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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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2SK2938(L), 2SK2938(S)

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1052-0400
(Previous: ADE-208-561B)
Rev.4.00
Sep 07, 2005

Features

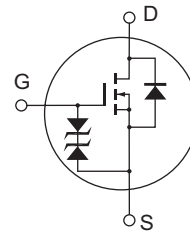
- Low on-resistance
 $R_{DS} = 0.026 \Omega$ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

Outline

RENESAS Package code: PRSS0004AE-A
(Package name: LDKPAK(L))



RENESAS Package code: PRSS0004AE-B
(Package name: LDKPAK(S)-(1))



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

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	25	A
Drain peak current	I _{D(pulse)} ^{Note1}	100	A
Body-drain diode reverse drain current	I _{DR}	25	A
Avalanche current	I _{AP} ^{Note3}	20	A
Avalanche energy	E _{AR} ^{Note3}	34	mJ
Channel dissipation	P _{ch} ^{Note2}	50	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

- Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1 %
 2. Value at T_c = 25°C
 3. Value at T_{ch} = 25°C, R_g ≥ 50 Ω

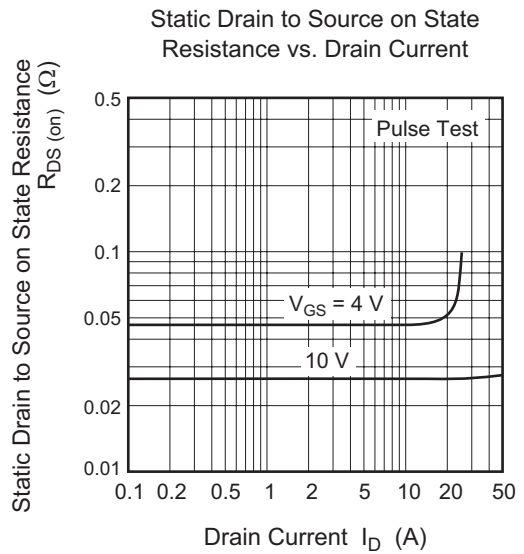
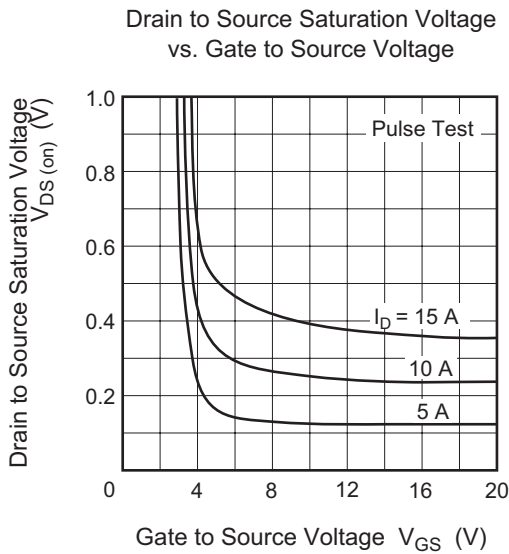
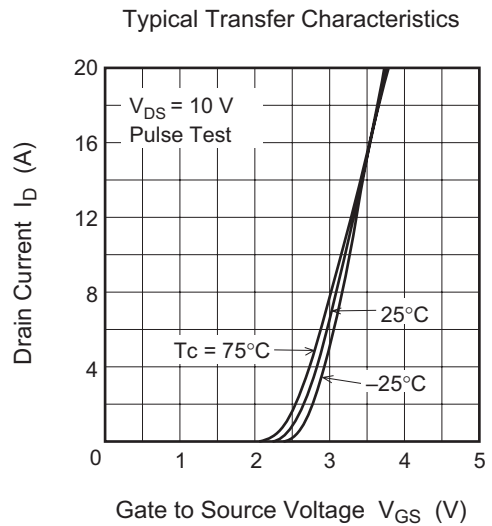
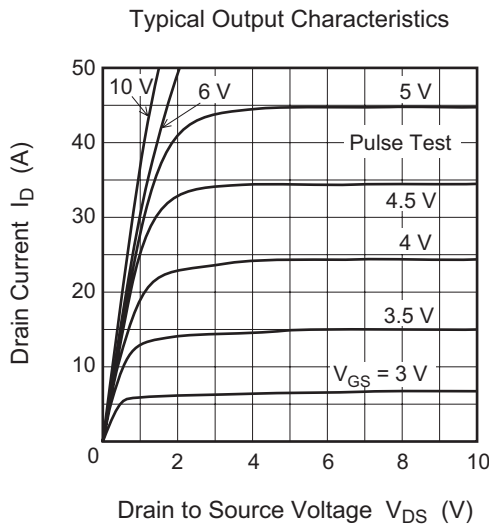
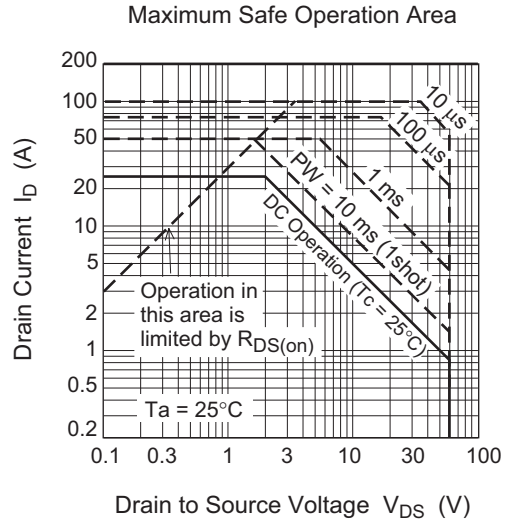
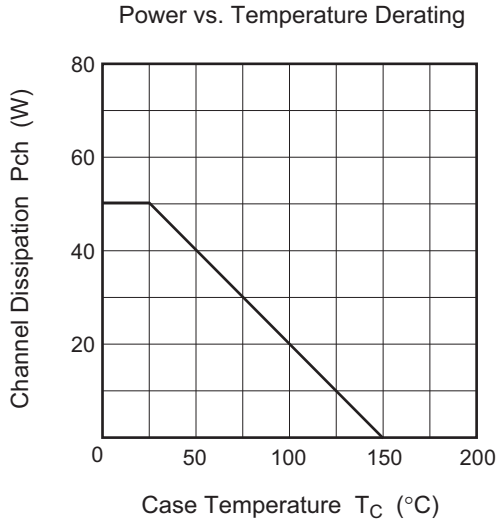
Electrical Characteristics

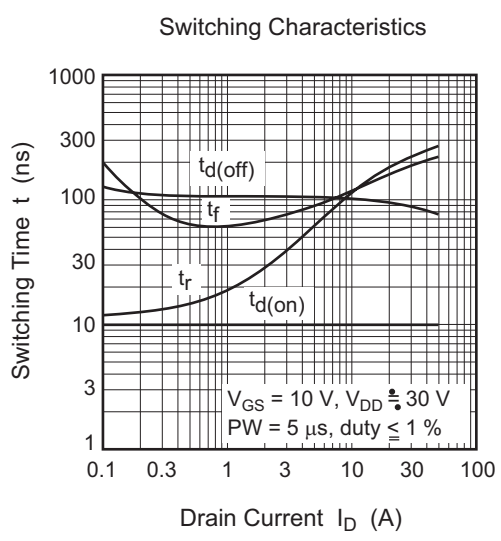
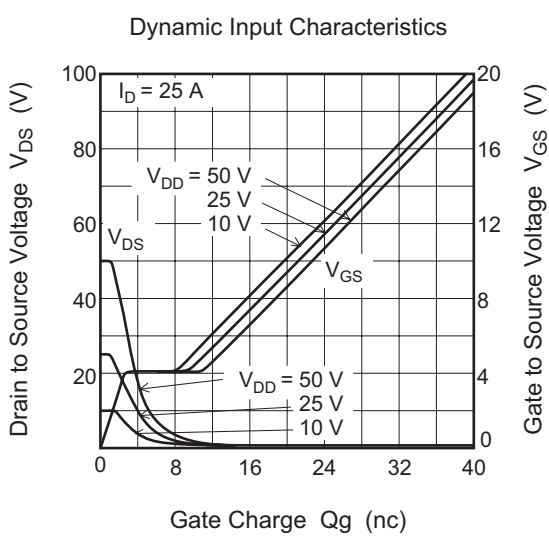
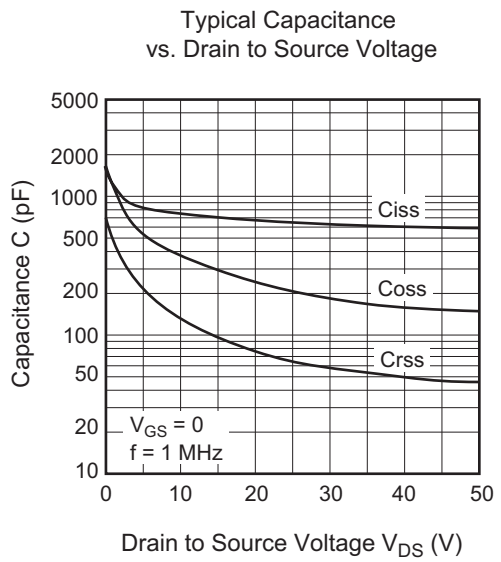
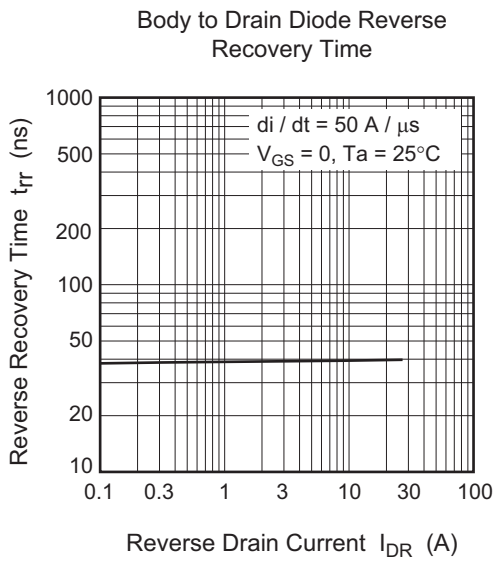
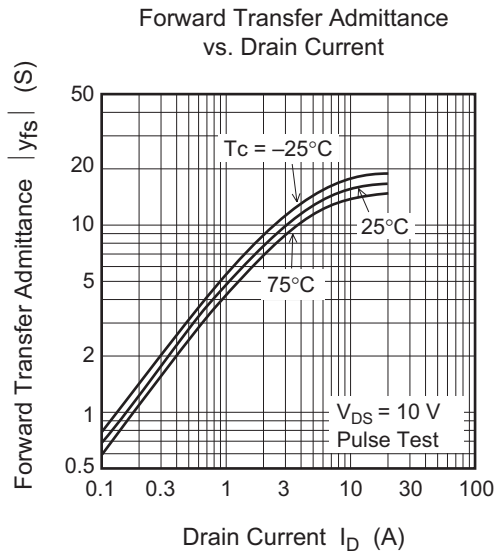
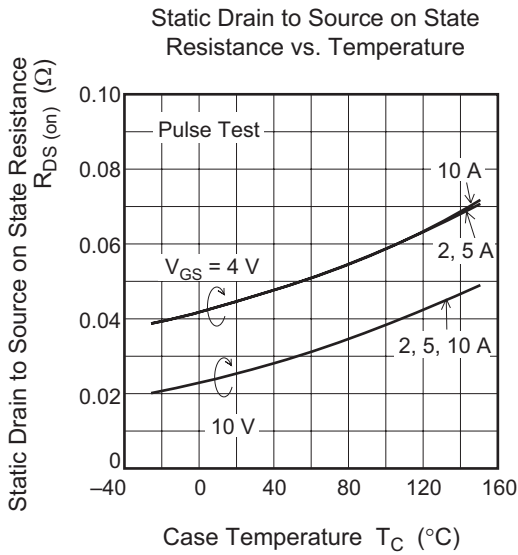
(Ta = 25°C)

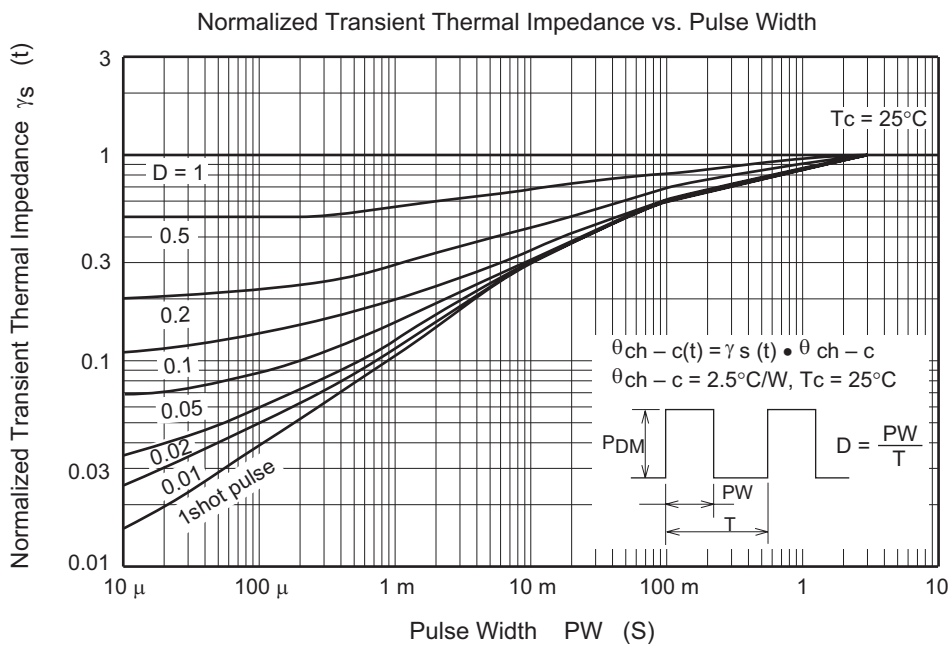
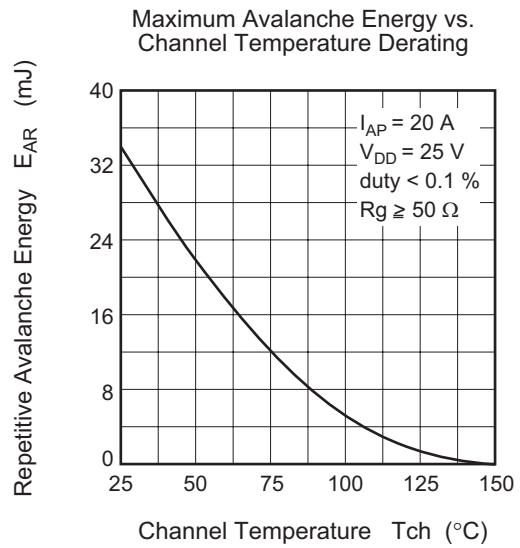
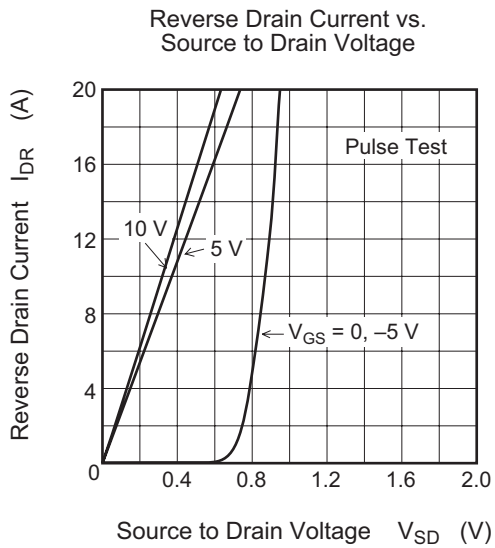
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	60	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 60 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.5	—	2.5	V	I _D = 1 mA, V _{DS} = 10 V
Static drain to source on state resistance	R _{DS(on)}	—	0.026	0.034	Ω	I _D = 15 A, V _{GS} = 10 V ^{Note4}
	R _{DS(on)}	—	0.045	0.07	Ω	I _D = 15 A, V _{GS} = 4 V ^{Note4}
Forward transfer admittance	y _{fs}	11	17	—	S	I _D = 15 A, V _{DS} = 10 V ^{Note4}
Input capacitance	C _{iss}	—	740	—	pF	V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz
Output capacitance	C _{oss}	—	380	—	pF	
Reverse transfer capacitance	C _{rss}	—	140	—	pF	
Turn-on delay time	t _{d(on)}	—	10	—	ns	I _D = 15 A, V _{GS} = 10 V, R _L = 2 Ω
Rise time	t _r	—	160	—	ns	
Turn-off delay time	t _{d(off)}	—	100	—	ns	
Fall time	t _f	—	150	—	ns	
Body-drain diode forward voltage	V _{DF}	—	0.95	—	V	I _F = 25 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	40	—	ns	I _F = 25 A, V _{GS} = 0 di _F / dt = 50 A/μs

- Note: 4. Pulse test

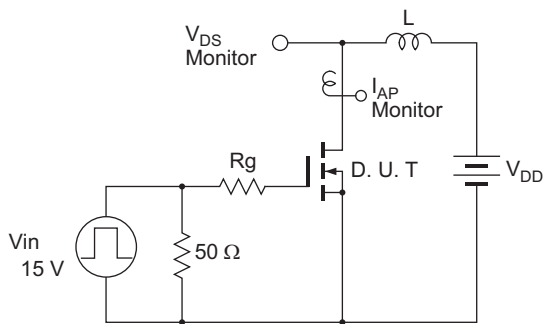
Main Characteristics



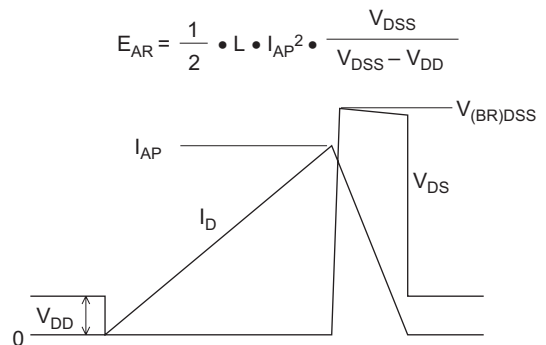


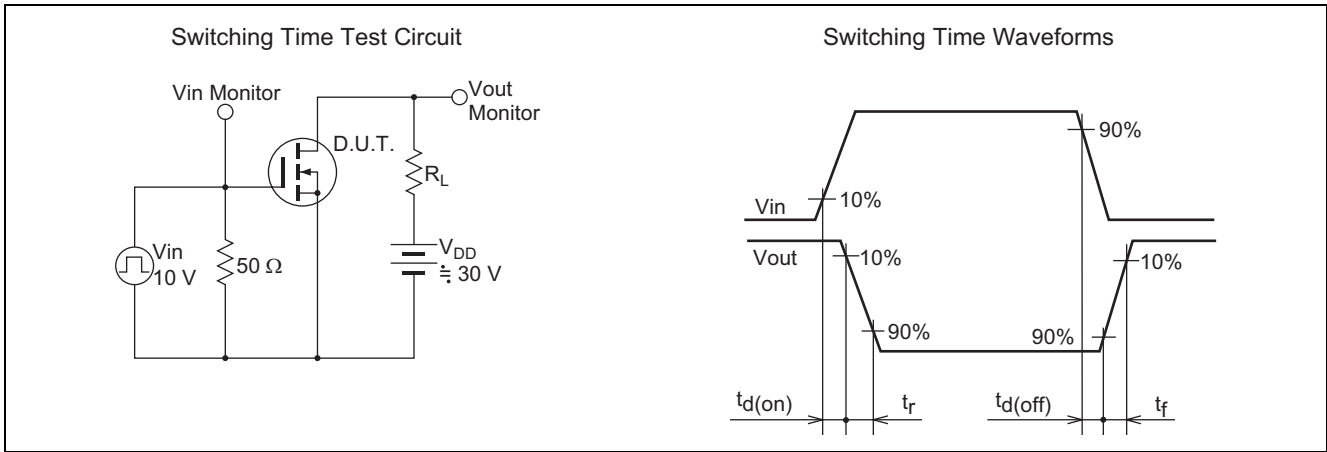


Avalanche Test Circuit

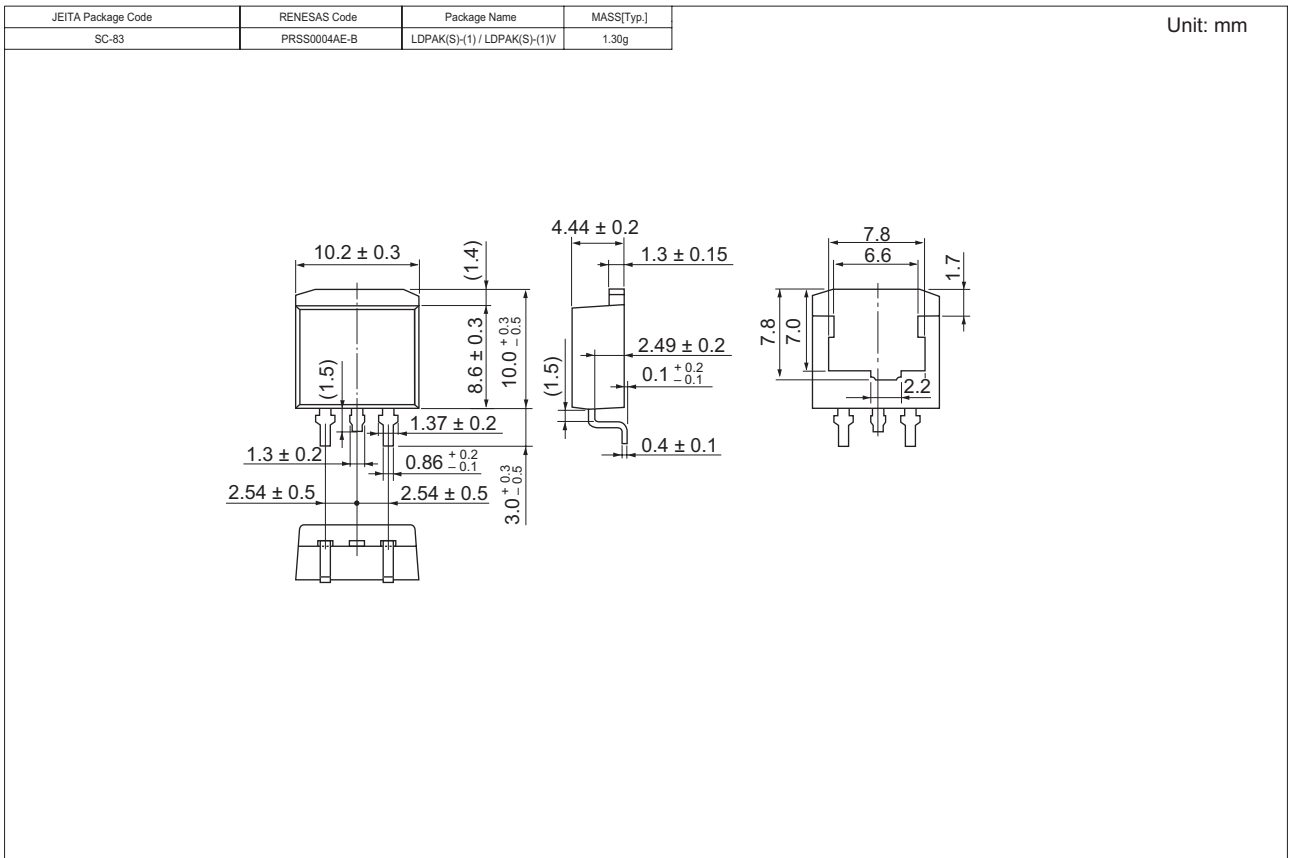
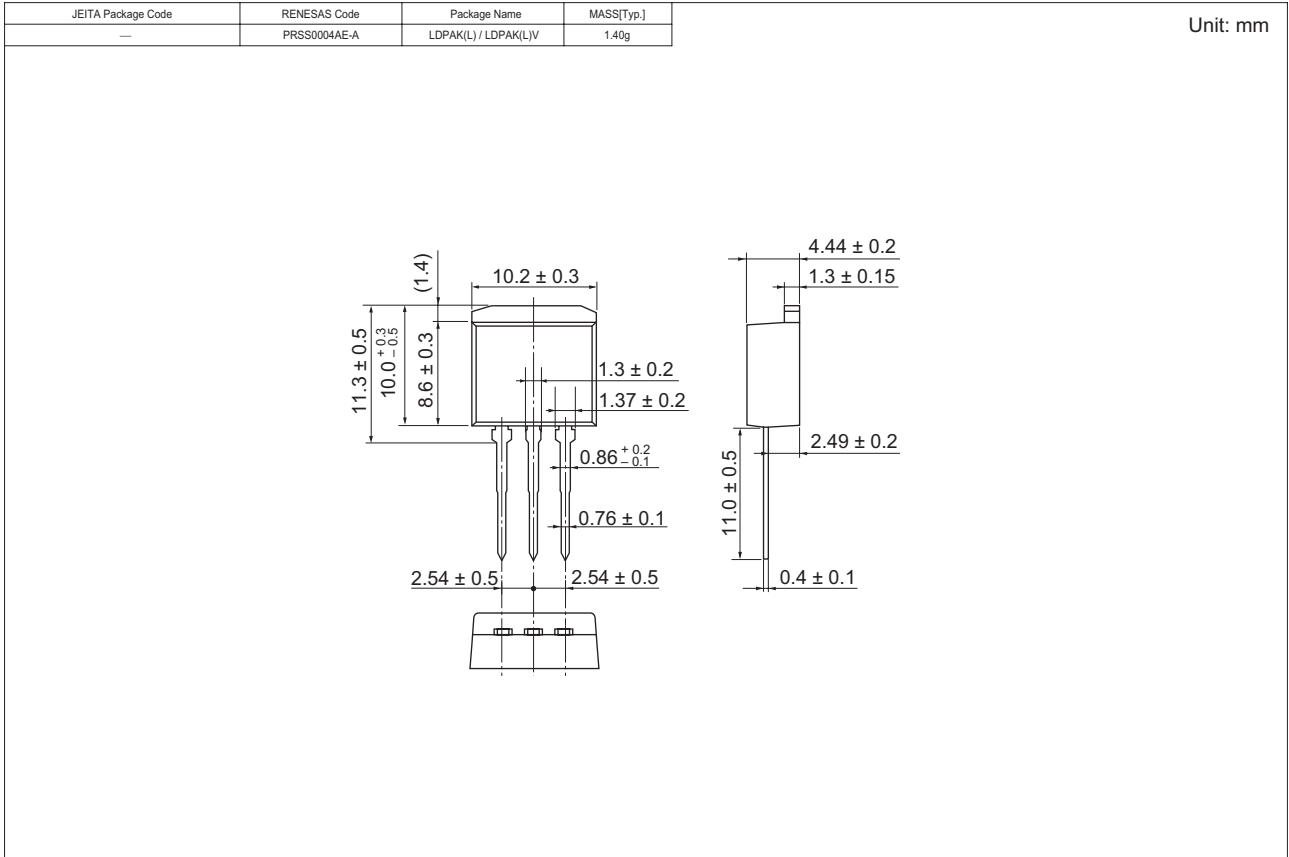


Avalanche Waveform





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK2938L-E	500 pcs	Box (Tube)
2SK2938STL-E	1000 pcs	Taping

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