

# H5N3005LD, H5N3005LS, H5N3005LM

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1315-0400

Rev.4.00

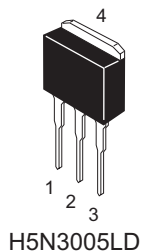
Nov 08, 2005

## Features

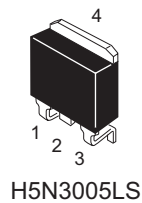
- Low on-resistance
- Low leakage current
- High speed switching

## Outline

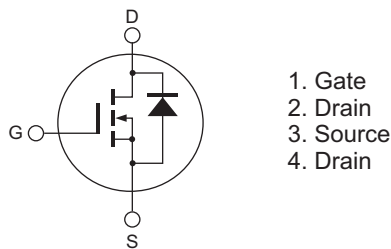
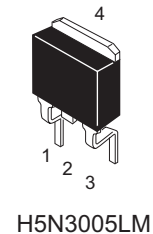
RENESAS Package code: PRSS0004AE-A  
(Package name LPAK(L))



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	$V_{DSS}$	300	V
Gate to source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	15	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	60	A
Body-drain diode reverse drain current	$I_{DR}$	15	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ <sup>Note1</sup>	60	A
Avalanche current	$I_{AP}$ <sup>Note3</sup>	15	A
Avalanche energy	$E_{AR}$ <sup>Note3</sup>	13.5	mJ
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	75	W
Channel to case thermal impedance	$\theta_{ch-c}$	1.67	°C/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

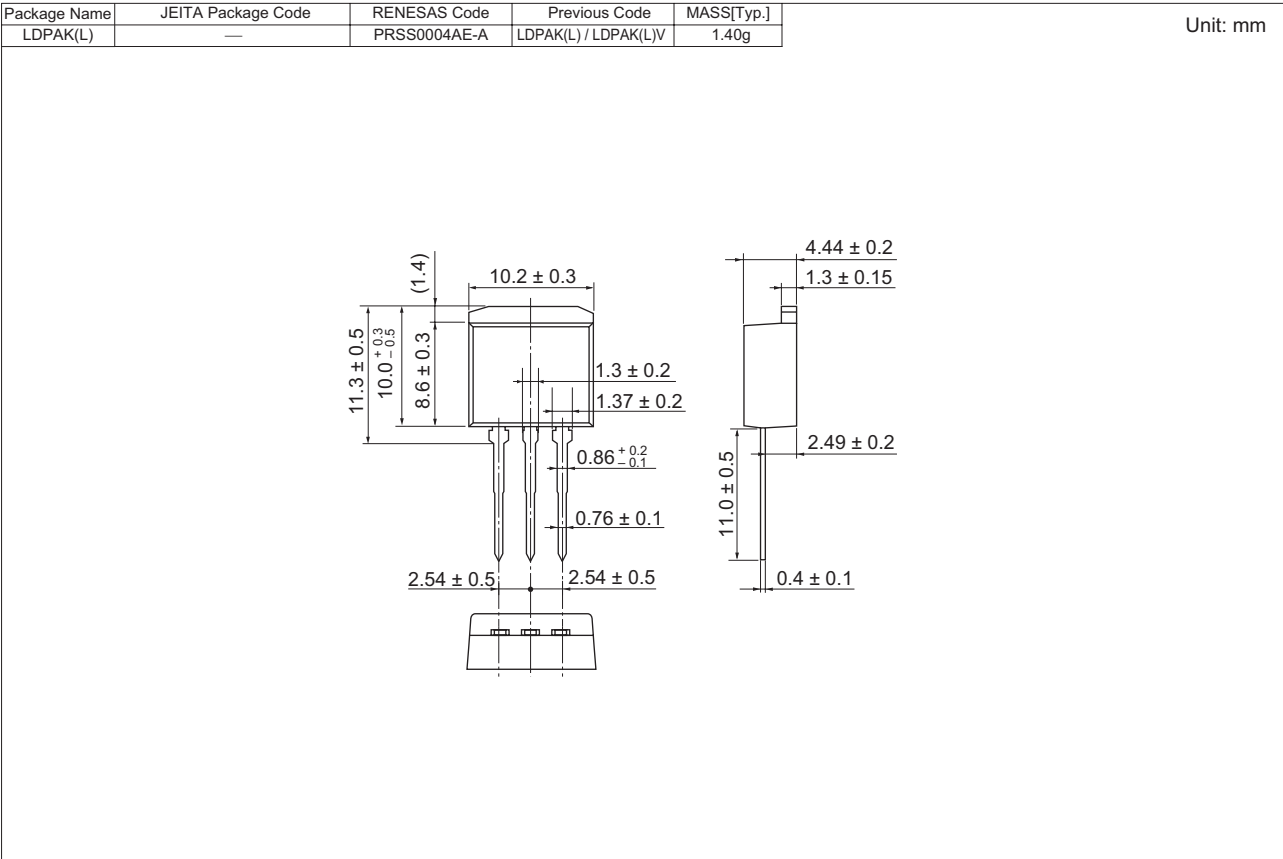
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	300	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu A$	$V_{DS} = 300 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu A$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
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} $	7	12	—	S	$I_D = 7.5 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note4</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	0.210	0.255	$\Omega$	$I_D = 7.5 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	1300	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	155	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	50	—	pF	
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$I_D = 7.5 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 20 \Omega$ $R_g = 10 \Omega$
Rise time	$t_r$	—	30	—	ns	
Turn-off delay time	$t_{d(off)}$	—	90	—	ns	
Fall time	$t_f$	—	15	—	ns	
Total gate charge	$Q_g$	—	49	—	nC	$V_{DD} = 240 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 15 \text{ A}$
Gate to source charge	$Q_{gs}$	—	8	—	nC	
Gate to drain charge	$Q_{gd}$	—	25	—	nC	
Body-drain diode forward voltage	$V_{DF}$	—	0.86	1.30	V	$I_F = 15 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	190	—	ns	$I_F = 15 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu s$
Body-drain diode reverse recovery charge	$Q_{rr}$	—	1.3	—	$\mu C$	

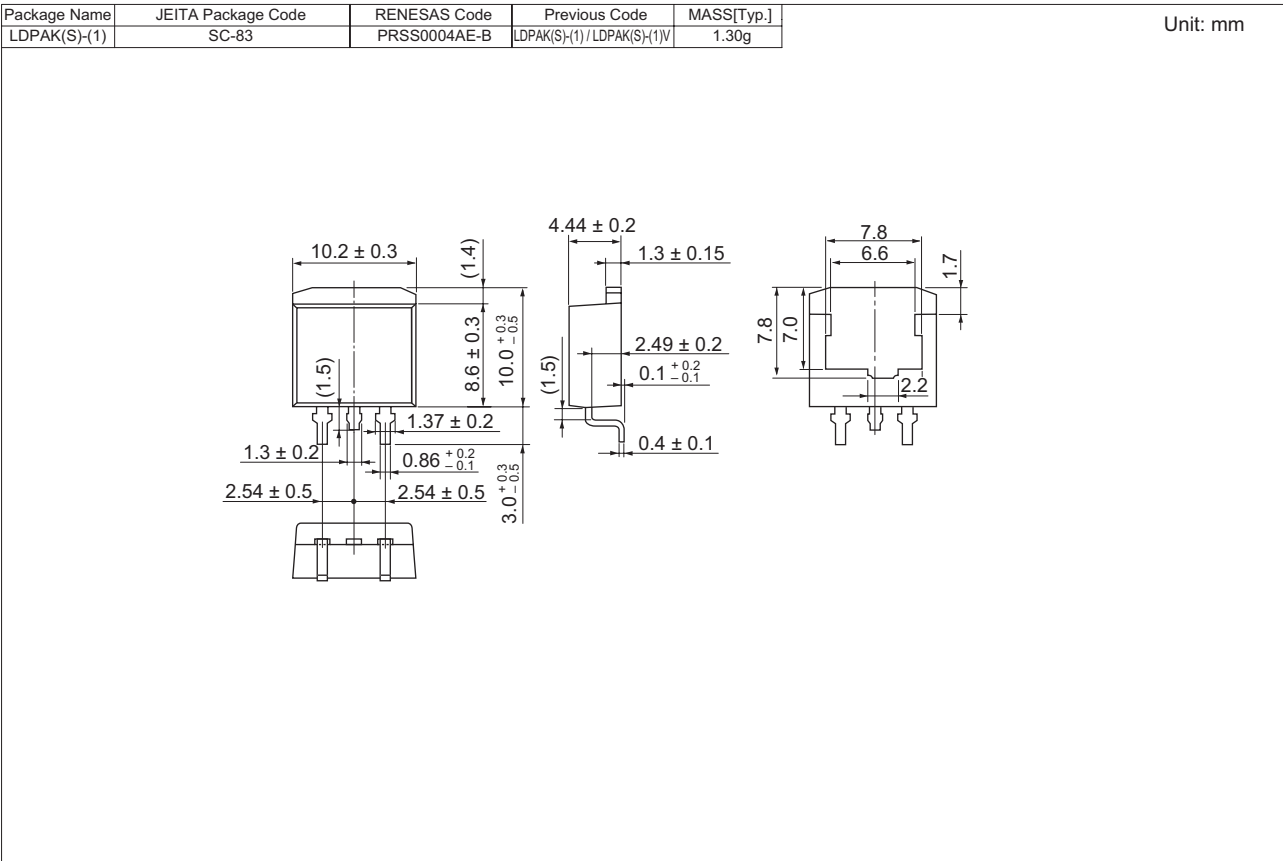
Notes: 4. Pulse test

# Package Dimensions

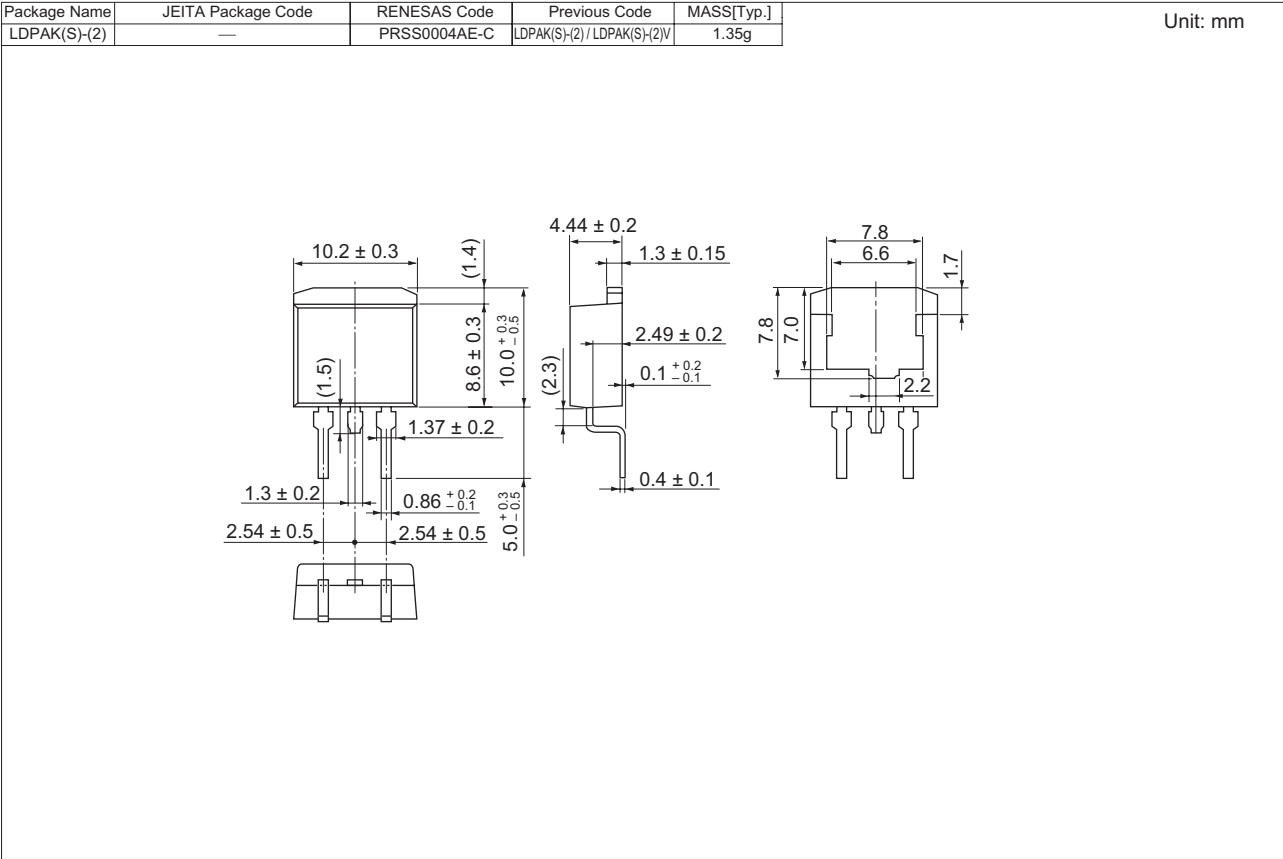
## • H5N3005LD



## • H5N3005LS



• H5N3005LM



Ordering Information

Part Name	Quantity	Shipping Container
H5N3005LSTL-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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