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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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Not recommended
for new design

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2SK2851

Silicon N Channel MOS FET
High Speed Power Switching

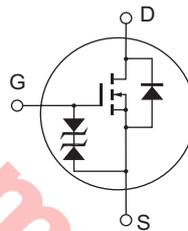
REJ03G1036-0200
(Previous: ADE-208-478)
Rev.2.00
Sep.07,2005

Features

- Low on-resistance
 $R_{DS(on)} = 0.055 \Omega$ typ. (at $V_{GS} = 10 \text{ V}$, $I_D = 2.5 \text{ A}$)
- 4 V gate drive devices.
- Large current capacitance
 $I_D = 5 \text{ A}$

Outline

RENESAS Package code: PRSS0003DC-A
(Package name: TO-92 Mod)



1. Source
2. Drain
3. Gate

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	5	A
Drain peak current	$I_{D(pulse)}^{*1}$	20	A
Body to drain diode reverse drain current	I_{DR}	5	A
Avalanche current	I_{AP}^{*3}	5	A
Avalanche energy	E_{AR}^{*3}	2.14	mJ
Channel dissipation	P_{ch}^{*2}	0.9	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

- Notes: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
 2. Value at Ta = 25°C
 3. Value at Tch = 25°C, Rg $\geq 50\ \Omega$

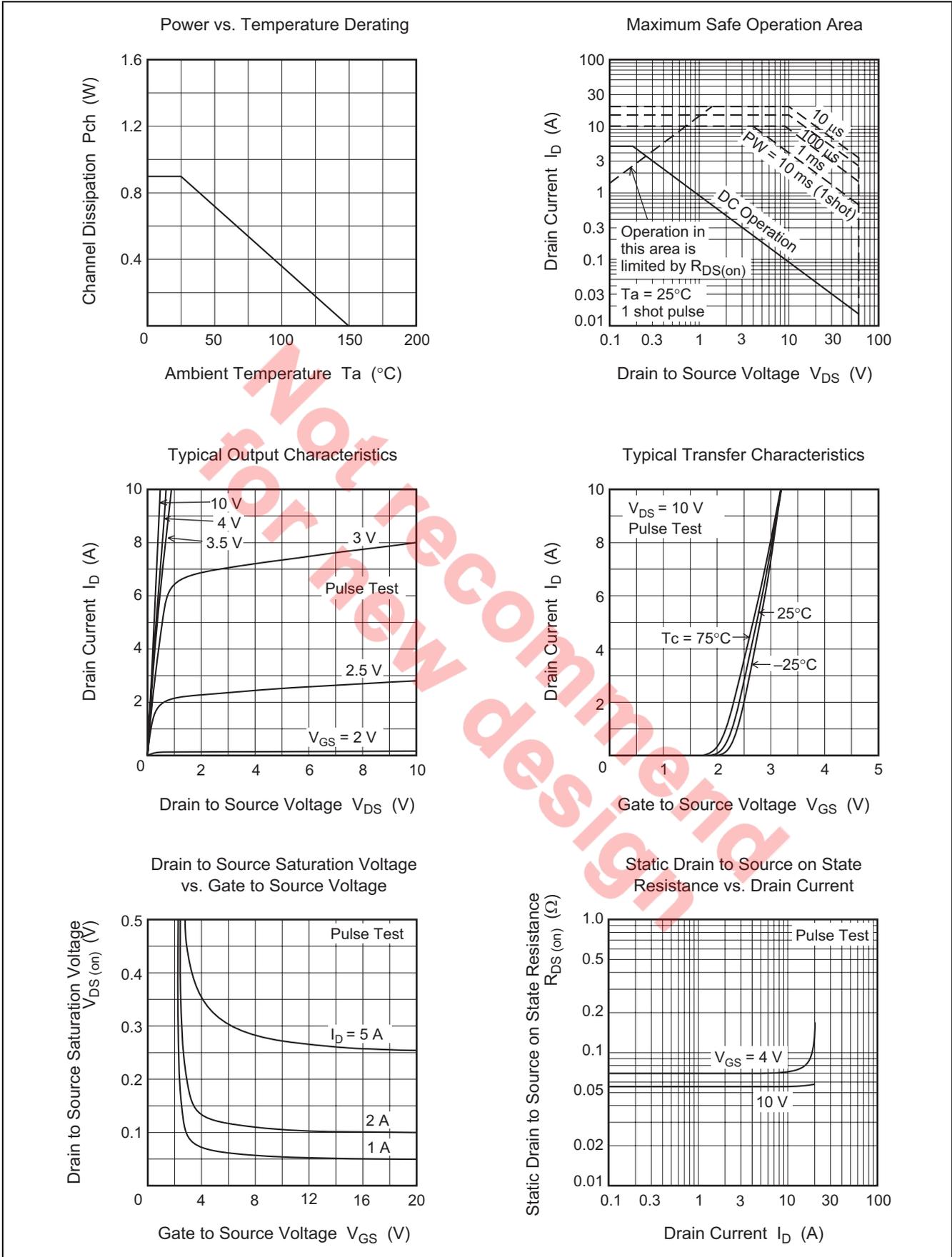
Electrical Characteristics

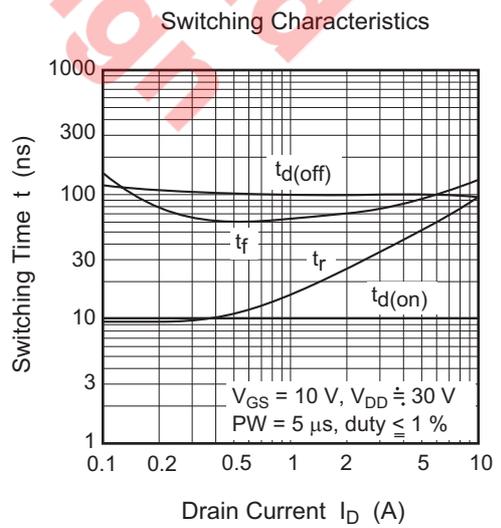
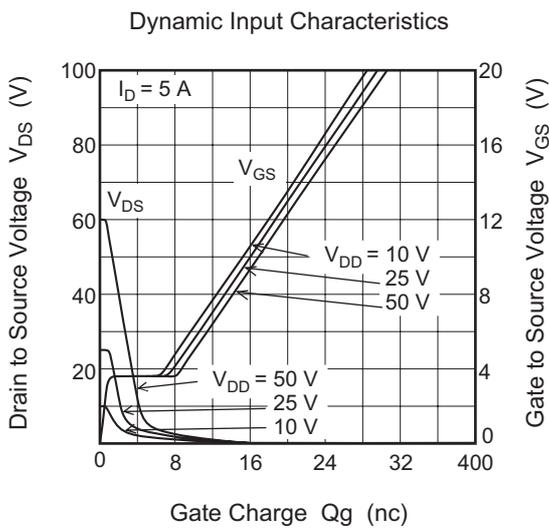
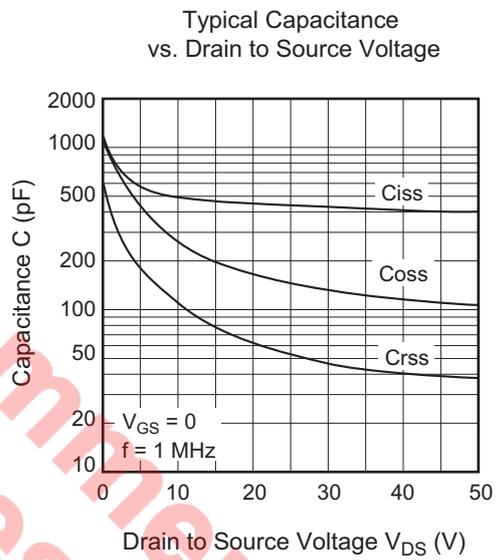
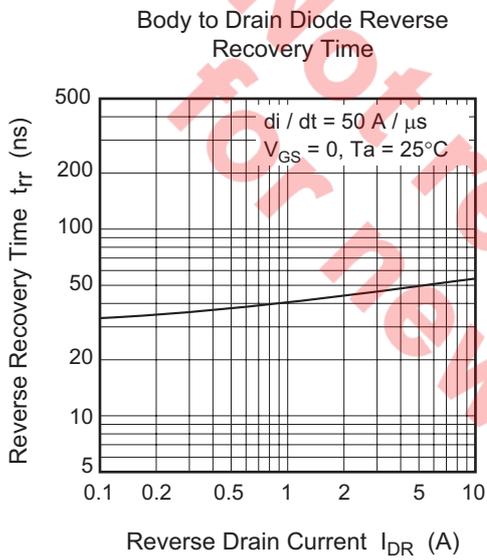
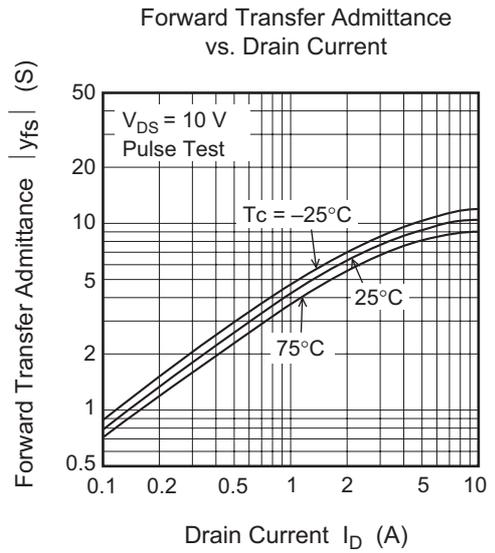
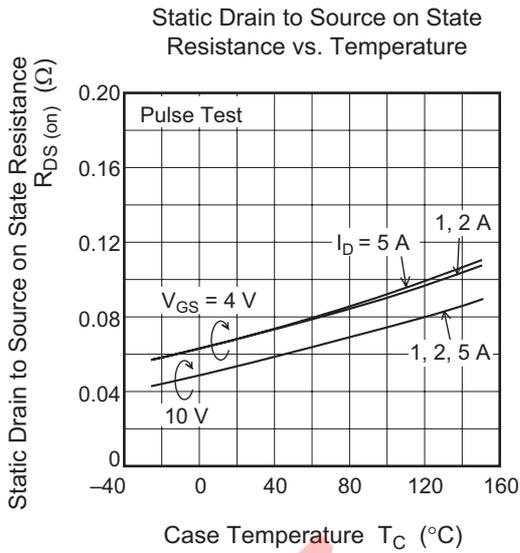
(Ta = 25°C)

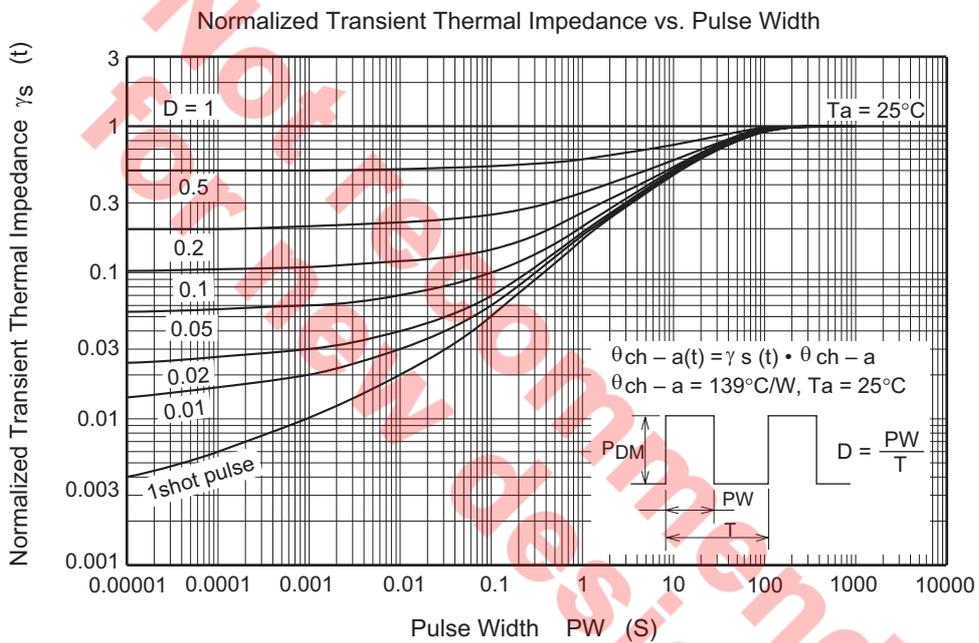
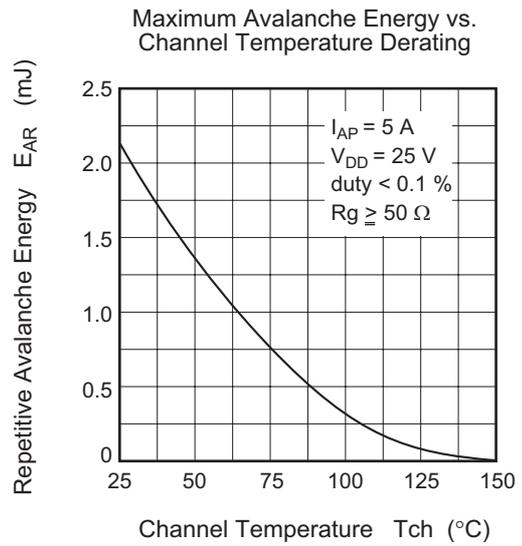
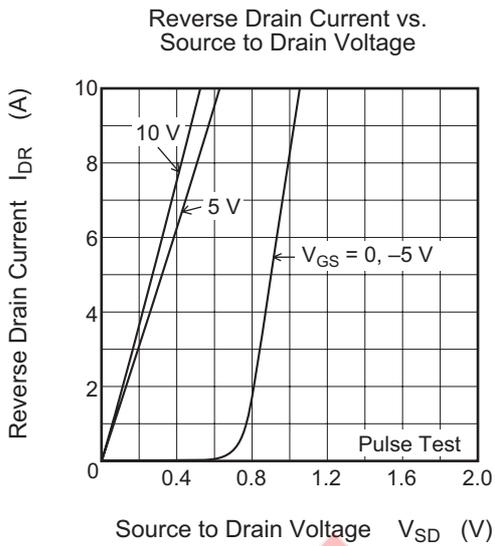
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10\text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100\ \mu A$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 60\text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16\text{ V}$, $V_{DS} = 0$
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	$R_{DS(on)}$	—	0.055	0.07	Ω	$I_D = 2.5\text{ A}$, $V_{GS} = 10V^{*1}$
	$R_{DS(on)}$	—	0.07	0.1	Ω	$I_D = 2.5\text{ A}$, $V_{GS} = 4V^{*1}$
Forward transfer admittance	$ y_{fs} $	5	7	—	S	$I_D = 2.5\text{ A}$, $V_{DS} = 10V^{*1}$
Input capacitance	C_{iss}	—	500	—	pF	$V_{DS} = 10\text{ V}$, $V_{GS} = 0$,
Output capacitance	C_{oss}	—	260	—	pF	f = 1 MHz
Reverse transfer capacitance	C_{rss}	—	110	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = 10\text{ V}$, $I_D = 2.5\text{ A}$, $R_L = 12\ \Omega$
Rise time	t_r	—	30	—	ns	
Turn-off delay time	$t_{d(off)}$	—	100	—	ns	
Fall time	t_f	—	75	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_D = 5\text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	50	—	ns	$I_F = 5\text{ A}$, $V_{GS} = 0$ $di_F/dt = 50\text{ A}/\mu s$

- Note: 4. Pulse test

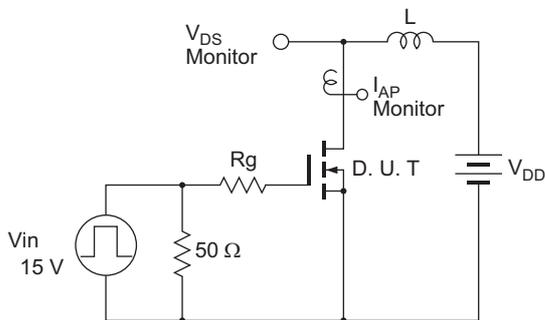
Main Characteristics



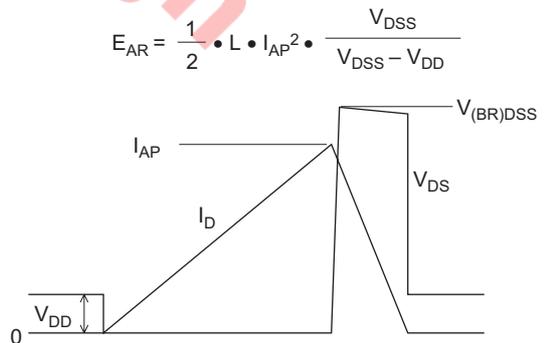


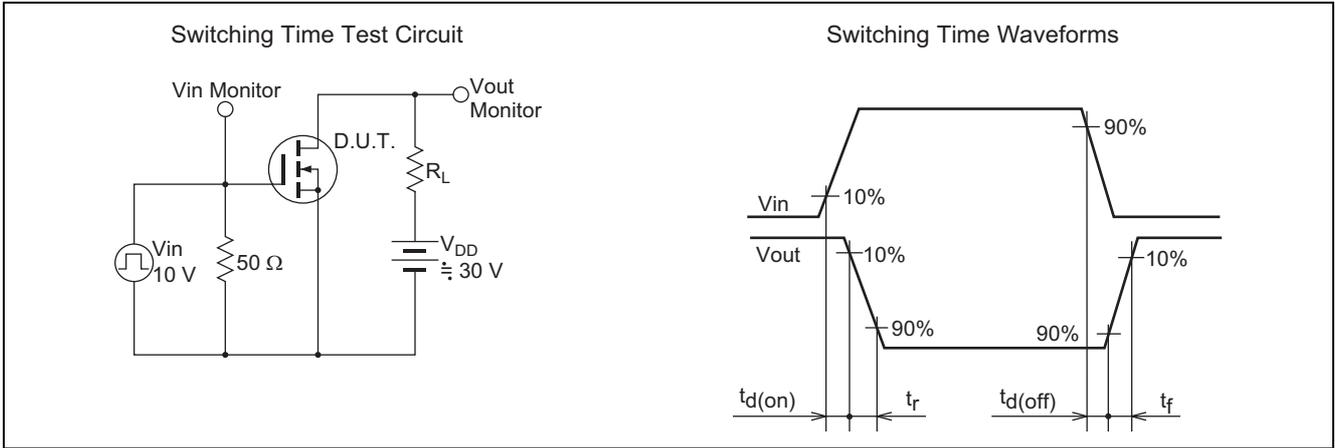


Avalanche Test Circuit



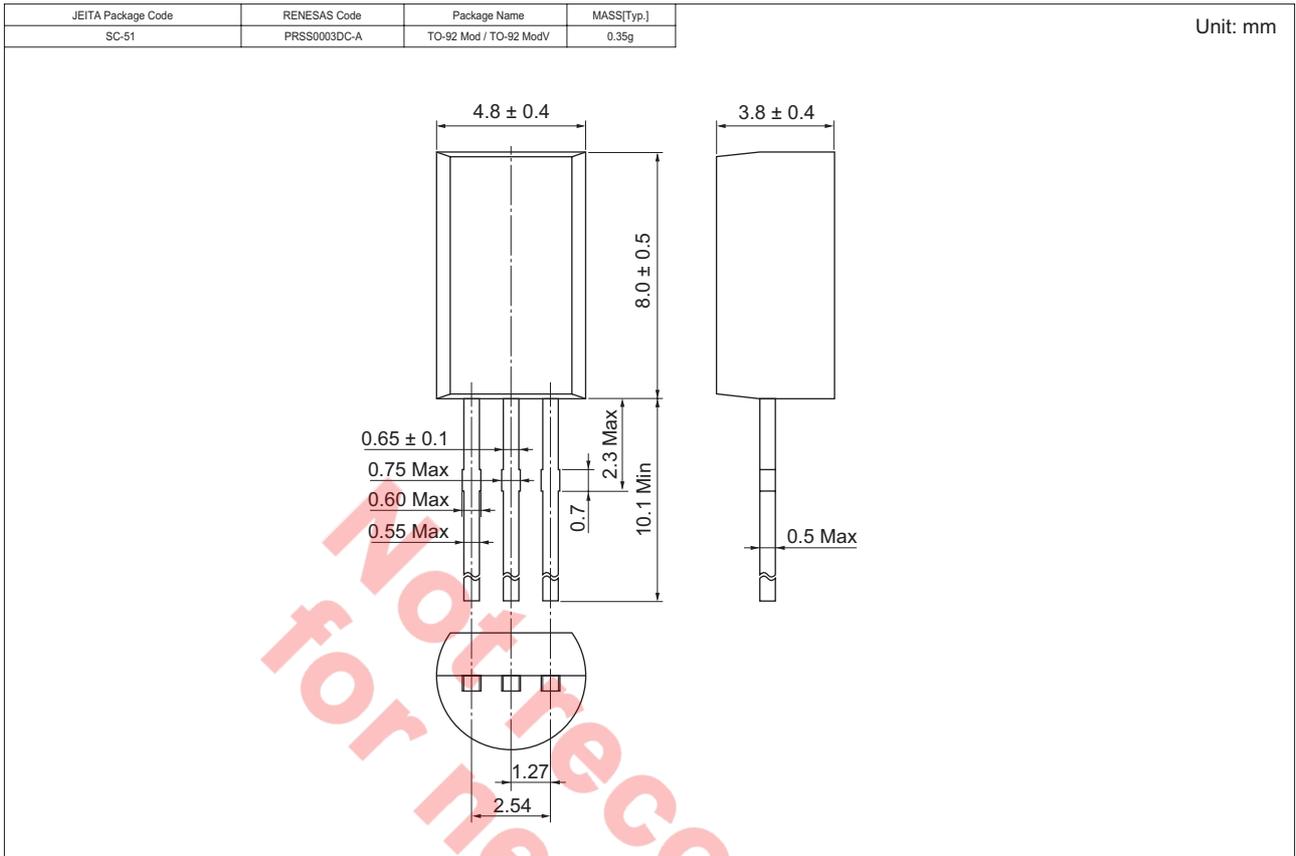
Avalanche Waveform





Not recommend
for new design

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK2851TZ-E	2500 pcs	Taping

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