

# HAT1090C

Silicon P Channel MOS FET  
Power Switching

R07DS1171EJ0500  
(Previous: REJ03G1228-0400)  
Rev.5.00  
Mar 19, 2014

## Features

- Low on-resistance  
 $R_{DS(on)} = 50 \text{ m}\Omega$  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	$V_{GSS}$	$\pm 12$	V
Drain current	$I_D$	-2.5	A
Drain peak current	$I_{D(pulse)}$ <sup>Note 1</sup>	-10	A
Body - Drain diode reverse drain current	$I_{DR}$	-2.5	A
Channel dissipation	$P_{ch}$ <sup>Note 2</sup>	900	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  $40 \times 40 \times 1.6\text{mm}$ ),  $T_a = 25^\circ\text{C}$

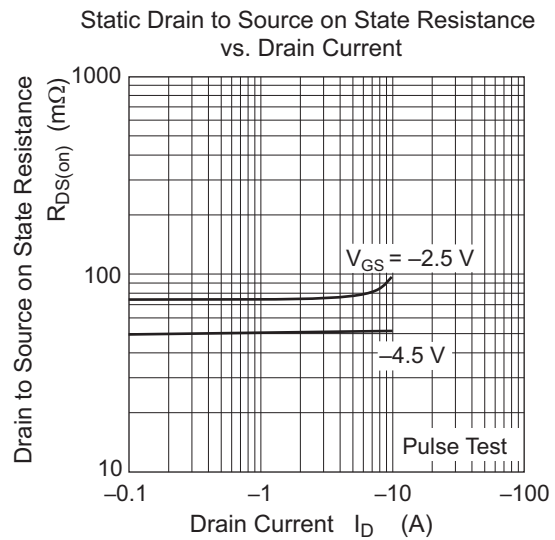
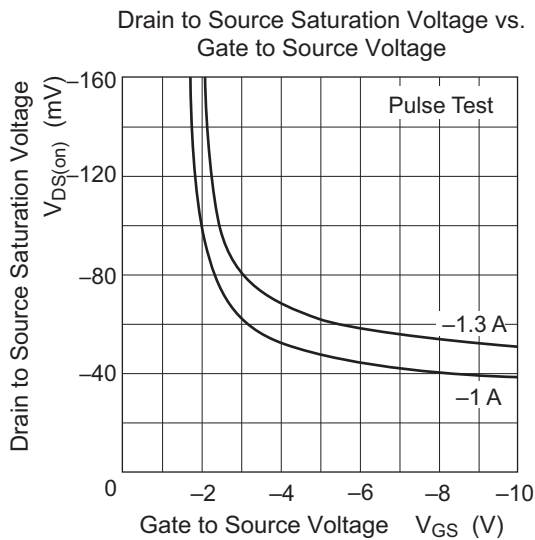
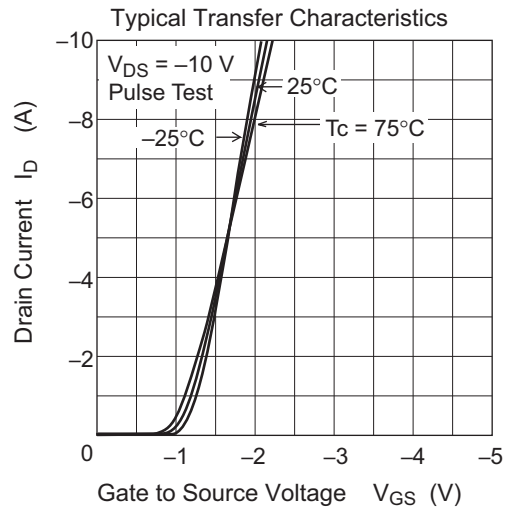
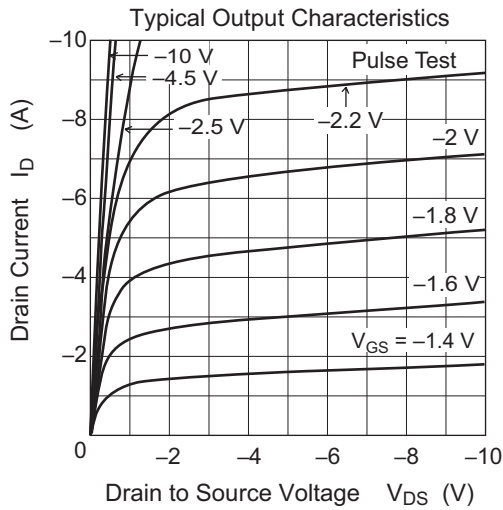
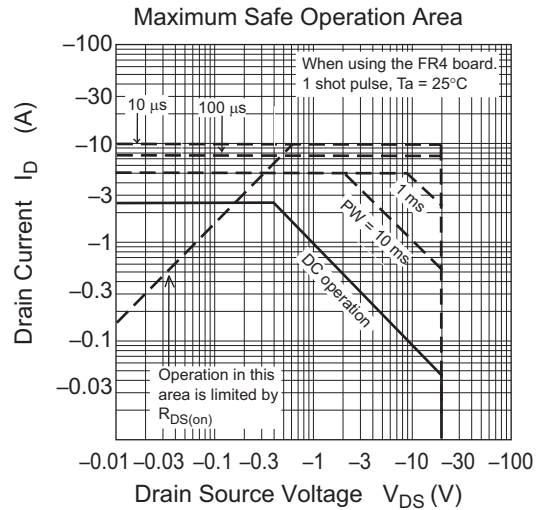
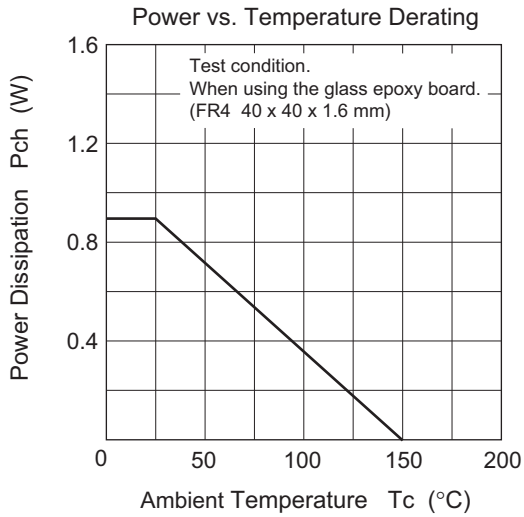
## Electrical Characteristics

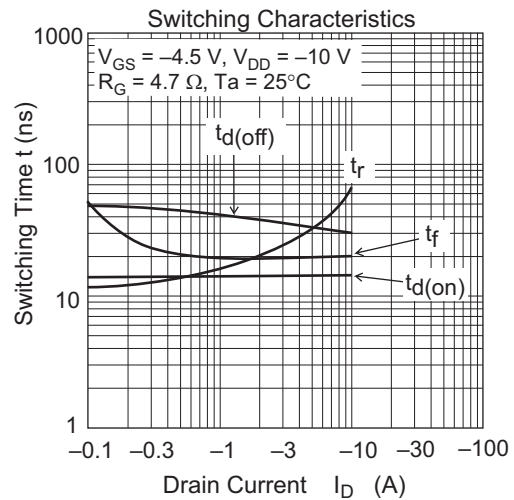
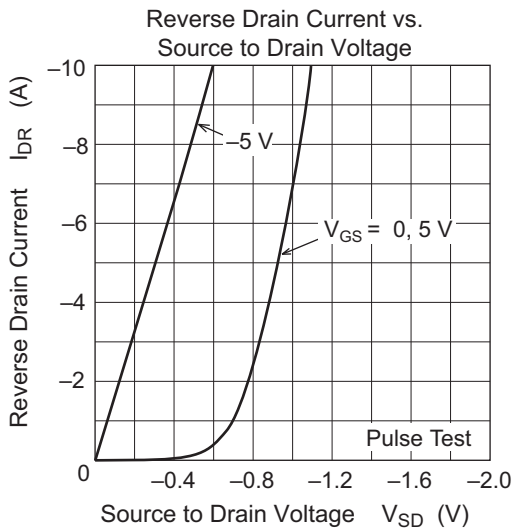
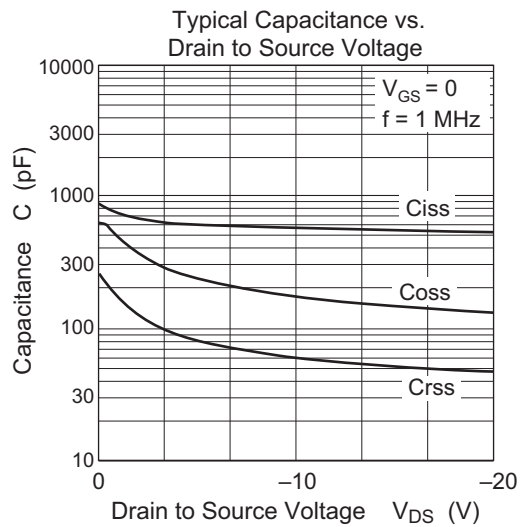
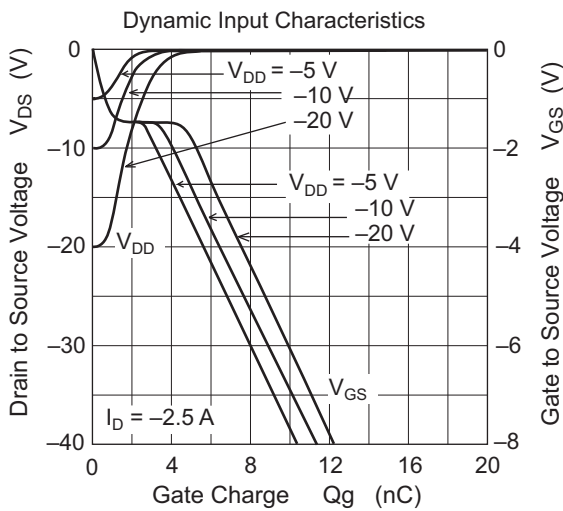
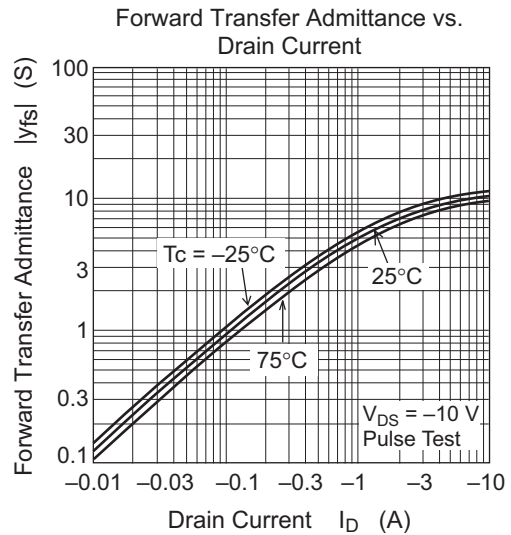
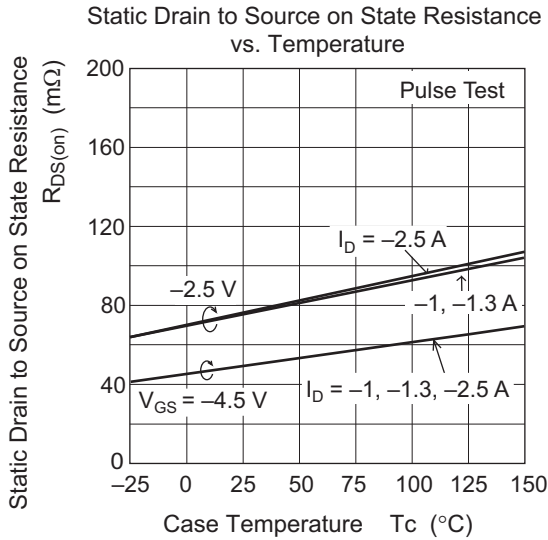
(Ta = 25°C)

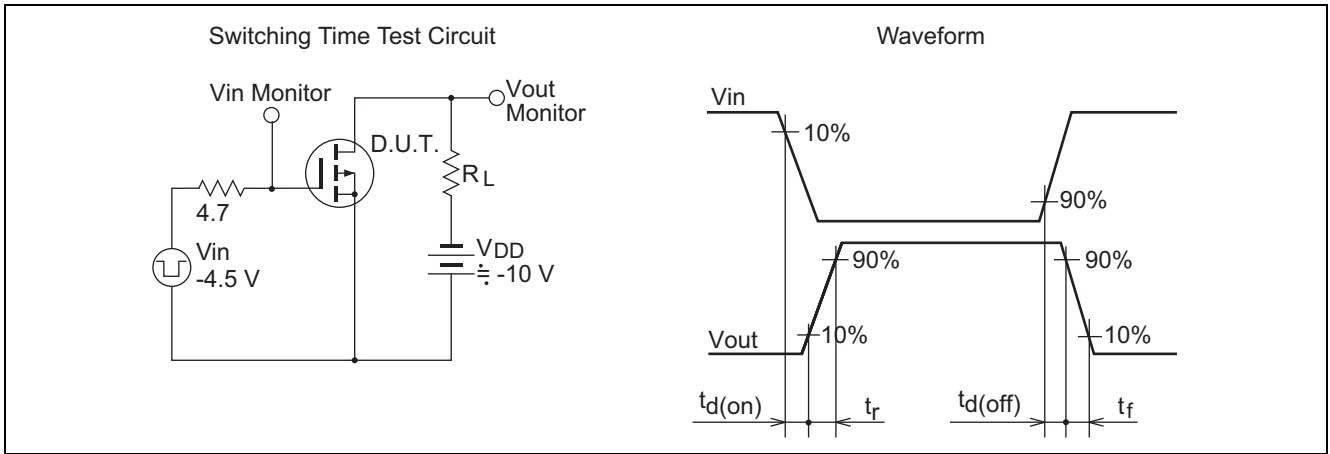
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	-20	—	—	V	$I_D = -10 \text{ mA}, V_{GS} = 0$
Gate to Source breakdown voltage	$V_{(BR)GSS}$	$\pm 12$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to Source leakage current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 10 \text{ V}, V_{DS} = 0$
Drain to Source leakage current	$I_{DSS}$	—	—	-1	$\mu\text{A}$	$V_{DS} = -20 \text{ V}, V_{GS} = 0$
Gate to Source cutoff voltage	$V_{GS(th)}$	-0.4	—	-1.4	V	$I_D = -1 \text{ mA}, V_{DS} = -10 \text{ V}$ <sup>Note3</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	50	65	m $\Omega$	$I_D = -1.3 \text{ A}, V_{GS} = -4.5 \text{ V}$ <sup>Note3</sup>
	$R_{DS(on)}$	—	74	104	m $\Omega$	$I_D = -1.3 \text{ A}, V_{GS} = -2.5 \text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	3.5	5.5	—	S	$I_D = -1.3 \text{ A}, V_{DS} = -10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	590	—	pF	$V_{DS} = -10 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	175	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	60	—	pF	
Total gate charge	$Q_g$	—	7	—	nC	$V_{DS} = -10 \text{ V}, V_{GS} = -4.5 \text{ V},$ $I_D = -2.5 \text{ A}$
Gate to Source charge	$Q_{gs}$	—	1.2	—	nC	
Gate to Drain charge	$Q_{gd}$	—	2.5	—	nC	
Turn - on delay time	$t_{d(on)}$	—	15	—	ns	$V_{DS} = -10 \text{ V}, V_{GS} = -4.5 \text{ V},$ $I_D = -1.3 \text{ A}, R_L = 7.7 \text{ }\Omega,$ $R_g = 4.7 \text{ }\Omega$
Rise time	$t_r$	—	17	—	ns	
Turn - off delay time	$t_{d(off)}$	—	40	—	ns	
Fall time	$t_f$	—	20	—	ns	
Body - Drain diode forward voltage	$V_{DF}$	—	-0.8	-1.1	V	$I_F = -2.5 \text{ A}, V_{GS} = 0$

Notes: 3. Pulse test

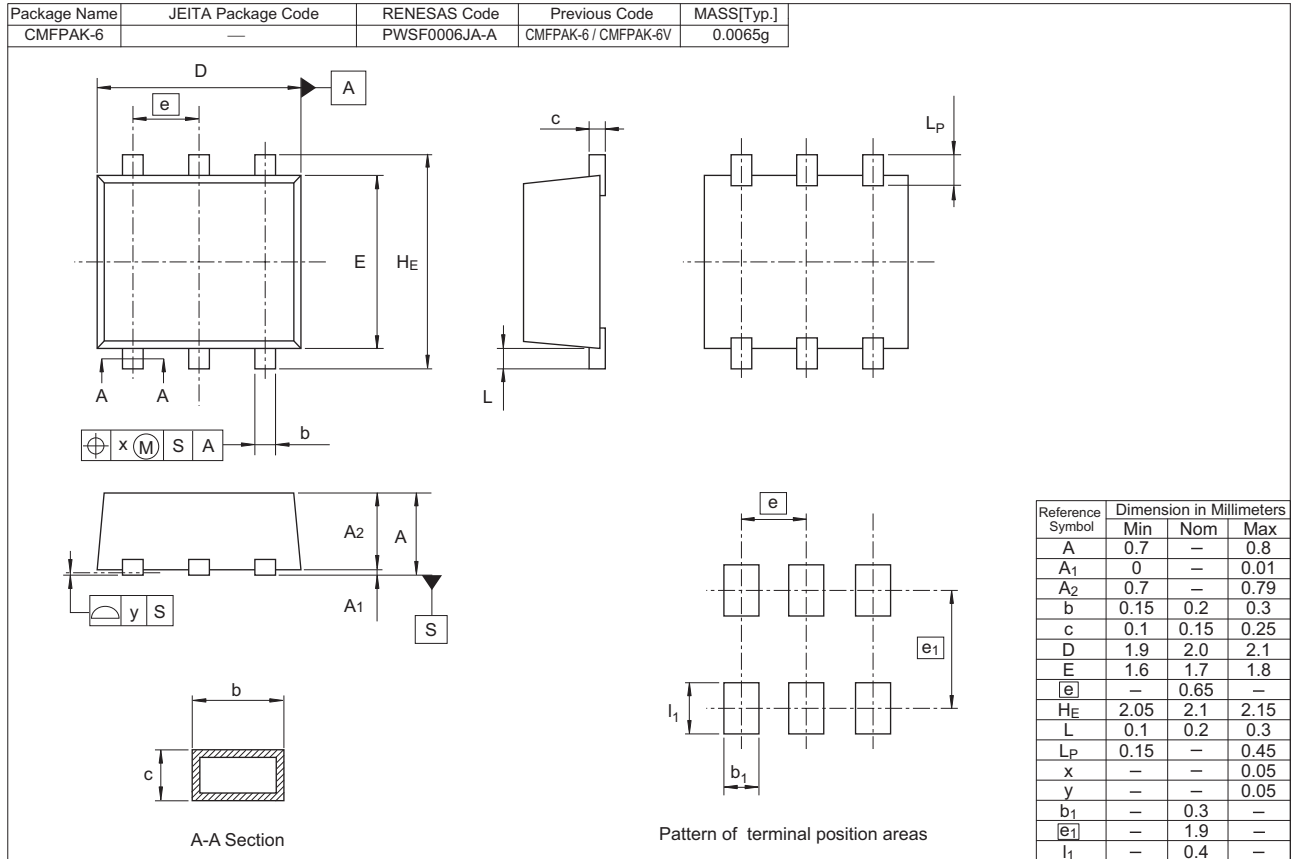
### Main Characteristics







### Package Dimensions



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
HAT1090C-EL-E	3000 pcs	Taping

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