

# HAT2132H

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G0177-0300

Rev.3.00

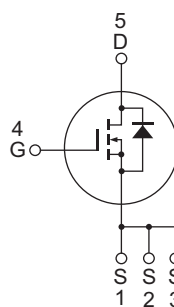
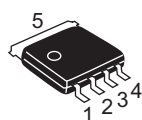
Dec 07, 2006

## Features

- Low drive current.
- Low on-resistance
- Low profile

## Outline

RENESAS Package code: PTZZ0005DA-A  
(Package name: LFPAK )



1, 2, 3 Source  
4 Gate  
5 Drain

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	200	V
Gate to source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	6	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	24	A
Body-drain diode reverse drain current	$I_{DR}$	6	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ <sup>Note1</sup>	24	A
Avalanche current	$I_{AP}$ <sup>Note3</sup>	6	A
Avalanche energy	$E_{AR}$ <sup>Note3</sup>	2.4	mJ
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	20	W
Channel to case thermal impedance	$\theta_{ch-c}$	6.25	°C/W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

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

2. Value at  $T_c = 25^\circ C$

3.  $STch = 25^\circ C$ ,  $T_{ch} \leq 150^\circ C$

## Electrical Characteristics

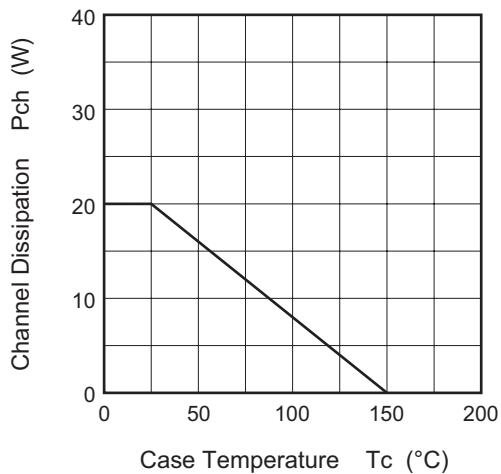
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 200 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.0	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	2.7	4.7	—	S	$I_D = 3 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note4</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	0.36	0.45	$\Omega$	$I_D = 3 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	450	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	65	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	13	—	pF	
Turn-on delay time	$t_{d(on)}$	—	19	—	ns	$I_D = 3 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 33.3 \Omega$ $R_g = 10 \Omega$
Rise time	$t_r$	—	26	—	ns	
Turn-off delay time	$t_{d(off)}$	—	48	—	ns	
Fall time	$t_f$	—	9	—	ns	
Total gate charge	$Q_g$	—	12.5	—	nC	$V_{DD} = 160 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 6 \text{ A}$
Gate to source charge	$Q_{gs}$	—	2.5	—	nC	
Gate to drain charge	$Q_{gd}$	—	6	—	nC	
Body-drain diode forward voltage	$V_{DF}$	—	0.85	1.30	V	$I_F = 6 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	95	—	ns	$I_F = 6 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

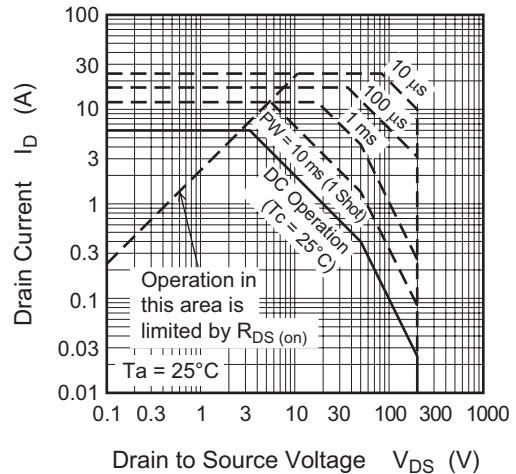
Notes: 4. Pulse test

## Main Characteristics

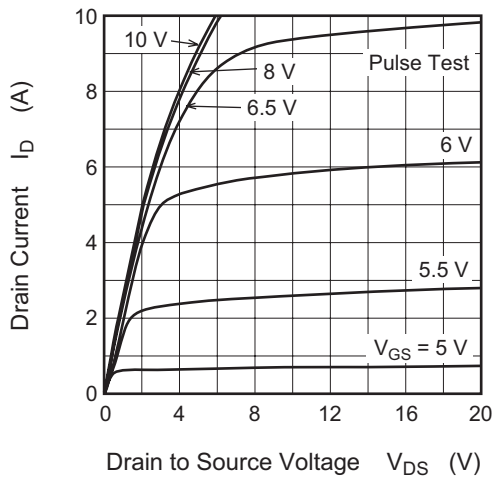
Power vs. Temperature Derating



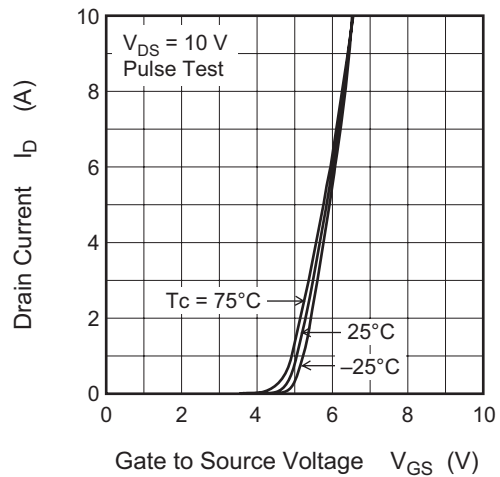
Maximum Safe Operation Area



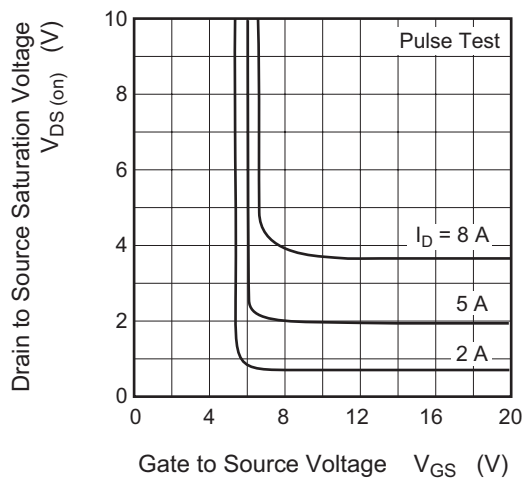
Typical Output Characteristics



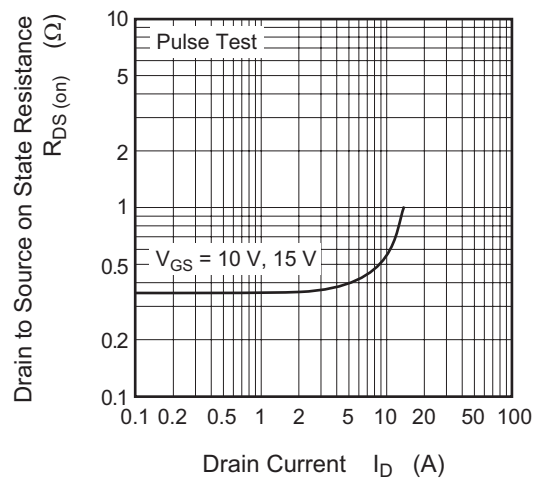
Typical Transfer Characteristics



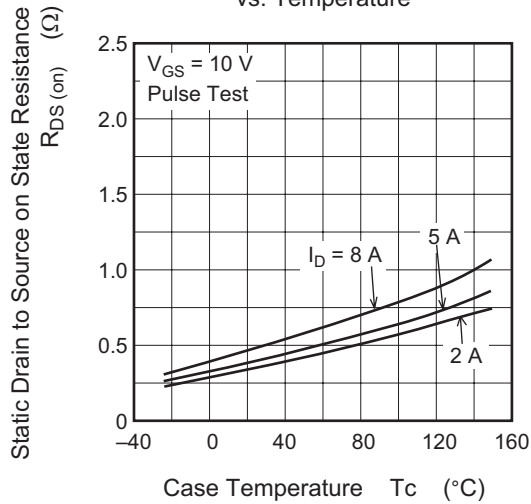
Drain to Source Saturation Voltage vs. Gate to Source Voltage



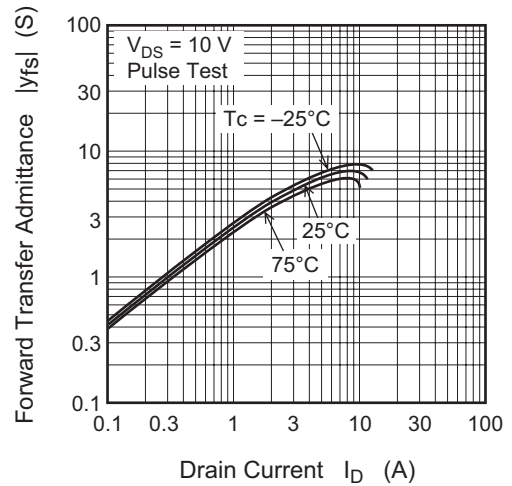
Static Drain to Source on State Resistance vs. Drain Current



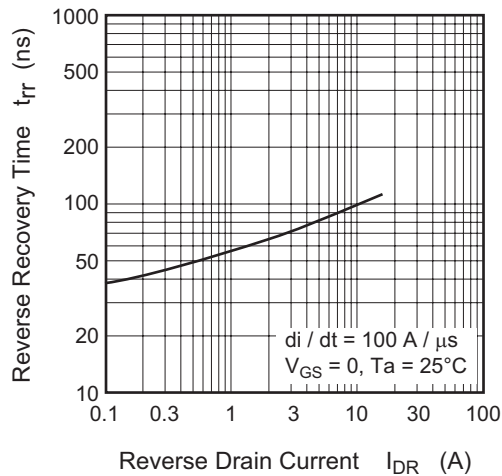
Static Drain to Source on State Resistance vs. Temperature



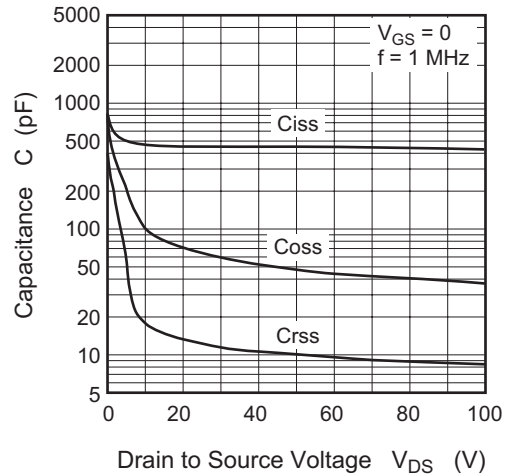
Forward Transfer Admittance vs. Drain Current



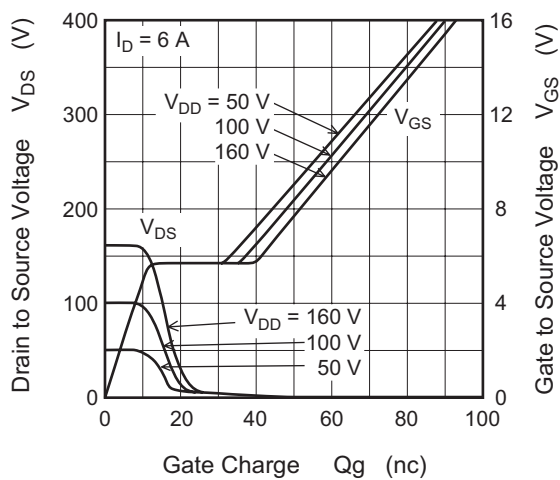
Body-Drain Diode Reverse Recovery Time



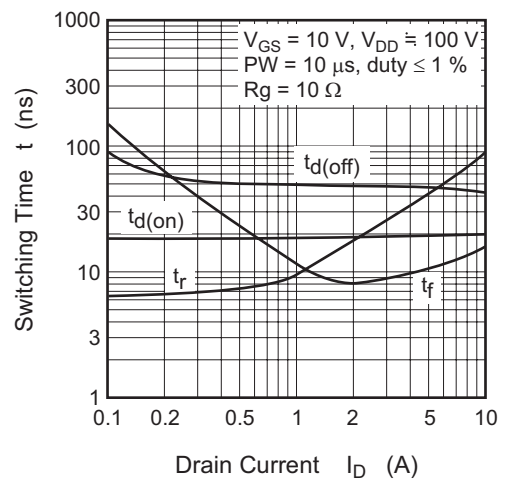
Typical Capacitance vs. Drain to Source Voltage

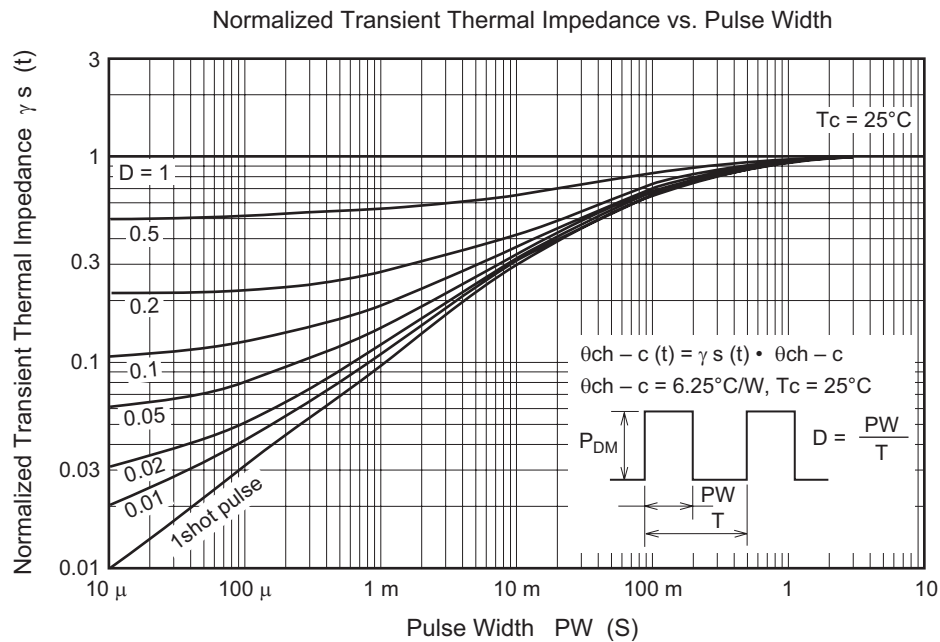
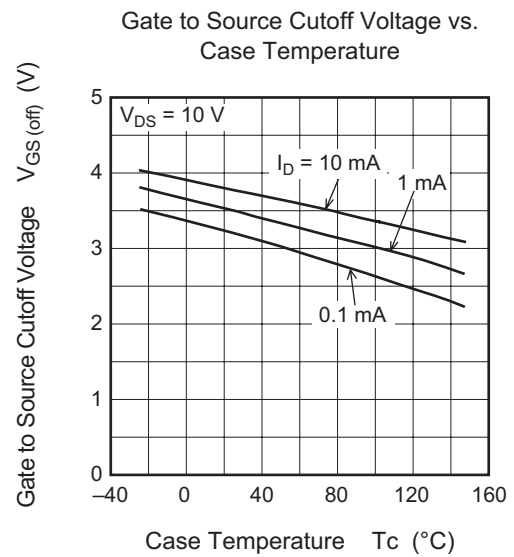
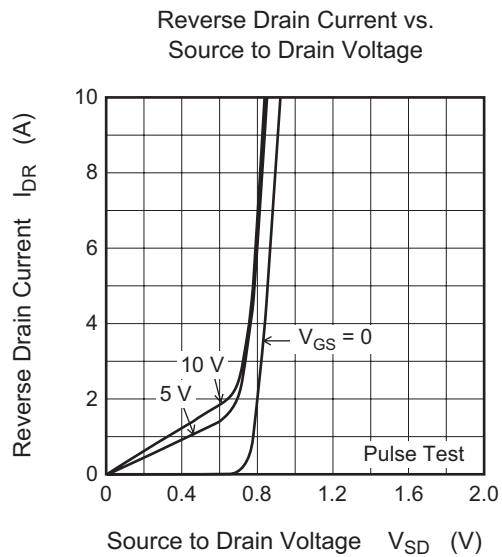


Dynamic Input Characteristics

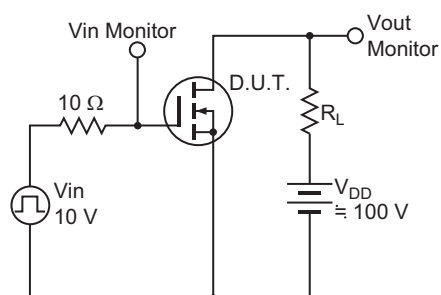


Switching Characteristics

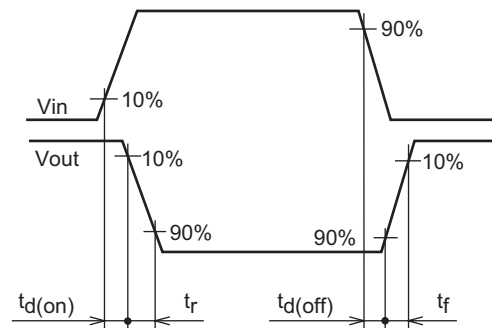




Switching Time Test Circuit



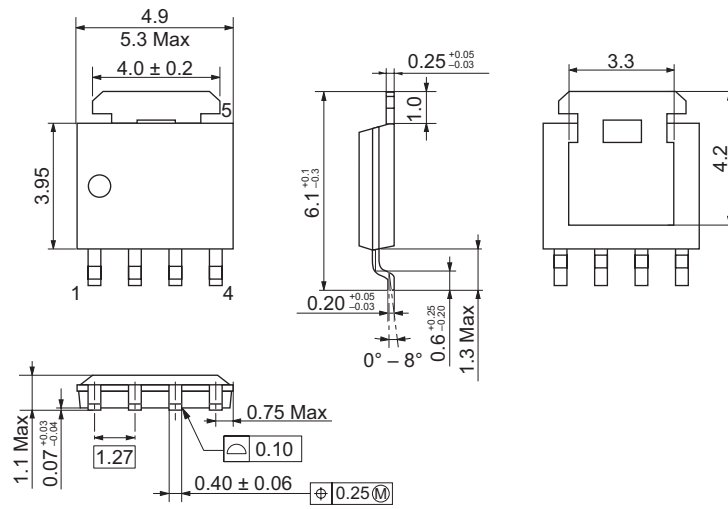
Switching Time Waveform



## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LPAK	SC-100	PTZZ0005DA-A	LPAKV	0.080g

Unit: mm



(Ni/Pd/Au plating)

## Ordering Information

Part No.	Quantity	Shipping Container
HAT2132H-EL-E	2500 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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