

# HAT2202C

## Silicon N Channel MOS FET Power Switching

REJ03G1236-0500

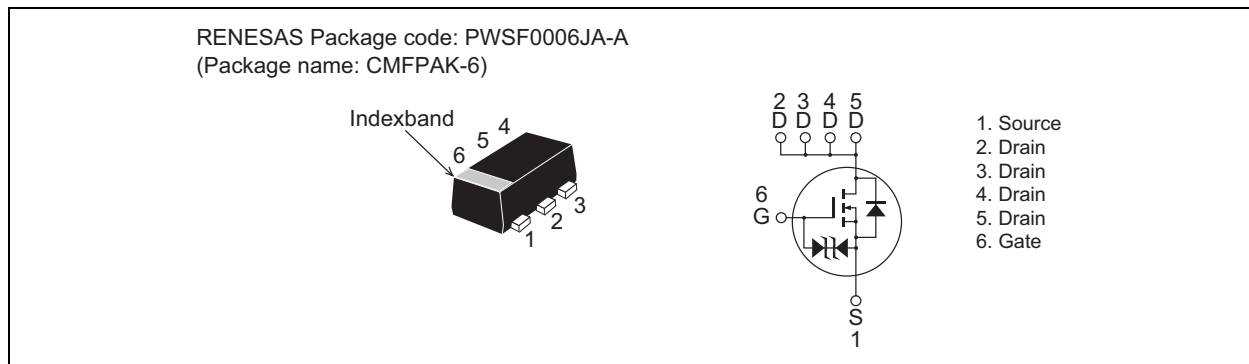
Rev.5.00

Jan 26, 2006

### Features

- Low on-resistance  
 $R_{DS(on)} = 31 \text{ m}\Omega$  typ. (at  $V_{GS} = 4.5 \text{ V}$ )
- Low drive current.
- High density mounting
- 2.5 V gate drive devices.

### Outline



### 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	$I_D$	3	A
Drain peak current	$I_D$ (pulse) <sup>Note 1</sup>	12	A
Body - Drain diode reverse drain current	$I_{DR}$	3	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  $40 \times 40 \times 1.6 \text{ mm}$ )

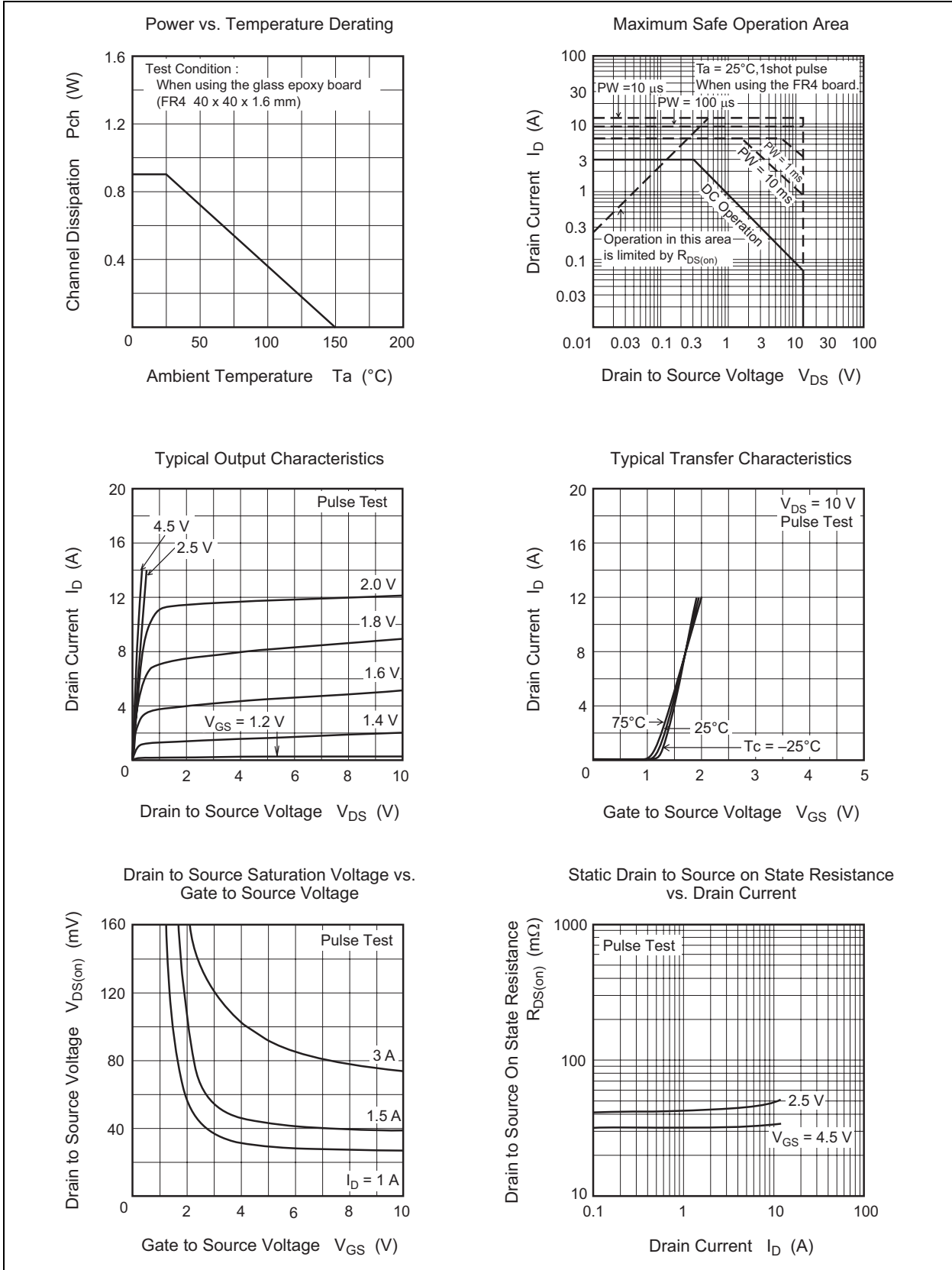
## Electrical Characteristics

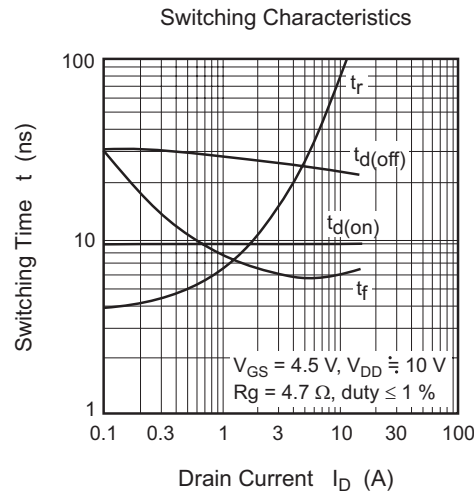
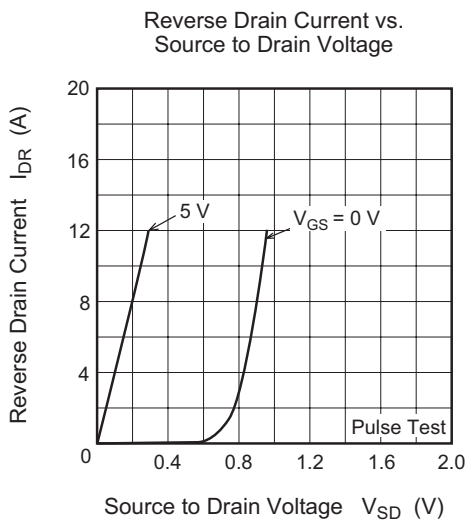
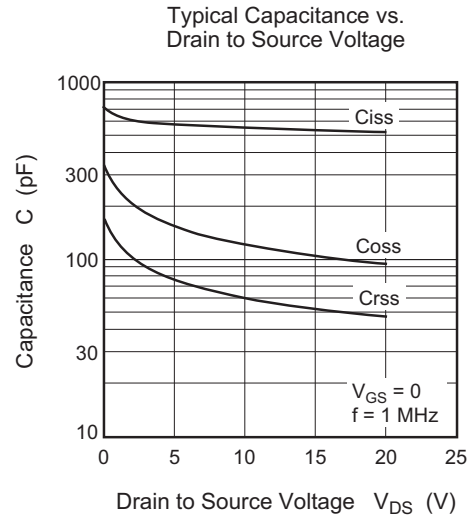
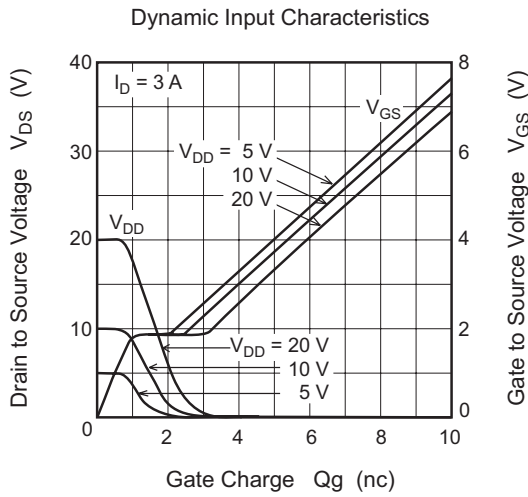
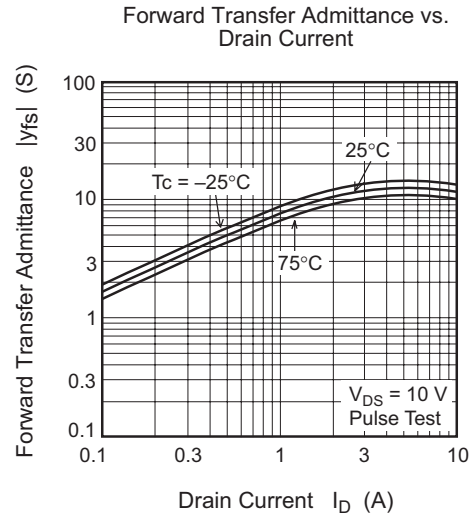
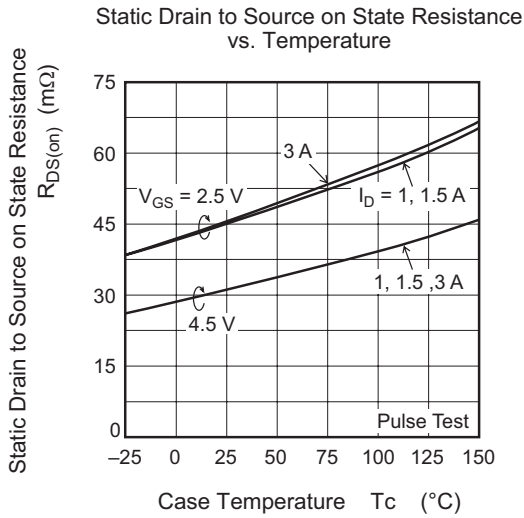
(Ta = 25°C)

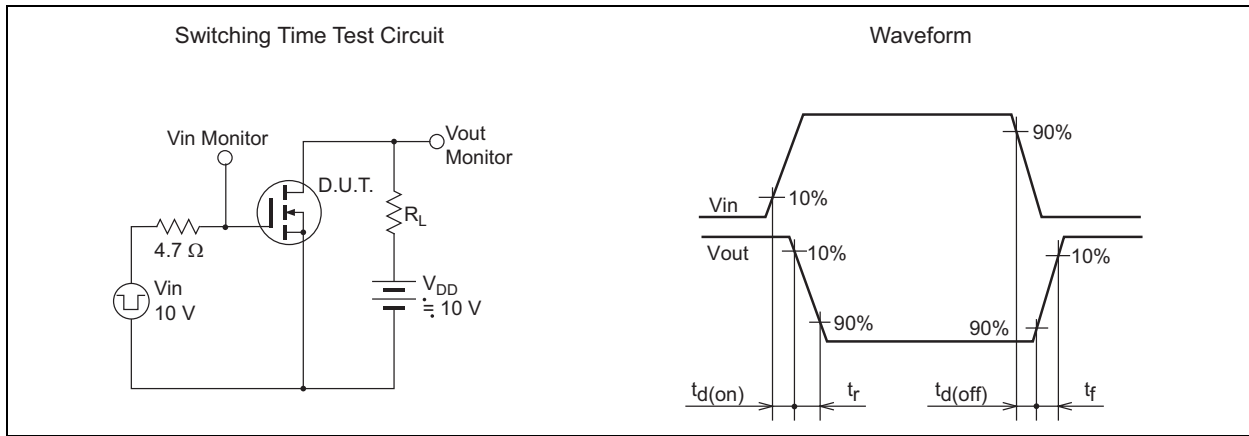
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to Source breakdown voltage	$V_{(BR)GSS}$	$\pm 12$	—	—	V	$I_G = \pm 10 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to Source leakage current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 10\text{V}$ , $V_{DS} = 0$
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	$I_D = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Drain to Source on state resistance	$R_{DS(on)}$	—	31	40	$\text{m}\Omega$	$I_D = 1.5 \text{ A}$ , $V_{GS} = 4.5 \text{ V}$ <sup>Note3</sup>
		—	43	55	$\text{m}\Omega$	$I_D = 1.5 \text{ A}$ , $V_{GS} = 2.5 \text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	6.5	9.5	—	S	$I_D = 1.5 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	520	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	115	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	60	—	pF	
Total gate charge	$Q_g$	—	6	—	nC	$V_{DD} = 10 \text{ V}$ , $V_{GS} = 4.5 \text{ V}$ , $I_D = 3 \text{ A}$
Gate to Source charge	$Q_{gs}$	—	1	—	nC	
Gate to Drain charge	$Q_{gd}$	—	1.4	—	nC	
Turn - on delay time	$t_{d(on)}$	—	9	—	ns	$I_D = 1.5 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $V_{DD} = 10 \text{ V}$ , $R_L = 6.7 \text{ }\Omega$ , $R_g = 4.7 \text{ }\Omega$
Rise time	$t_r$	—	8	—	ns	
Turn - off delay time	$t_{d(off)}$	—	28	—	ns	
Fall time	$t_f$	—	6	—	ns	
Body - Drain diode forward voltage	$V_{DF}$	—	0.8	1.1	V	$I_F = 3 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>

Notes: 3. Pulse test

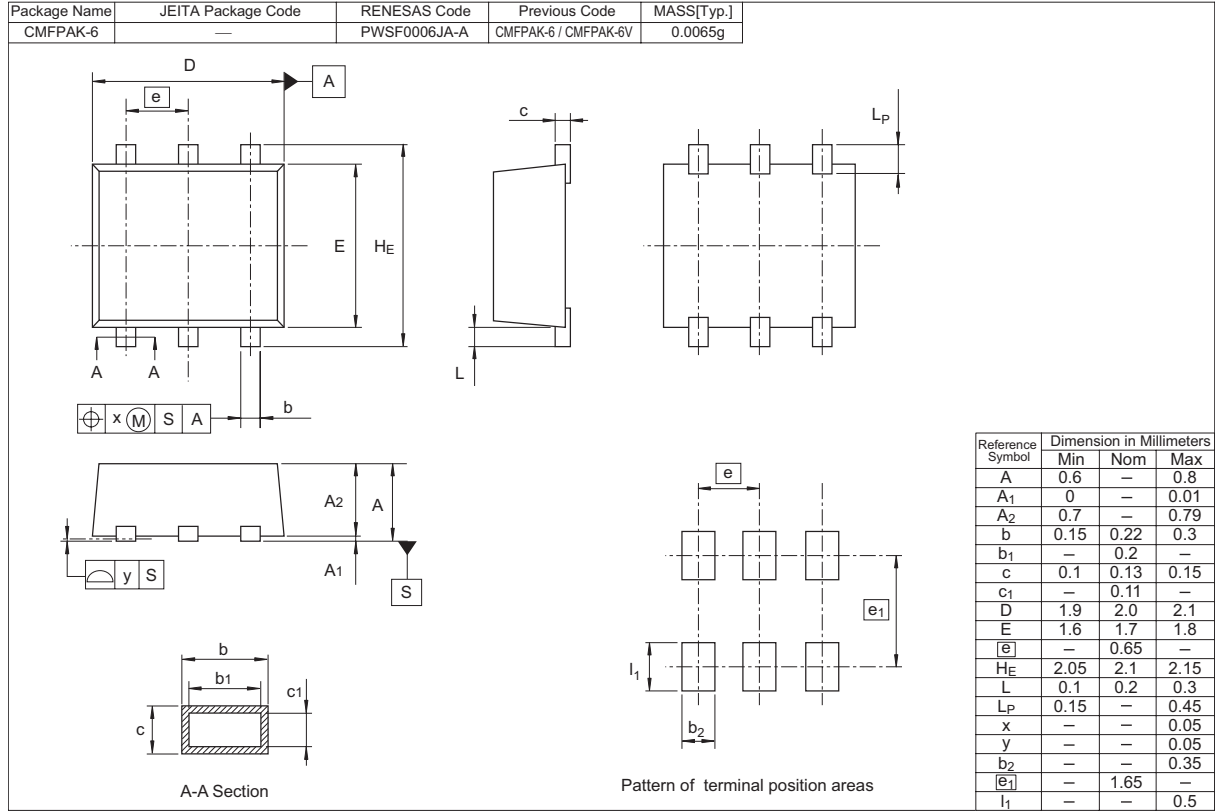
Main Characteristics







### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
HAT2202C-EL-E	3000 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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