

# H5N2504DL, H5N2504DS


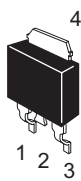
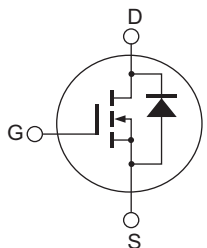
Silicon N Channel MOS FET  
High Speed Power Switching

R07DS0399EJ0300  
(Previous: REJ03G1106-0200)  
Rev.3.00  
May 16, 2011

## Features

- Low on-resistance
- Low leakage 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	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	7	A
Drain peak current	$I_{D (pulse)}$ <sup>Note 1</sup>	28	A
Body-drain diode reverse drain current	$I_{DR}$	7	A
Body-drain diode reverse drain peak current	$I_{DR (pulse)}$ <sup>Note 1</sup>	28	A
Avalanche current	$I_{AP}$ <sup>Note 3</sup>	7	A
Channel dissipation	$P_{ch}$ <sup>Note 2</sup>	30	W
Channel to case thermal Impedance	$\theta_{ch-c}$	4.17	°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.  $T_{ch} \leq 150^\circ C$

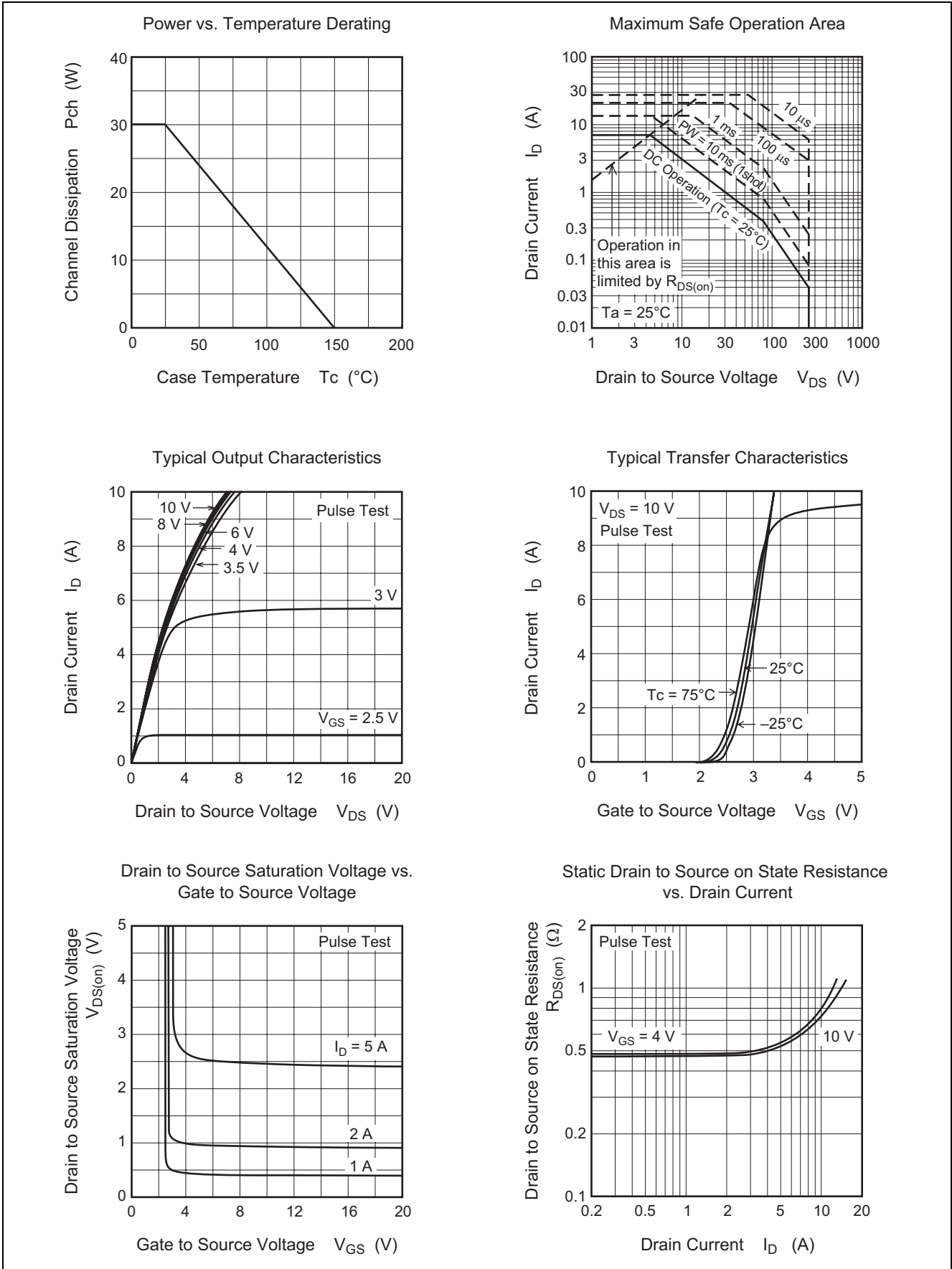
## Electrical Characteristics

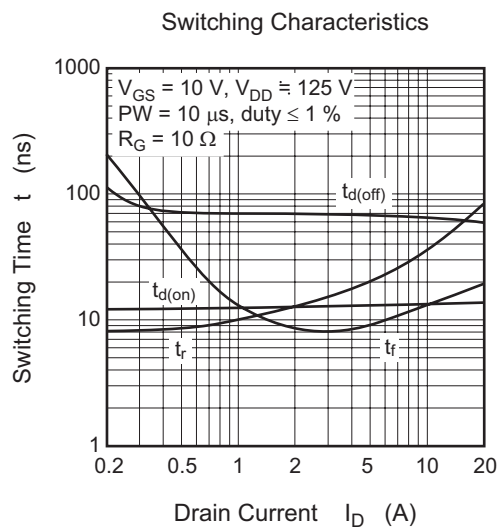
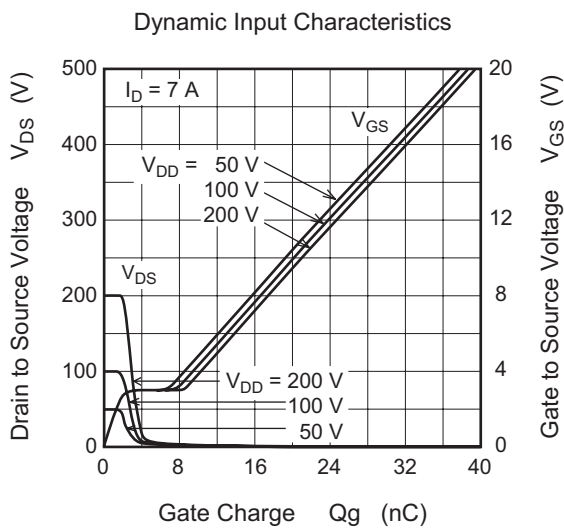
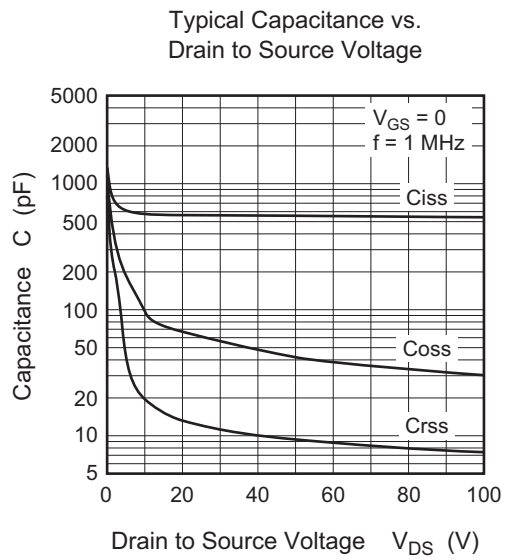
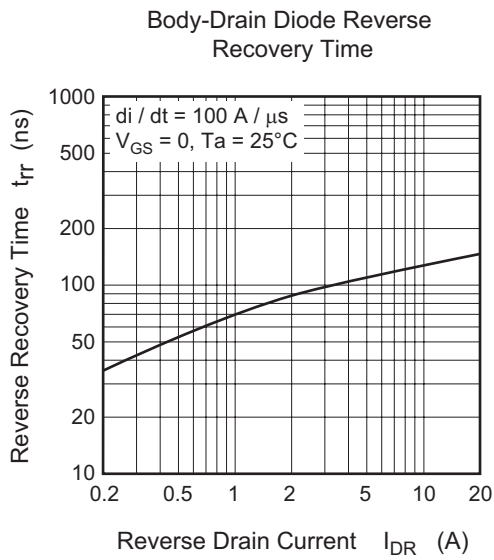
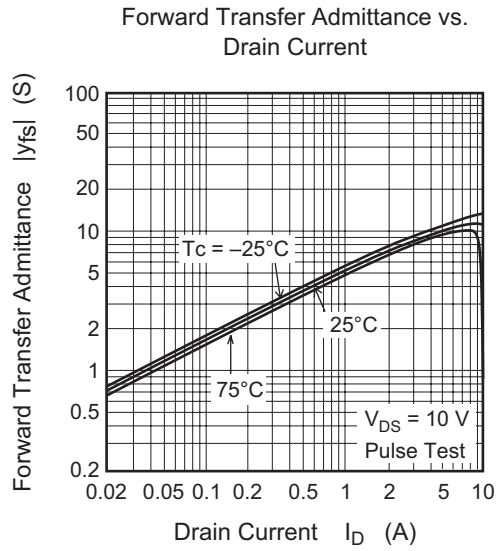
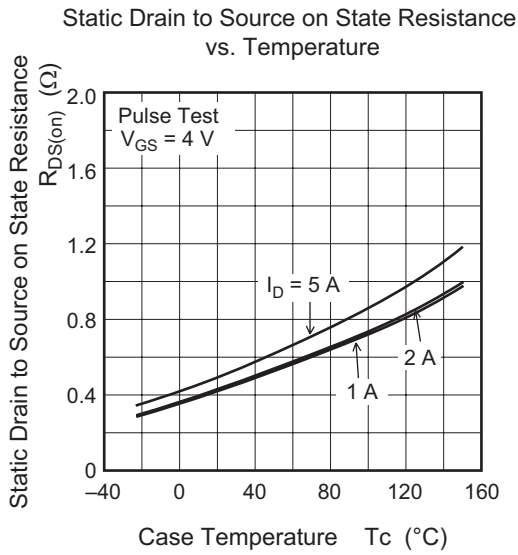
(Ta = 25°C)

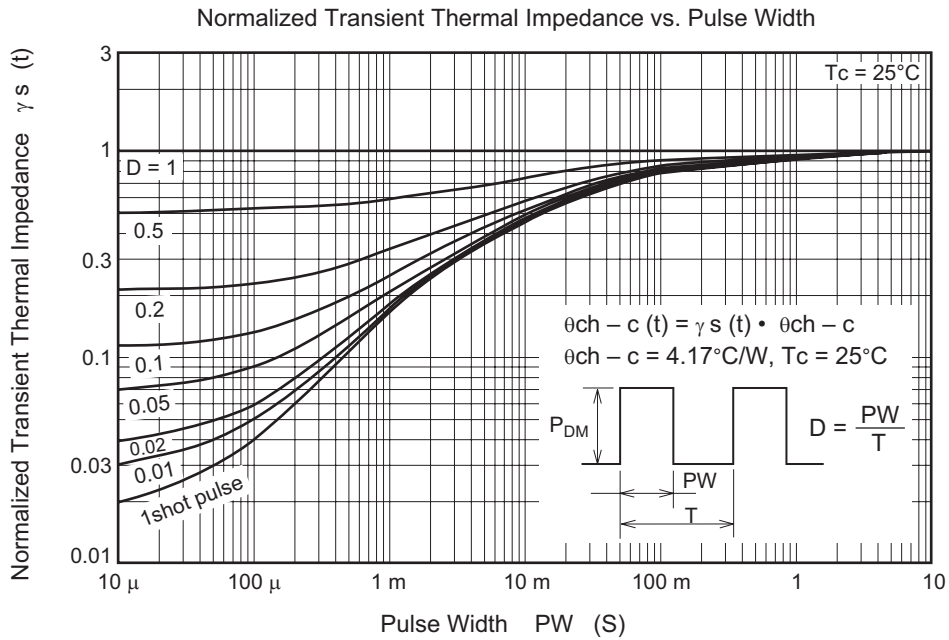
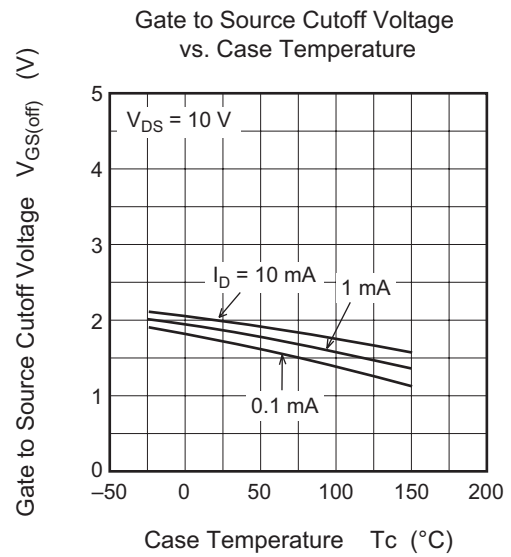
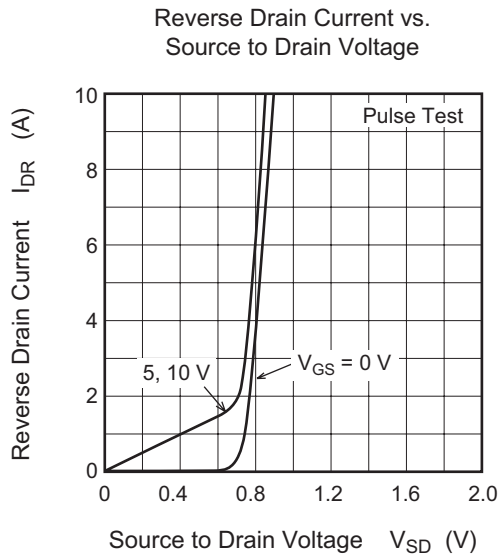
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 250 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.48	0.63	$\Omega$	$I_D = 3.5 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note 4</sup>
	$R_{DS(on)}$	—	0.5	0.67	$\Omega$	$I_D = 3.5 \text{ A}$ , $V_{GS} = 4 \text{ V}$ <sup>Note 4</sup>
Forward transfer admittance	$ y_{fs} $	5	8.5	—	S	$I_D = 3.5 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note 4</sup>
Input capacitance	$C_{iss}$	—	570	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	$C_{oss}$	—	60	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	12	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	13	—	ns	$I_D = 3.5 \text{ A}$
Rise time	$t_r$	—	18	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	70	—	ns	$R_L = 35.7 \Omega$
Fall time	$t_f$	—	8	—	ns	$R_g = 10 \Omega$
Total gate charge	$Q_g$	—	21	—	nC	$V_{DD} = 200 \text{ V}$
Gate to source charge	$Q_{gs}$	—	2	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	6	—	nC	$I_D = 7 \text{ A}$
Body-drain diode forward voltage	$V_{DF}$	—	0.85	1.30	V	$I_F = 7 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	120	—	ns	$I_F = 7 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery charge	$Q_{rr}$	—	0.48	—	$\mu\text{C}$	$di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 4. Pulse test

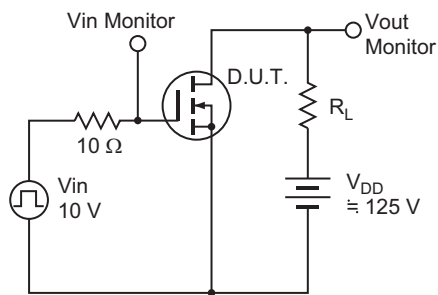
### Main Characteristics



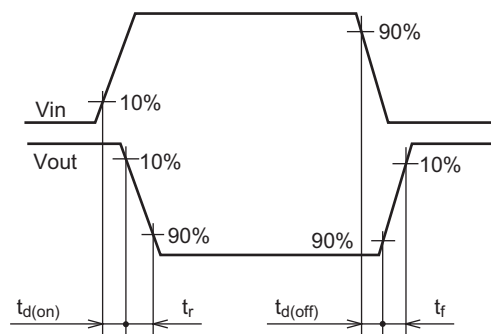




Switching Time Test Circuit

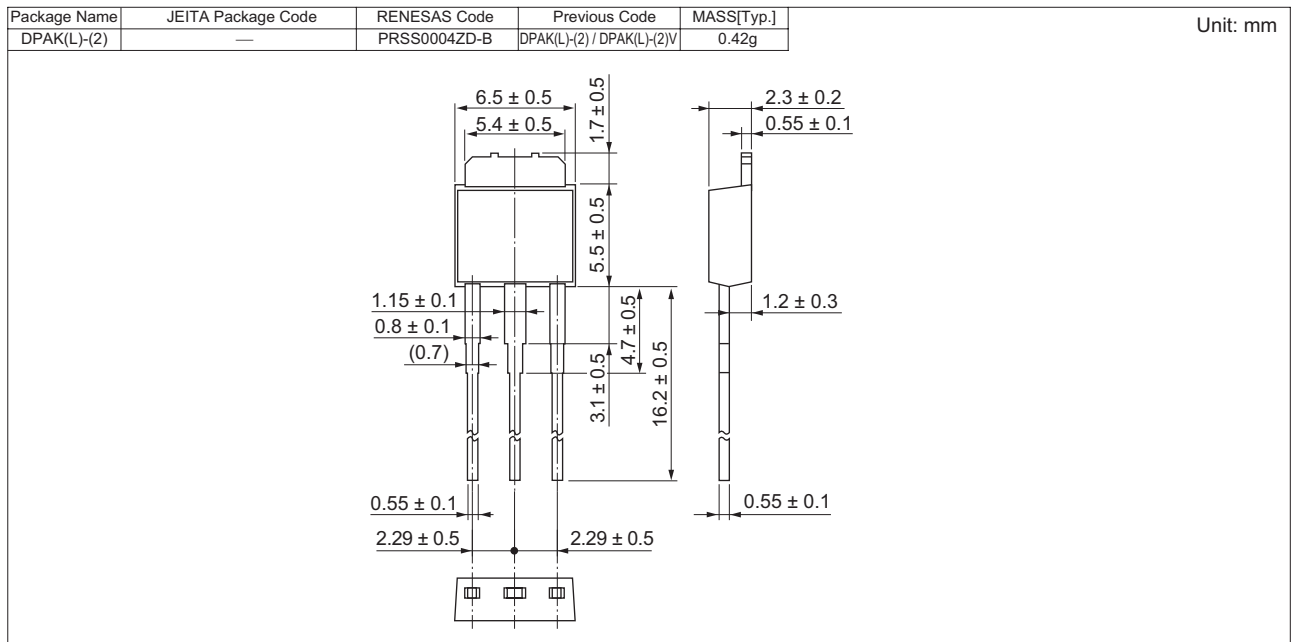


Waveform

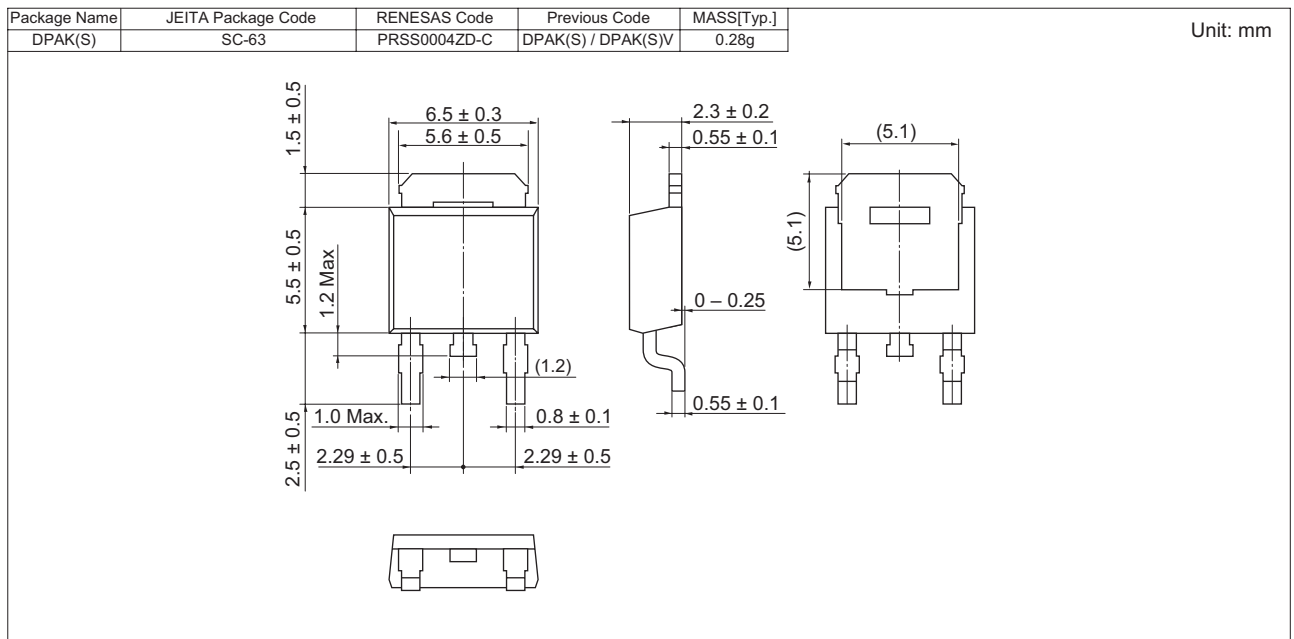


## Package Dimensions

### • H5N2504DL



### • H5N2504DS



## Ordering Information

Orderable Part Number	Quantity	Shipping Container
H5N2504DL-E	2160 pcs	Box (Tube)
H5N2504DSTR-E	3000 pcs	Taping

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