



H7N0307LD, H7N0307LS, H7N0307LM

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1121-0700

(Previous: ADE-208-1516E)

Rev.7.00

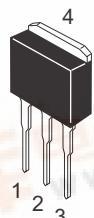
Apr 07, 2006

Features

- Low on-resistance
 $R_{DS(on)} = 4.6 \text{ m}\Omega \text{ typ.}$
- Low drive current
- 4.5 V gate drive device can be driven from 5 V source

Outline

RENESAS Package code: PRSS0004AE-A
(Package name: LDPAK (L))



H7N0307LD

RENESAS Package code: PRSS0004AE-B
(Package name: LDPAK (S)-(1))



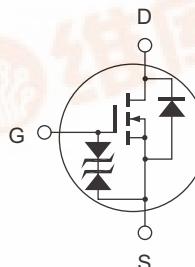
H7N0307LS

1. Gate
2. Drain
3. Source
4. Drain

RENESAS Package code: PRSS0004AE-C
(Package name: LDPAK (S)-(2))



H7N0307LM



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	60	A
Drain peak current	I _D (pulse) ^{Note 1}	240	A
Body to drain diode reverse drain current	I _{DR}	60	A
Channel dissipation	P _{ch} ^{Note 2}	90	W
Channel to case thermal impedance	θ _{ch-c}	1.39	°C/W
Channel to ambient thermal impedance	θ _{ch-a}	89	°C/W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T_c = 25°C

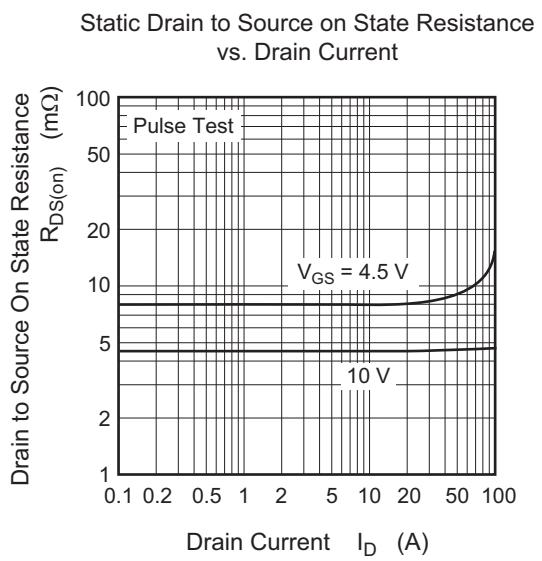
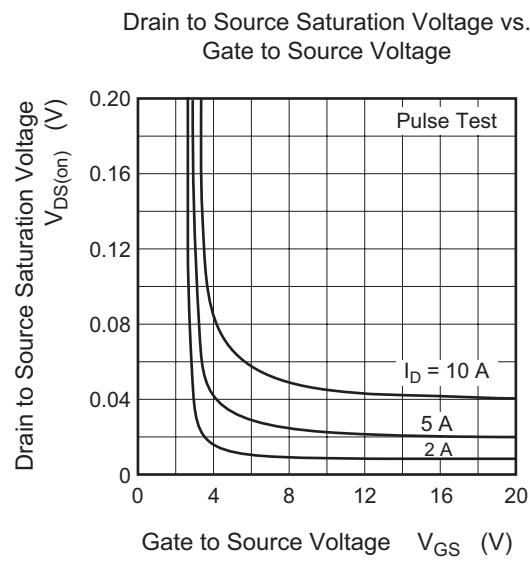
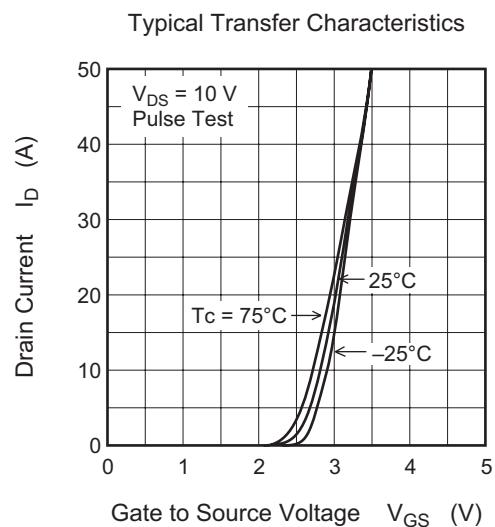
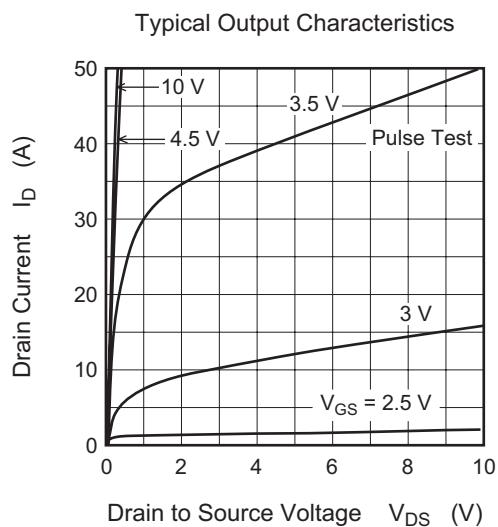
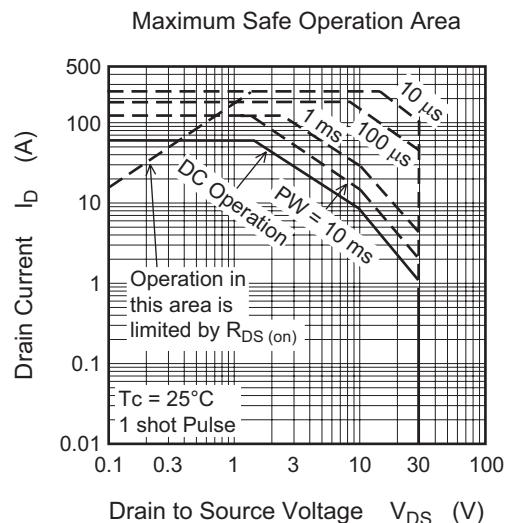
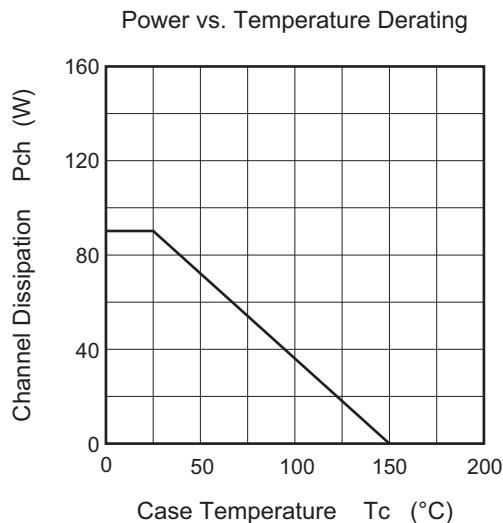
Electrical Characteristics

(Ta = 25°C)

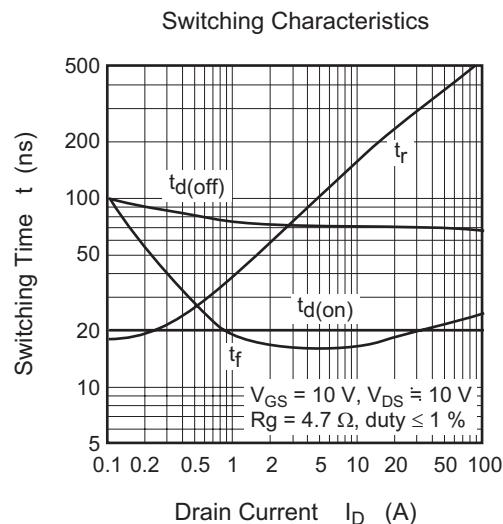
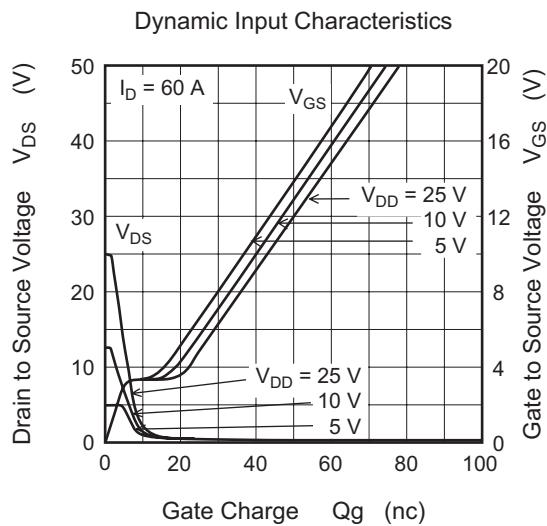
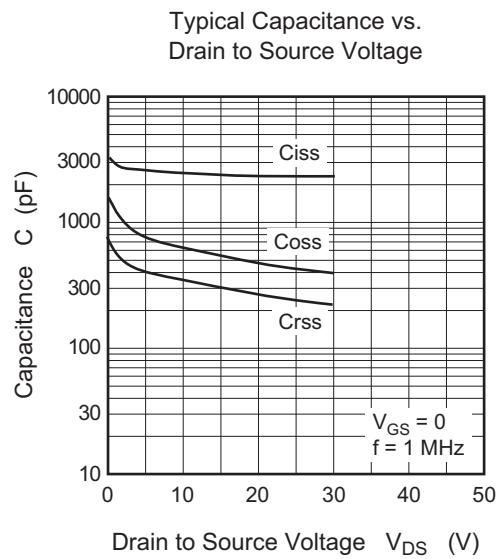
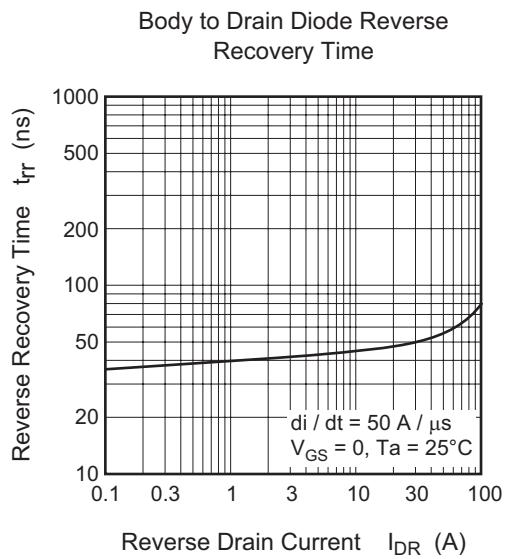
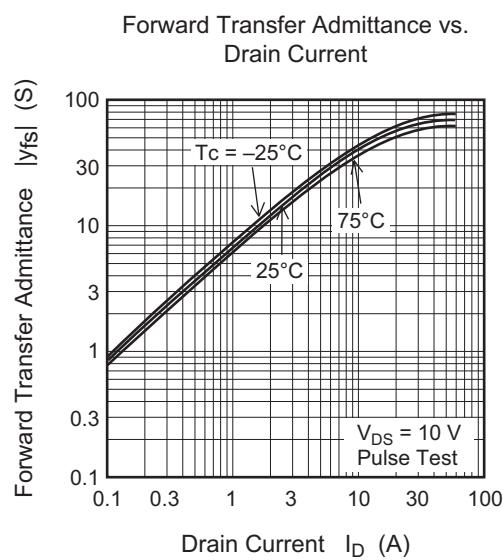
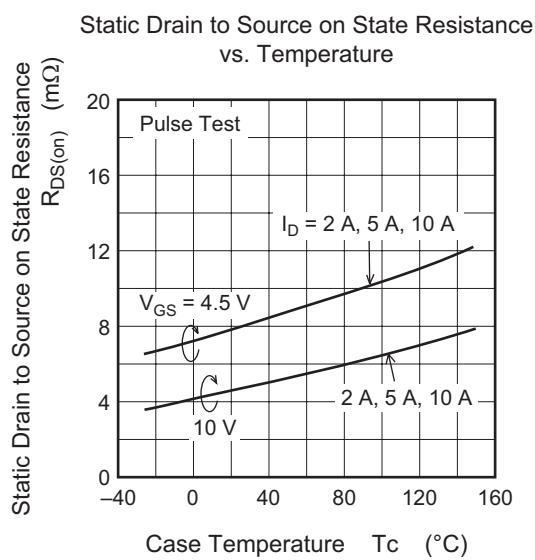
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	30	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR) GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 30 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	1.0	—	2.5	V	I _D = 1 mA, V _{DS} = 10 V ^{Note 3}
Static drain to source on state resistance	R _{DS (on)}	—	4.6	5.8	mΩ	I _D = 30 A, V _{GS} = 10 V ^{Note 3}
		—	8.0	11.5	mΩ	I _D = 30 A, V _{GS} = 4.5 V ^{Note 3}
Forward transfer admittance	y _{fs}	40	65	—	S	I _D = 30 A, V _{DS} = 10 V ^{Note 3}
Input capacitance	C _{iss}	—	2500	—	pF	V _{DS} = 10 V V _{GS} = 0 f = 1 MHz
Output capacitance	C _{oss}	—	650	—	pF	
Reverse transfer capacitance	C _{rss}	—	350	—	pF	
Total gate charge	Q _g	—	40	—	nC	V _{DD} = 10 V V _{GS} = 10 V I _D = 60 A
Gate to source charge	Q _{gs}	—	7	—	nC	
Gate to drain charge	Q _{gd}	—	8	—	nC	
Turn-on delay time	t _{d (on)}	—	20	—	ns	V _{GS} = 10 V, I _D = 30 A R _L = 0.33 Ω R _g = 4.7 Ω
Rise time	t _r	—	300	—	ns	
Turn-off delay time	t _{d (off)}	—	70	—	ns	
Fall time	t _f	—	20	—	ns	
Body to drain diode forward voltage	V _{DF}	—	0.92	—	V	I _F = 60 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	60	—	ns	I _F = 60 A, V _{GS} = 0 di _F /dt = 50 A/μs

Note: 3. Pulse test

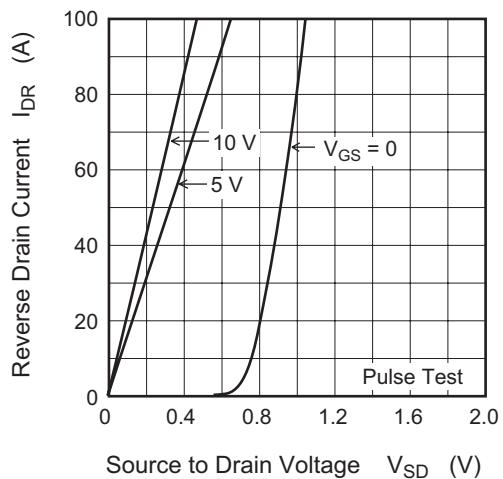
Main Characteristics



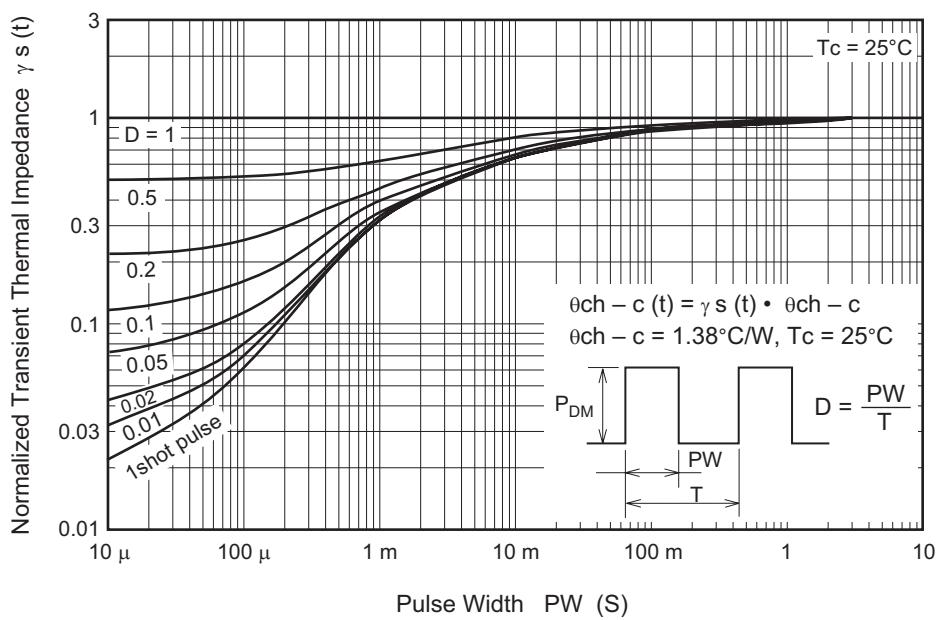
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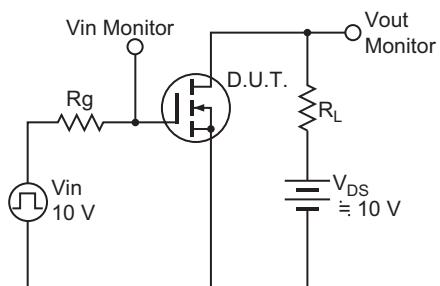
Reverse Drain Current vs.
Source to Drain Voltage



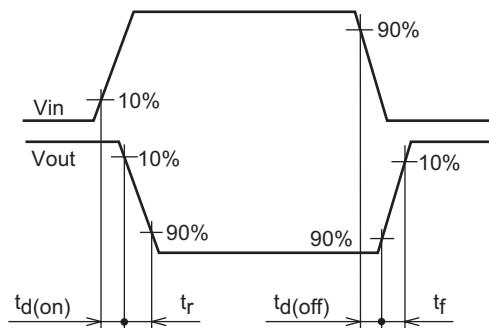
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Switching Time Waveform



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Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
LDPAK(L)	—	PRSS0004AE-A	LDPAK(L) / LDPAK(L)V	1.40g	

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
LDPAK(S)-(1)	SC-83	PRSS0004AE-B	LDPAK(S)-(1) / LDPAK(S)-(1)V	1.30g	

H7N0307LD, H7N0307LS, H7N0307LM

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
LDPAK(S)-(2)	—	PRSS0004AE-C	LDPAK(S)-(2)/LDPAK(S)-(2)V	1.35g	

Ordering Information

Part Name	Quantity	Shipping Container
H7N0307LD-E	500 pcs	Box (Conductive Sack)
H7N0307LSTL-E	1000 pcs	Taping
H7N0307LMTL-E	1000 pcs	Taping

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