

2SK1838(L), 2SK1838(S)

Silicon N Channel MOS FET

REJ03G0980-0300

Rev.3.00

Nov 21, 2005

Application

High speed power switching

Features

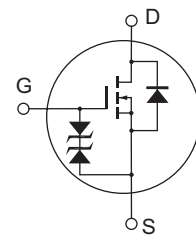
- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter

Outline

RENESAS Package code: PRSS0004ZD-A
(Package name: DPAK(L)-(1))



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	Ratings	Unit
Drain to source voltage	V_{DSS}	250	V
Gate to source voltage	V_{GSS}	± 30	V
Drain current	I_D	1	A
Drain peak current	$I_{D(pulse)}^{*1}$	2	A
Body to drain diode reverse drain current	I_{DR}	1	A
Channel dissipation	P_{ch}^{*2}	10	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 $T_c = 25^\circ C$

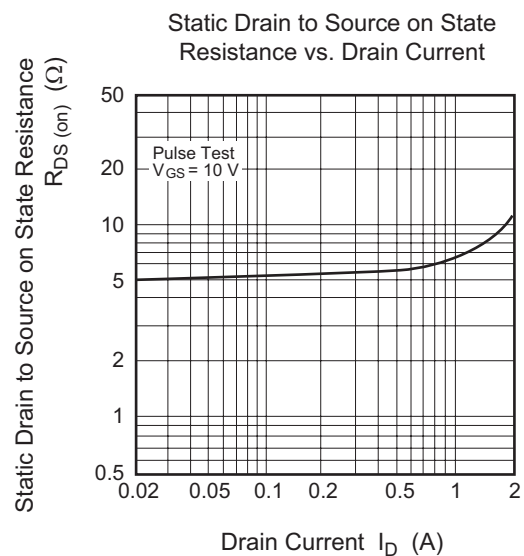
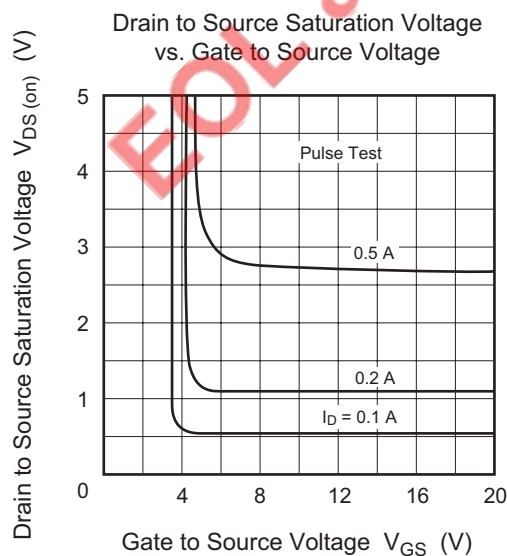
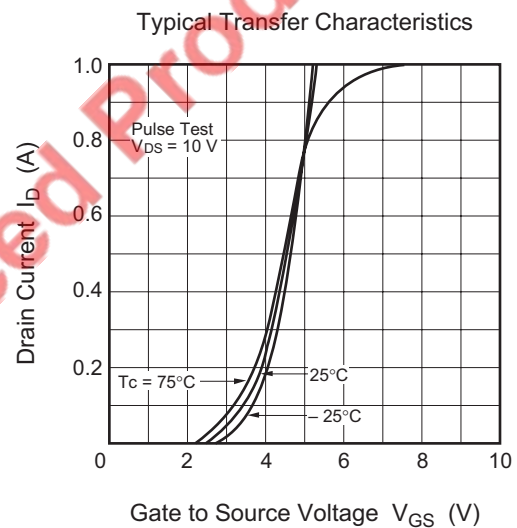
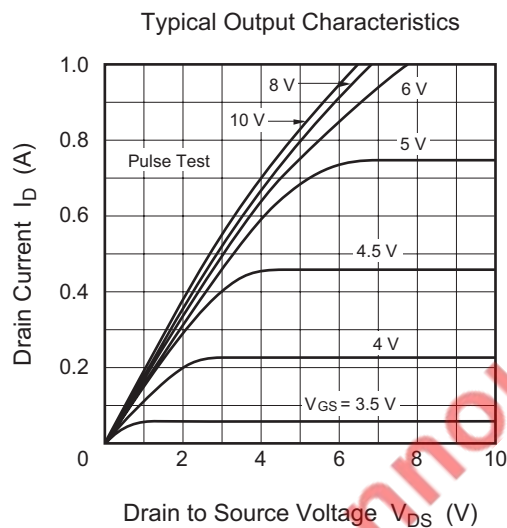
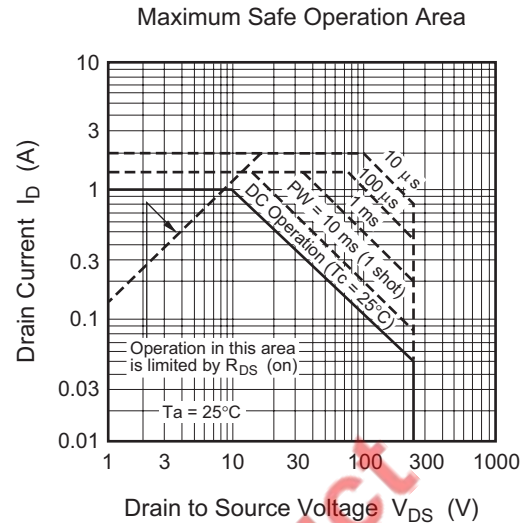
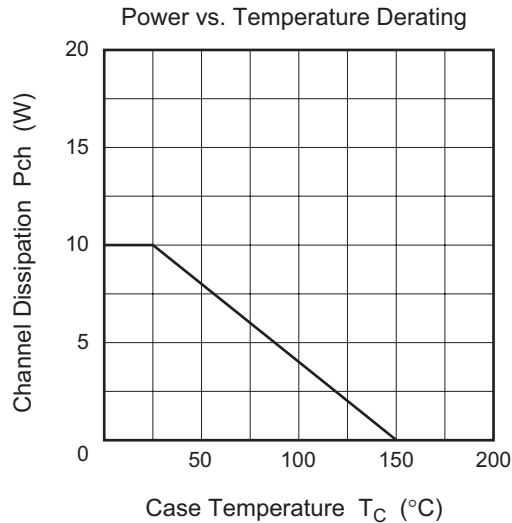
Electrical Characteristics

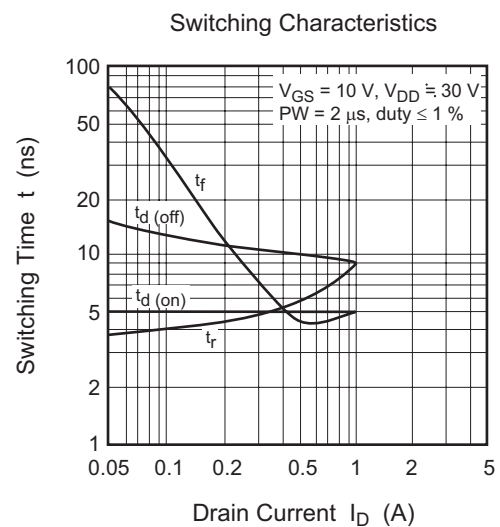
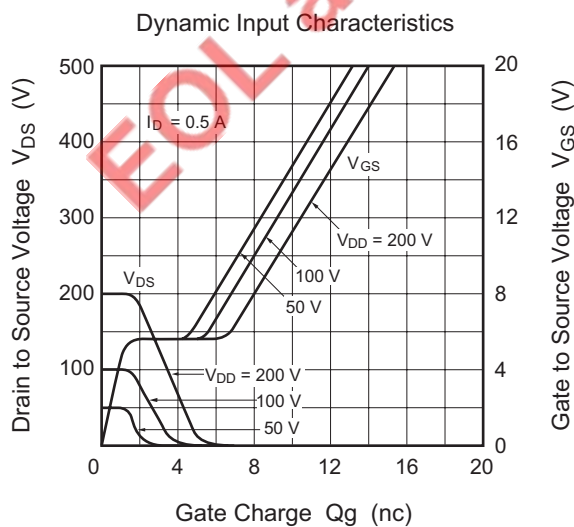
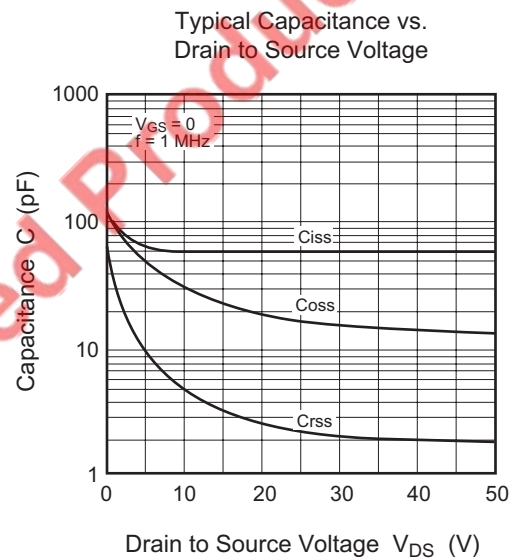
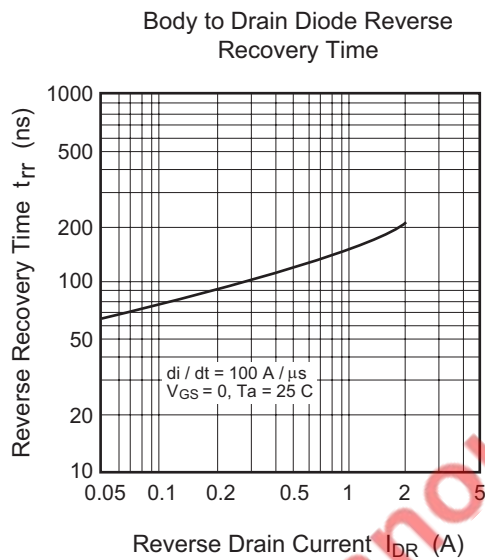
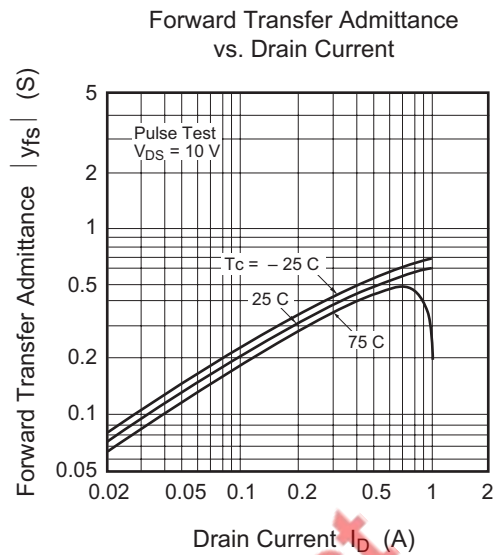
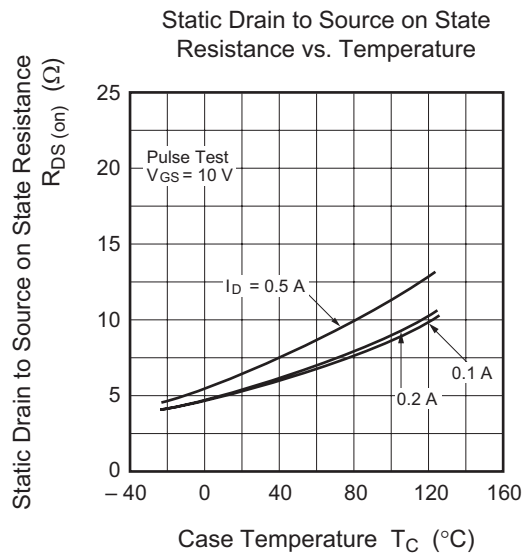
(Ta = 25°C)

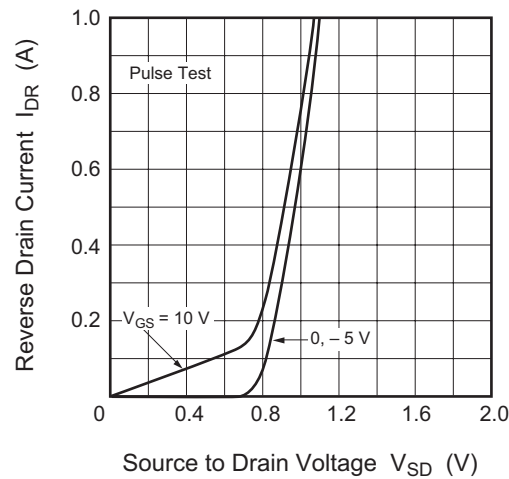
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100 \mu A$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	50	μA	$V_{DS} = 200 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	0.3	0.5	—	S	$V_{DS} = 10 \text{ V}$, $I_D = 0.5 \text{ A}^{*3}$
Static drain to source on state resistance	$R_{DS(on)}$	—	5.5	8.0	Ω	$I_D = 0.5 \text{ A}$, $V_{GS} = 10 \text{ V}^{*3}$
Input capacitance	C_{iss}	—	60	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	30	—	pF	
Reverse transfer capacitance	C_{rss}	—	5	—	pF	
Turn-on delay time	$t_{d(on)}$	—	5	—	ns	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 \text{ A}$, $R_L = 60 \Omega$
Rise time	t_r	—	6	—	ns	
Turn-off delay time	$t_{d(off)}$	—	10	—	ns	
Fall time	t_f	—	4.5	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.96	—	V	$I_F = 1 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	160	—	ns	$I_F = 1 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu s$

Note: 3. Pulse test

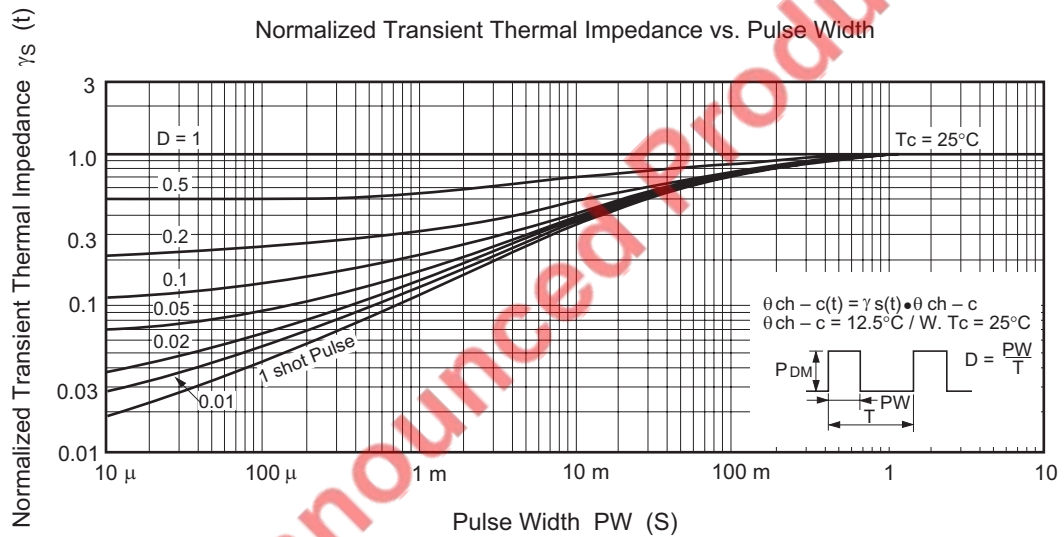
Main Characteristics



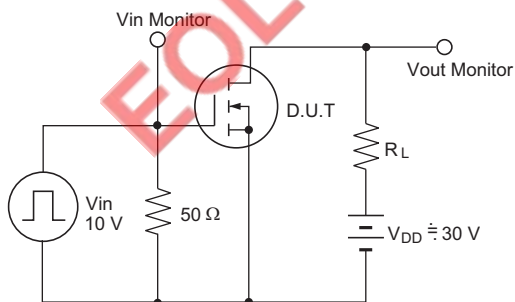


Reverse Drain Current vs.
Source to Drain Voltage

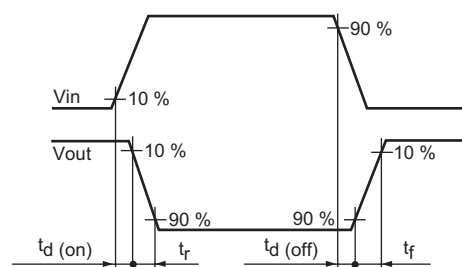
Normalized Transient Thermal Impedance vs. Pulse Width



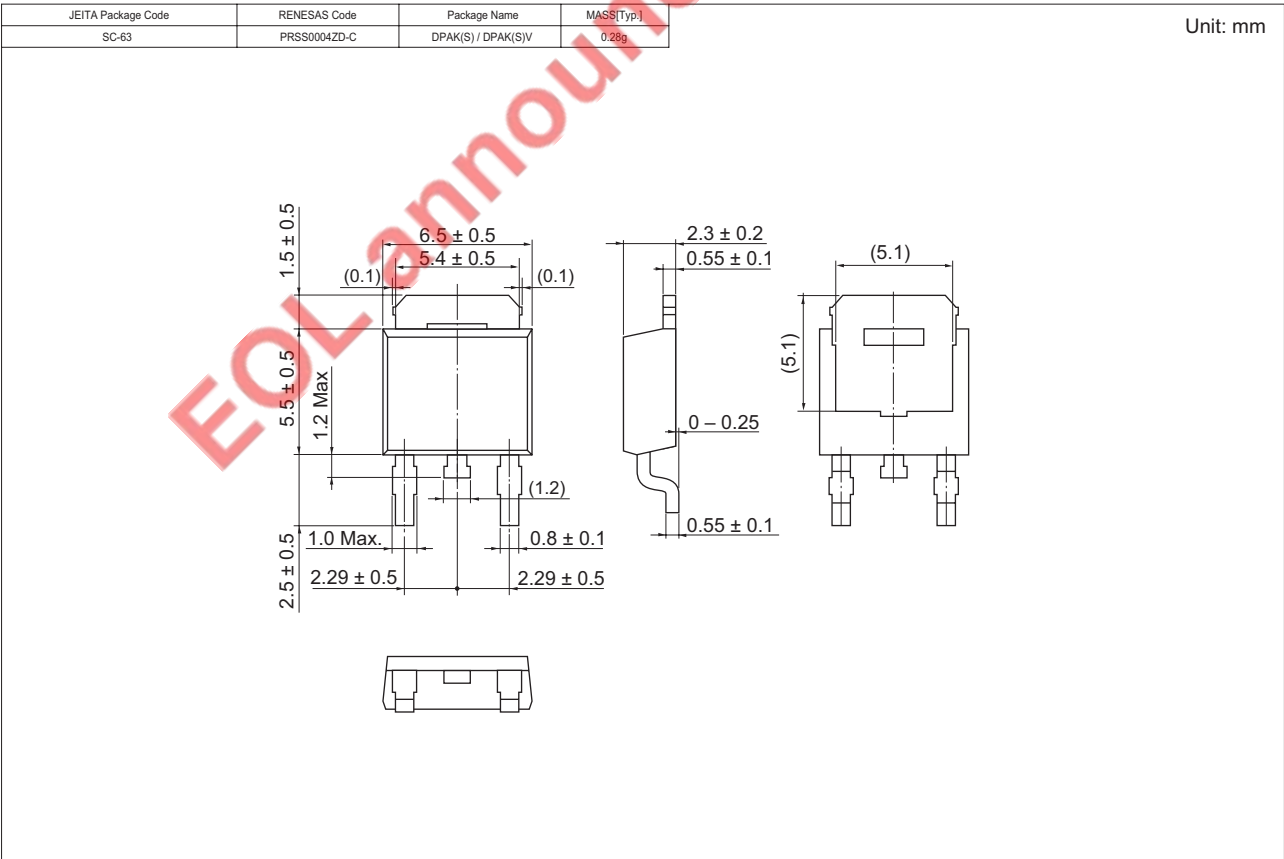
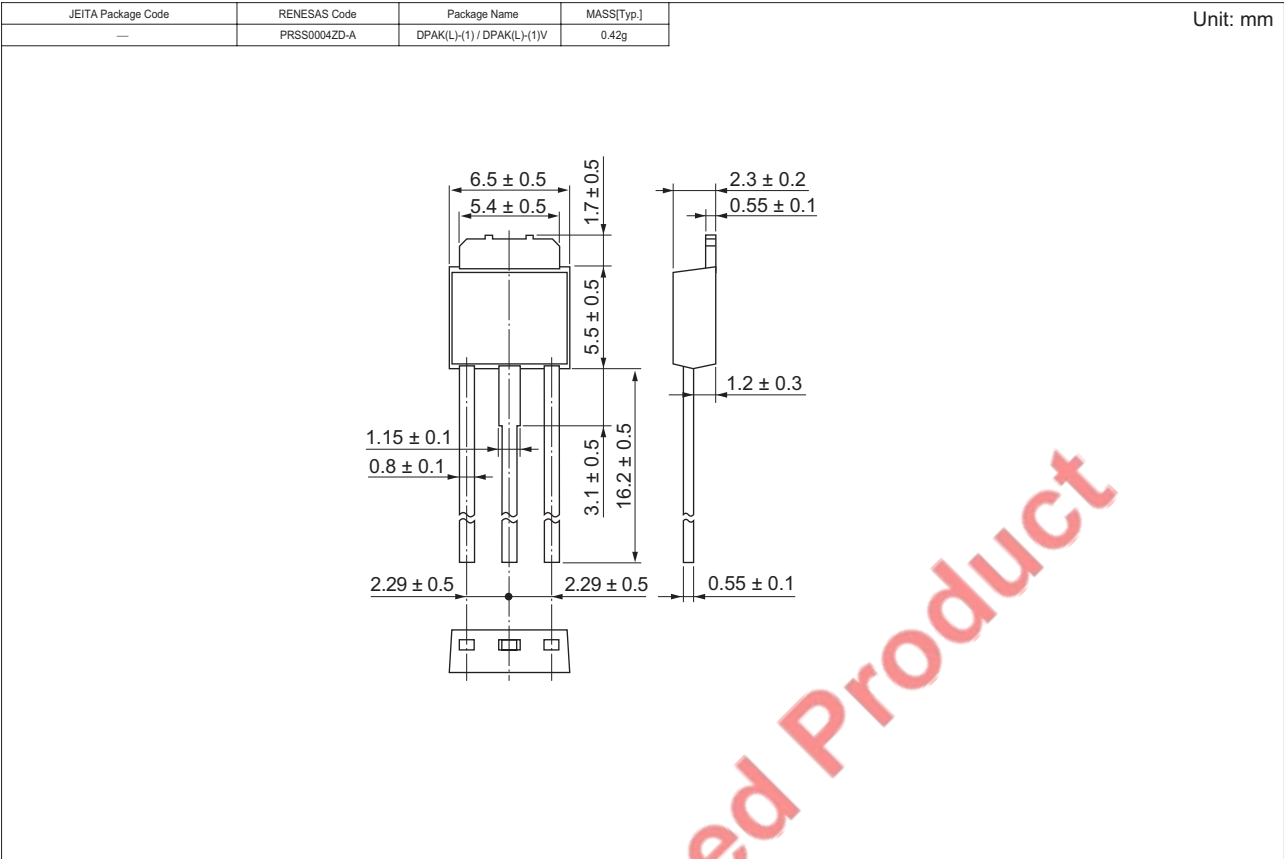
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK1838L-E	3200 pcs	Box (Sack)
2SK1838STL-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.

EOL announced Product

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