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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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HAT1089C

Silicon P Channel MOS FET Power Switching

REJ03G1227-0300

Rev.3.00

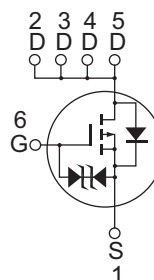
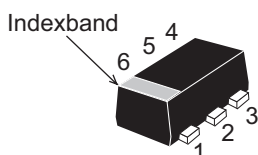
Jun. 13, 2005

Features

- Low on-resistance
 $R_{DS(on)} = 79 \text{ m}\Omega$ typ. (at $V_{GS} = -4.5 \text{ V}$)
- Low drive current.
- 2.5 V gate drive devices.
- High density mounting

Outline

RENESAS Package code: PWSF0006JA-A
(Package name: CMFPAK-6)



1. Source
2. Drain
3. Drain
4. Drain
5. Drain
6. Gate

Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to Source voltage	V_{DSS}	-20	V
Gate to Source voltage	V_{GSS}	± 12	V
Drain current	I_D	-2	A
Drain peak current	I_D (pulse) ^{Note 1}	-8	A
Body - Drain diode reverse drain current	I_{DR}	-2	A
Channel dissipation	P_{ch} ^{Note 2}	850	mW
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$

2. When using the glass epoxy board. (FR4 40 × 40 × 1.6mm), $T_a = 25^\circ\text{C}$

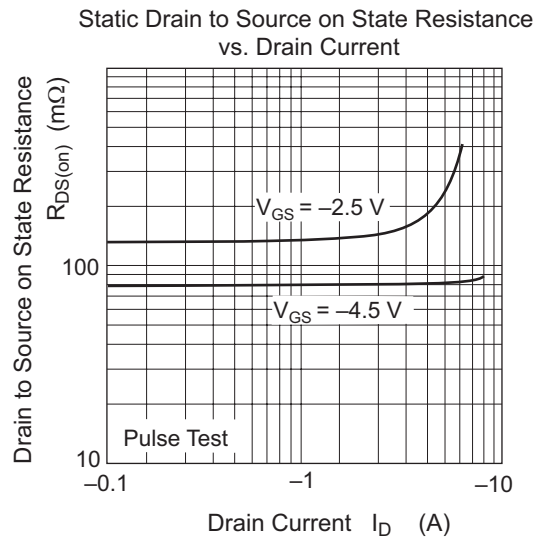
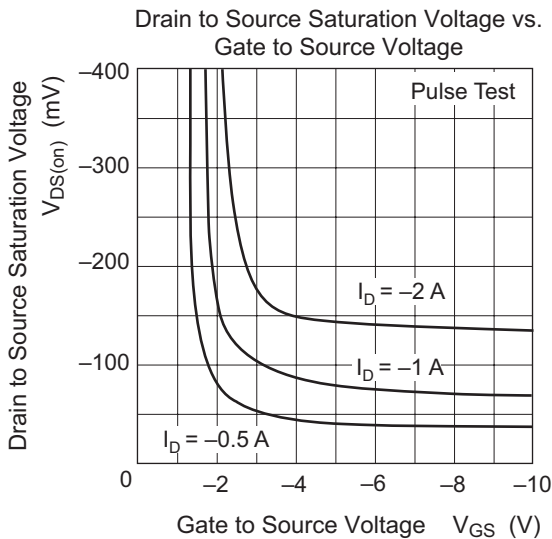
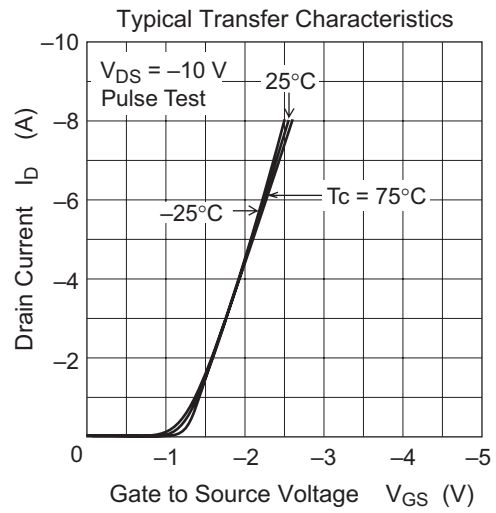
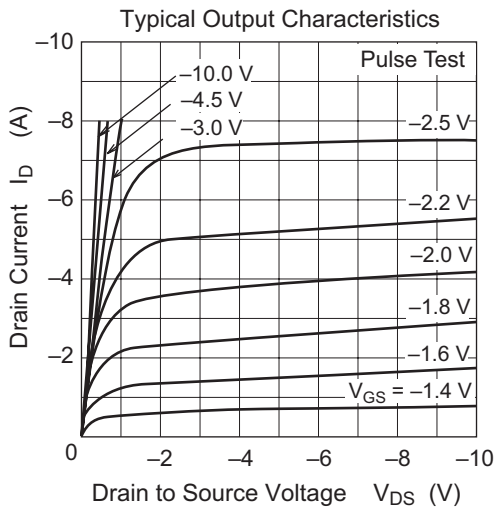
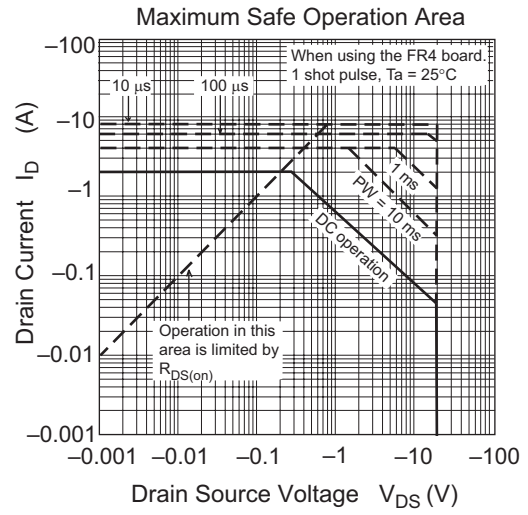
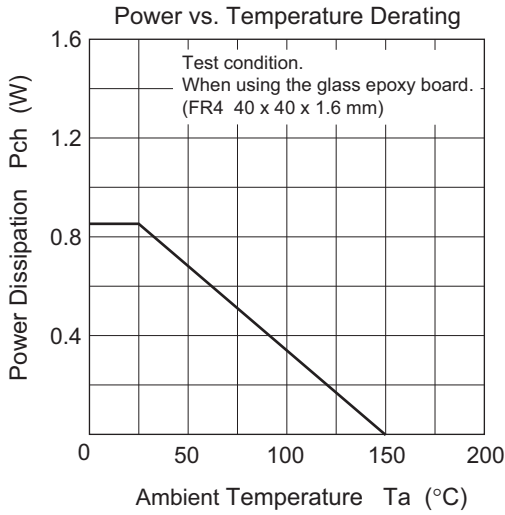
Electrical Characteristics

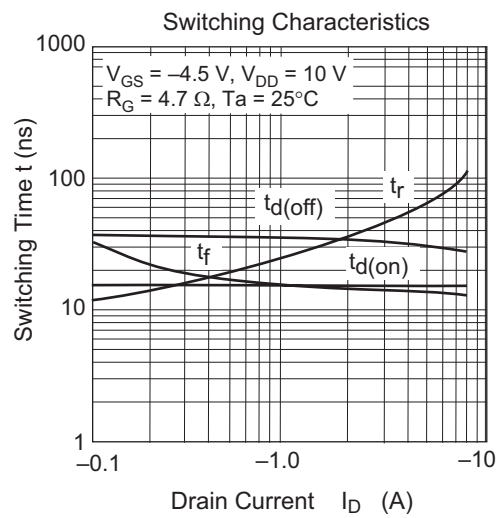
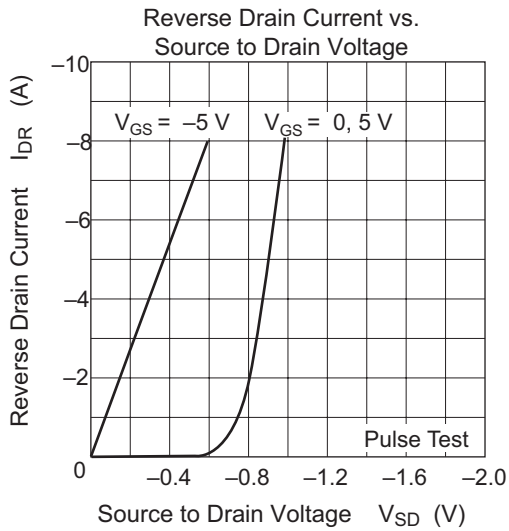
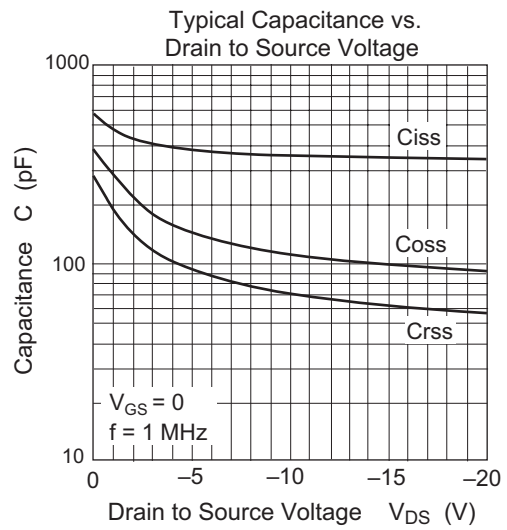
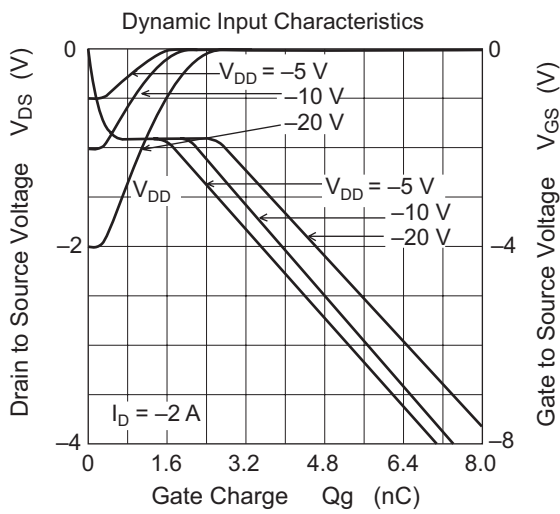
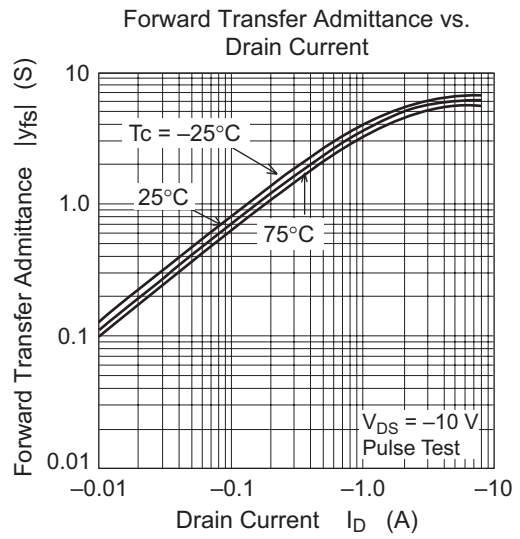
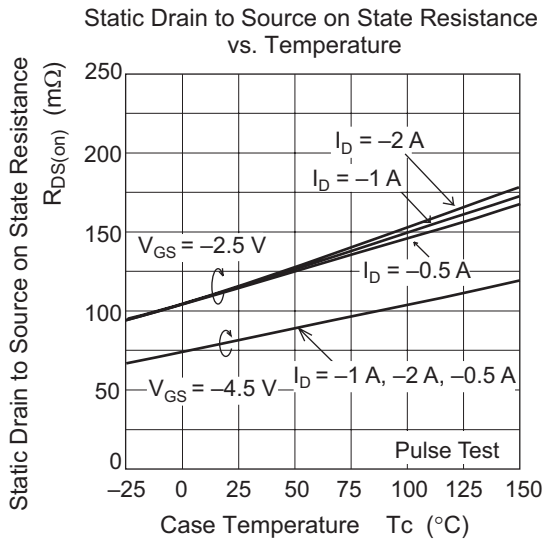
(Ta = 25°C)

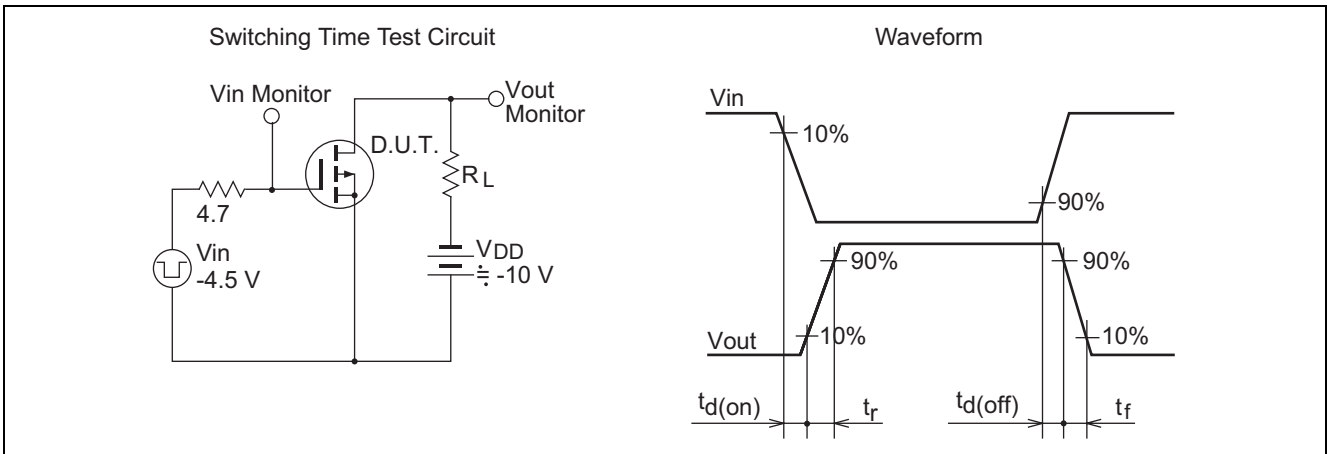
Item	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	-20	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to Source breakdown voltage	$V_{(BR)GSS}$	± 12	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to Source leakage current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 10 \text{ V}$, $V_{DS} = 0$
Drain to Source leakage current	I_{DSS}	—	—	-1	μA	$V_{DS} = -20 \text{ V}$, $V_{GS} = 0$
Gate to Source cutoff voltage	$V_{GS(th)}$	-0.4	—	-1.4	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$ ^{Note3}
Drain to Source on state resistance	$R_{DS(on)}$	—	79	103	m Ω	$I_D = -1 \text{ A}$, $V_{GS} = -4.5 \text{ V}$ ^{Note3}
		—	120	168	m Ω	$I_D = -1 \text{ A}$, $V_{GS} = -2.5 \text{ V}$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	2	3.5	—	S	$I_D = -1 \text{ A}$, $V_{DS} = -10 \text{ V}$ ^{Note3}
Input capacitance	C_{iss}	—	365	—	pF	$V_{DS} = -10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	105	—	pF	
Reverse transfer capacitance	C_{rss}	—	70	—	pF	
Total gate charge	Q_g	—	4.5	—	nC	$V_{DS} = -10 \text{ V}$, $V_{GS} = -4.5 \text{ V}$, $I_D = -2 \text{ A}$
Gate to Source charge	Q_{gs}	—	0.6	—	nC	
Gate to Drain charge	Q_{gd}	—	1.6	—	nC	
Turn - on delay time	$t_{d(on)}$	—	15	—	ns	$V_{DS} = -10 \text{ V}$, $V_{GS} = -4.5 \text{ V}$, $I_D = -1 \text{ A}$, $R_L = 10 \text{ }\Omega$, $R_g = 4.7 \text{ }\Omega$
Rise time	t_r	—	25	—	ns	
Turn - off delay time	$t_{d(off)}$	—	35	—	ns	
Fall time	t_f	—	15	—	ns	
Body - Drain diode forward voltage	V_{DF}	—	-0.8	-1.1	V	$I_F = -2 \text{ A}$, $V_{GS} = 0$

Notes: 3. Pulse test

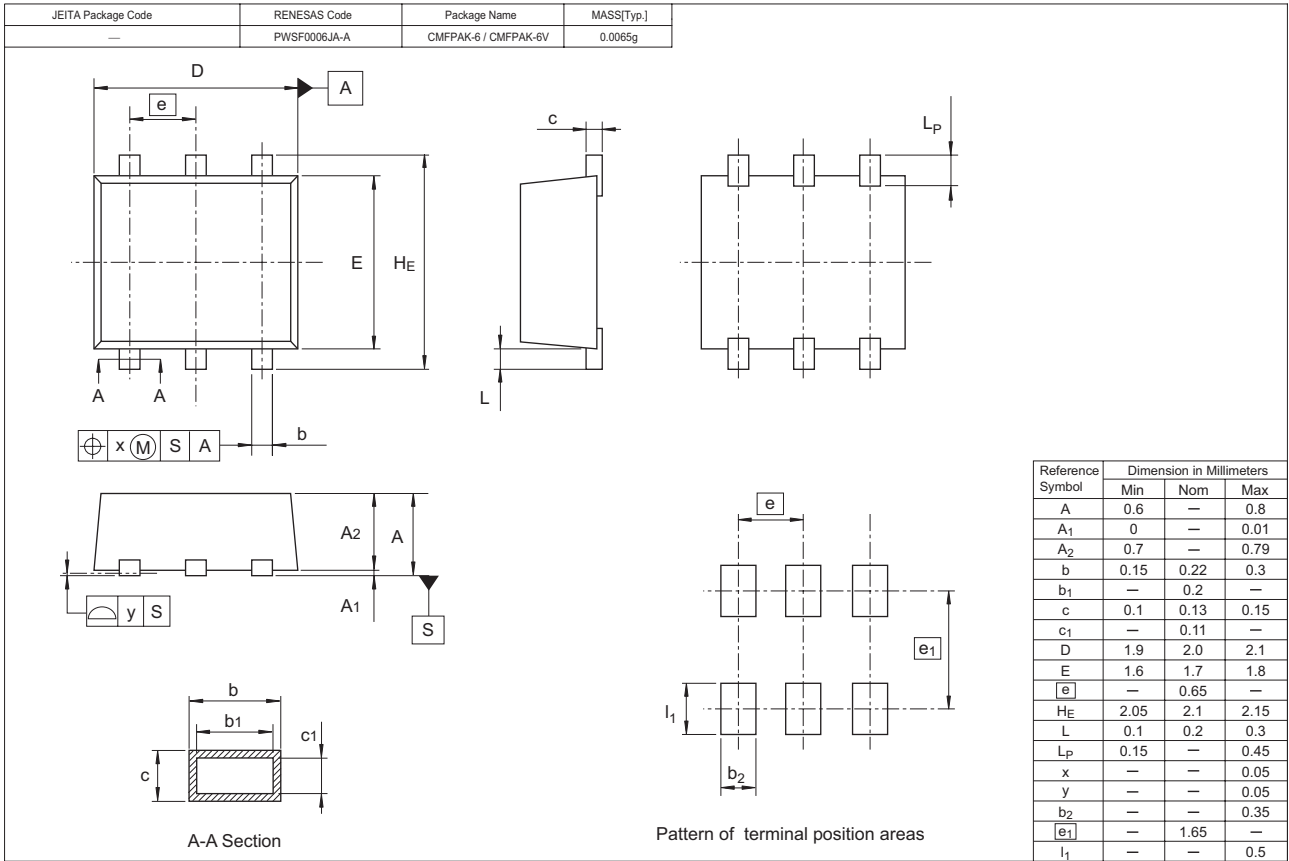
Main Characteristics







Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT1089C-EL-E	3000 pcs	Taping

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Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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Renesas Technology America, Inc.
450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.
7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.
10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.
Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001