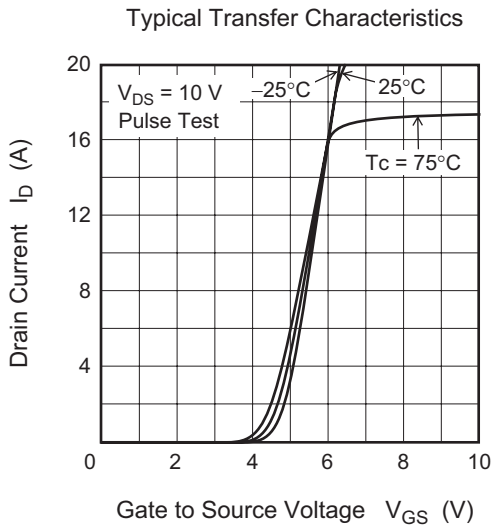
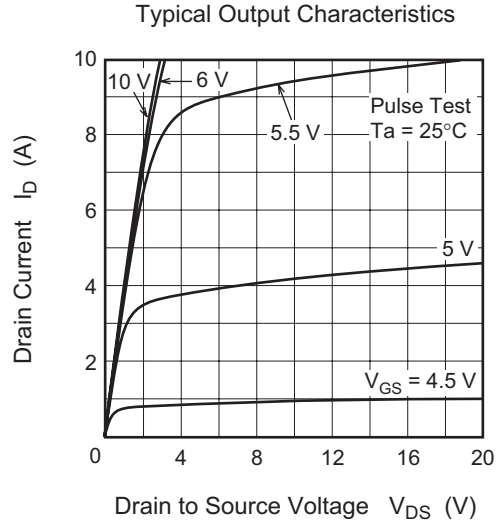
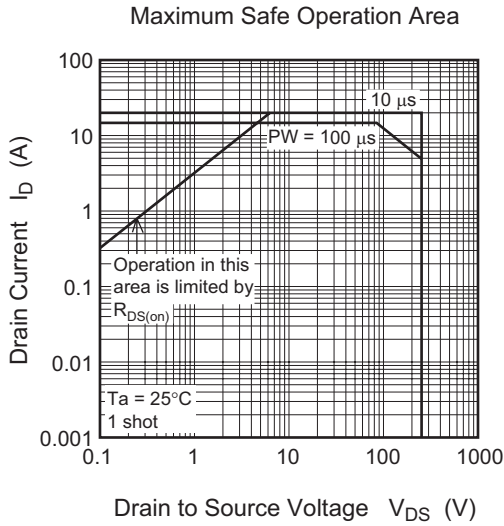
Electrical Characteristics

(Ta = 25°C)

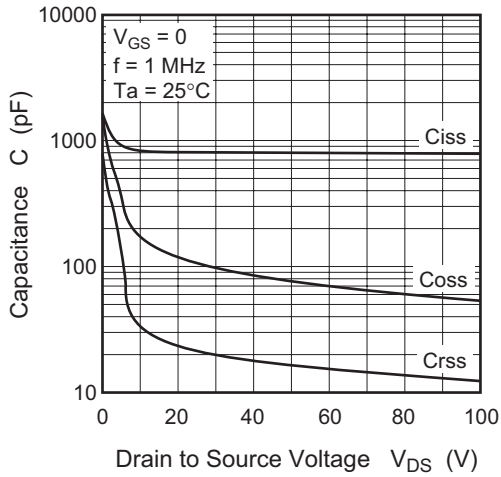
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 250 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.24	0.31	Ω	$I_D = 1.25 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note 3}
Forward transfer admittance	$ y_{fs} $	2.1	3.5	—	S	$I_D = 1.25 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note 3}
Input capacitance	C_{iss}	—	830	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	C_{oss}	—	105	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	21	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	22.5	—	ns	$I_D = 1.25 \text{ A}$
Rise time	t_r	—	12.5	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	82	—	ns	$R_L = 100 \Omega$
Fall time	t_f	—	17	—	ns	$R_g = 10 \Omega$
Total gate charge	Q_g	—	23	—	nC	$V_{DD} = 200 \text{ V}$
Gate to source charge	Q_{gs}	—	3.2	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	10.4	—	nC	$I_D = 2.5 \text{ A}$
Body to drain diode forward voltage	V_{DF}	—	0.75	1.15	V	$I_F = 2.5 \text{ A}$, $V_{GS} = 0$ ^{Note 3}
Body to drain diode reverse recovery time	t_{rr}	—	88	—	ns	$I_F = 2.5 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 3. Pulse test

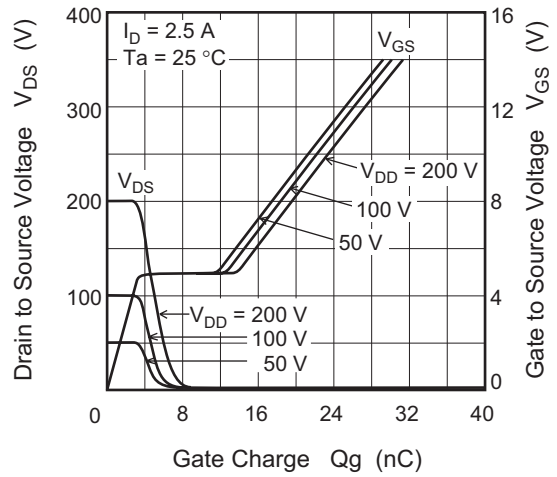
Main Characteristics



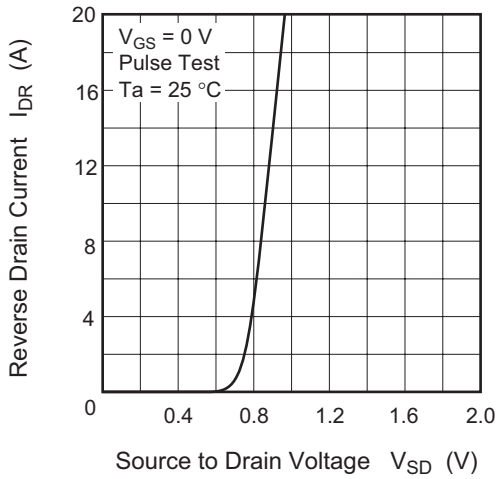
Typical Capacitance vs. Drain to Source Voltage (Typical)



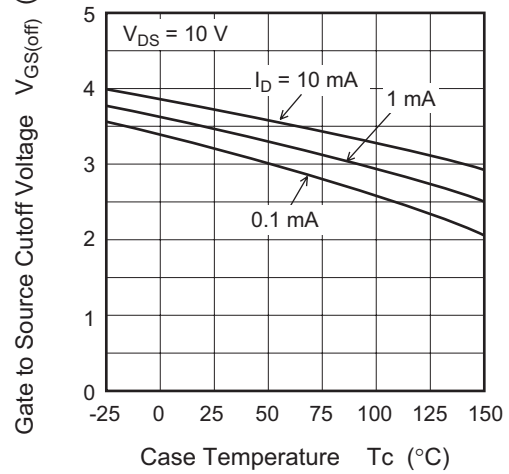
Dynamic Input Characteristics (Typical)

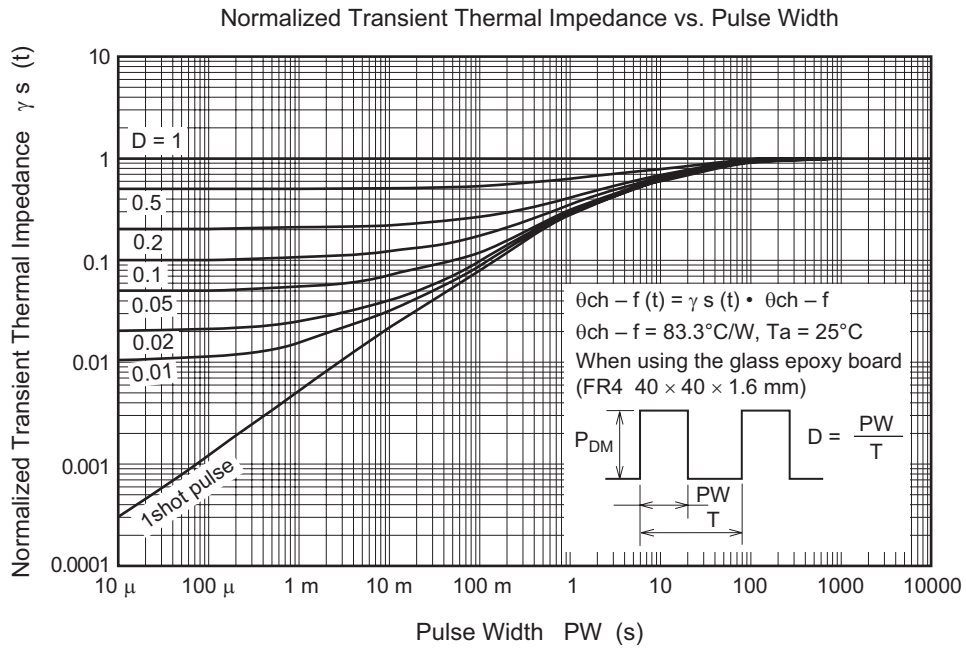


Reverse Drain Current vs. Source to Drain Voltage (Typical)

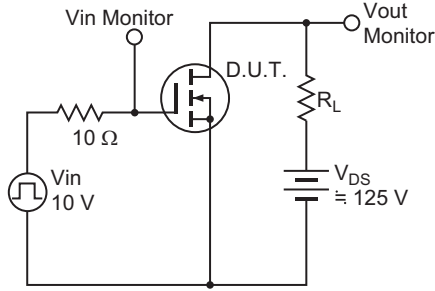


Gate to Source Cutoff Voltage vs. Case Temperature (Typical)

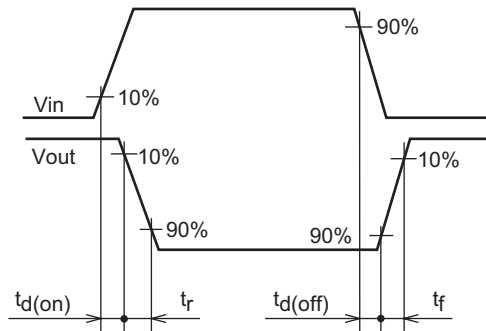




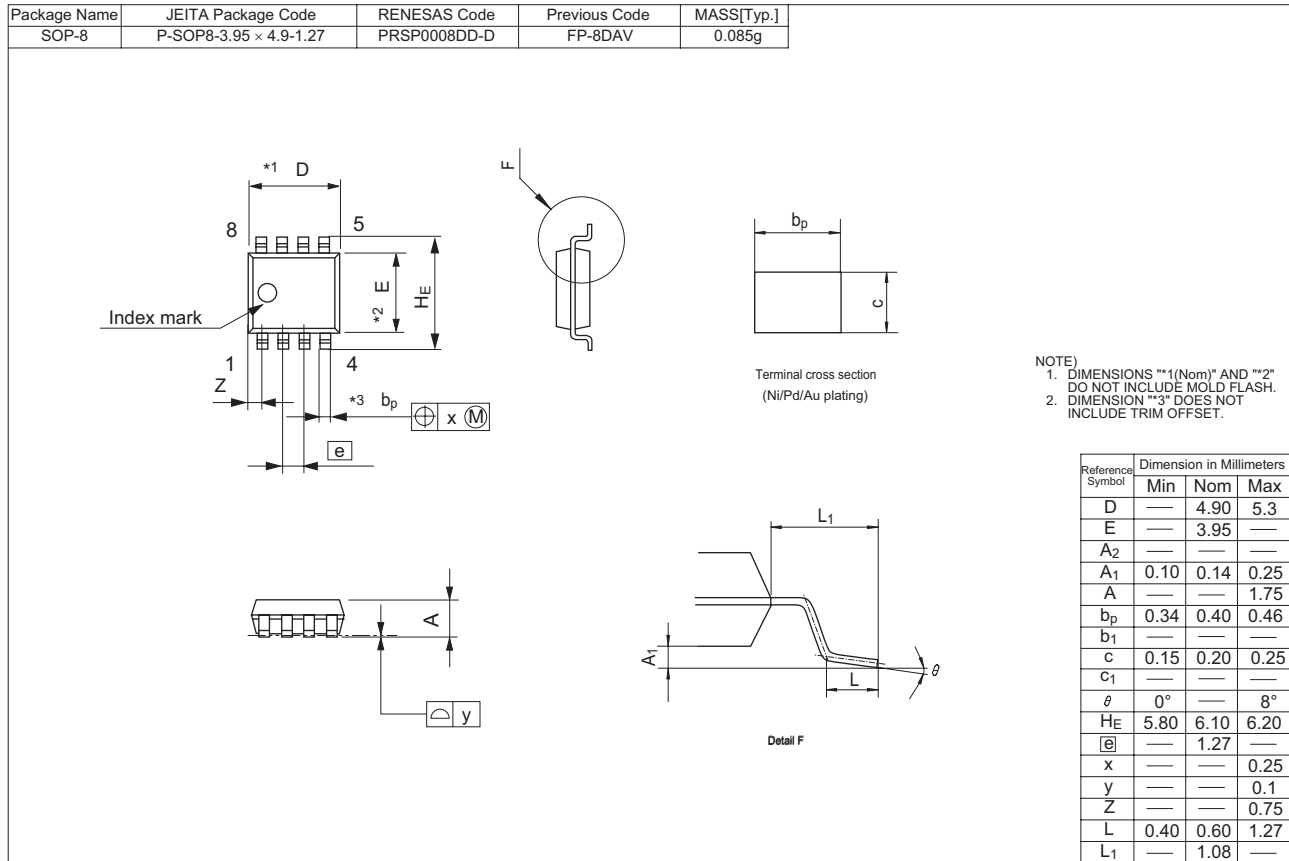
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
HAT2087R-EL-E	2500 pcs	Taping

Notes:

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