

# H5N2501LD, H5N2501LS, H5N2501LM

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1250-0200

Rev.2.00

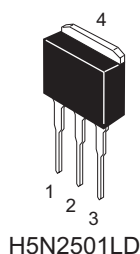
Jul.21,2005

## Features

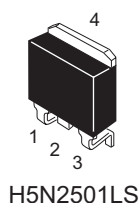
- Low on-resistance
- Low leakage current
- High speed switching

## Outline

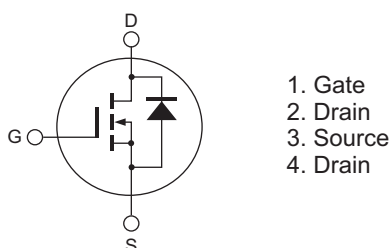
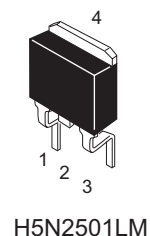
RENESAS Package code: PRSS0004AE-A  
(Package name LPAK(L))



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



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



## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to Source voltage	$V_{DSS}$	250	V
Gate to Source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	18	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	72	A
Body-Drain diode reverse Drain current	$I_{DR}$	18	A
Avalanche current	$I_{AP}$ <sup>Note3</sup>	18	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	75	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

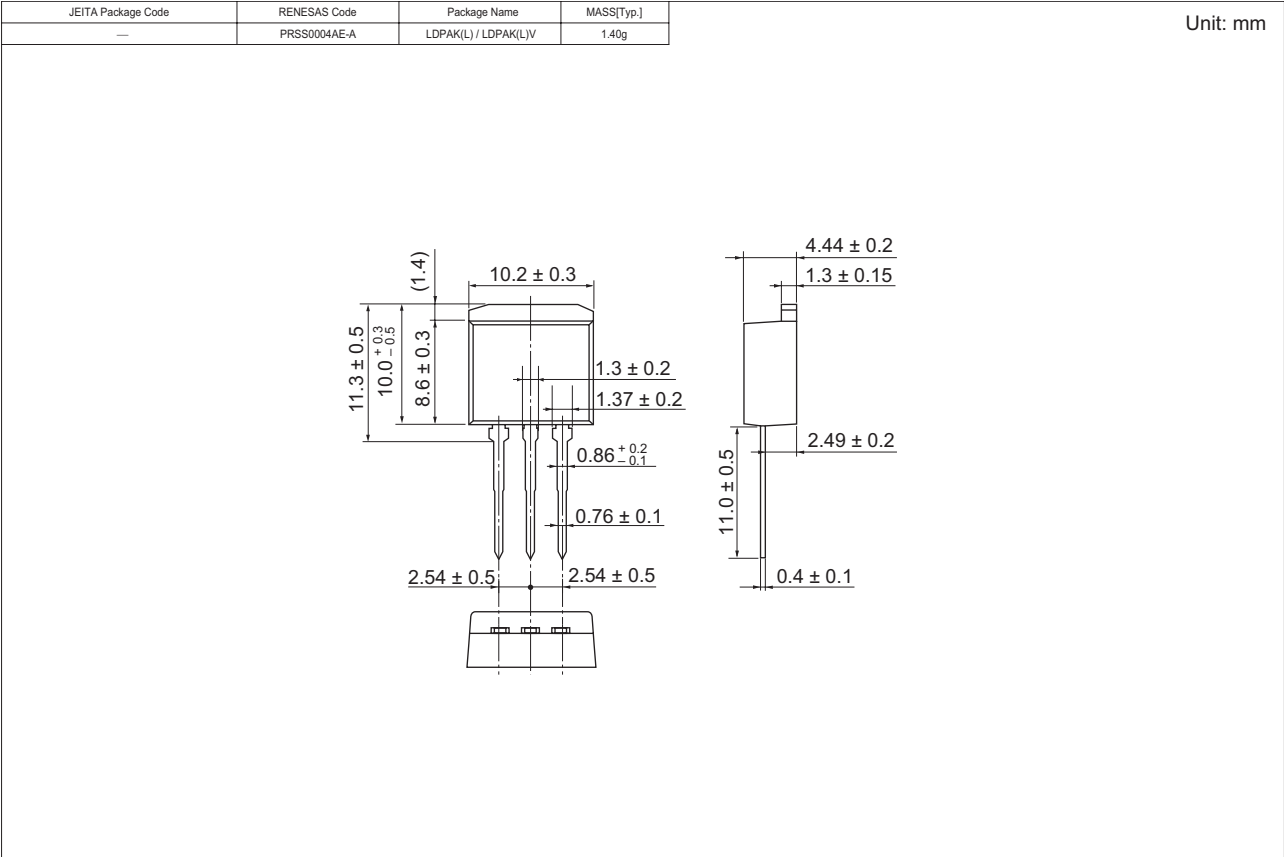
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero Gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 250 \text{ V}$ , $V_{GS} = 0$
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	—	4.5	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	8	14	—	S	$I_D = 9 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note4</sup>
Static Drain to Source on state resistance	$R_{DS(on)}$	—	0.14	0.18	$\Omega$	$I_D = 9 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	1350	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	170	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	50	—	pF	
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$I_D = 9 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 13.9 \Omega$ $R_g = 10 \Omega$
Rise time	$t_r$	—	65	—	ns	
Turn-off delay time	$t_{d(off)}$	—	95	—	ns	
Fall time	$t_f$	—	18	—	ns	
Total Gate charge	$Q_g$	—	45	—	nC	$V_{DD} = 200 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 18 \text{ A}$
Gate to Source charge	$Q_{gs}$	—	8	—	nC	
Gate to Drain charge	$Q_{gd}$	—	22	—	nC	
Body-Drain diode forward voltage	$V_{DF}$	—	0.9	1.4	V	$I_F = 18 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-Drain diode reverse recovery time	$t_{rr}$	—	160	—	ns	$I_F = 18 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$
Body-Drain diode reverse recovery charge	$Q_{rr}$	—	1.0	—	$\mu\text{C}$	

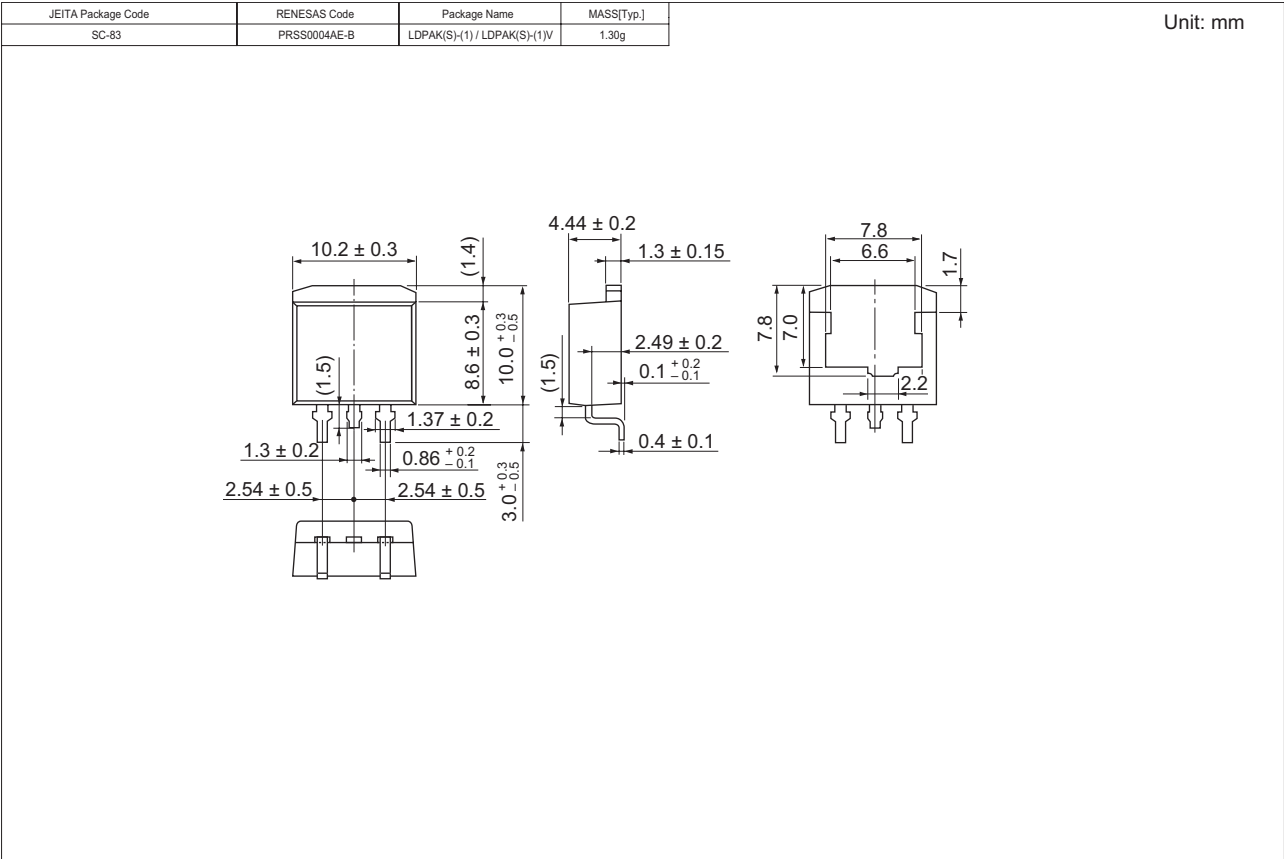
Notes: 4. Pulse test

Package Dimensions

• H5N2501LD



• H5N2501LS



• H5N2501LM

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

The mechanical drawing shows three views of the H5N2501LM package:

- Top View:** Dimensions include 10.2 ± 0.3, 1.4, 8.6 ± 0.3, 10.0 ± 0.3, 1.37 ± 0.2, 1.3 ± 0.2, 0.86 ± 0.1, 2.54 ± 0.5, and 5.0 ± 0.3.
- Side View:** Dimensions include 4.44 ± 0.2, 1.3 ± 0.15, 2.49 ± 0.2, 0.1 ± 0.1, 0.4 ± 0.1, and 2.3.
- Bottom View:** Dimensions include 7.8, 6.6, 7.0, 1.7, and 2.2.

Ordering Information

Part Name	Quantity	Shipping Container
H5N2501LSTL-E	1000 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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