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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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H5N5006LD, H5N5006LS, H5N5006LM

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1115-0100
(Previous: ADE-208-1549)
Rev.1.00
Apr 07, 2006

Features

- Low on-resistance
- Low leakage current
- High speed switching
- Low gate charge
- Avalanche ratings

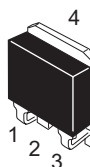
Outline

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



H5N5006LD

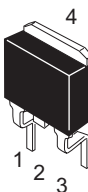
RENESAS Package code: PRSS0004AE-B
(Package name: LDKPAK (S)-(1))



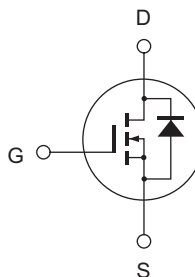
H5N5006LS

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

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



H5N5006LM



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	500	V
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	3.5	A
Drain peak current	I _{D (pulse)} ^{Note 1}	14	A
Body to drain diode reverse drain current	I _{DR}	3.5	A
Avalanche current	I _{AP} ^{Note 3}	3.5	A
Channel dissipation	P _{ch} ^{Note 2}	50	W
Channel to case Thermal Impedance	θ _{ch-c}	2.5	°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 Tc = 25°C
 3. T_{ch} ≤ 150°C

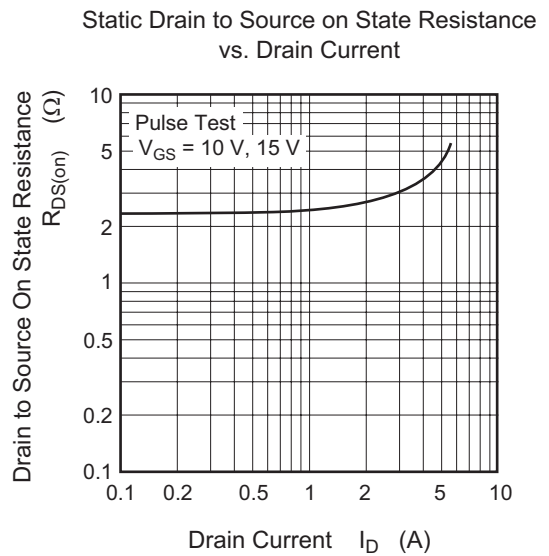
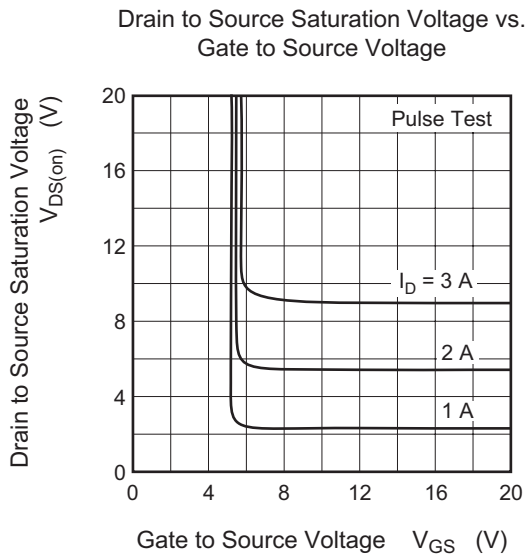
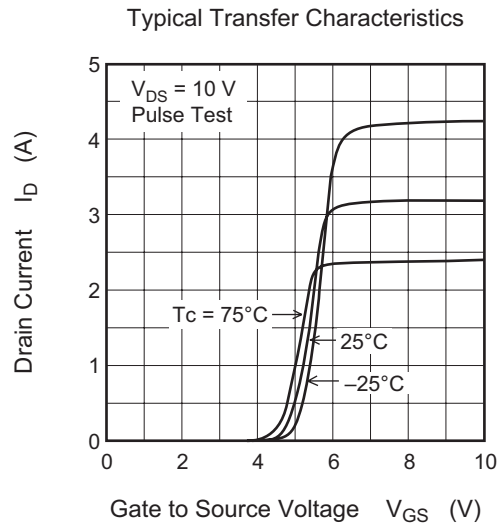
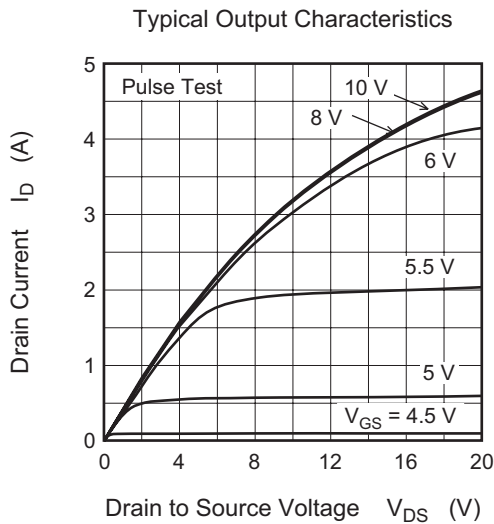
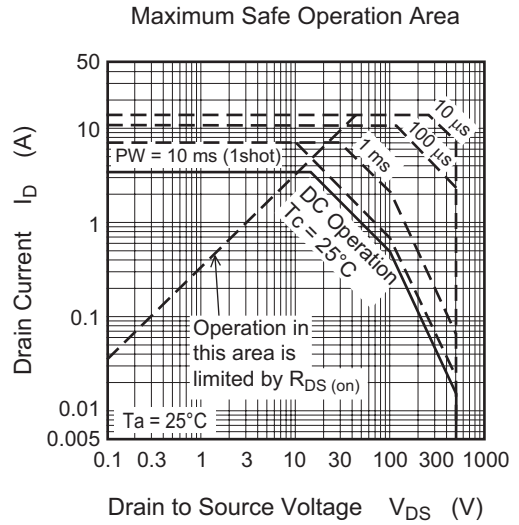
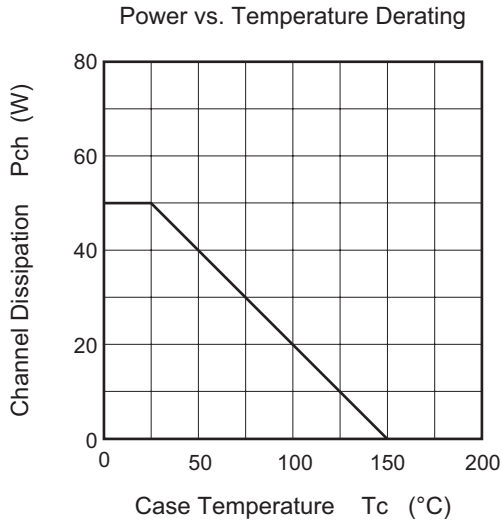
Electrical Characteristics

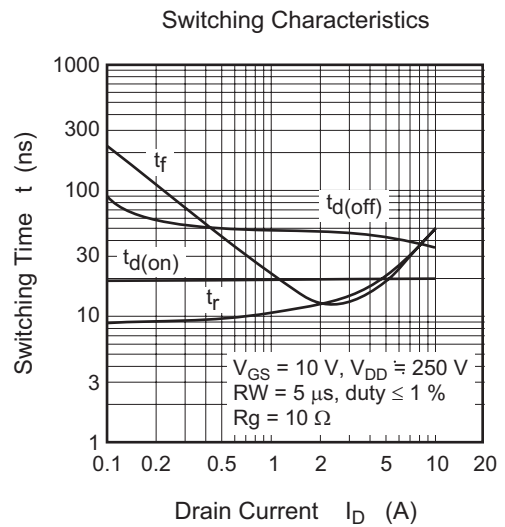
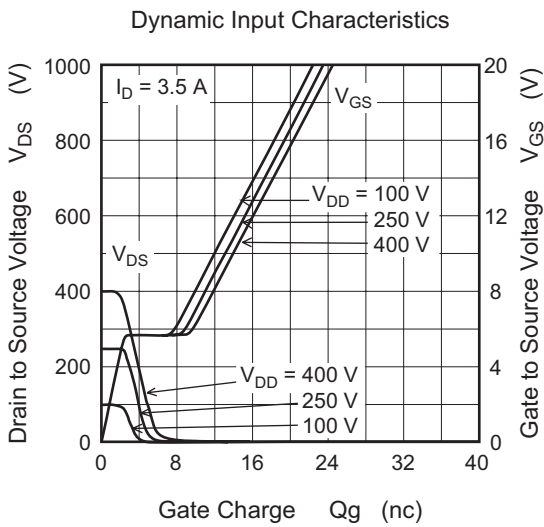
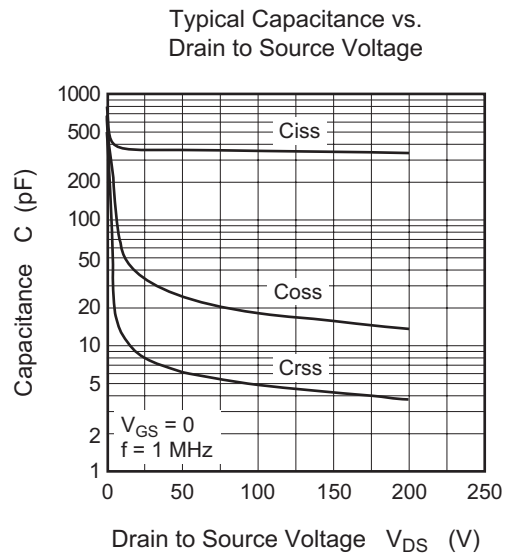
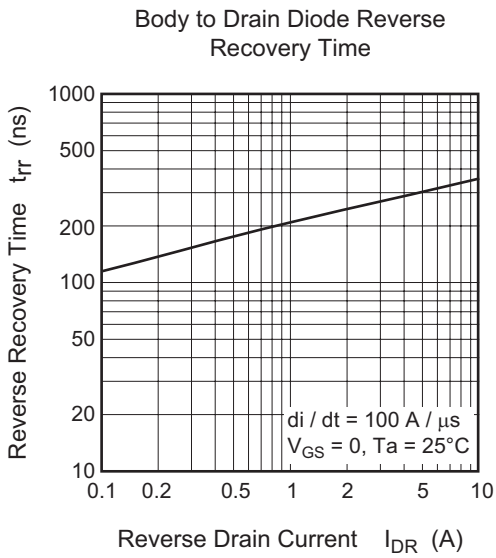
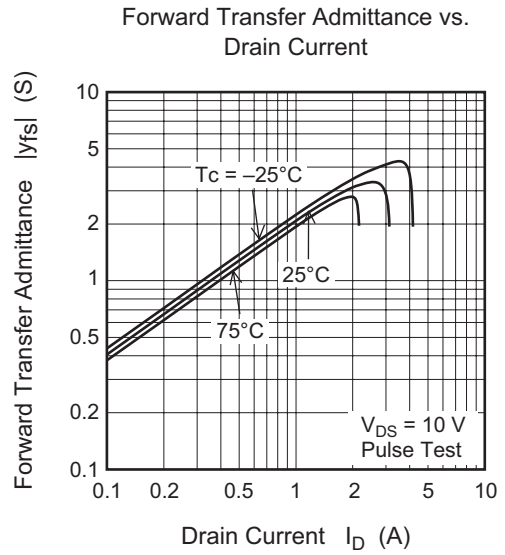
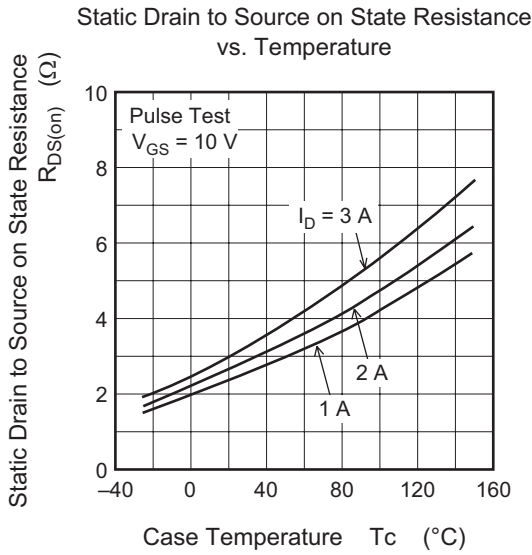
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	500	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±30 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} = 500 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	3.0	—	4.5	V	I _D = 1 mA, V _{DS} = 10 V
Static drain to source on state resistance	R _{DS (on)}	—	2.5	3.0	Ω	I _D = 1.75 A, V _{GS} = 10 V ^{Note 4}
Forward transfer admittance	y _{fs}	1.8	3.0	—	S	I _D = 1.75 A, V _{DS} = 10 V ^{Note 4}
Input capacitance	C _{iss}	—	365	—	pF	V _{DS} = 25 V V _{GS} = 0 f = 1 MHz
Output capacitance	C _{oss}	—	35	—	pF	
Reverse transfer capacitance	C _{rss}	—	8	—	pF	
Turn-on delay time	t _{d (on)}	—	20	—	ns	V _{DD} ≅ 250 V, I _D = 1.75 A R _L = 143 Ω V _{GS} = 10 V R _g = 10 Ω
Rise time	t _r	—	13	—	ns	
Turn-off delay time	t _{d (off)}	—	48	—	ns	
Fall time	t _f	—	14	—	ns	
Total gate charge	Q _g	—	14	—	nC	V _{DD} = 400 V
Gate to source charge	Q _{gs}	—	2	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	8	—	nC	I _D = 3.5 A
Body to drain diode forward voltage	V _{DF}	—	0.85	1.3	V	I _F = 3.5 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	280	—	ns	I _F = 3.5 A, V _{GS} = 0
Body to drain diode reverse recovery charge	Q _{rr}	—	0.8	—	μC	di _F /dt = 100 A/μs

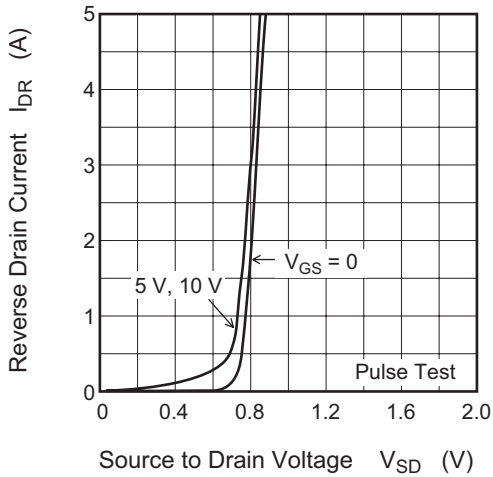
- Note: 4. Pulse test

Main Characteristics

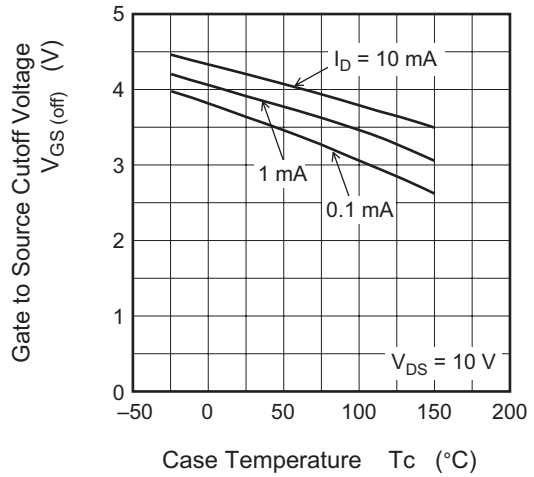




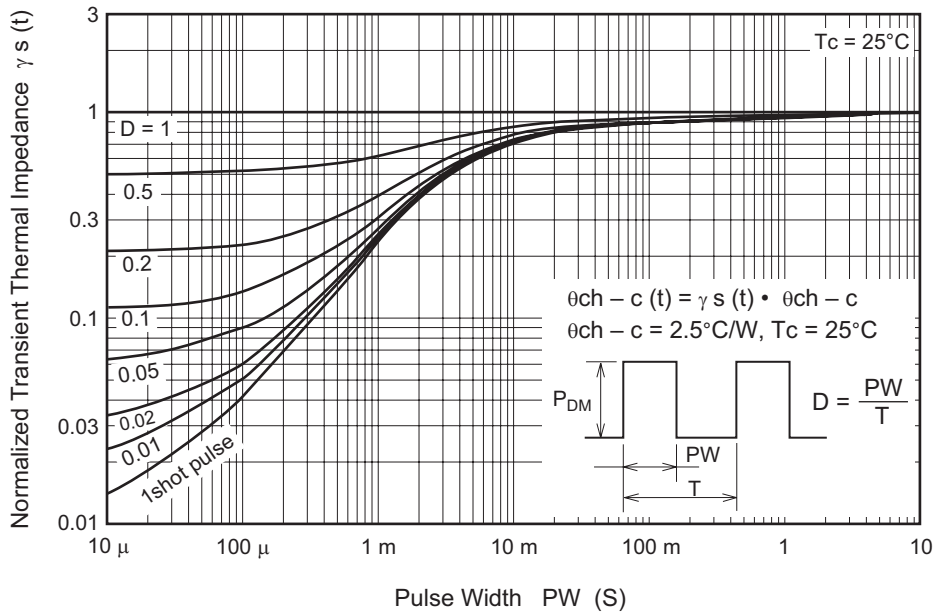
Reverse Drain Current vs. Source to Drain Voltage



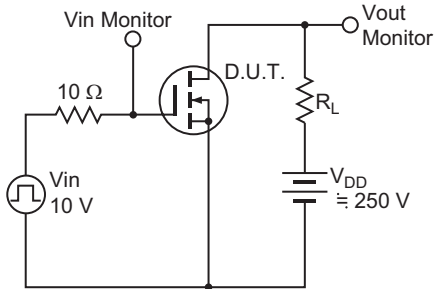
Gate to Source Cutoff Voltage vs. Case Temperature



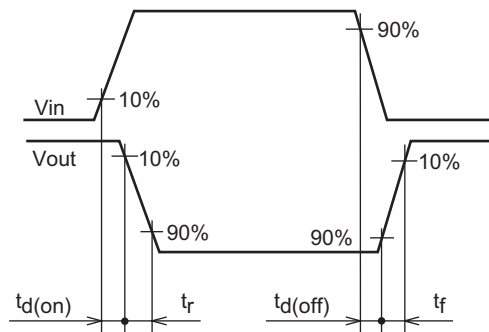
Normalized Transient Thermal Impedance vs. Pulse Width



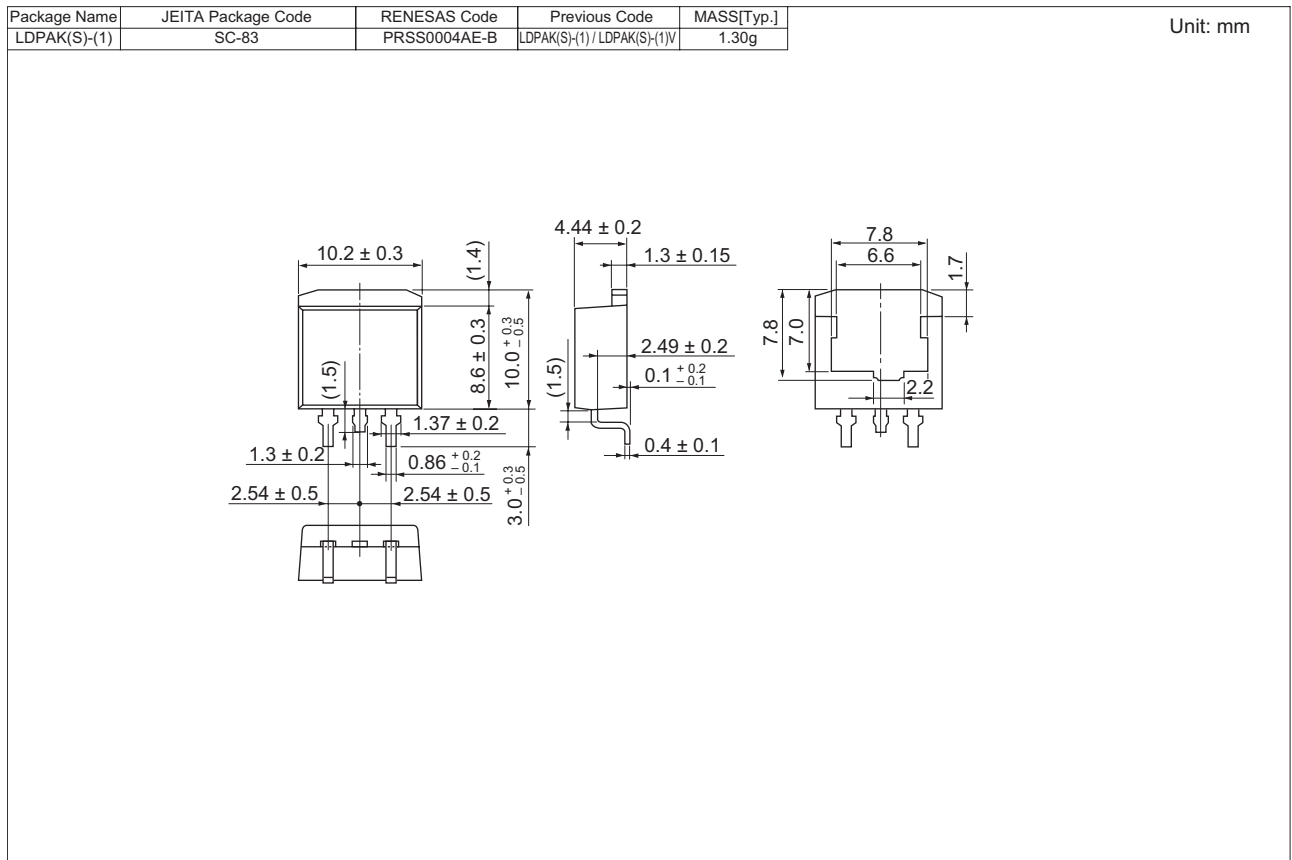
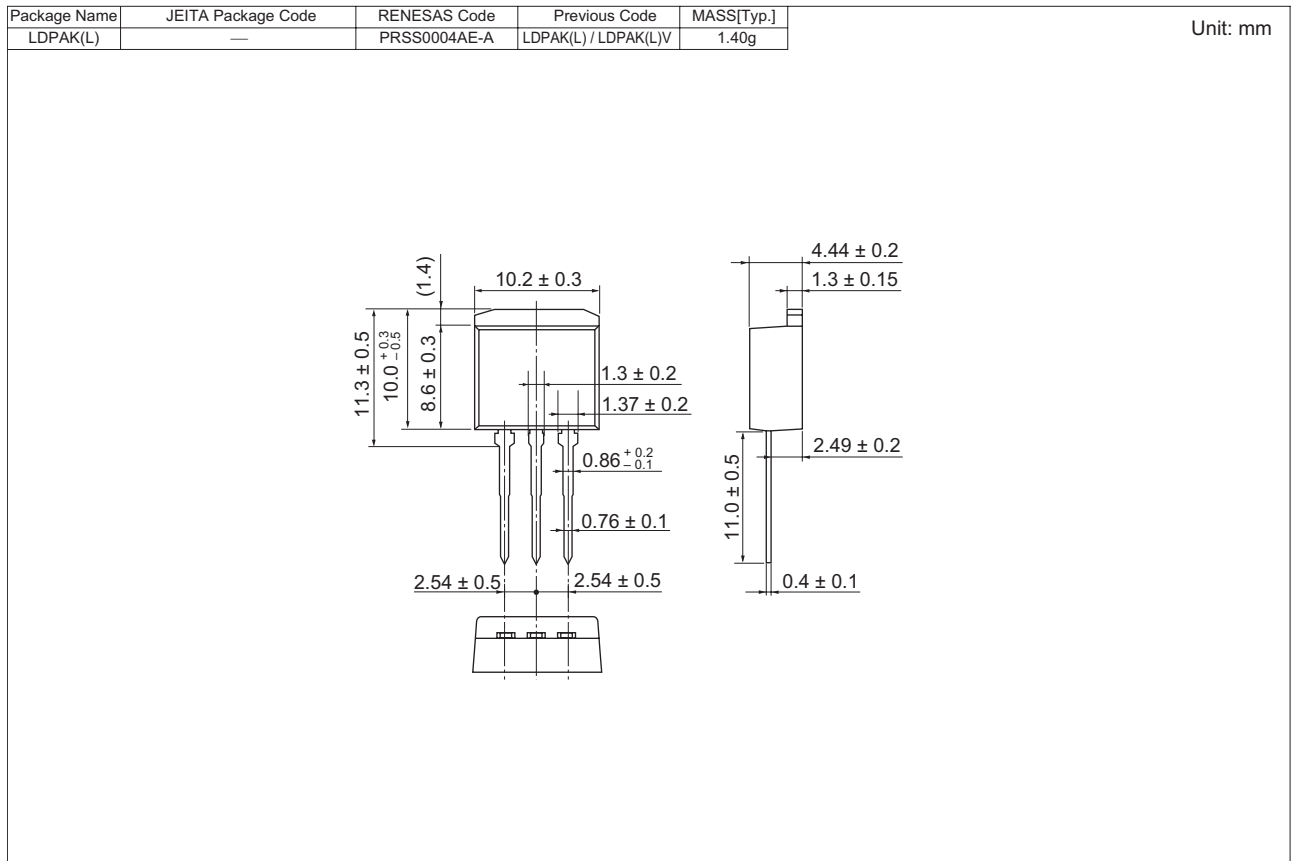
Switching Time Test Circuit



Switching Time Waveform



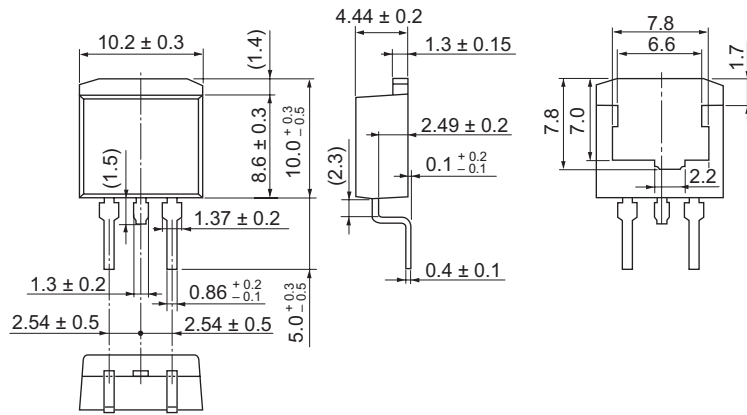
Package Dimensions



H5N5006LD, H5N5006LS, H5N5006LM

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

Unit: mm



Ordering Information

Part Name	Quantity	Shipping Container
H5N5006LD-E	500 pcs	Box (Conductive Sack)
H5N5006LSTL-E	1000 pcs	Taping
H5N5006LMTL-E	1000 pcs	Taping

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