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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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2SK2553(L), 2SK2553(S)

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1015-1000
(Previous: ADE-208-357H)
Rev.10.00
Sep 07, 2005

Application

High speed power switching

Features

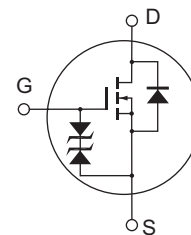
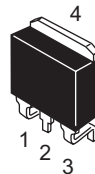
- Low on-resistance
- $R_{DS(on)} = 7 \text{ m}\Omega$ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

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	50	A
Drain peak current	$I_{D(pulse)}$ ^{Note 1}	200	A
Body to drain diode reverse drain current	I_{DR}	50	A
Avalanche current	I_{AP} ^{Note 3}	45	A
Avalanche energy	E_{AR} ^{Note 3}	174	mJ
Channel dissipation	P_{ch} ^{Note 2}	75	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. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50 \Omega$

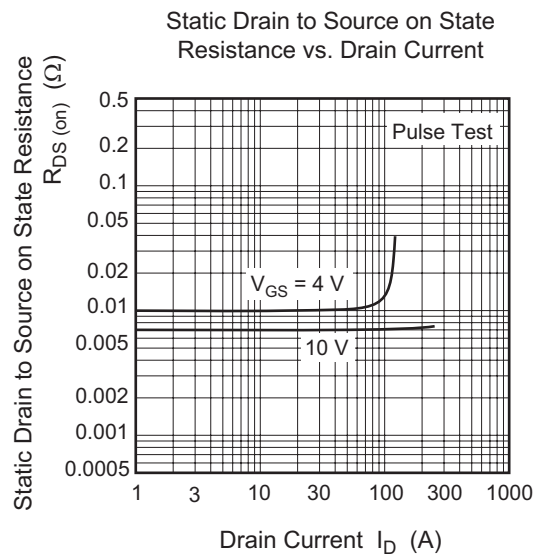
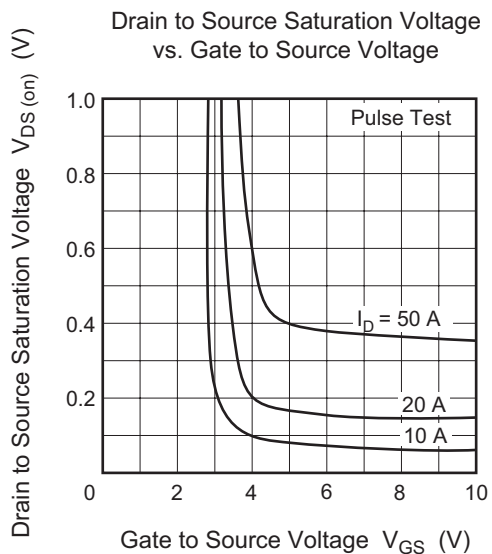
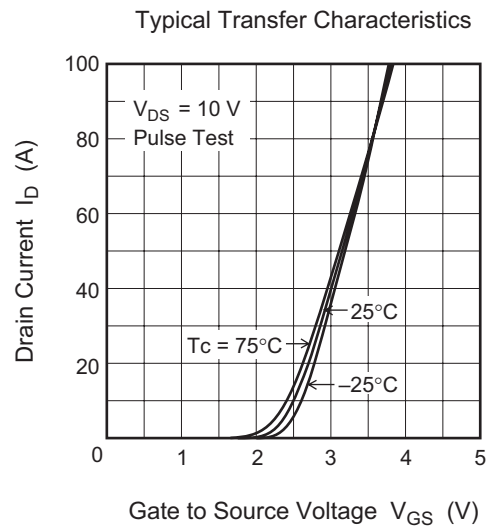
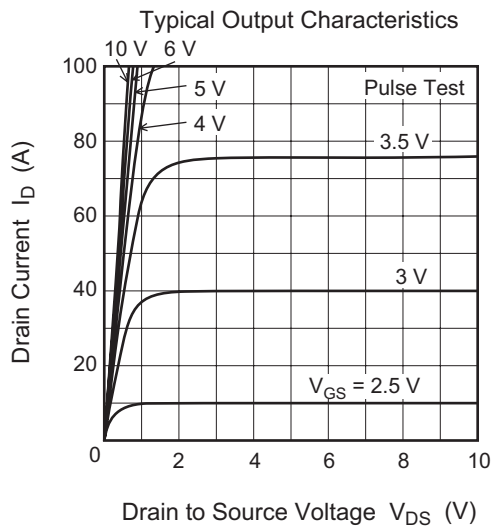
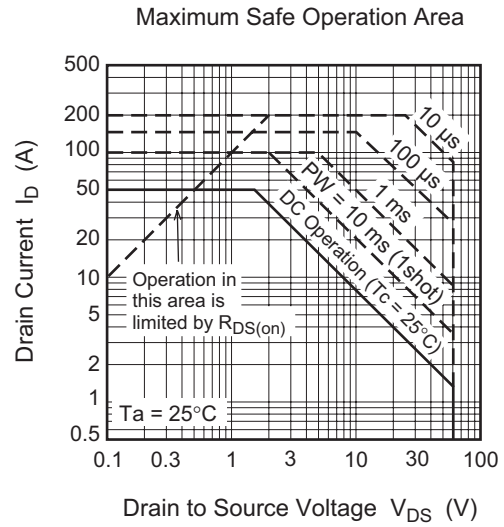
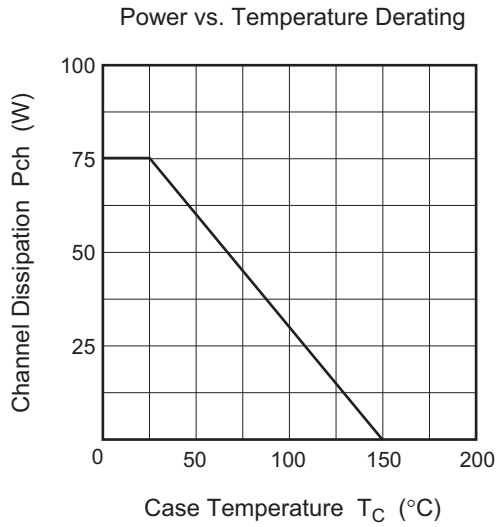
Electrical Characteristics

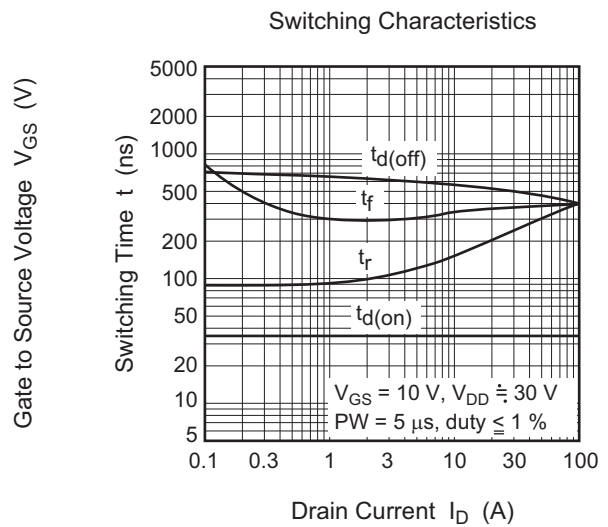
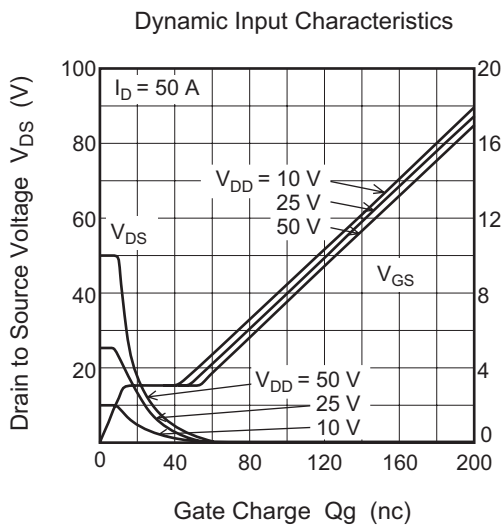
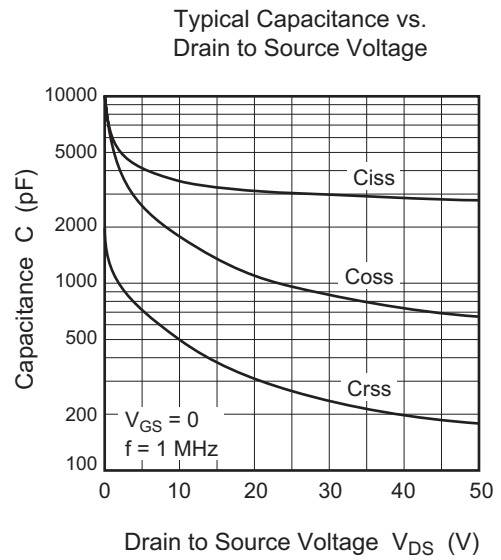
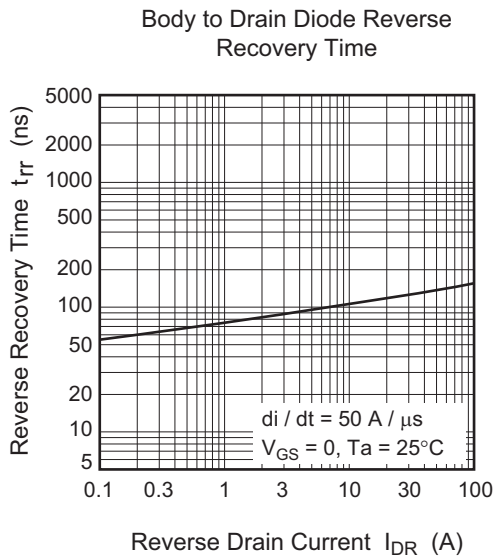
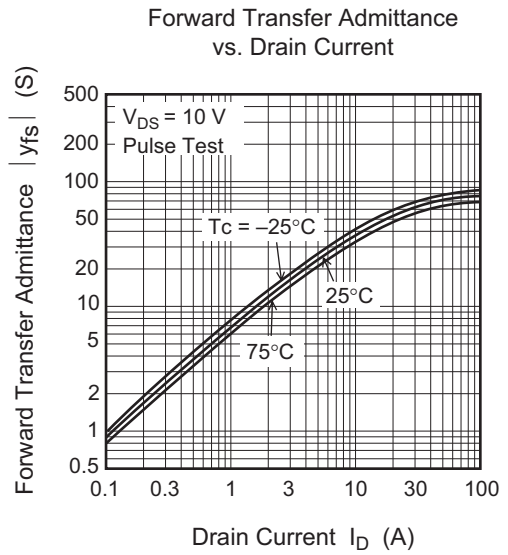
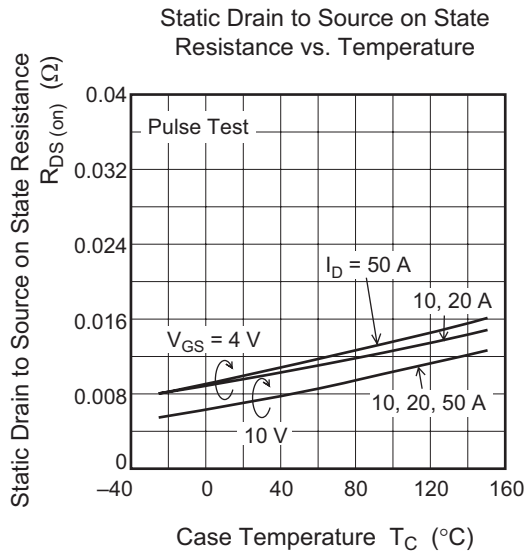
(Ta = 25°C)

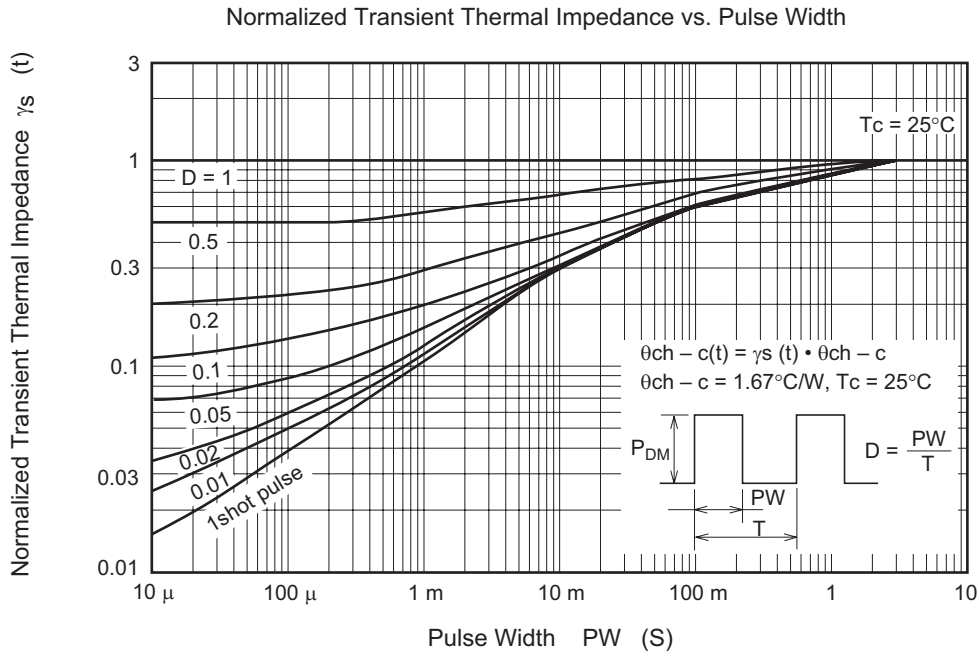
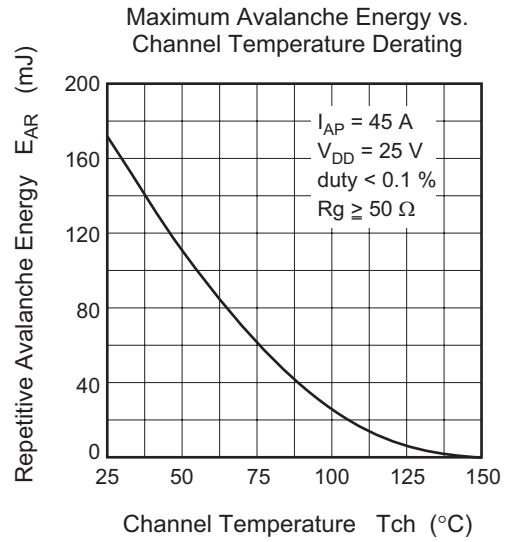
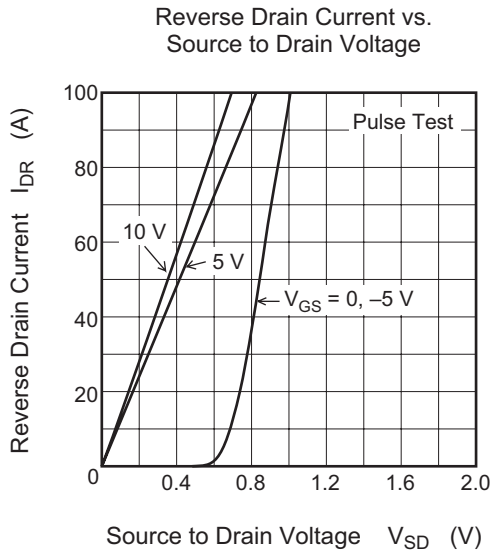
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu A$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 60 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	7	10	mΩ	$I_D = 25 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note 4}
		—	10	16	mΩ	$I_D = 25 \text{ A}$, $V_{GS} = 4 \text{ V}$ ^{Note 4}
Forward transfer admittance	$ y_{fs} $	35	55	—	S	$I_D = 25 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note 4}
Input capacitance	C_{iss}	—	3550	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	1760	—	pF	
Reverse transfer capacitance	C_{rss}	—	500	—	pF	
Turn-on delay time	$t_{d(on)}$	—	35	—	ns	$I_D = 25 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 1.2 \Omega$
Rise time	t_r	—	230	—	ns	
Turn-off delay time	$t_{d(off)}$	—	470	—	ns	
Fall time	t_f	—	360	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.85	—	V	$I_F = 50 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	135	—	ns	$I_F = 50 \text{ A}$, $V_{GS} = 0$ $di_F / dt = 50 \text{ A} / \mu s$

Note: 4. Pulse Test

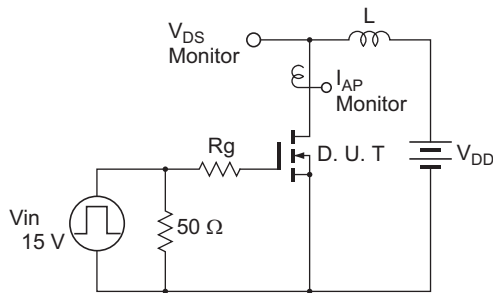
Main Characteristics



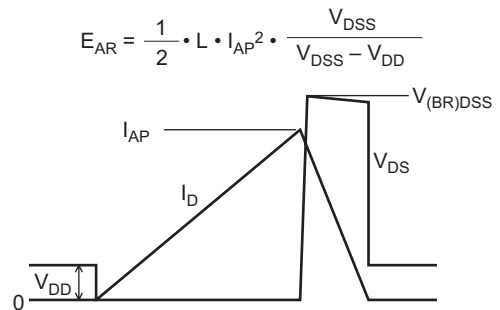


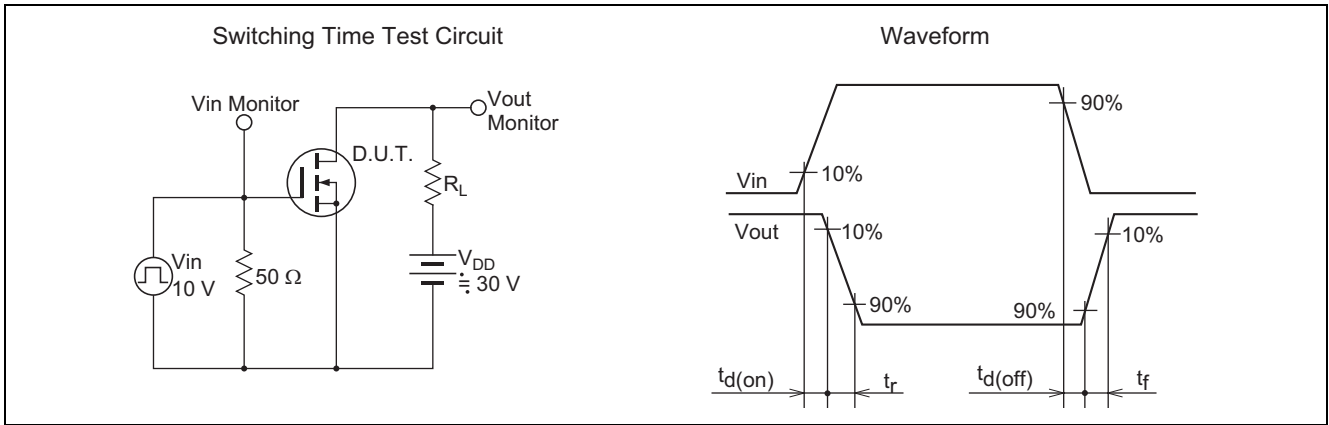


Avalanche Test Circuit

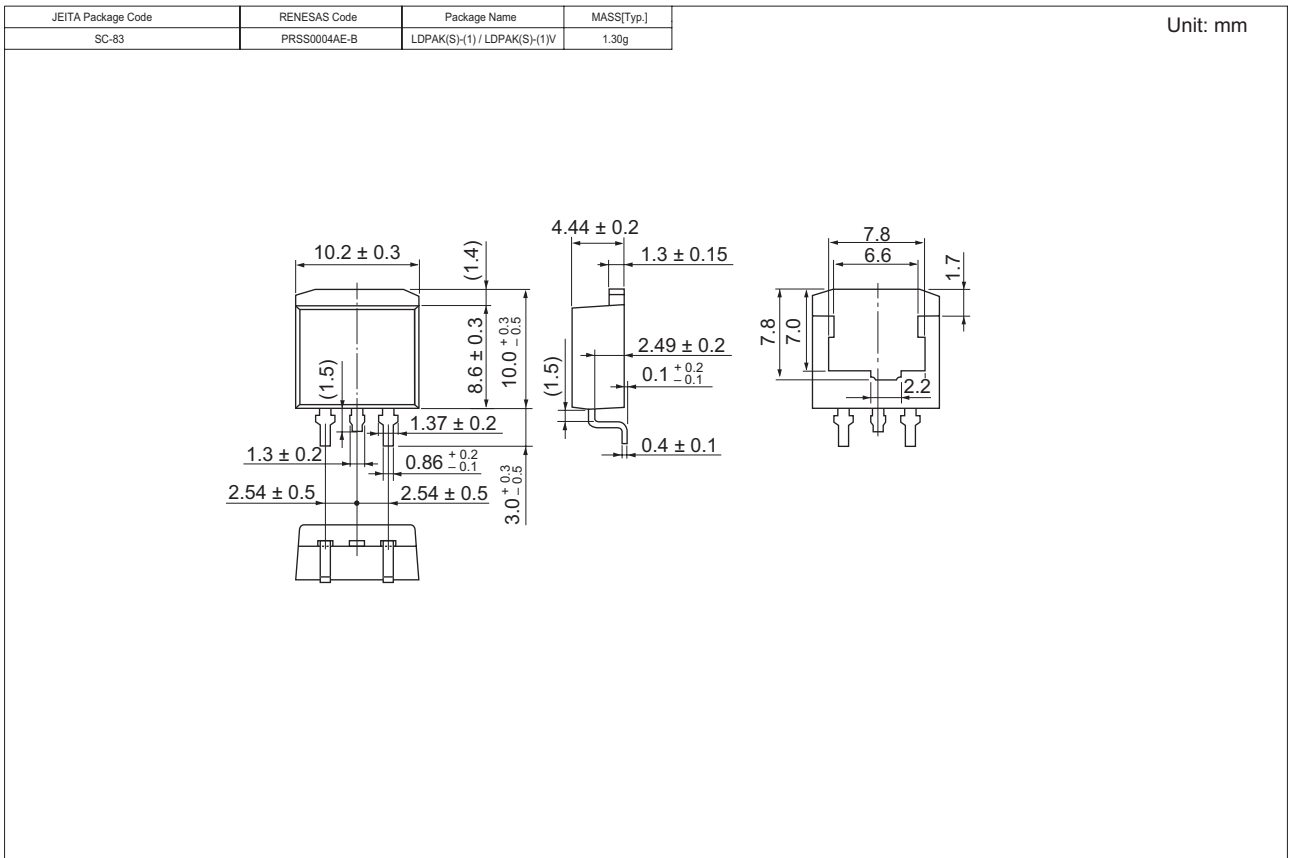
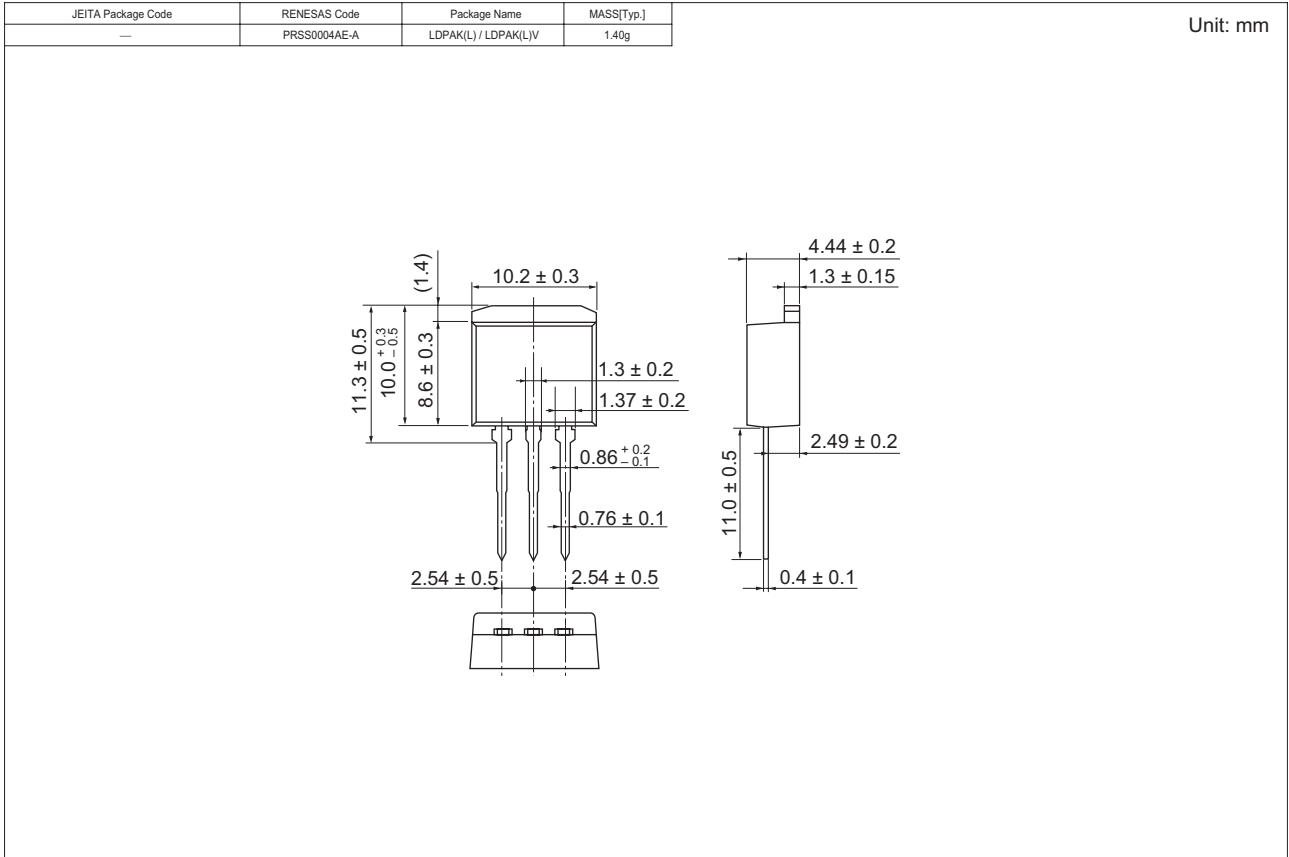


Avalanche Waveform





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK2553L-E	500 pcs	Box (Sack)
2SK2553STL-E	1000 pcs	Taping

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