

# H5N2508DL, H5N2508DS

Silicon N Channel MOS FET  
High Speed Power Switching

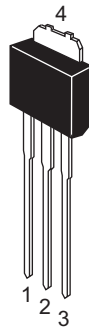
REJ03G1108-0200  
(Previous: ADE-208-1377)  
Rev.2.00  
Sep 07, 2005

## Features

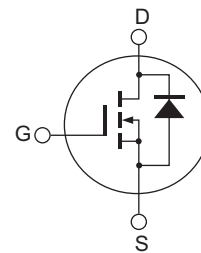
- Low on-resistance:  $R_{DS(on)} = 0.48 \Omega$  typ.
- Low leakage current:  $I_{DSS} = 1 \mu A$  max (at  $V_{DS} = 250 V$ )
- High speed switching:  $t_f = 11 ns$  typ (at  $V_{GS} = 10 V$ ,  $V_{DD} = 125 V$ ,  $I_D = 3.5 A$ )
- Low gate charge:  $Q_g = 13 nC$  typ (at  $V_{DD} = 200 V$ ,  $V_{GS} = 10 V$ ,  $I_D = 7 A$ )
- 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	$V_{DS}$	250	V
Gate to source voltage	$V_{GS}$	±30	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.  $T_{ch} \leq 150^\circ C$ 

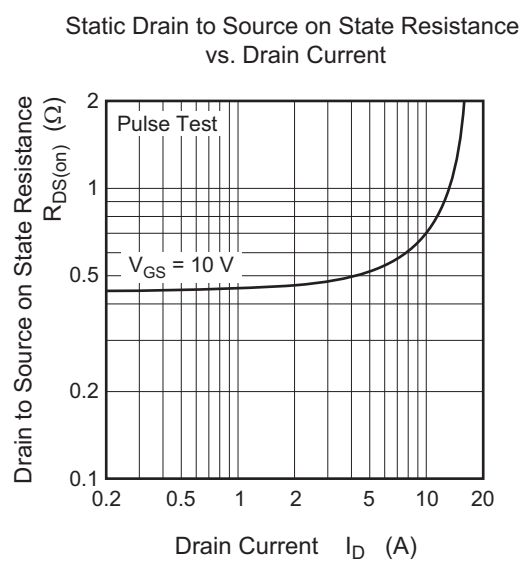
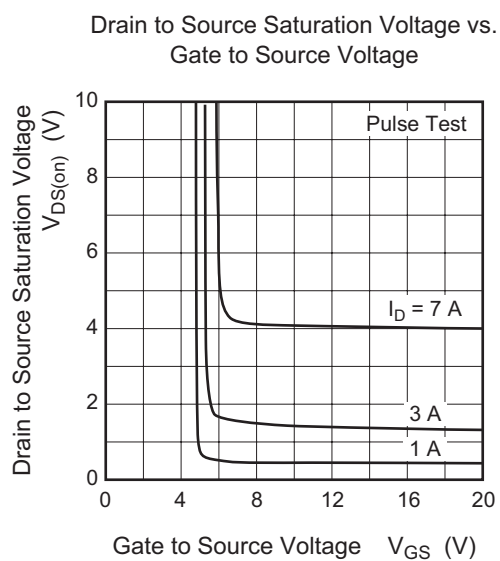
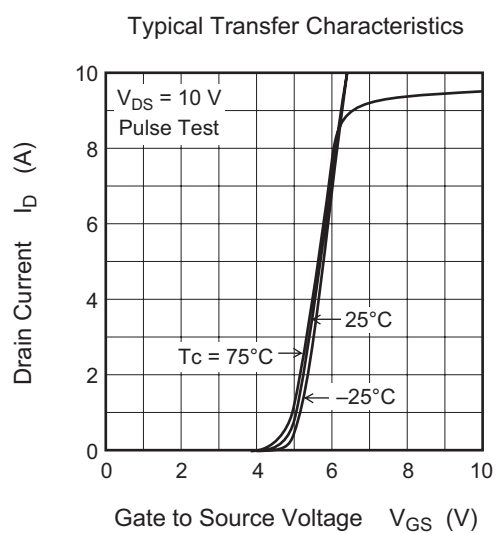
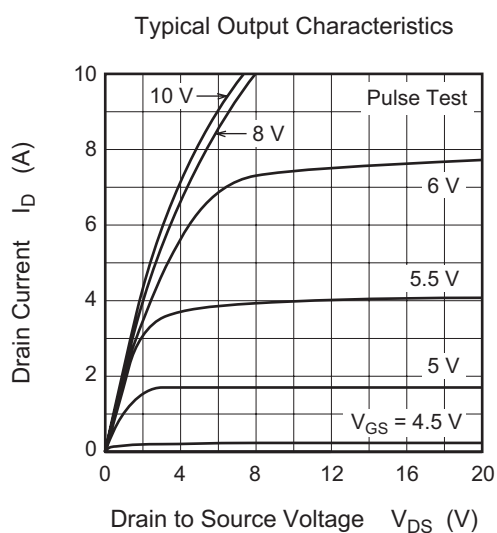
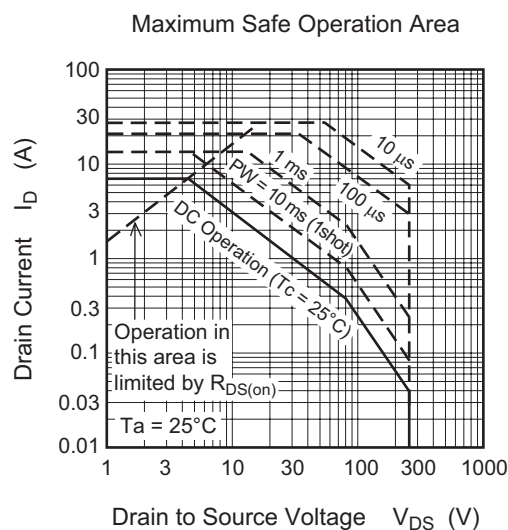
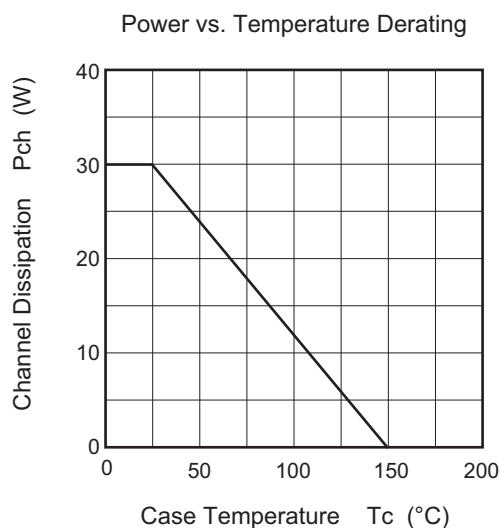
## Electrical Characteristics

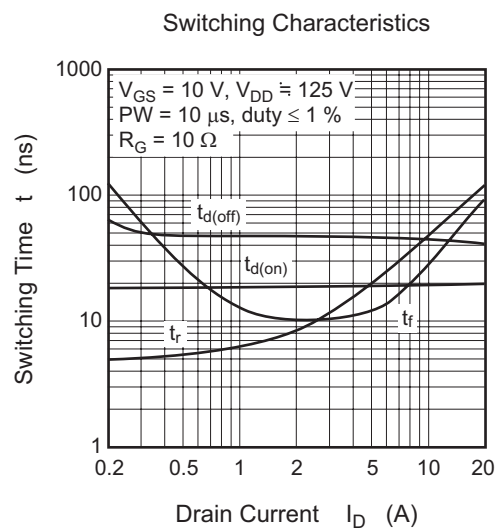
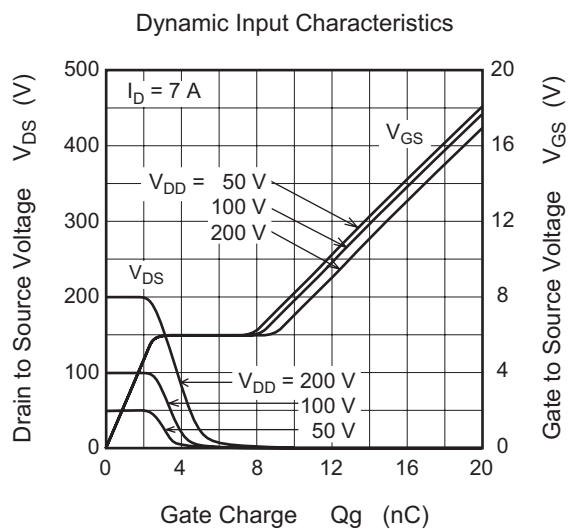
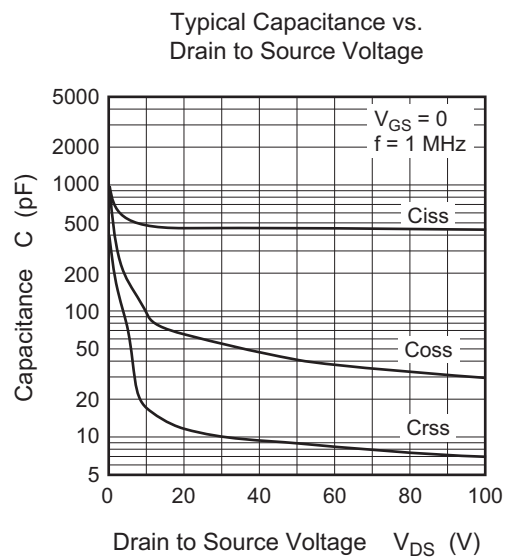
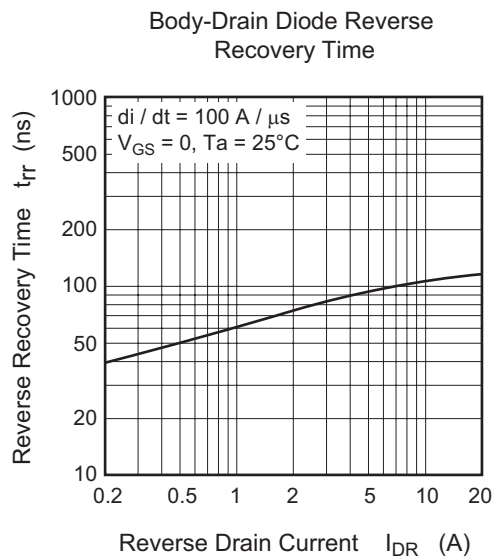
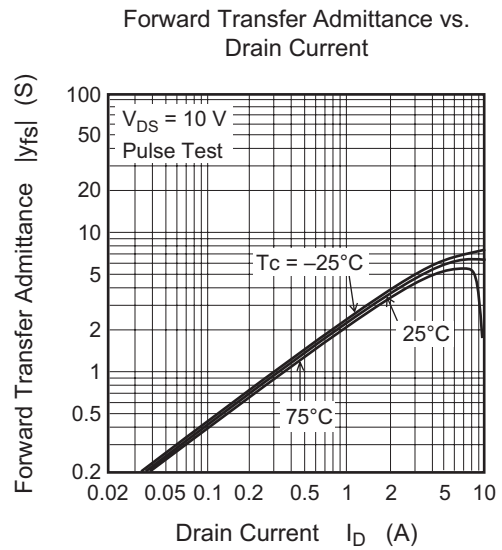
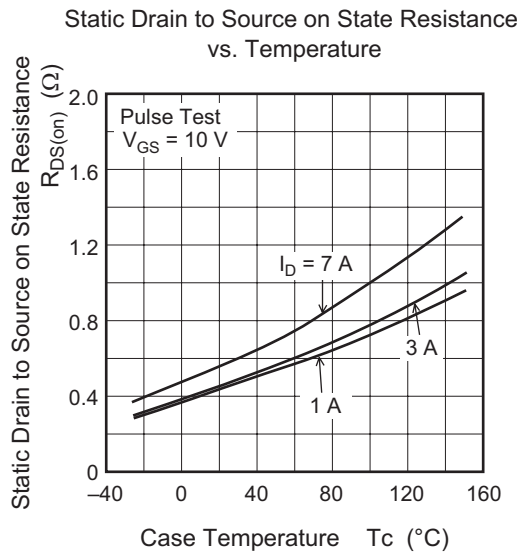
(Ta = 25°C)

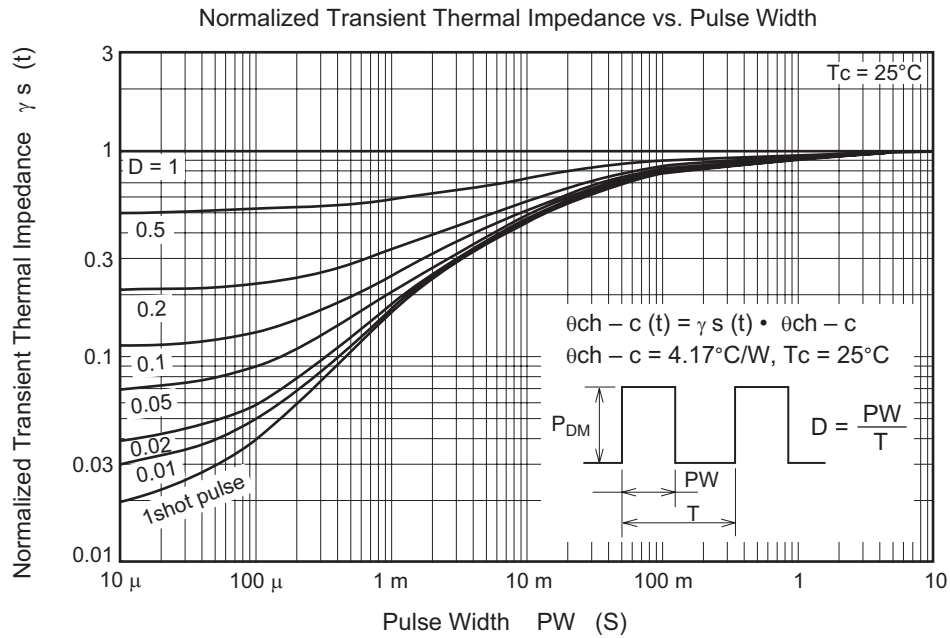
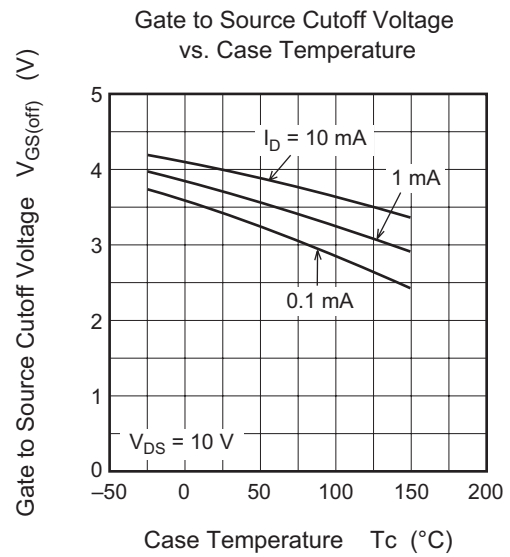
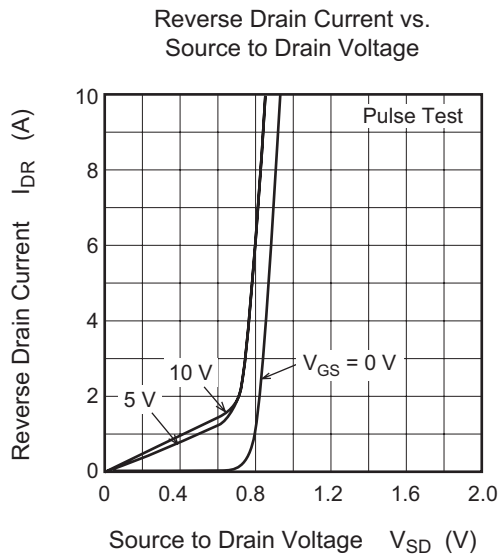
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR) DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±0.1	μA	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	μA	$V_{DS} = 250 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS (off)}$	3.0	—	4.5	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	Ω	$I_D = 3.5 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note 4</sup>
Forward transfer admittance	$ y_{fs} $	3.0	5.0	—	S	$I_D = 3.5 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note 4</sup>
Input capacitance	$C_{iss}$	—	450	—	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	$t_{d (on)}$	—	19	—	ns	$V_{DD} = 125 \text{ V}$ , $I_D = 3.5 \text{ A}$
Rise time	$t_r$	—	14	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d (off)}$	—	47	—	ns	$R_L = 35.7 \Omega$
Fall time	$t_f$	—	11	—	ns	$R_g = 10 \Omega$
Total gate charge	$Q_g$	—	13	—	nC	$V_{DD} = 200 \text{ V}$
Gate to source charge	$Q_{gs}$	—	2.5	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	6	—	nC	$I_D = 7 \text{ A}$
Body-drain diode forward voltage	$V_{DF}$	—	0.9	1.4	V	$I_F = 7 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	100	—	ns	$I_F = 7 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery charge	$Q_{rr}$	—	0.38	—	μC	$di_F/dt = 100 \text{ A}/\mu s$

Note: 4. Pulse test

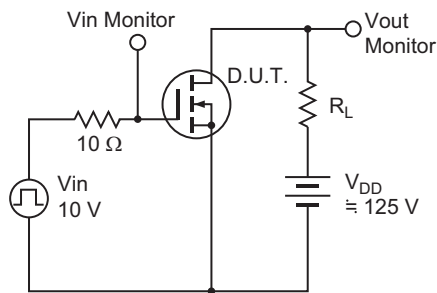
## Main Characteristics



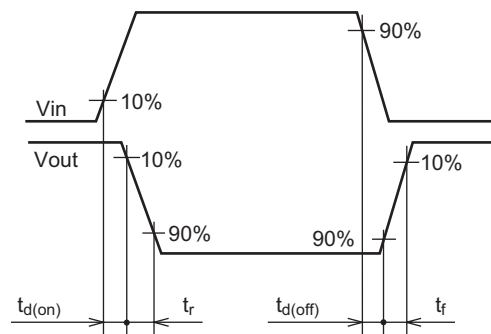




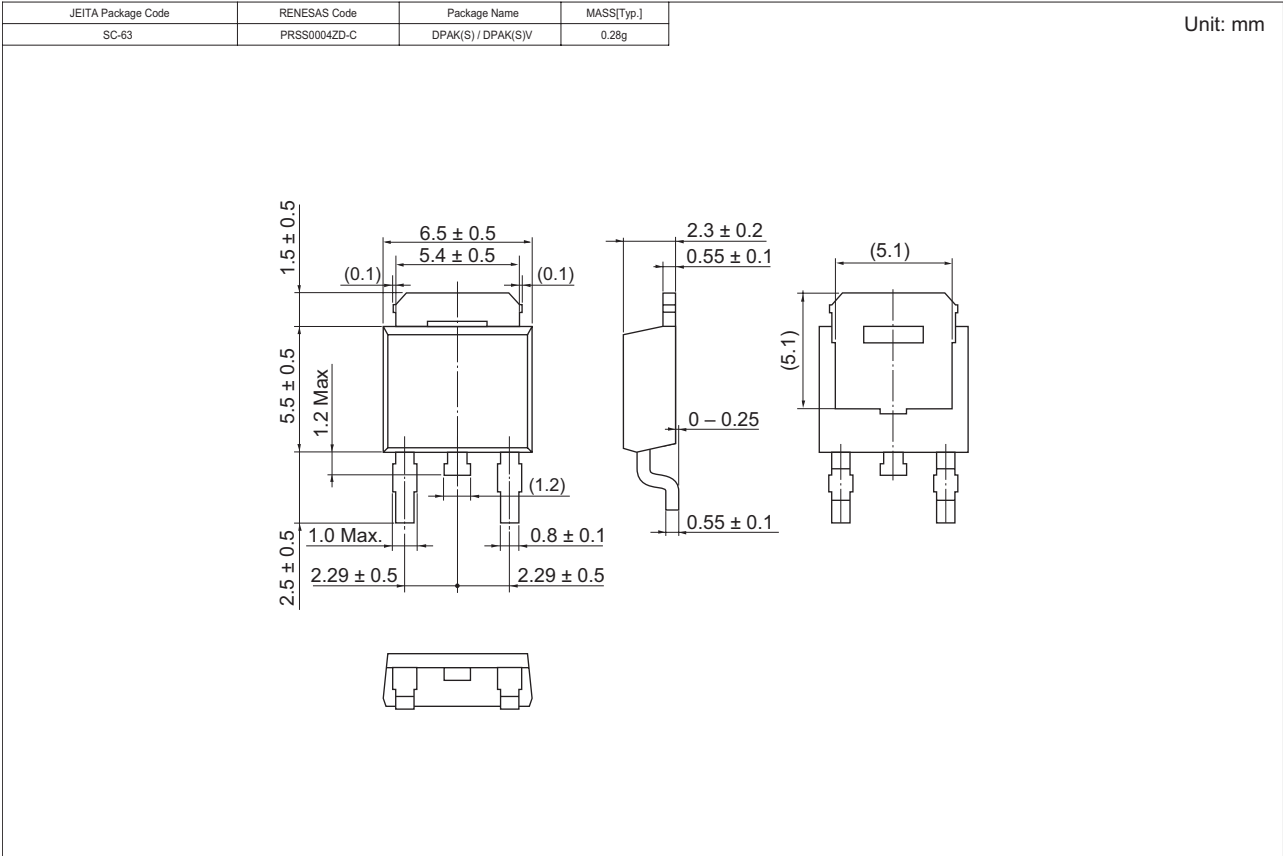
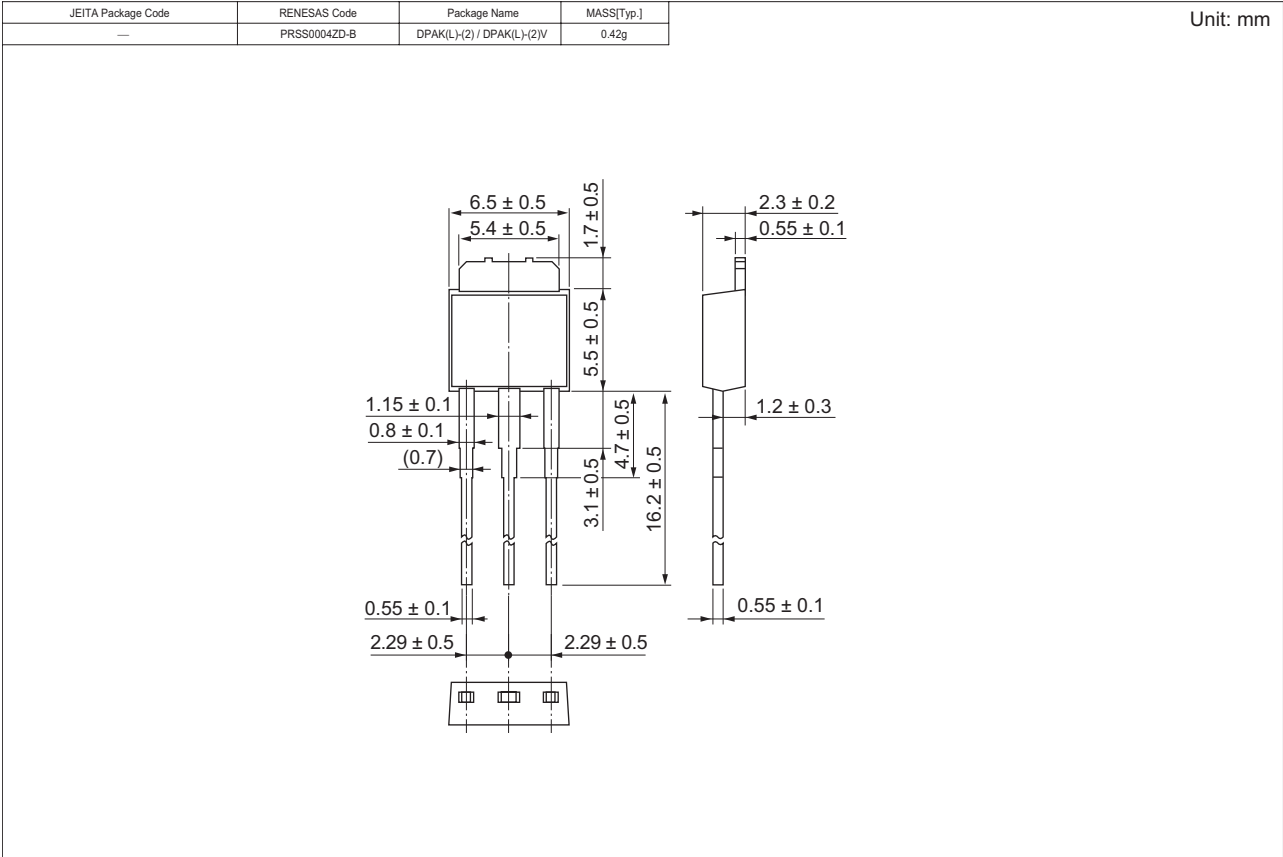
Switching Time Test Circuit



Waveform



Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
H5N2508DL-E	3200 pcs	Box (Sack)
H5N2508DSTL-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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