

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## HAT1072H

Silicon P Channel Power MOS FET  
Power Switching

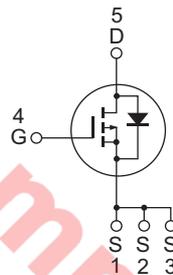
REJ03G1155-0700  
(Previous: ADE-208-1534E)  
Rev.7.00  
Sep 07, 2005

### Features

- Capable of  $-4.5\text{ V}$  gate drive
- Low drive current
- High density mounting
- Low on-resistance  
 $R_{DS(on)} = 3.6\text{ m}\Omega$  typ (at  $V_{GS} = -10\text{ V}$ )

### 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	Value	Unit
Drain to source voltage	V <sub>DSS</sub>	-30	V
Gate to source voltage	V <sub>GSS</sub>	-20 / +10	V
Drain current	I <sub>D</sub>	-40	A
Drain peak current	I <sub>D (pulse)</sub> <sup>Note 1</sup>	-160	A
Body-drain diode reverse drain current	I <sub>DR</sub>	-40	A
Channel dissipation	P <sub>ch</sub> <sup>Note 2</sup>	30	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Tc = 25°C

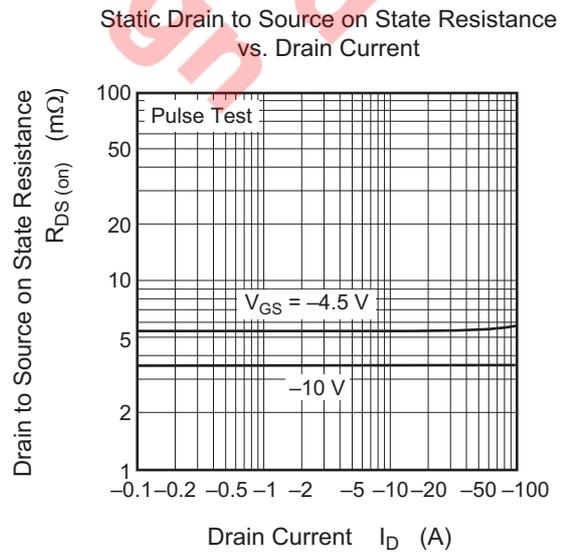
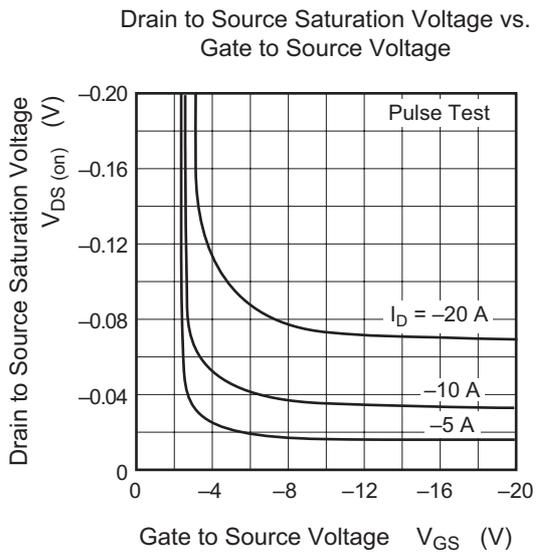
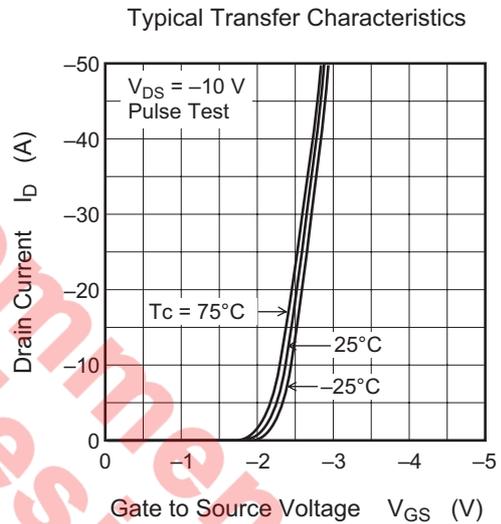
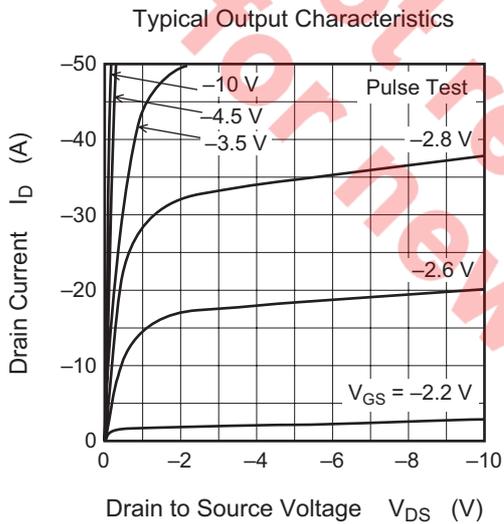
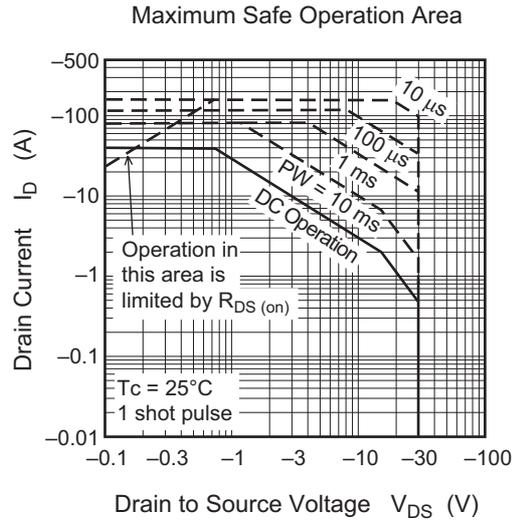
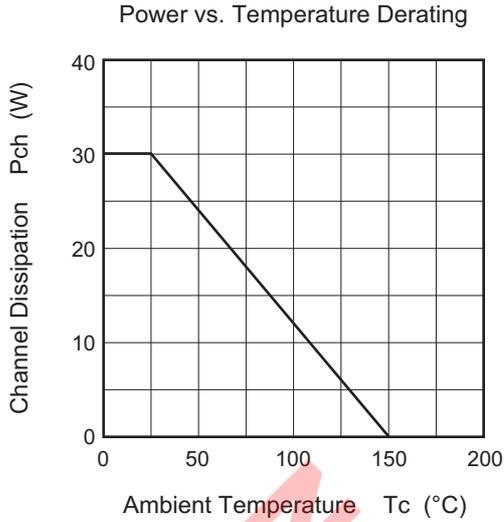
## Electrical Characteristics

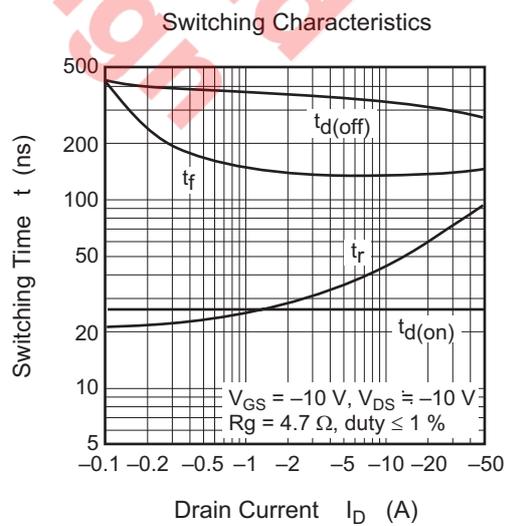
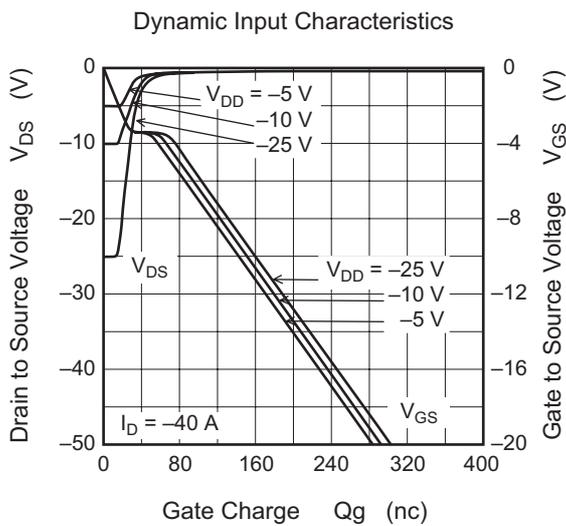
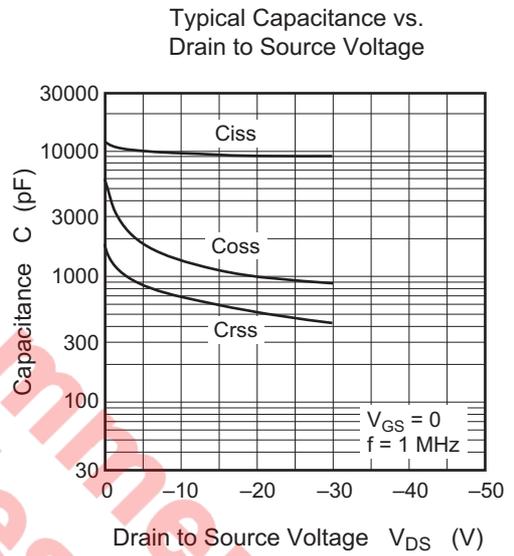
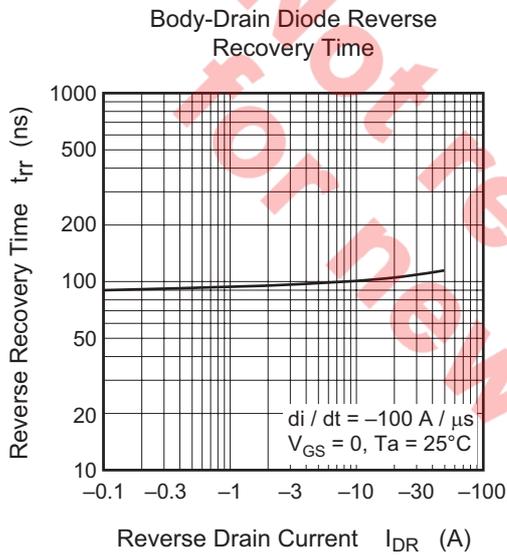
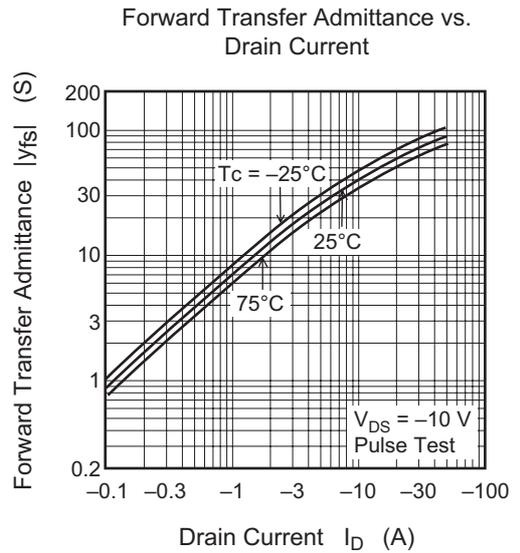
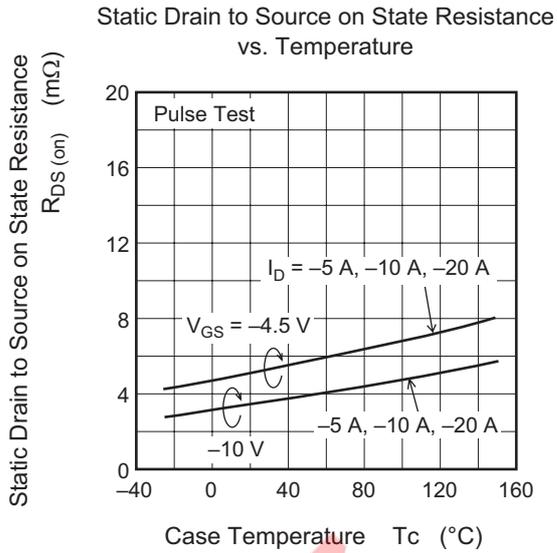
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR) DSS</sub>	-30	—	—	V	I <sub>D</sub> = -10 mA, V <sub>GS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±0.1	μA	V <sub>GS</sub> = -20, +10 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	-1	μA	V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS (off)</sub>	-0.5	—	-2.0	V	V <sub>DS</sub> = -10 V, I <sub>D</sub> = -1 mA
Static drain to source on state resistance	R <sub>DS (on)</sub>	—	3.6	4.5	mΩ	I <sub>D</sub> = -20 A, V <sub>GS</sub> = -10 V <sup>Note 3</sup>
	R <sub>DS (on)</sub>	—	5.3	7.7	mΩ	I <sub>D</sub> = -20 A, V <sub>GS</sub> = -4.5 V <sup>Note 3</sup>
Forward transfer admittance	y <sub>fs</sub>	36	60	—	S	I <sub>D</sub> = -20 A, V <sub>DS</sub> = -10 V <sup>Note 3</sup>
Input capacitance	C <sub>iss</sub>	—	9500	—	pF	V <sub>DS</sub> = -10 V
Output capacitance	C <sub>oss</sub>	—	1300	—	pF	V <sub>GS</sub> = 0
Reverse transfer capacitance	C <sub>rss</sub>	—	700	—	pF	f = 1 MHz
Total gate charge	Q <sub>g</sub>	—	155	—	nC	V <sub>DD</sub> = -10 V
Gate to source charge	Q <sub>gs</sub>	—	28	—	nC	V <sub>GS</sub> = -10 V
Gate to drain charge	Q <sub>gd</sub>	—	26	—	nC	I <sub>D</sub> = -40 A
Turn-on delay time	t <sub>d (on)</sub>	—	28	—	ns	V <sub>GS</sub> = -10 V, I <sub>D</sub> = -20 A,
Rise time	t <sub>r</sub>	—	60	—	ns	V <sub>DD</sub> ≅ -10 V
Turn-off delay time	t <sub>d (off)</sub>	—	305	—	ns	R <sub>L</sub> = 0.5 Ω
Fall time	t <sub>f</sub>	—	140	—	ns	R <sub>g</sub> = 4.7 Ω
Body-drain diode forward voltage	V <sub>DF</sub>	—	0.87	1.14	V	I <sub>F</sub> = -40 A, V <sub>GS</sub> = 0 <sup>Note 3</sup>
Body-drain diode reverse recovery time	t <sub>rr</sub>	—	110	—	ns	I <sub>F</sub> = -40 A, V <sub>GS</sub> = 0 di <sub>F</sub> /dt = 100 A/μs

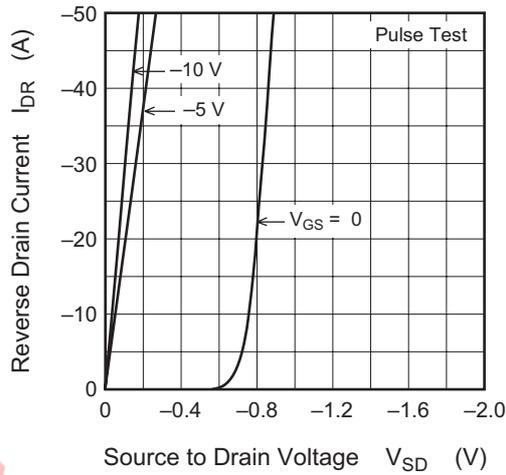
Note: 3. Pulse test

Main Characteristics

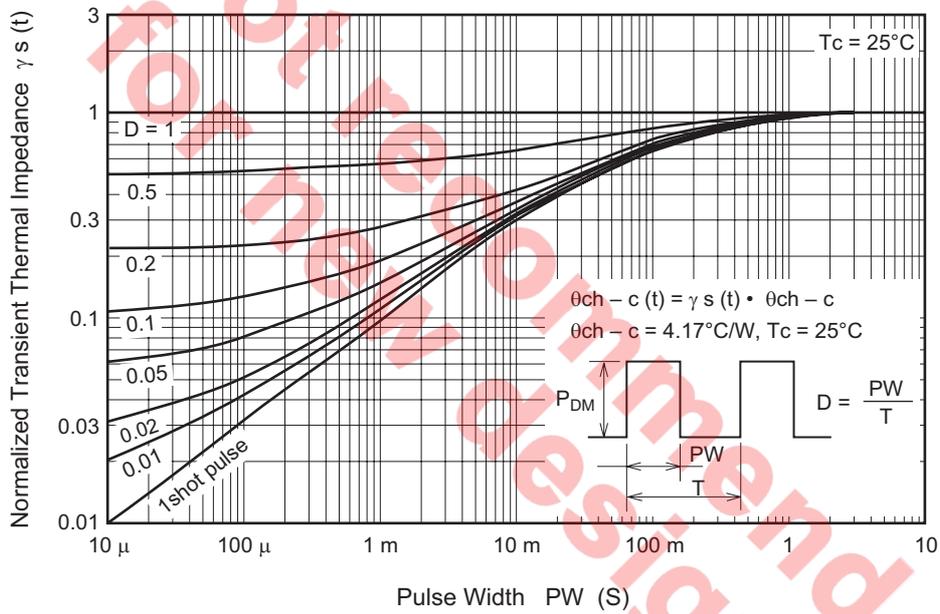




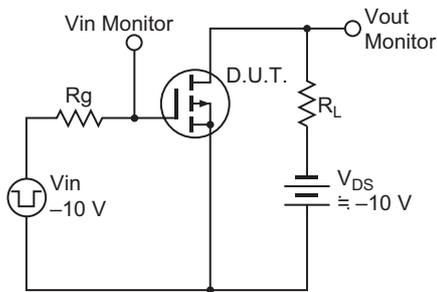
Reverse Drain Current vs. Source to Drain Voltage



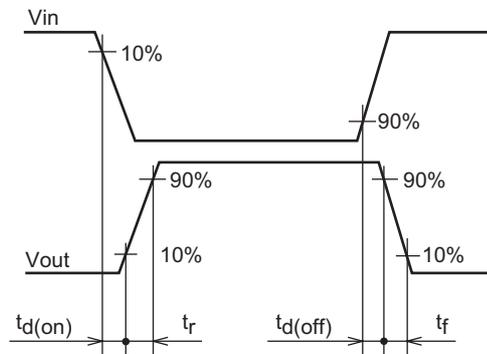
Normalized Transient Thermal Impedance vs. Pulse Width



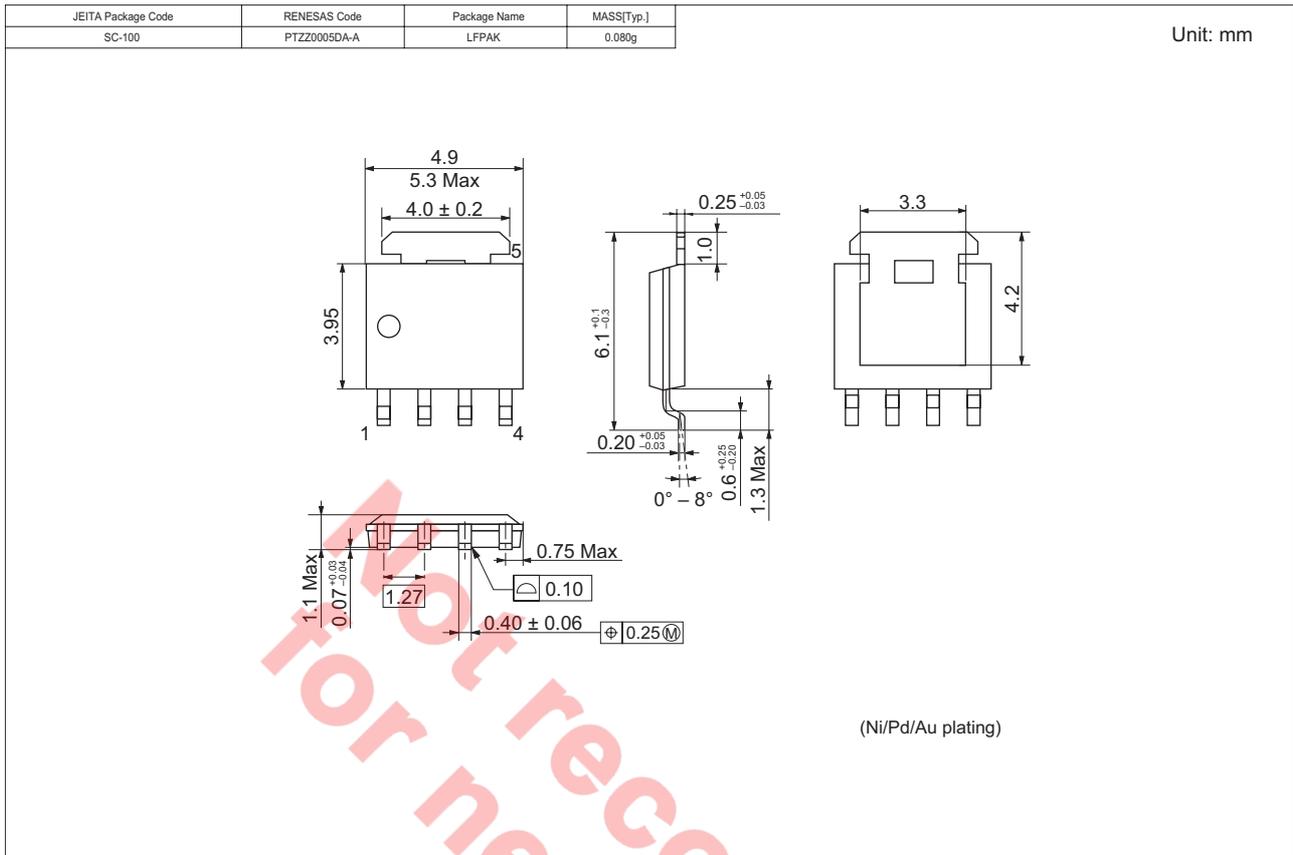
Switching Time Test Circuit



Switching Time Waveform



### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
HAT1072H-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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