

HAT2116H

Silicon N Channel Power MOS FET Power Switching

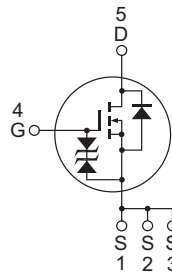
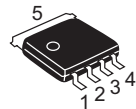
REJ03G1189-0400
(Previous: ADE-208-1575B)
Rev.4.00
Sep 07, 2005

Features

- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
 $R_{DS(on)} = 6.3 \text{ m}\Omega$ 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 _{DSS}	30	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	30	A
Drain peak current	I _{D (pulse)} ^{Note 1}	120	A
Body-drain diode reverse drain current	I _{DR}	30	A
Channel dissipation	P _{ch} ^{Note 2}	15	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. T_c = 25 °C

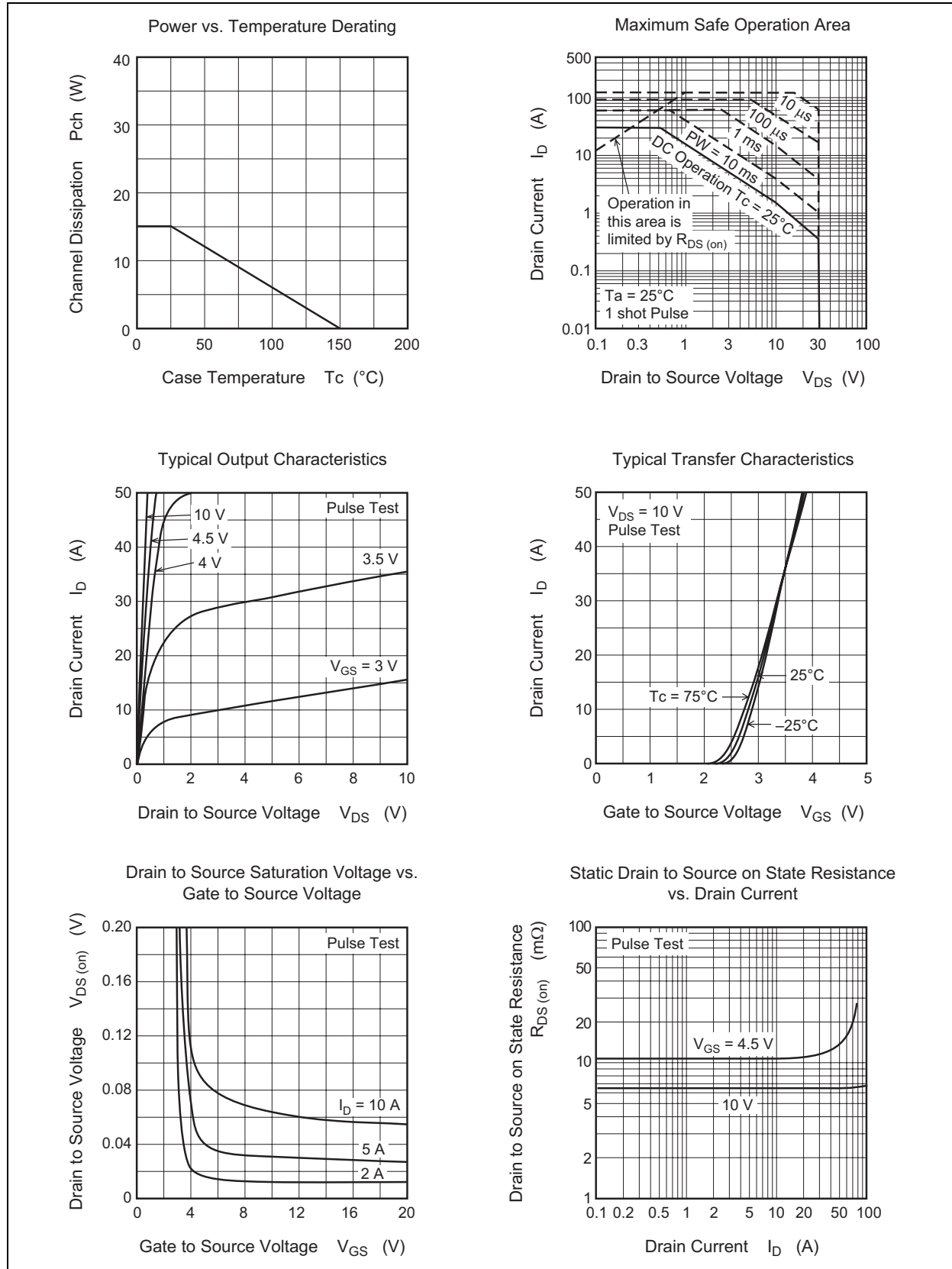
Electrical Characteristics

(Ta = 25°C)

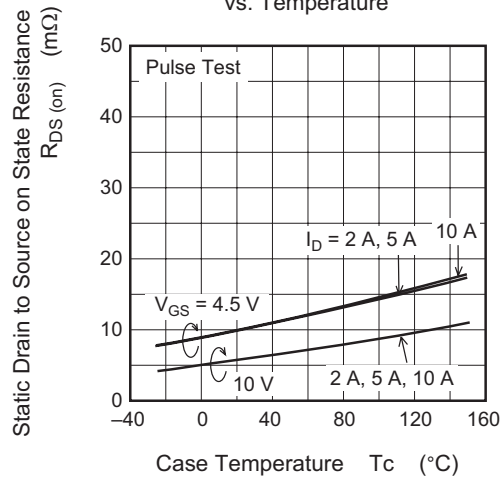
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	30	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR) GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} = 30 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	1.0	—	2.5	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DS (on)}	—	6.3	8.2	mΩ	I _D = 15 A, V _{GS} = 10 V ^{Note 3}
	R _{DS (on)}	—	10.5	15.3	mΩ	I _D = 15 A, V _{GS} = 4.5 V ^{Note 3}
Forward transfer admittance	y _{fs}	27	45	—	S	I _D = 15 A, V _{DS} = 10 V ^{Note 3}
Input capacitance	C _{iss}	—	1650	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	400	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	220	—	pF	f = 1 MHz
Total gate charge	Q _g	—	26	—	nC	V _{DD} = 10 V
Gate to source charge	Q _{gs}	—	5	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	5	—	nC	I _D = 30 A
Turn-on delay time	t _{d (on)}	—	15	—	ns	V _{GS} = 10 V, I _D = 15 A
Rise time	t _r	—	55	—	ns	V _{DD} ≅ 10 V
Turn-off delay time	t _{d (off)}	—	48	—	ns	R _L = 0.5 Ω
Fall time	t _f	—	11	—	ns	R _g = 4.7 Ω
Body-drain diode forward voltage	V _{DF}	—	0.85	1.11	V	I _F = 30 A, V _{GS} = 0 ^{Note 3}
Body-drain diode reverse recovery time	t _{rr}	—	60	—	ns	I _F = 30 A, V _{GS} = 0 di _F /dt = 50 A/μs

Note: 3. Pulse test

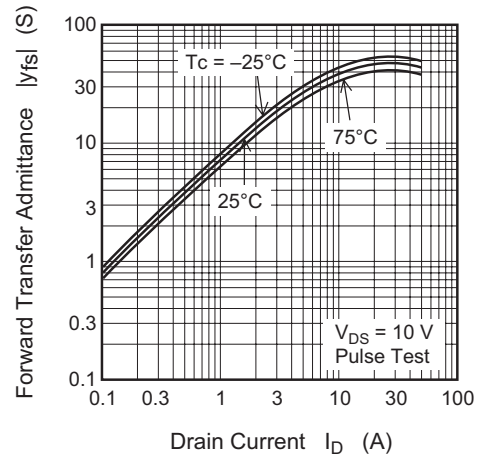
Main Characteristics



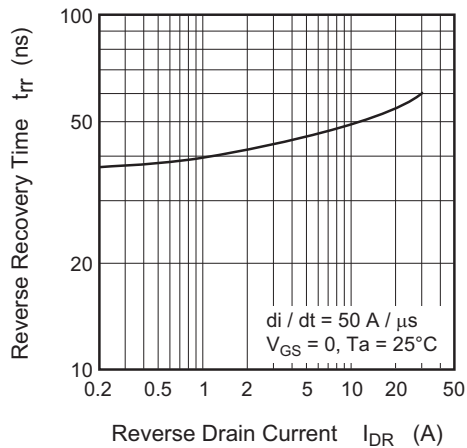
Static Drain to Source on State Resistance vs. Temperature



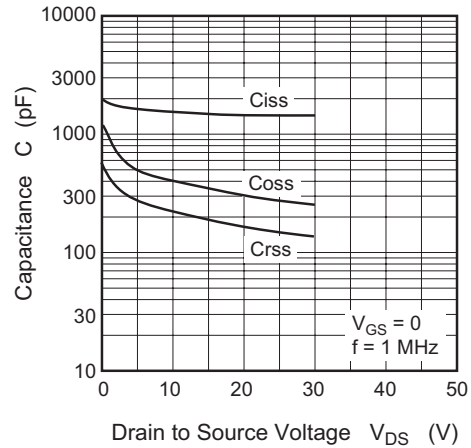
Forward Transfer Admittance vs. Drain Current



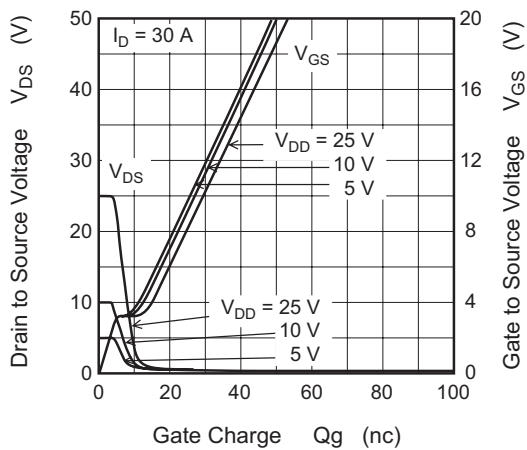
Body-Drain Diode Reverse Recovery Time



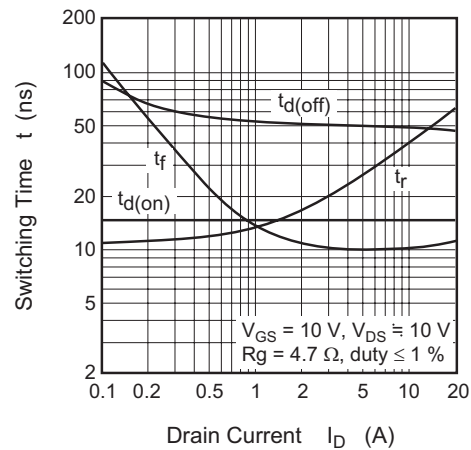
Typical Capacitance vs. Drain to Source Voltage

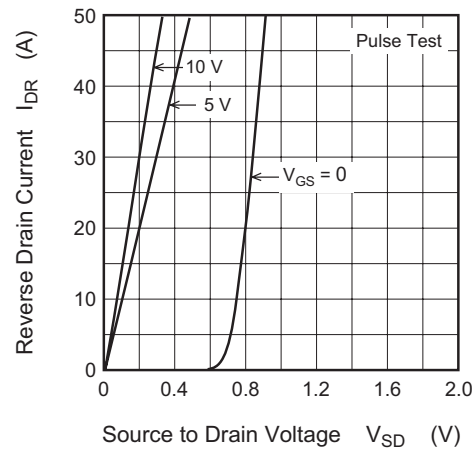


Dynamic Input Characteristics

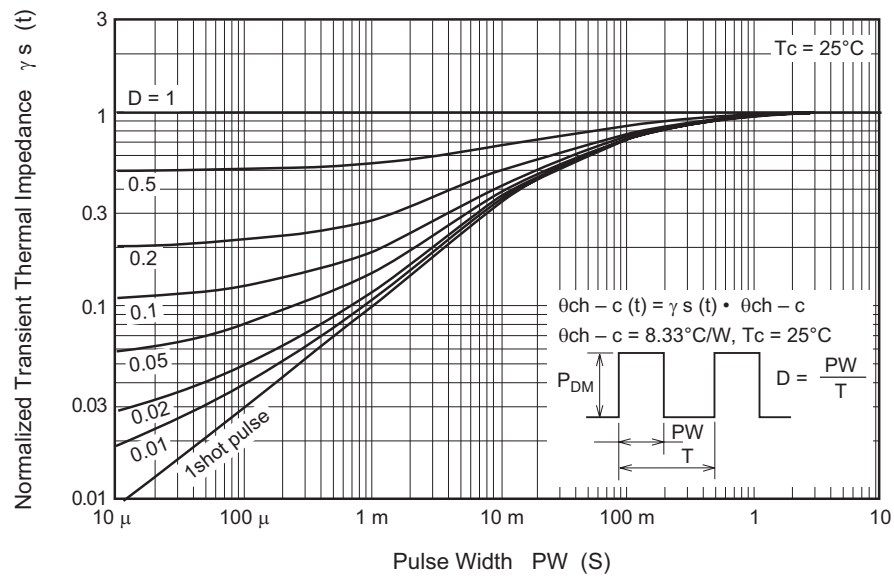


Switching Characteristics

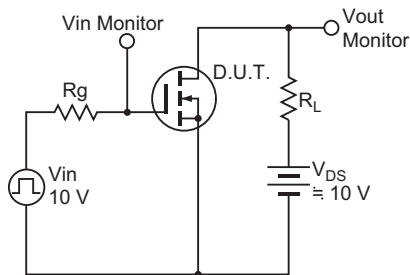


Reverse Drain Current vs.
Source to Drain Voltage

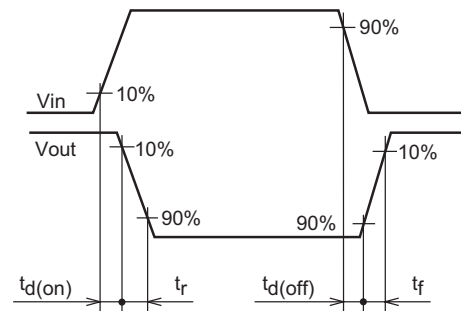
Normalized Transient Thermal Impedance vs. Pulse Width



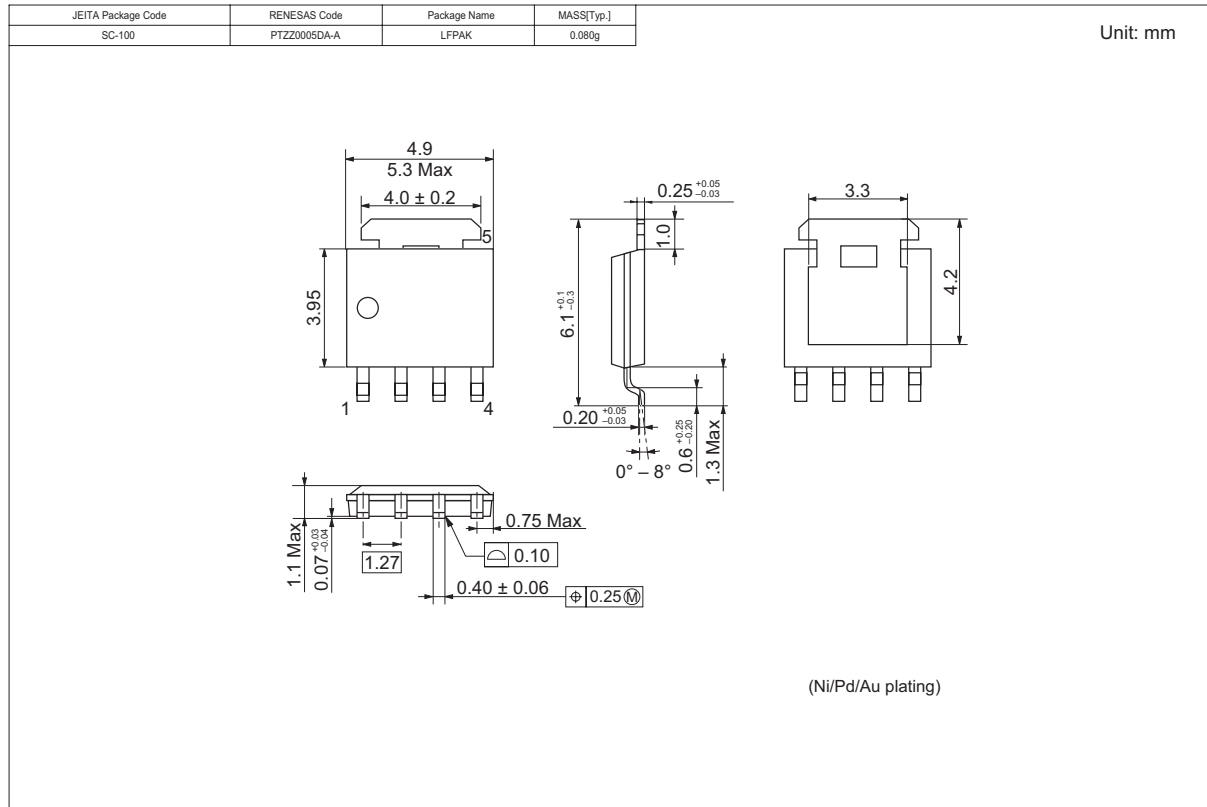
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2116H-EL-E	2500 pcs	Taping

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Renesas Technology America, Inc.

450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.

Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

Renesas Technology Korea Co., Ltd.

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

Renesas Technology Malaysia Sdn. Bhd.

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510