

HAT1093C

Silicon P Channel MOSFET
Power Switching

R07DS0605EJ0700
Rev.7.00
Mar 19, 2014

Features

- Low on-resistance
 $R_{DS(on)} = 41\text{ m}\Omega$ typ. (at $V_{GS} = -4.5\text{ V}$)
- Low drive current.
- 1.8 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}	-12	V
Gate to Source voltage	V_{GSS}	± 8	V
Drain current	I_D	-3	A
Drain peak current	$I_{D(pulse)}$ ^{Note 1}	-12	A
Body - Drain diode reverse drain current	I_{DR}	-3	A
Channel dissipation	P_{ch} ^{Note 2}	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 × 40 × 1.6mm), $T_a = 25^\circ\text{C}$

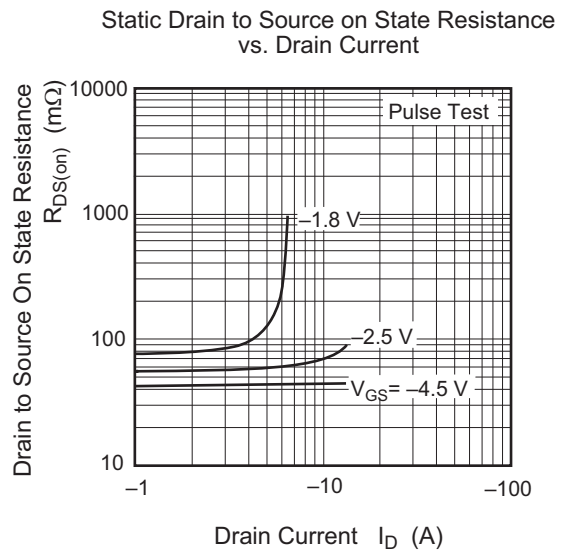
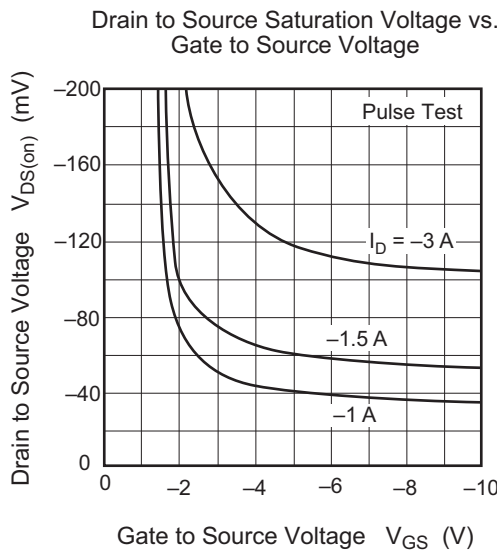
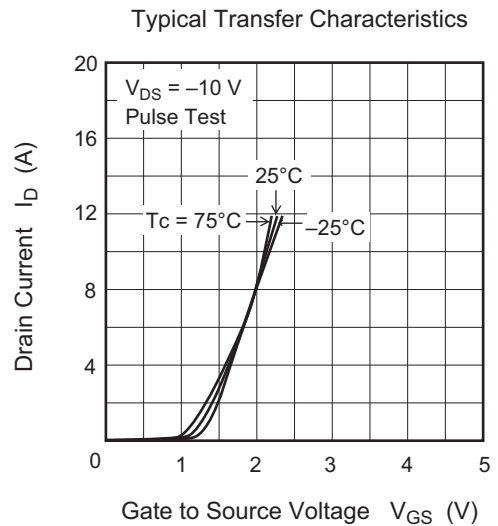
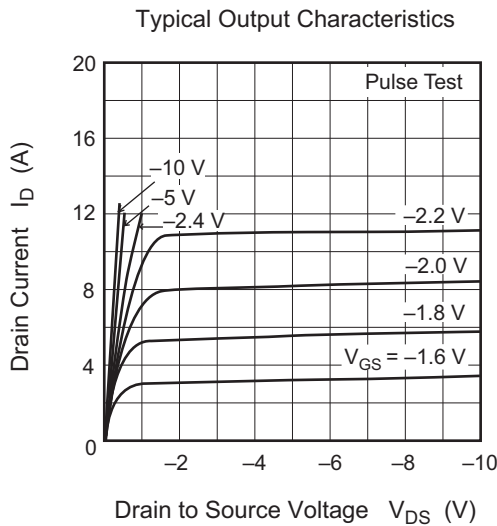
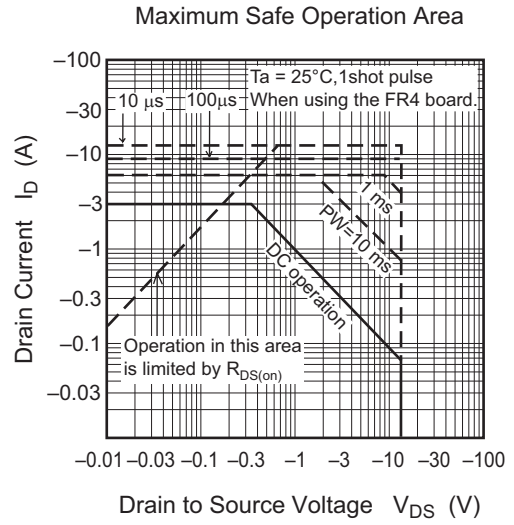
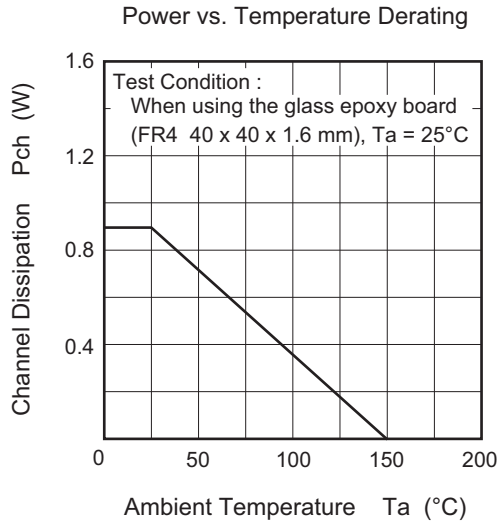
Electrical Characteristics

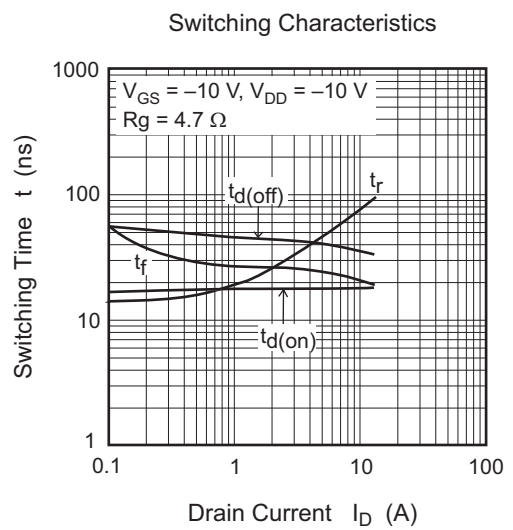
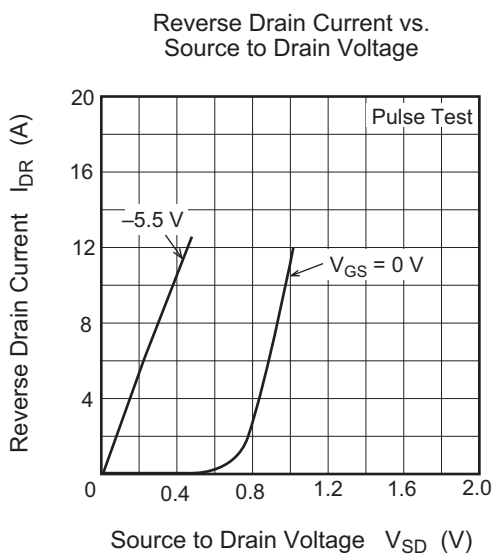
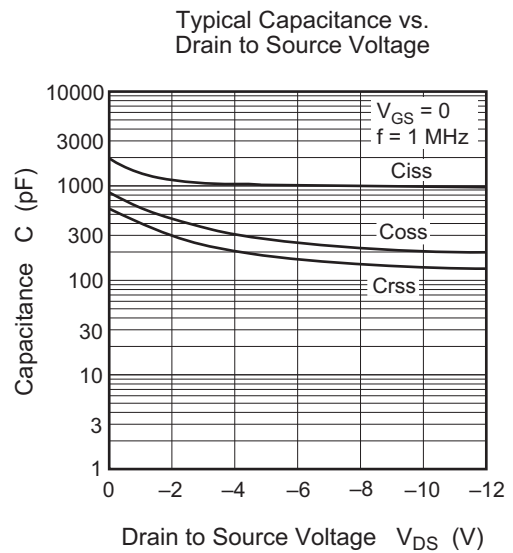
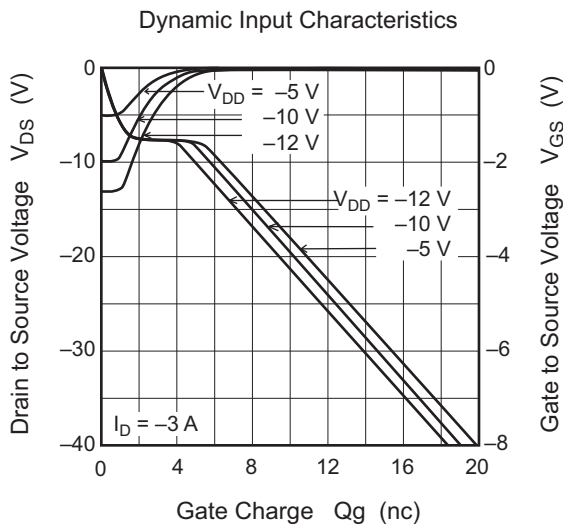
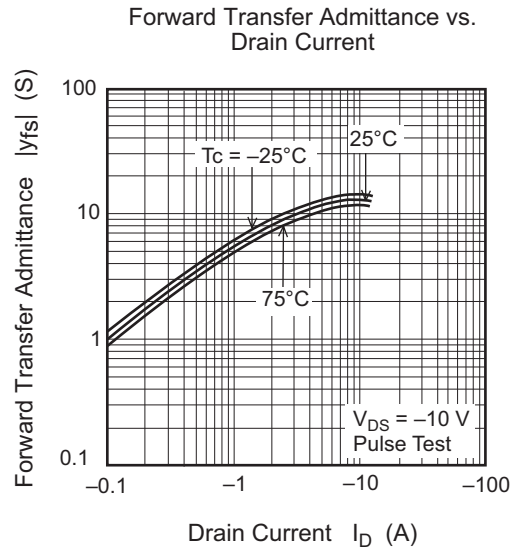
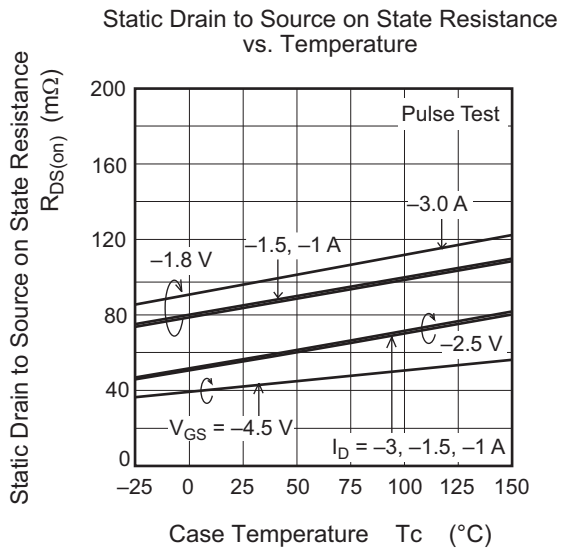
(Ta = 25°C)

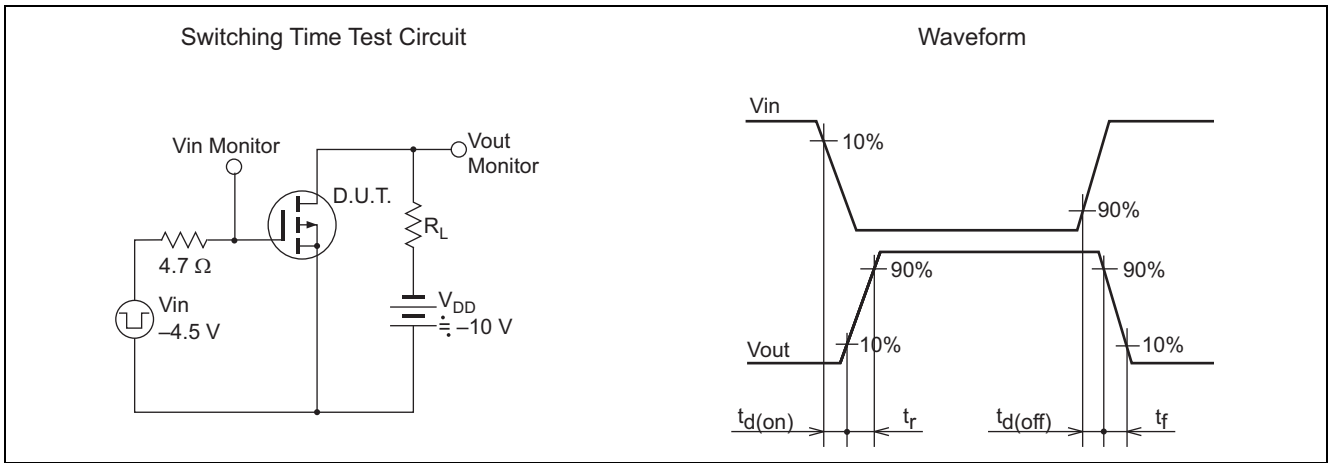
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	-12	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to Source breakdown voltage	$V_{(BR)GSS}$	± 8	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to Source leakage current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 6.4 \text{ V}$, $V_{DS} = 0$
Drain to Source leakage current	I_{DSS}	—	—	-1	μA	$V_{DS} = -12 \text{ V}$, $V_{GS} = 0$
Gate to Source cutoff voltage	$V_{GS(th)}$	-0.3	—	-1.2	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$ ^{Note3}
Drain to Source on state resistance	$R_{DS(on)}$	—	41	54	m Ω	$I_D = -1.5 \text{ A}$, $V_{GS} = -4.5 \text{ V}$ ^{Note3}
		—	54	76	m Ω	$I_D = -1.5 \text{ A}$, $V_{GS} = -2.5 \text{ V}$ ^{Note3}
		—	79	119	m Ω	$I_D = -1.5 \text{ A}$, $V_{GS} = -1.8 \text{ V}$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	4	6.5	—	S	$I_D = -1.5 \text{ A}$, $V_{DS} = -10 \text{ V}$ ^{Note3}
Input capacitance	C_{iss}	—	940	—	pF	$V_{DS} = -10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	200	—	pF	
Reverse transfer capacitance	C_{rss}	—	130	—	pF	
Total gate charge	Q_g	—	11	—	nC	$V_{DS} = -10 \text{ V}$, $V_{GS} = -4.5 \text{ V}$, $I_D = -3 \text{ A}$
Gate to Source charge	Q_{gs}	—	1.5	—	nC	
Gate to Drain charge	Q_{gd}	—	3.5	—	nC	
Turn - on delay time	$t_{d(on)}$	—	18	—	ns	$V_{DS} = -10 \text{ V}$, $V_{GS} = -4.5 \text{ V}$, $I_D = -1.5 \text{ A}$, $R_L = 6.7 \text{ }\Omega$, $R_g = 4.7 \text{ }\Omega$
Rise time	t_r	—	23	—	ns	
Turn - off delay time	$t_{d(off)}$	—	50	—	ns	
Fall time	t_f	—	28	—	ns	
Body - Drain diode forward voltage	V_{DF}	—	-0.8	-1.1	V	$I_F = -3 \text{ A}$, $V_{GS} = 0$

Note: 3. Pulse test

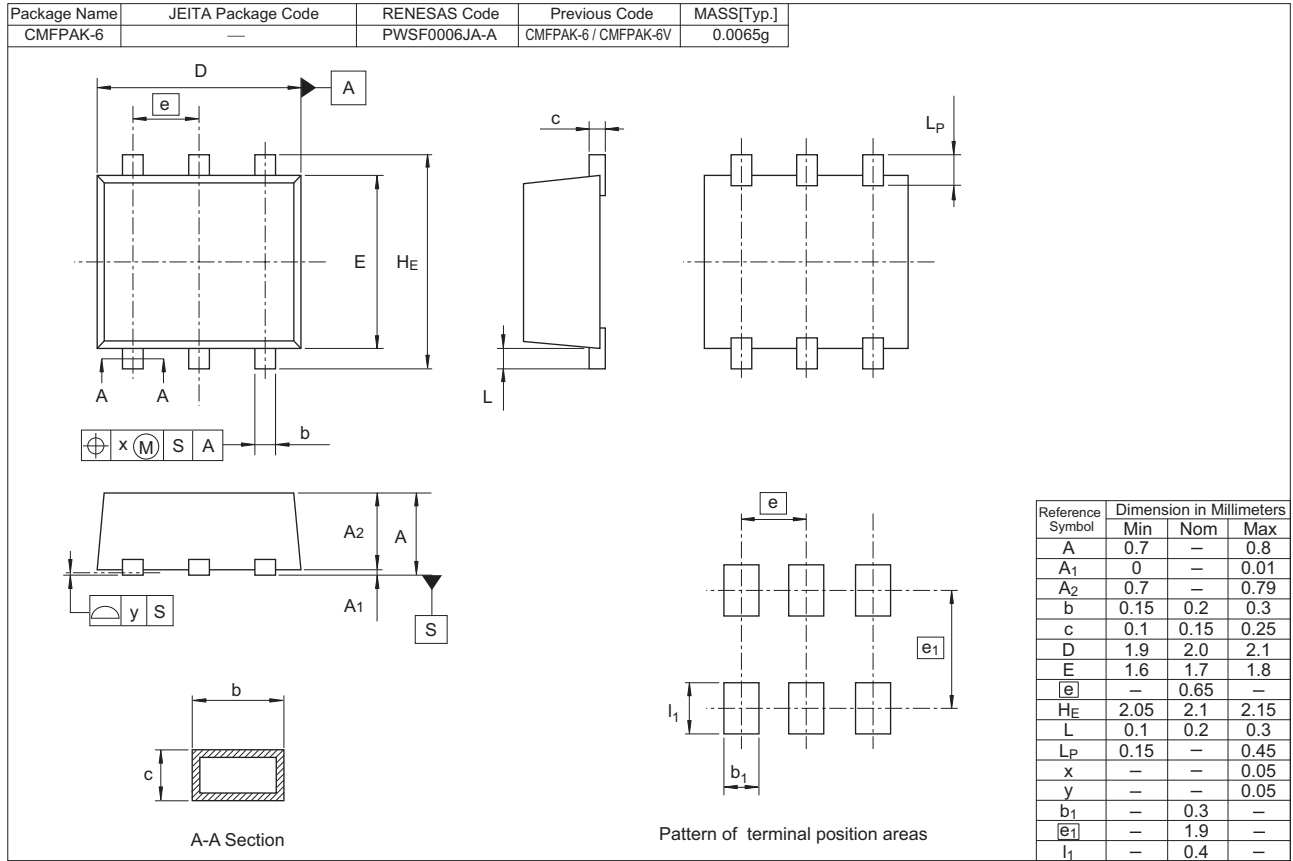
Main Characteristics







Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
HAT1093C-EL-E	3000 pcs	Taping

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