

HAT2093R

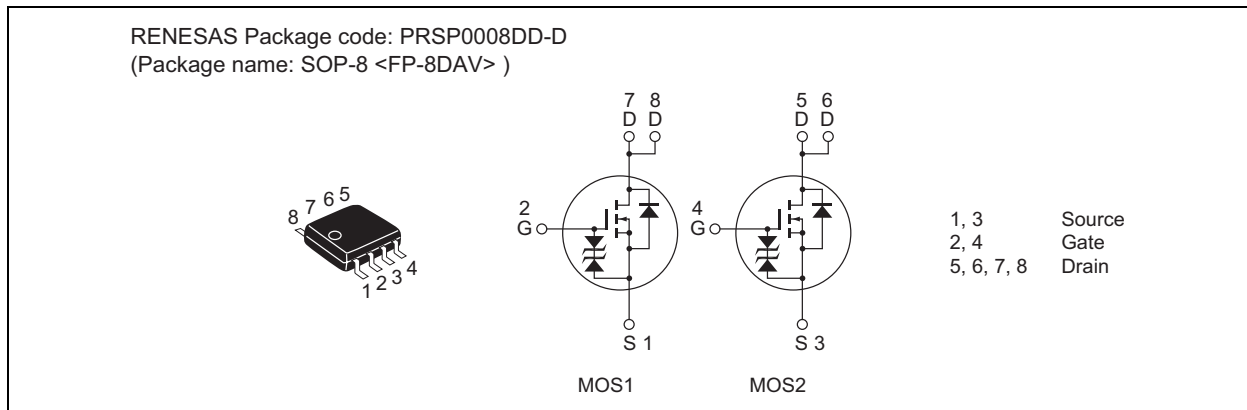
Silicon N Channel Power MOS FET
High Speed Power Switching

REJ03G1185-0300
(Previous: ADE-208-1237A)
Rev.3.00
Sep 07, 2005

Features

- Low on-resistance
- Capable of 4.5 V gate drive
- Low drive current
- High density mounting

Outline



Absolute Maximum Ratings

(T_a = 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	9	A
Drain peak current	I _{D (pulse)} ^{Note 1}	72	A
Body-drain diode reverse drain current	I _{DR}	9	A
Channel dissipation	P _{ch} ^{Note 2}	2	W
Channel dissipation	P _{ch} ^{Note 3}	3	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. 1 Drive operation: When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

3. 2 Drive operation: When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

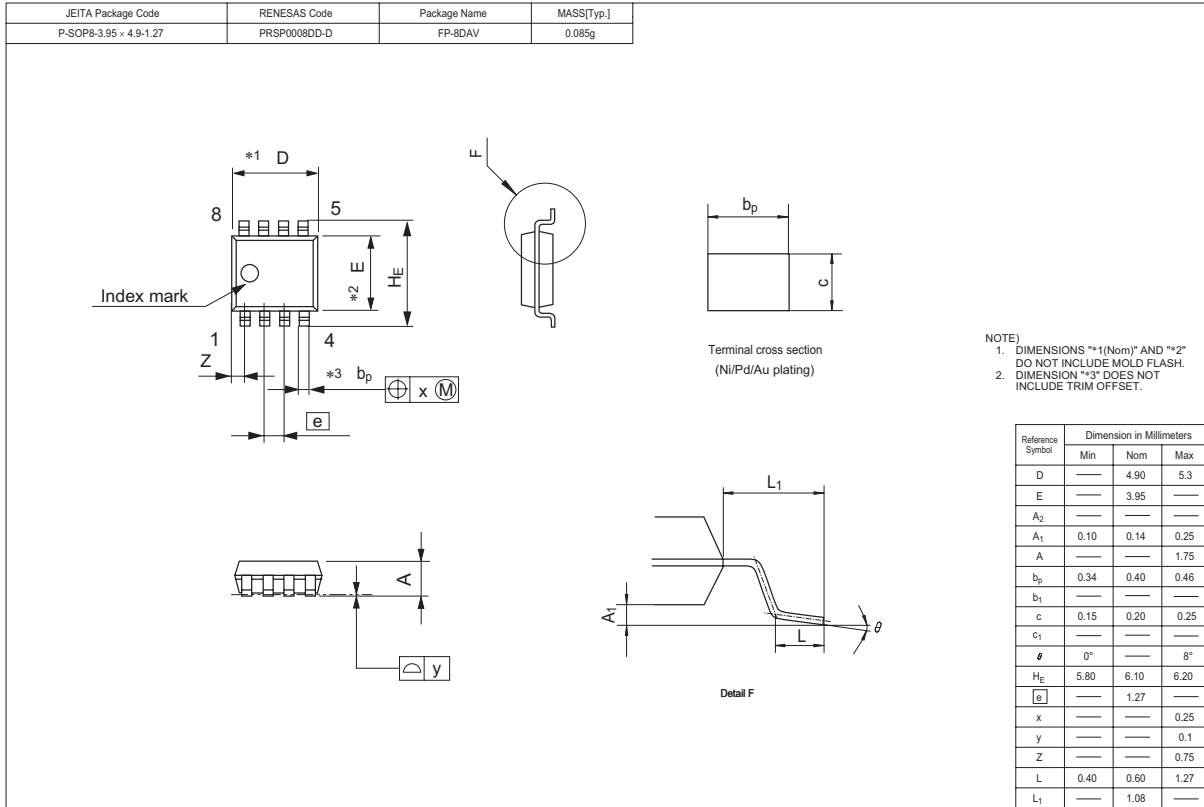
Electrical Characteristics

(T_a = 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)}	—	18	23	mΩ	I _D = 4.5 A, V _{GS} = 10 V ^{Note 4}
	R _{DS (on)}	—	27	39	mΩ	I _D = 4.5 A, V _{GS} = 4.5 V ^{Note 4}
Forward transfer admittance	y _{fs}	9	15	—	S	I _D = 4.5 A, V _{DS} = 10 V ^{Note 4}
Input capacitance	C _{iss}	—	750	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	200	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	110	—	pF	f = 1 MHz
Total gate charge	Q _g	—	12	—	nC	V _{DD} = 10 V
Gate to source charge	Q _{gs}	—	2.3	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	2.2	—	nC	I _D = 9 A
Turn-on delay time	t _{d (on)}	—	11	—	ns	V _{GS} = 10 V, I _D = 4.5 A
Rise time	t _r	—	16	—	ns	V _{DD} ≅ 10 V
Turn-off delay time	t _{d (off)}	—	40	—	ns	R _L = 2.22 Ω
Fall time	t _f	—	7	—	ns	R _g = 4.7 Ω
Body-drain diode forward voltage	V _{DF}	—	0.85	1.10	V	I _F = 9 A, V _{GS} = 0 ^{Note 4}
Body-drain diode reverse recovery time	t _{rr}	—	50	—	ns	I _F = 9 A, V _{GS} = 0 di _F /dt = 50 A/μs

Note: 4. Pulse test

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2093R-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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RENESAS Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
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RENESAS Technology (Shanghai) Co., Ltd.

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RENESAS Technology Singapore Pte. Ltd.

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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