

# H5N2505DL, H5N2505DS

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1107-0300

Rev.3.00

Oct 16, 2006

## Features

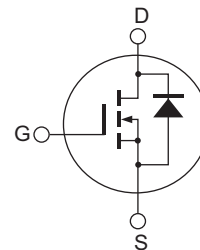
- Low on-resistance
- Low drive current
- High speed switching
- Low gate charge
- Avalanche ratings

## Outline

RENESAS Package code: PRSS0004ZD-B  
(Package name: DPAK(L)-(2) )



RENESAS Package code: PRSS0004ZD-C  
(Package name: DPAK(S) )



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

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	$V_{DSS}$	250	V
Gate to source voltage	$V_{GSS}$	$\pm 30$	V
Drain current	$I_D$	5	A
Drain peak current	$I_{D(pulse)}$ <sup>Note 1</sup>	20	A
Body-drain diode reverse drain current	$I_{DR}$	5	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ <sup>Note 1</sup>	20	A
Avalanche current	$I_{AP}$ <sup>Note 3</sup>	5	A
Channel dissipation	$P_{ch}$ <sup>Note 2</sup>	25	W
Channel to case thermal Impedance	$\theta_{ch-c}$	5	°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.  $STch = 25^\circ C$ ,  $T_{ch} \leq 150^\circ C$

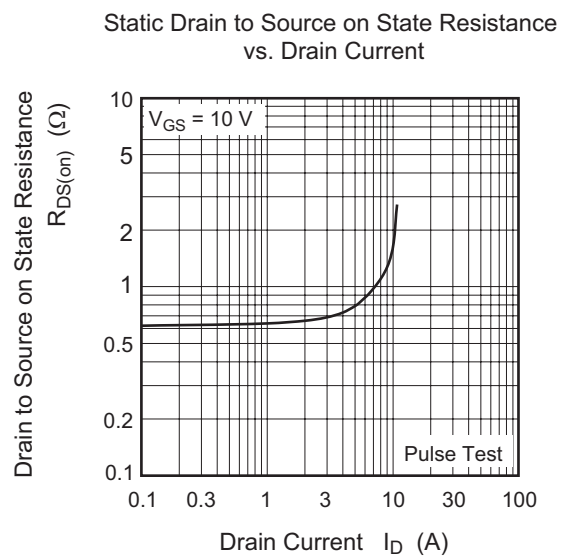
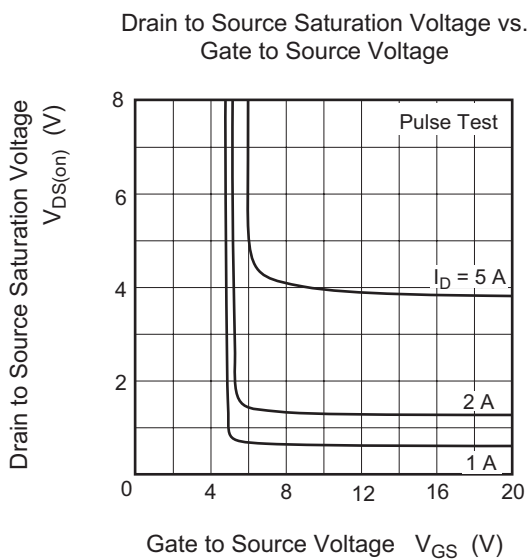
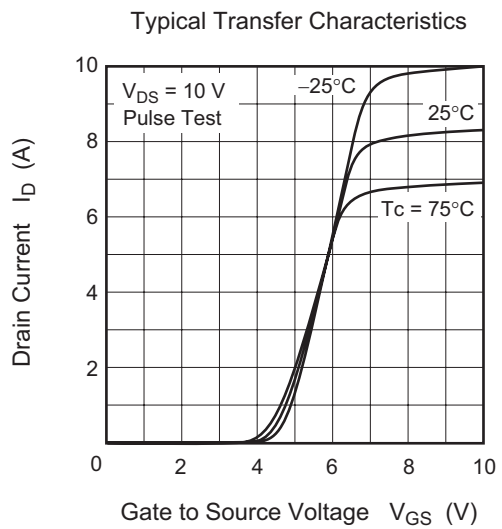
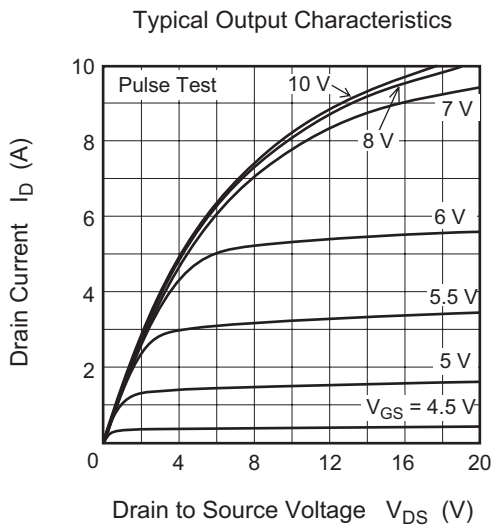
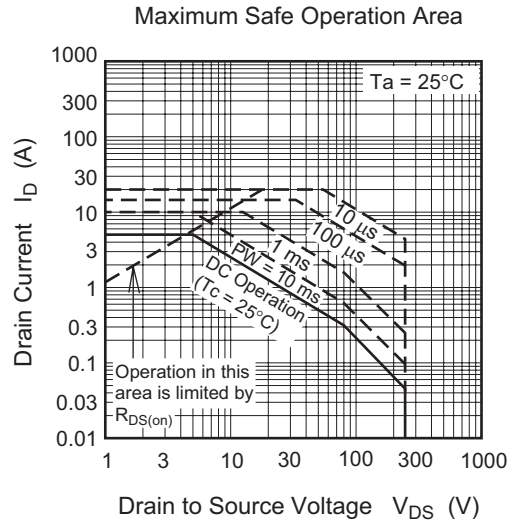
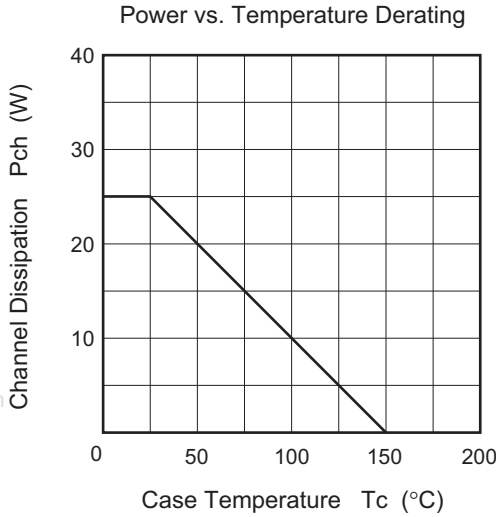
Electrical Characteristics

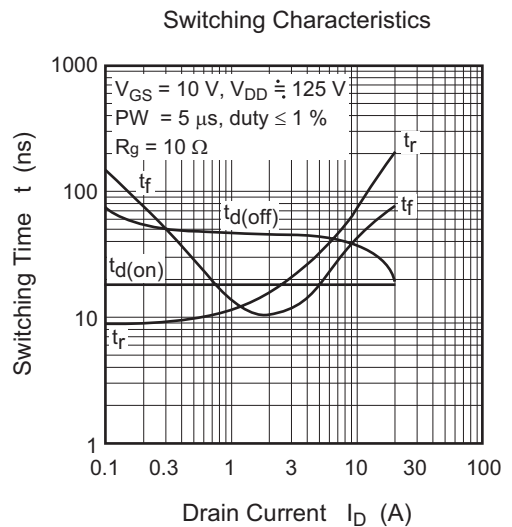
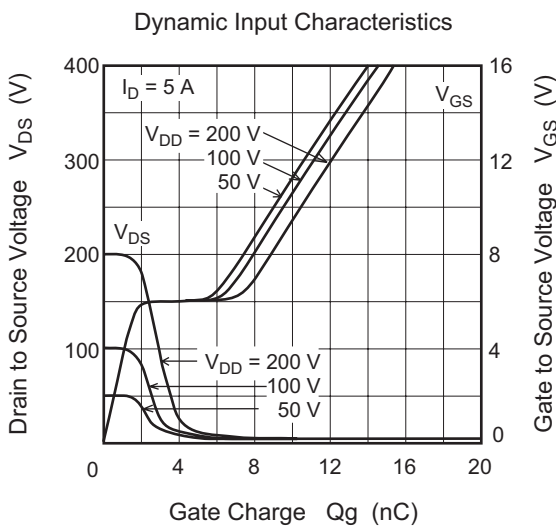
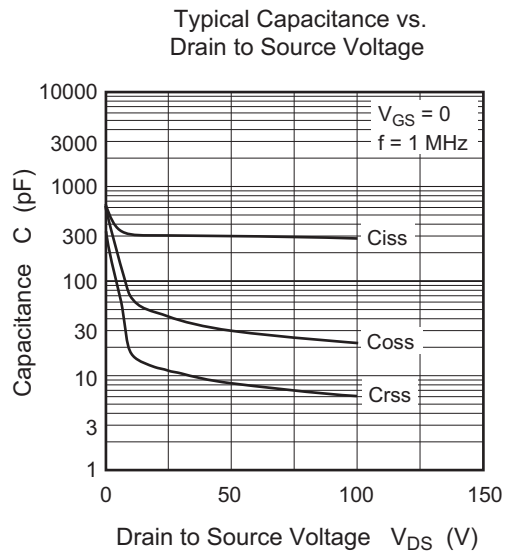
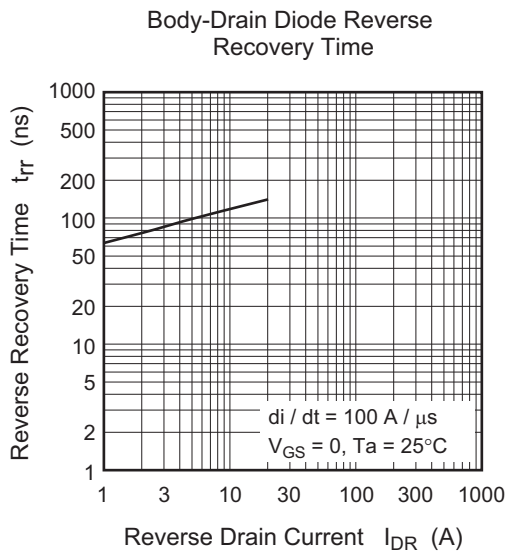
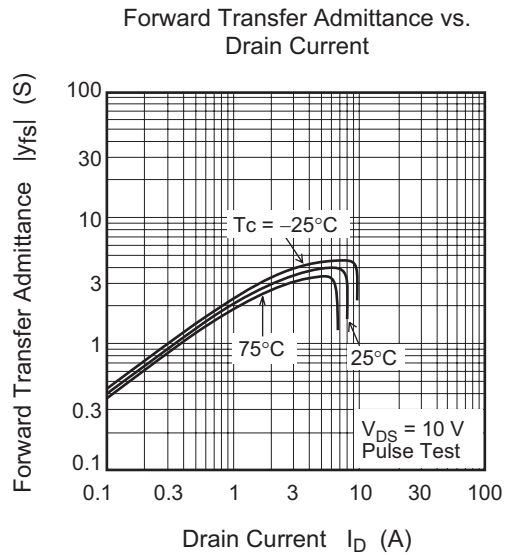
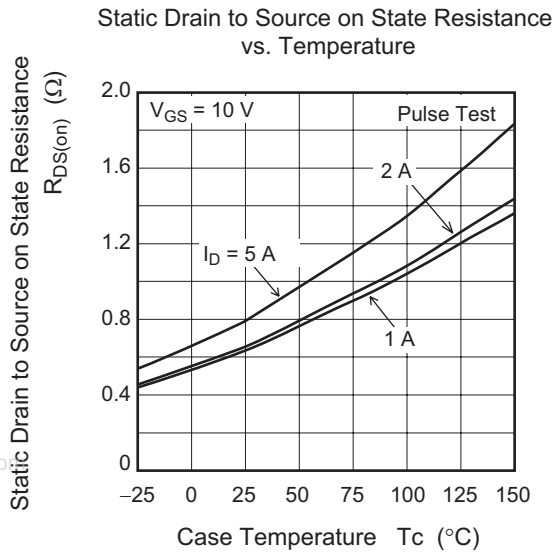
(Ta = 25°C)

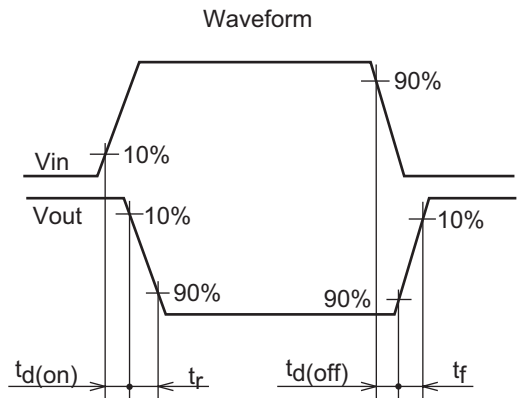
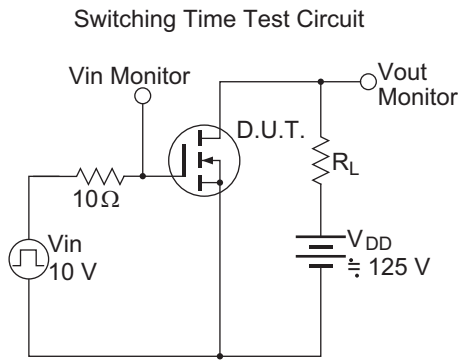
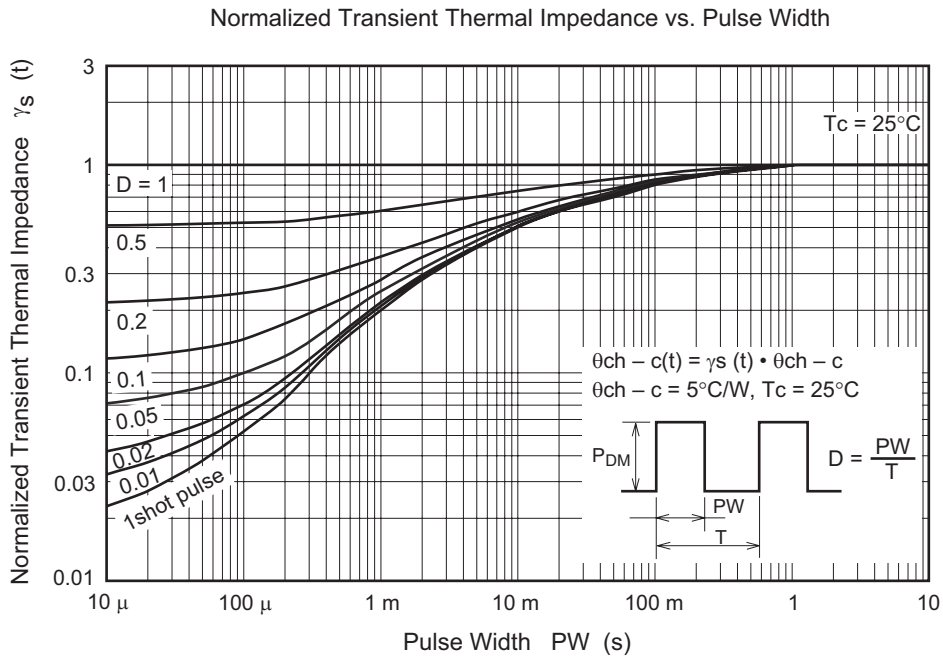
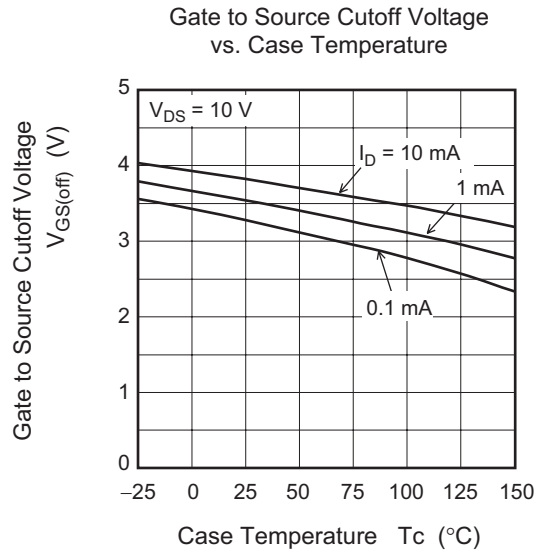
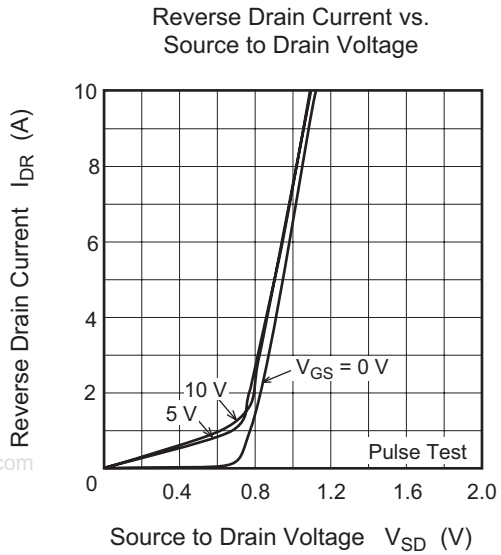
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 250 \text{ V}, V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}, V_{DS} = 0$
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} $	2.0	3.3	—	S	$I_D = 2.5 \text{ A}, V_{DS} = 10 \text{ V}$ <sup>Note 4</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	0.68	0.89	$\Omega$	$I_D = 2.5 \text{ A}, V_{GS} = 10 \text{ V}$ <sup>Note 4</sup>
Input capacitance	$C_{iss}$	—	300	—	pF	$V_{DS} = 25 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	42	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	11	—	pF	
Total gate charge	$Q_g$	—	11	—	nC	$V_{DD} = 200 \text{ V}, V_{GS} = 10 \text{ V},$ $I_D = 5 \text{ A}$
Gate to source charge	$Q_{gs}$	—	2	—	nC	
Gate to drain charge	$Q_{gd}$	—	5	—	nC	
Turn-on delay time	$t_{d(on)}$	—	18	—	ns	$V_{DD} \cong 125 \text{ V}, I_D = 2.5 \text{ A},$ $V_{GS} = 10 \text{ V}$ $R_L = 50 \Omega, R_g = 10 \Omega$
Rise time	$t_r$	—	18	—	ns	
Turn-off delay time	$t_{d(off)}$	—	44	—	ns	
Fall time	$t_f$	—	11	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	1.0	1.5	V	$I_F = 5 \text{ A}, V_{GS} = 0$ <sup>Note 4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	100	—	ns	$I_F = 5 \text{ A}, V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$
Body-drain diode reverse recovery charge	$Q_{rr}$	—	0.32	—	$\mu\text{C}$	

Note: 4. Pulse test

Main Characteristics

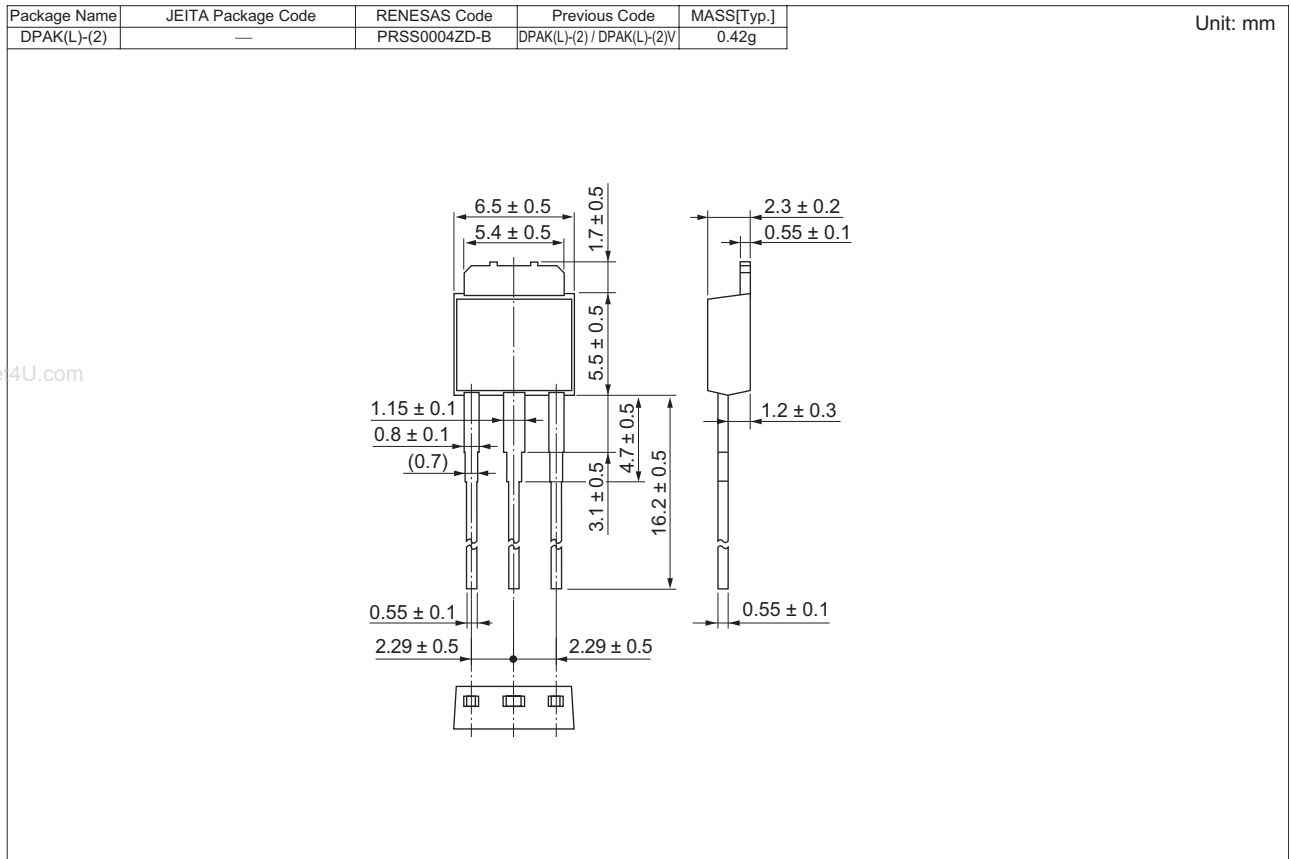




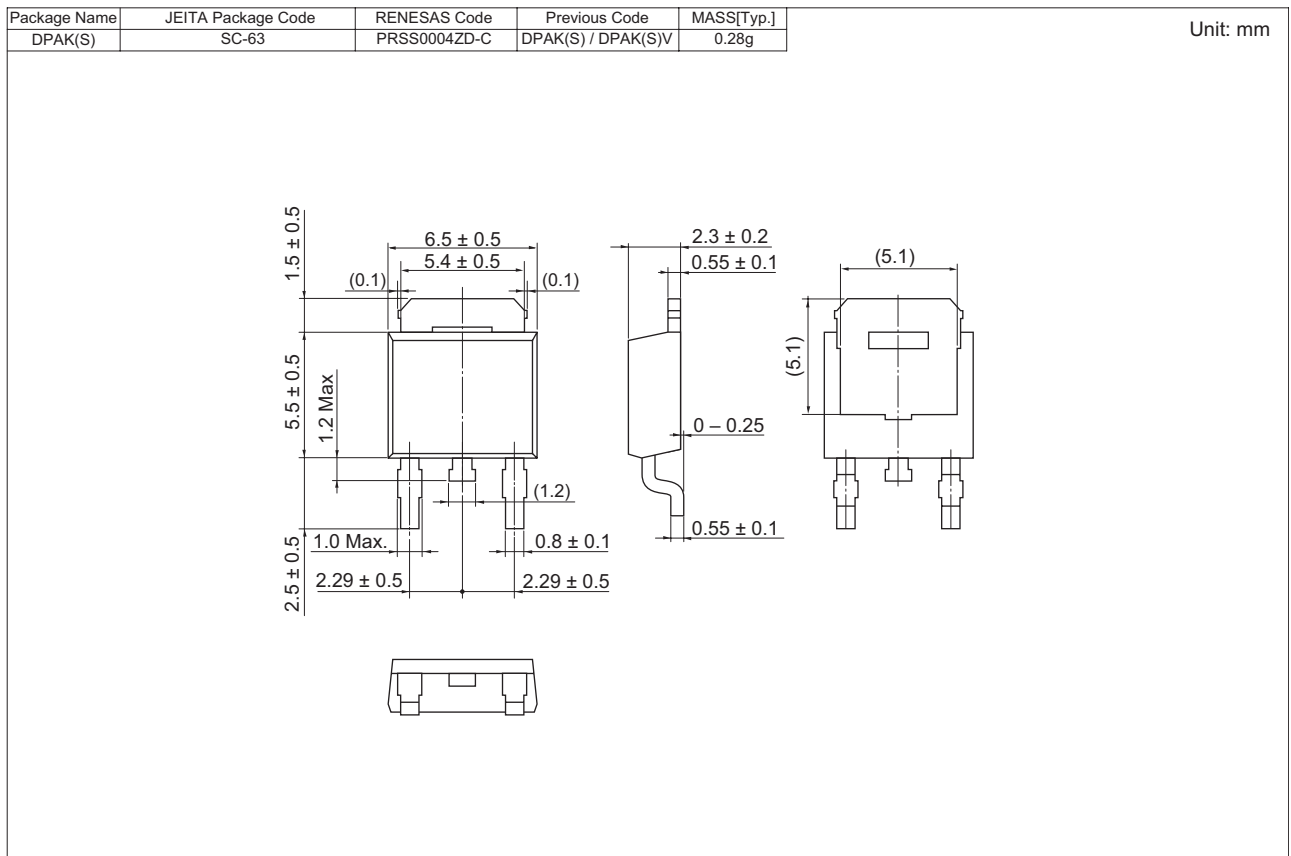


Package Dimensions

• H5N2505DL



• H5N2505DS



### Ordering Information

Part Name	Quantity	Shipping Container
H5N2505DL-E	3200 pcs	Box (Sack)
H5N2505DSTL-E	3000 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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