

HAT2197R

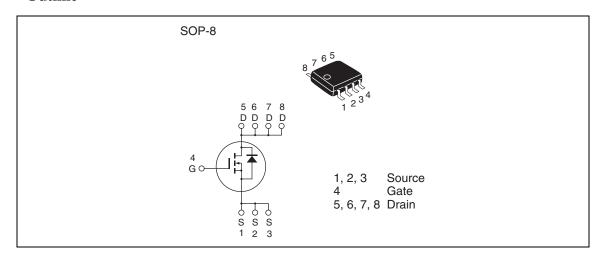
Silicon N Channel Power MOS FET Power Switching

REJ03G0061-0200Z Rev.2.00 Apr.02.2004

Features

- High speed switching
- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance $R_{DS(on)} = 5.3 \ m\Omega \ typ. \ (at \ V_{GS} = 10 \ V)$

Outline



Absolute Maximum Ratings

 $(Ta = 25^{\circ}C)$

Item	m Symbol		Unit	
Drain to source voltage	V_{DSS}	30	V	
Gate to source voltage	V _{GSS}	±20	V	
Drain current	I _D	16	Α	
Drain peak current	I _{D(pulse)} Note1	128	Α	
Body-drain diode reverse drain current	I _{DR}	16	Α	
Avalanche current	I _{AP} Note 2	16	Α	
Avalanche energy	E _{AR} Note 2	25.6	mJ	
Channel dissipation	Pch Note3	2.5	W	
Channel to ambient thermal impedance	θch-a Note3	50	°C/W	
Channel temperature	Tch	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

Notes: 1. PW \leq 10 μ s, duty cycle \leq 1%

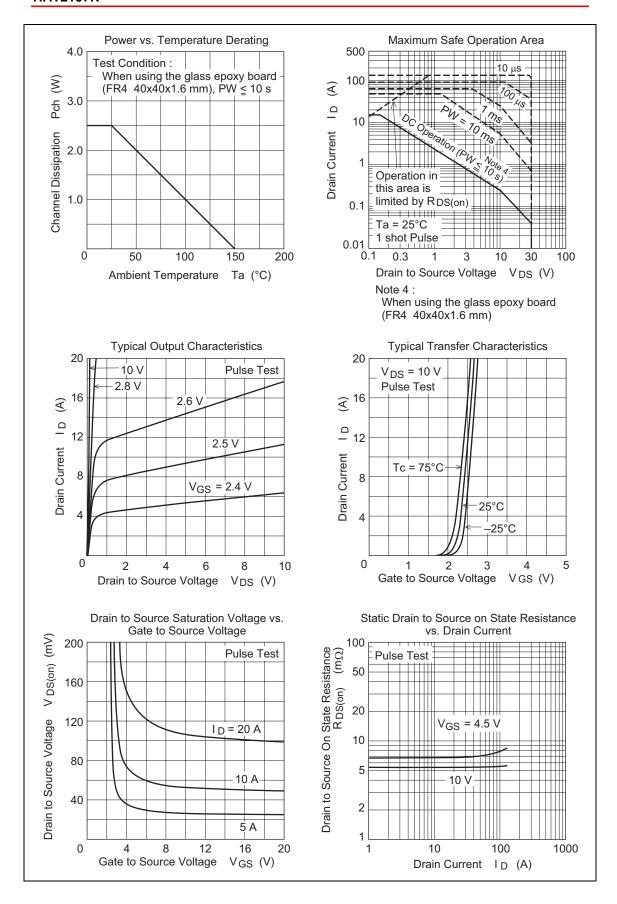
- 2. Value at Tch = 25°C, Rg \geq 50 Ω
- 3. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW \leq 10s

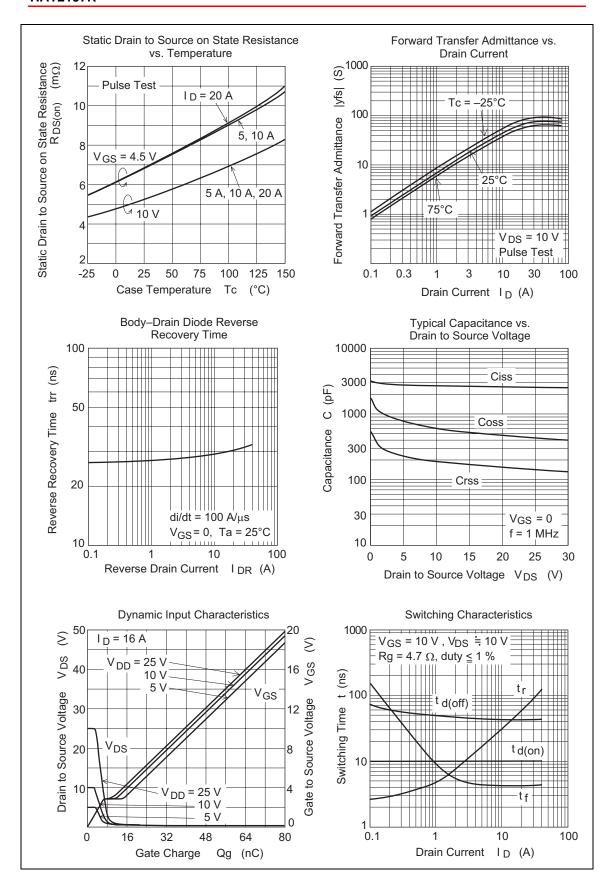
Electrical Characteristics

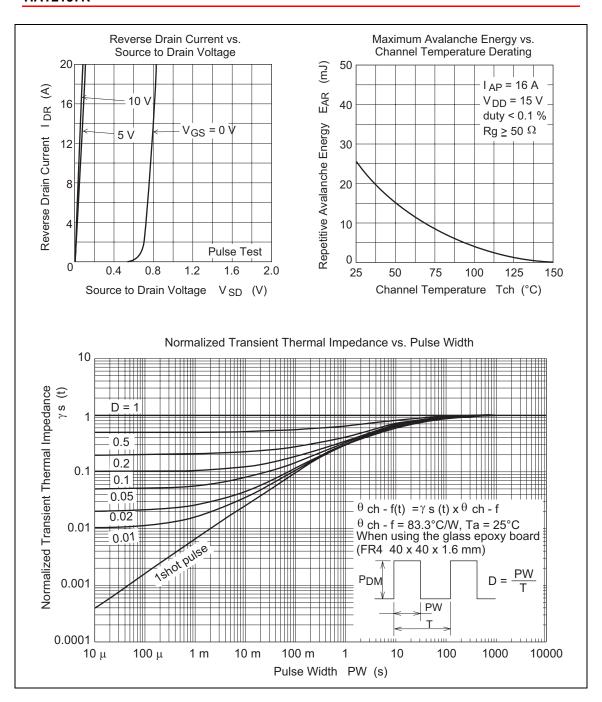
 $(Ta = 25^{\circ}C)$

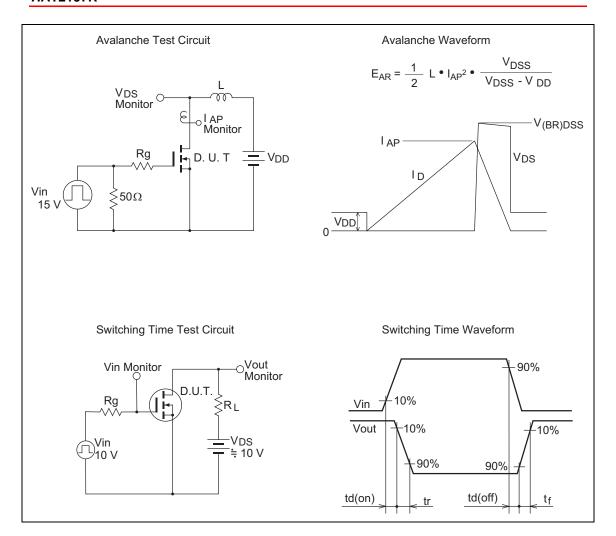
Item	Symbol	Min	Тур	Max	Unit	Test Conditions
Drain to source breakdown	$V_{(BR)DSS}$	30	_	_	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
voltage						
Gate to source leak current	I_{GSS}	_	_	± 0.1	μΑ	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	_	_	1	μΑ	$V_{DS} = 30 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{\text{GS(off)}}$	1.0	_	2.5	V	$V_{DS} = 10 \text{ V}, \text{ I }_{D} = 1 \text{ mA}$
Static drain to source on state	R _{DS(on)}	_	5.3	6.7	$m\Omega$	$I_D = 8 A, V_{GS} = 10 V^{Note4}$
resistance	R _{DS(on)}	_	6.8	9.9	$m\Omega$	$I_D = 8 A, V_{GS} = 4.5 V^{Note4}$
Forward transfer admittance	y _{fs}	22	38	_	S	$I_D = 8 A, V_{DS} = 10 V^{Note4}$
Input capacitance	Ciss	_	2650	_	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	Coss	_	610	_	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	_	190	_	pF	f = 1 MHz
Gate Resistance	Rg	_	1.2	_	Ω	
Total gate charge	Qg	_	18	_	nC	$V_{DD} = 10 \text{ V}$
Gate to source charge	Qgs	_	7.5	_	nC	$V_{GS} = 4.5 \text{ V}$
Gate to drain charge	Qgd	_	4.2	_	nC	I _D = 16 A
Turn-on delay time	$t_{d(on)}$	_	10	_	ns	$V_{GS} = 10 \text{ V}, I_D = 8 \text{ A}$
Rise time	t _r	_	25	_	ns	$V_{DD} \cong 10 \text{ V}$
Turn-off delay time	$t_{\text{d(off)}}$	_	45	_	ns	$R_L = 1.25 \Omega$
Fall time	\mathbf{t}_{f}	_	4.2	_	ns	$Rg = 4.7 \Omega$
Body-drain diode forward voltage	V_{DF}	_	0.80	1.04	V	IF = 16 A, V _{GS} = 0 Note4
Body-drain diode reverse	t _{rr}	_	30	_	ns	$IF = 16 A, V_{GS} = 0$
recovery time						diF/ dt = 100 A/ μs

Notes: 4. Pulse test

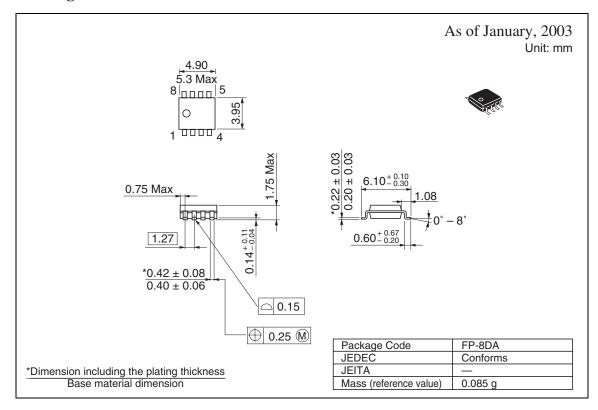








Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2197R-EL-E	2500pcs	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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