

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# 2SJ506(L), 2SJ506(S)

Silicon P Channel MOS FET

REJ03G0873-0500  
 (Previous: ADE-208-548C)  
 Rev.5.00  
 Sep 07, 2005

## Description

High speed power switching

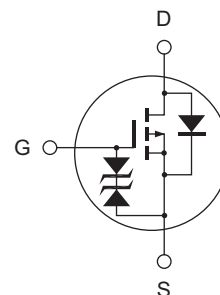
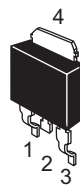
## Features

- Low on-resistance  
 $R_{DS(on)} = 0.065 \Omega$  typ. (at  $V_{GS} = -10$  V,  $I_D = -5$  A)
- Low drive current
- High speed switching
- 4 V gate drive devices.

## 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 <sub>DSS</sub>	-30	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	-10	A
Drain peak current	I <sub>D (pulse)</sub> <sup>Note 1</sup>	-40	A
Body to drain diode reverse drain current	I <sub>DR</sub>	-10	A
Channel dissipation	P <sub>ch</sub> <sup>Note 2</sup>	20	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at Tc = 25°C

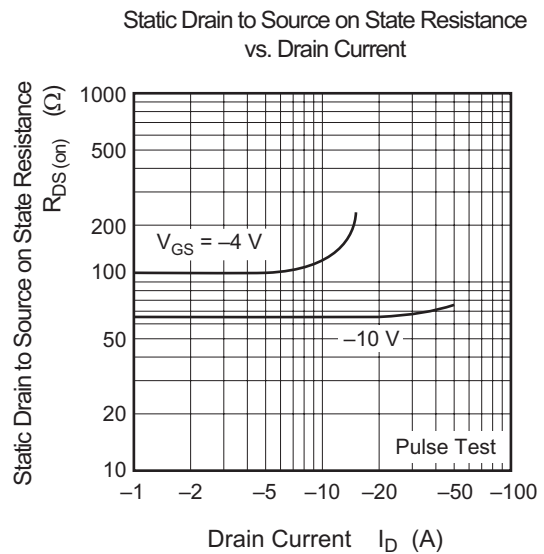
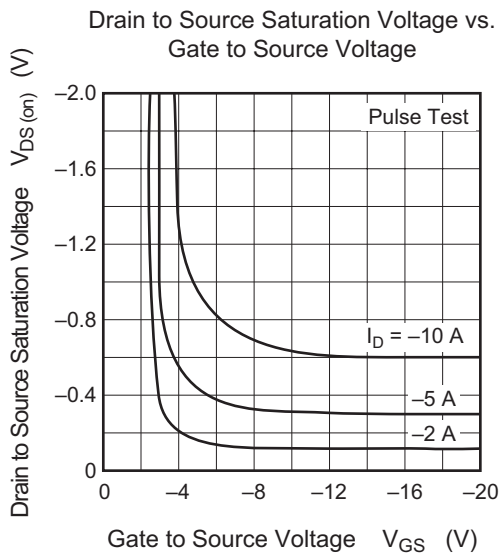
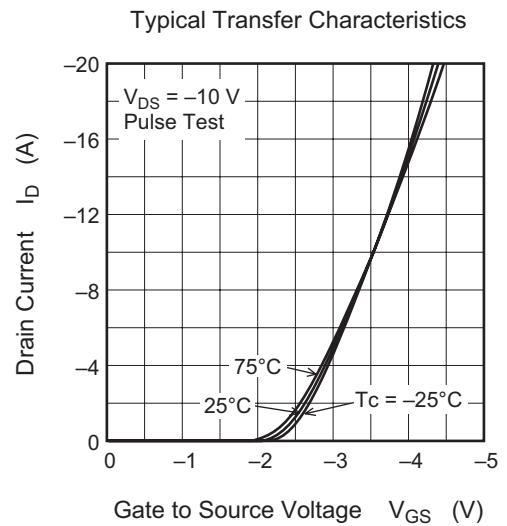
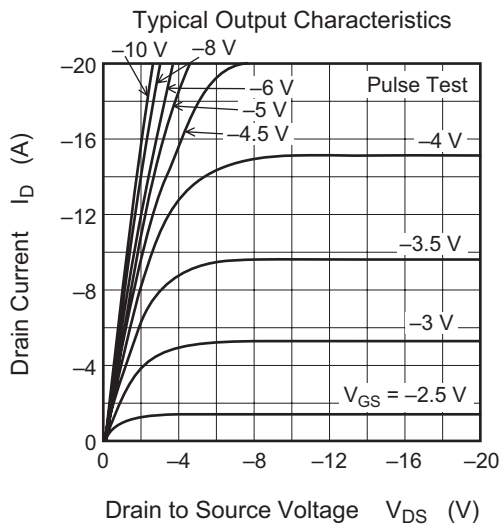
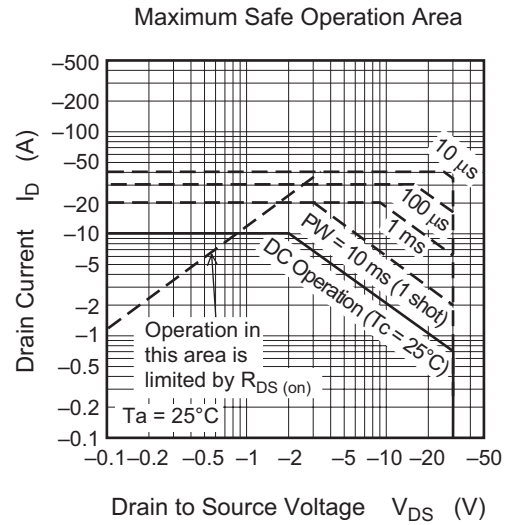
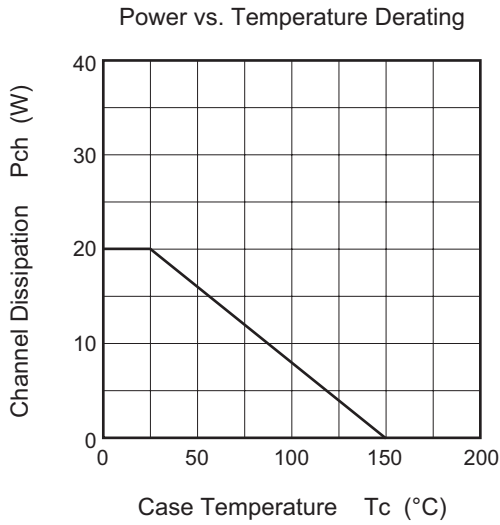
## Electrical Characteristics

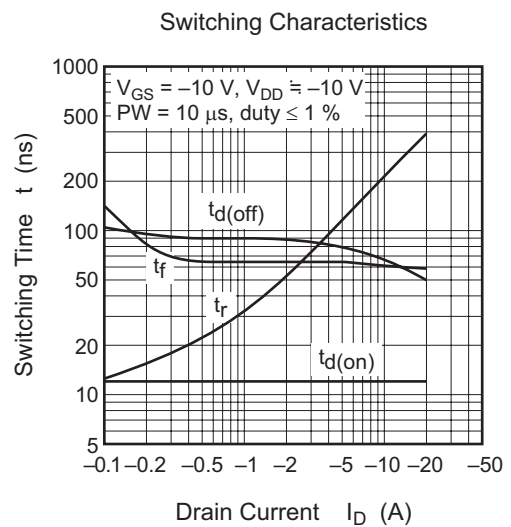
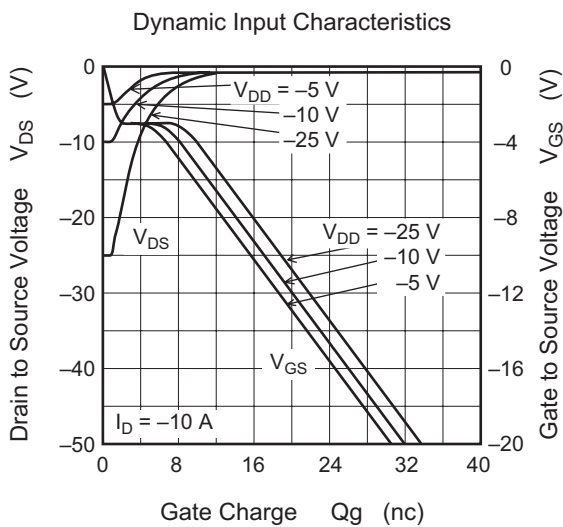
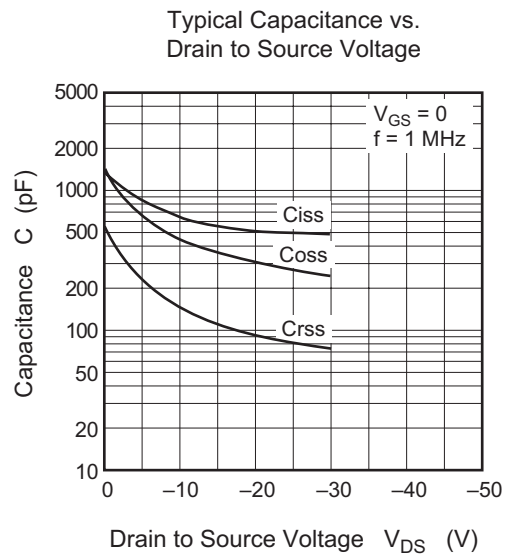
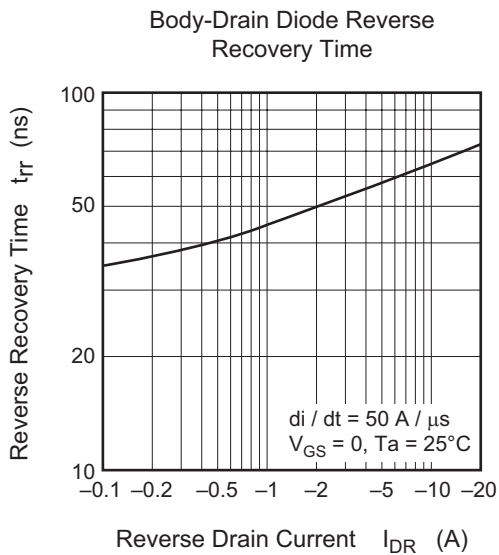
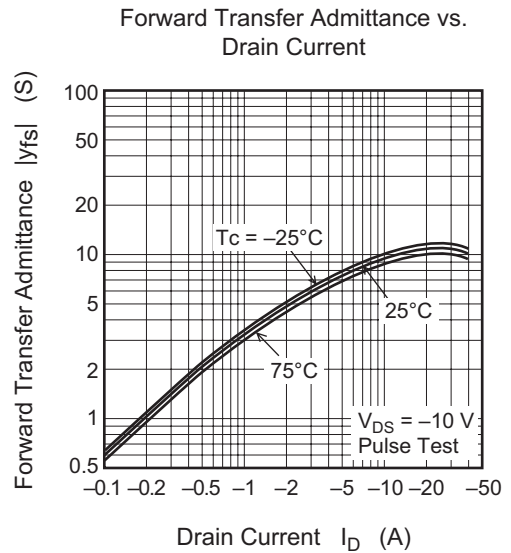
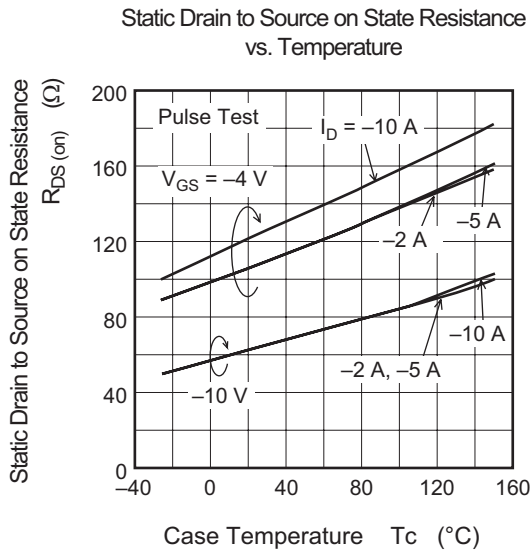
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR) DSS</sub>	-30	—	—	V	I <sub>D</sub> = -10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR) GSS</sub>	±20	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	-10	μA	V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Gate to source cutoff voltage	V <sub>GS (off)</sub>	-1.0	—	-2.0	V	I <sub>D</sub> = -1 mA, V <sub>DS</sub> = -10 V
Static drain to source on state resistance	R <sub>DS (on)</sub>	—	65	85	mΩ	I <sub>D</sub> = -5 A, V <sub>GS</sub> = -10 V <sup>Note 3</sup>
	R <sub>DS (on)</sub>	—	110	180	mΩ	I <sub>D</sub> = -5 A, V <sub>GS</sub> = -4 V <sup>Note 3</sup>
Forward transfer admittance	y <sub>fs</sub>	10	16	—	S	I <sub>D</sub> = -5 A, V <sub>DS</sub> = -10 V <sup>Note 3</sup>
Input capacitance	C <sub>iss</sub>	—	660	—	pF	V <sub>DS</sub> = -10 V
Output capacitance	C <sub>oss</sub>	—	440	—	pF	V <sub>GS</sub> = 0
Reverse transfer capacitance	C <sub>rss</sub>	—	140	—	pF	f = 1 MHz
Turn-on delay time	t <sub>d (on)</sub>	—	12	—	ns	V <sub>GS</sub> = -10 V
Rise time	t <sub>r</sub>	—	65	—	ns	I <sub>D</sub> = -5 A
Turn-off delay time	t <sub>d (off)</sub>	—	85	—	ns	R <sub>L</sub> = 2 Ω
Fall time	t <sub>f</sub>	—	65	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	-1.05	—	V	I <sub>F</sub> = -10 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	65	—	ns	I <sub>F</sub> = -10 A, V <sub>GS</sub> = 0 di <sub>F</sub> /dt = 50 A/μs

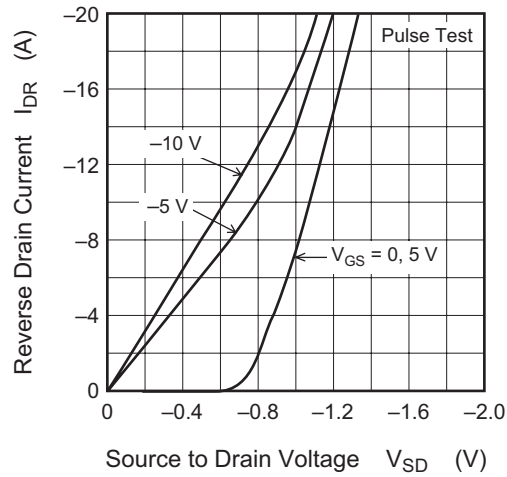
Note: 3. Pulse test

Main Characteristics

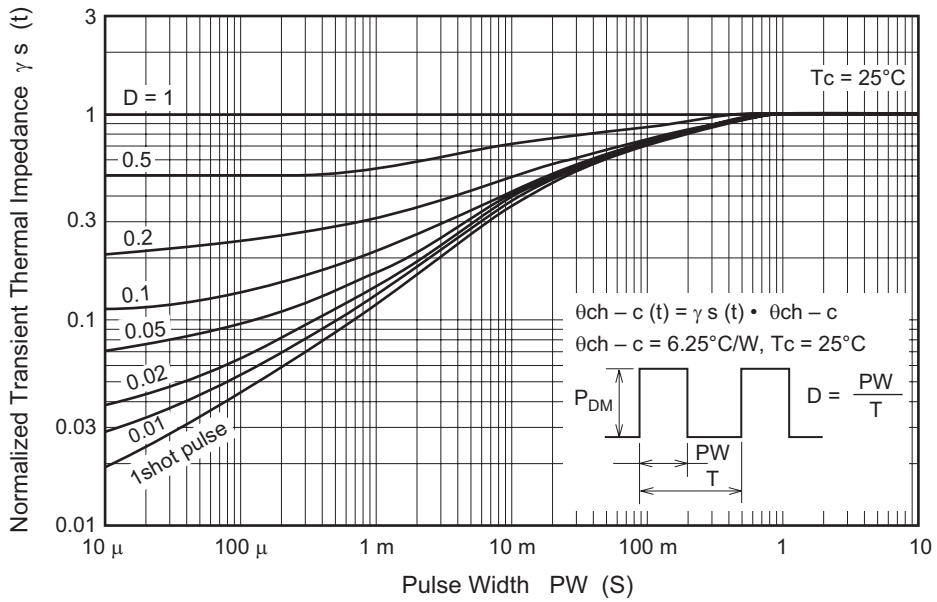




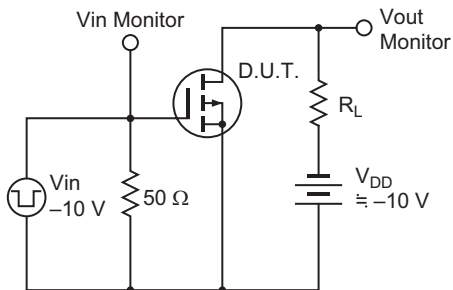
Reverse Drain Current vs. Source to Drain Voltage



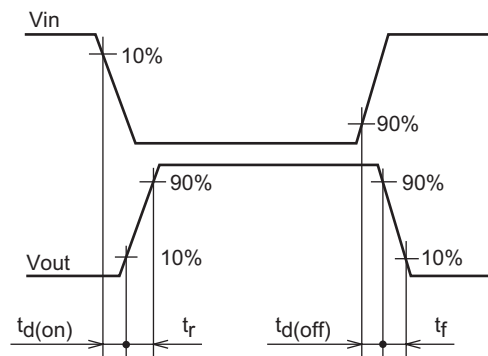
Normalized Transient Thermal Impedance vs. Pulse Width



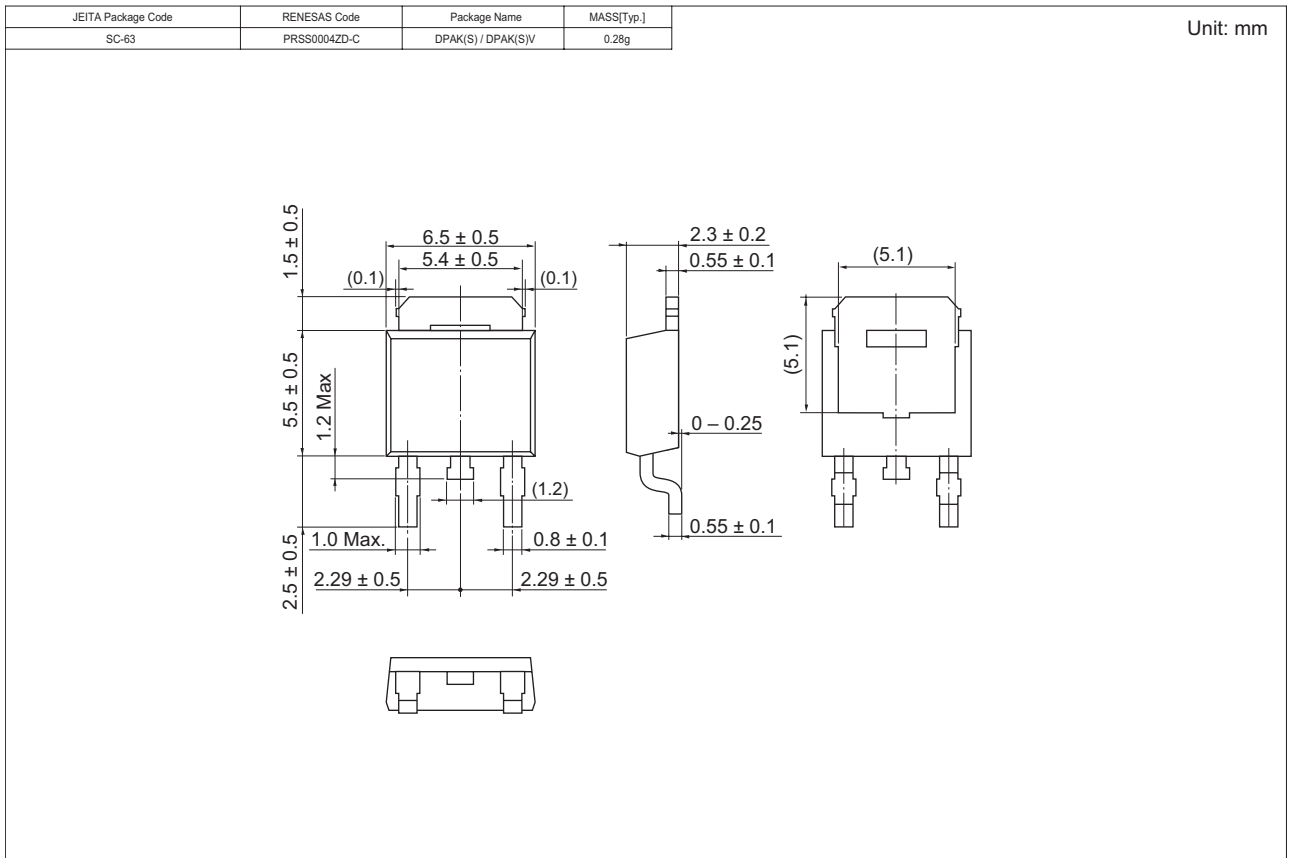
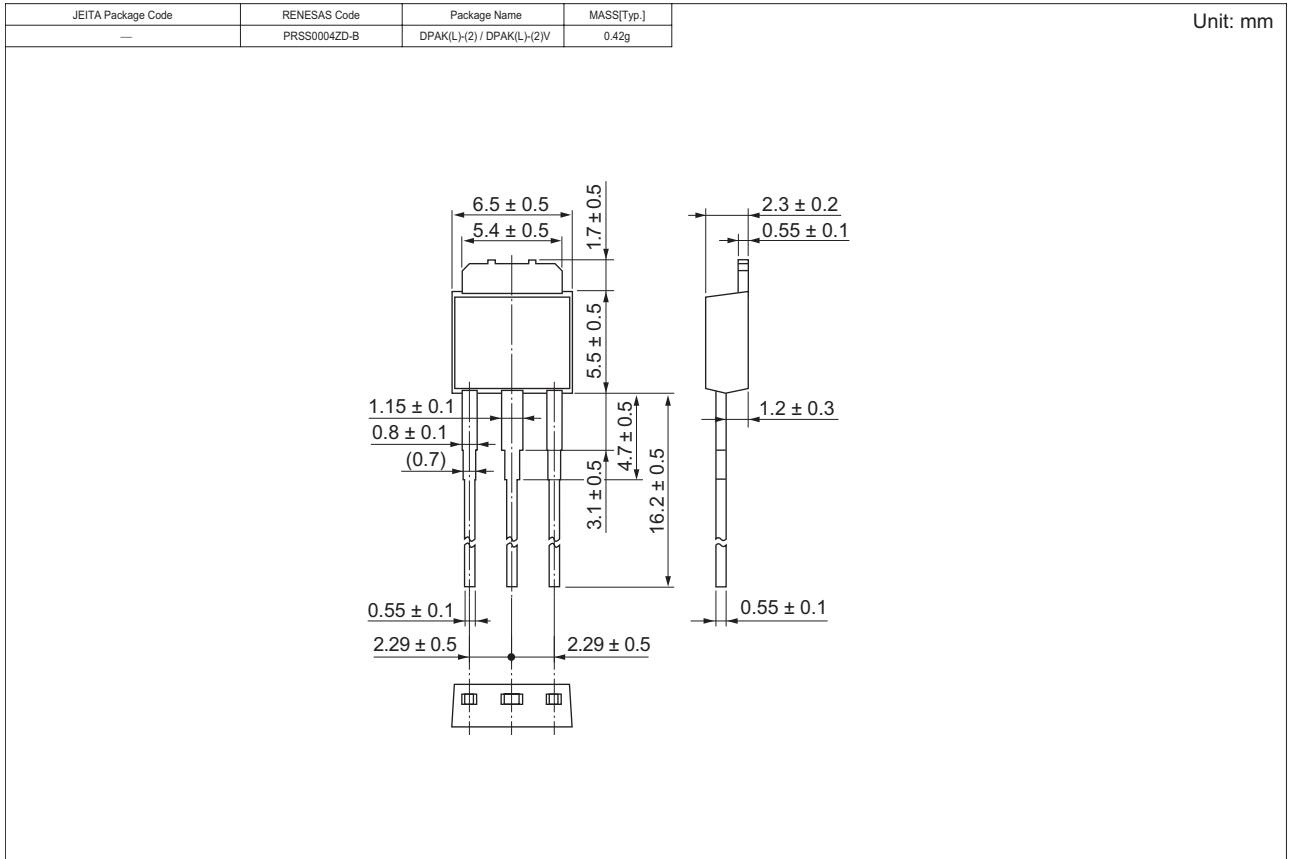
Switching Time Test Circuit



Waveform



Package Dimensions





### Ordering Information

Part Name	Quantity	Shipping Container
2SJ506L-E	3200 pcs	Box (Sack)
2SJ506STL-E	3000 pcs	Taping

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