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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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2SK3163

Silicon N Channel MOS FET
High Speed Power Switching

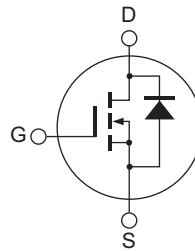
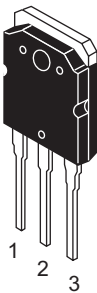
REJ03G1088-0300
(Previous: ADE-208-736A)
Rev.3.00
Sep 07, 2005

Features

- Low on-resistance
 $R_{DS(on)} = 6 \text{ m}\Omega$ typ.
- Low drive current
- 4 V gate drive device can be driven from 5 V source

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)



1. Gate
2. Drain (Flange)
3. Source

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	75	A
Drain peak current	I _{D(pulse)} ^{Note 1}	300	A
Body-drain diode reverse drain current	I _{DR}	75	A
Avalanche current	I _{AP} ^{Note 3}	50	A
Avalanche energy	E _{AR} ^{Note 3}	214	mJ
Channel dissipation	P _{ch} ^{Note 2}	110	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

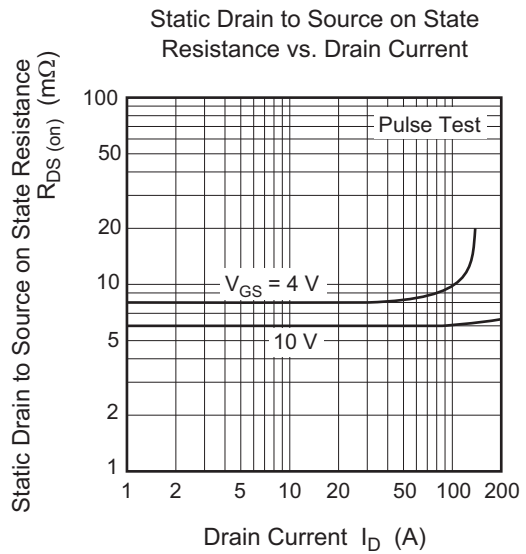
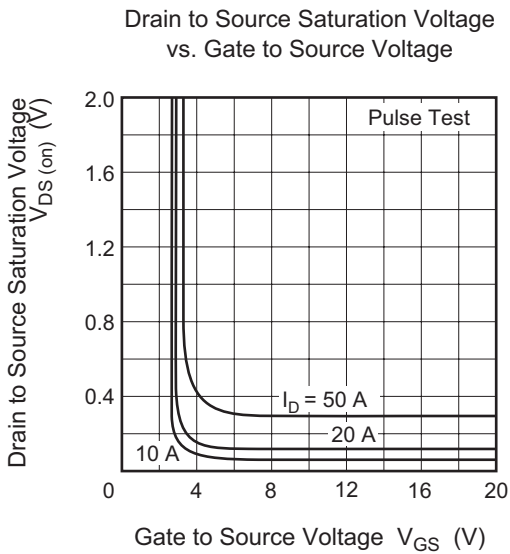
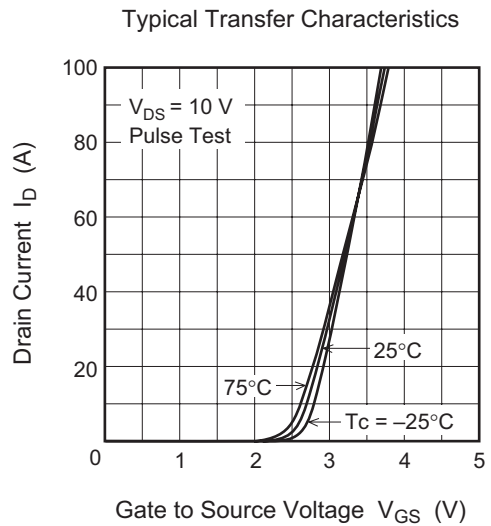
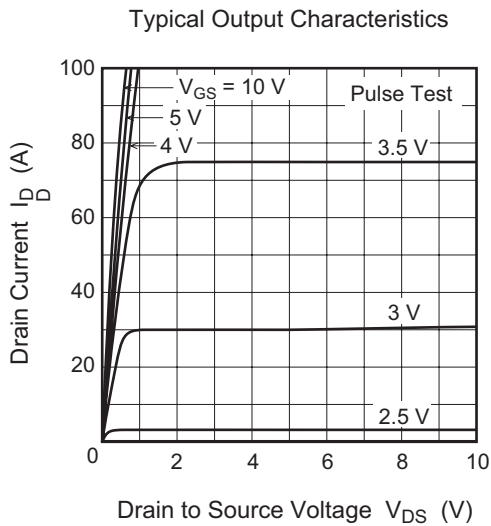
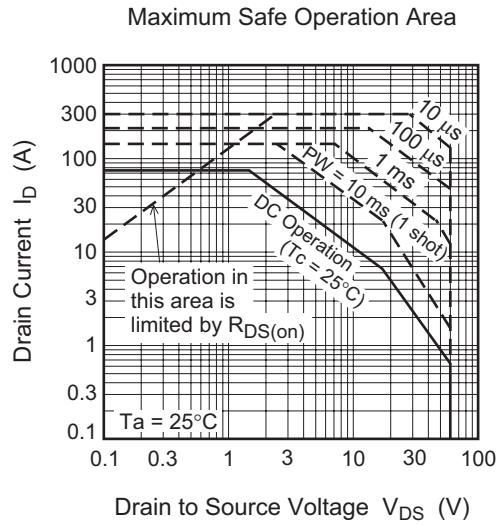
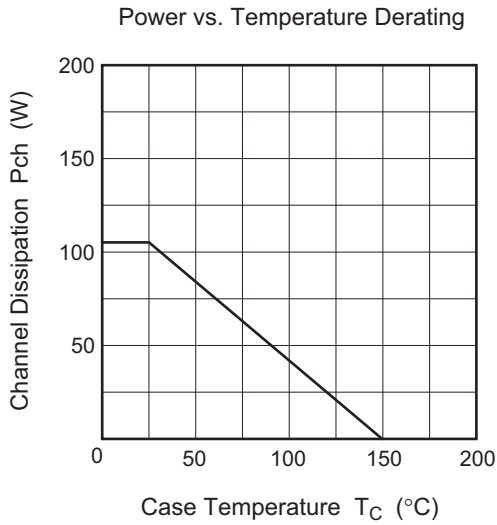
Electrical Characteristics

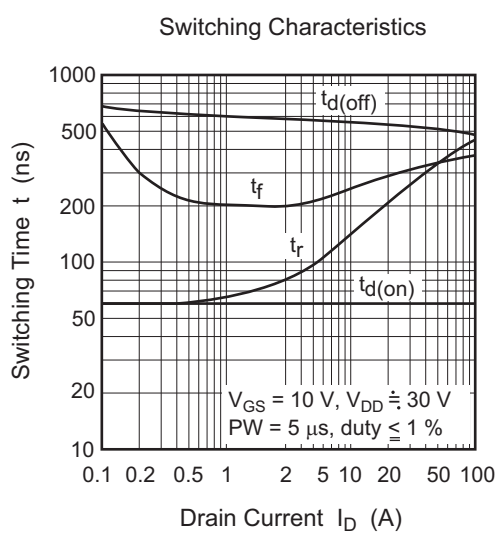
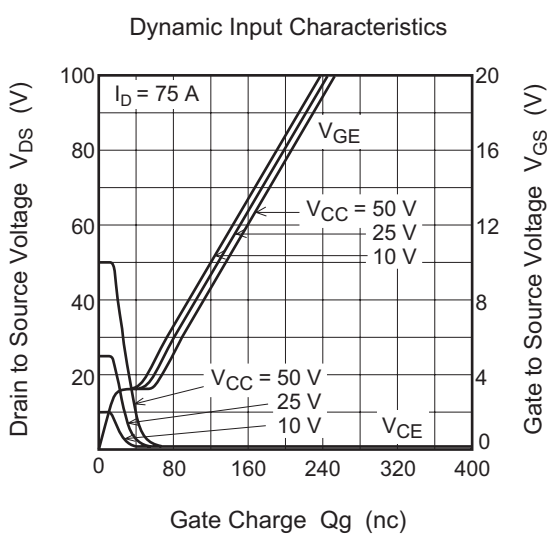
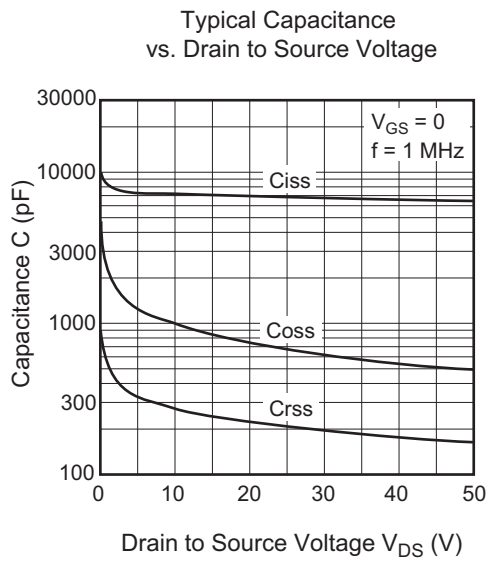
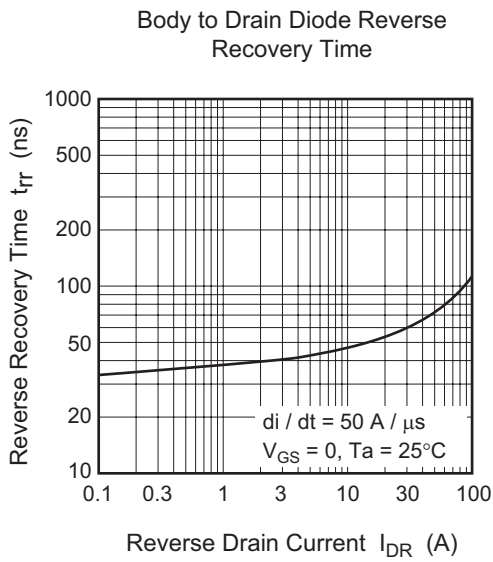
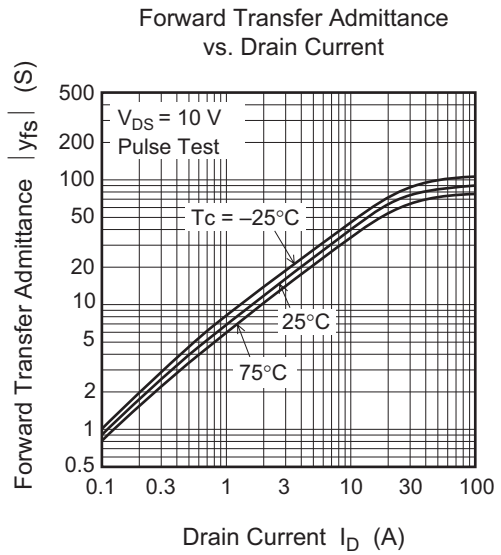
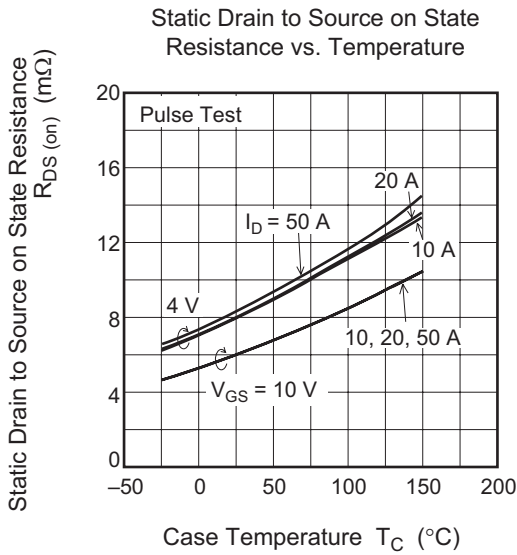
(Ta = 25°C)

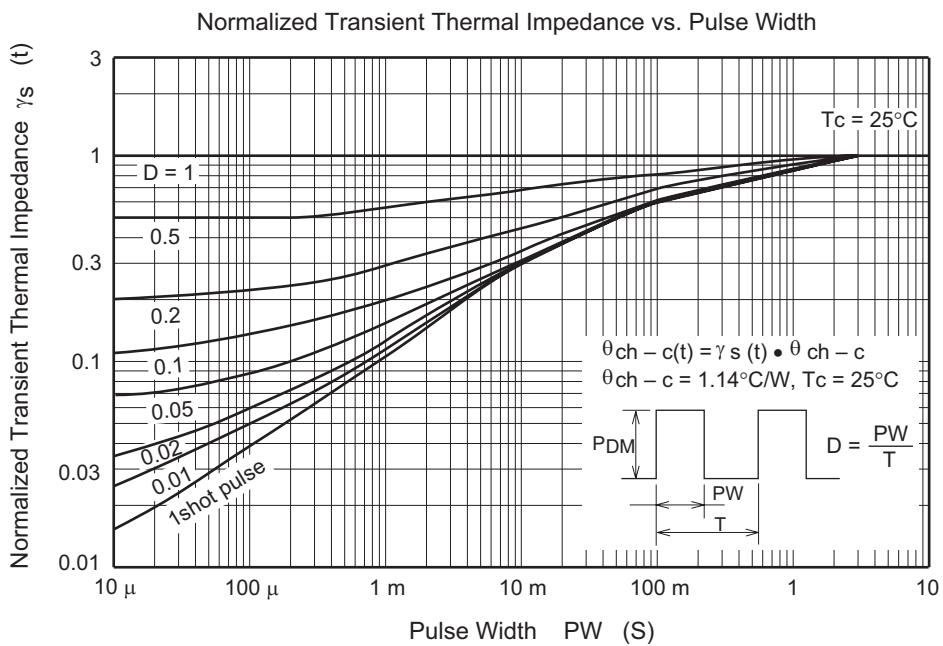
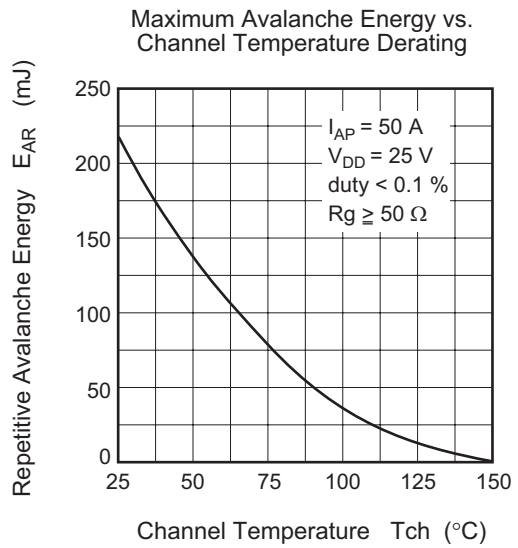
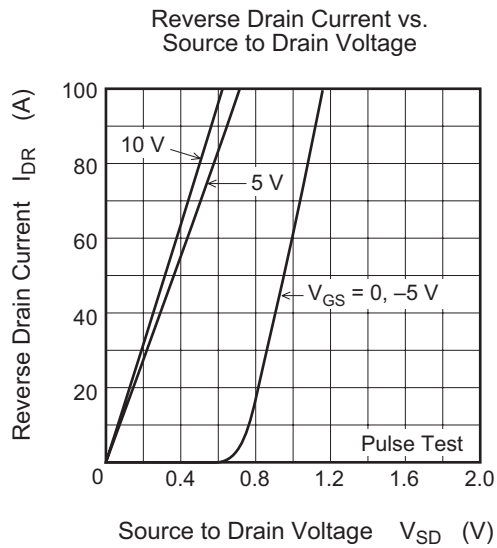
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	60	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±20 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 60 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.0	—	2.5	V	I _D = 1 mA, V _{DS} = 10 V ^{Note 1}
Static drain to source on state resistance	R _{DS(on)}	—	6.0	7.5	mΩ	I _D = 40 A, V _{GS} = 10 V ^{Note 1}
		—	8.0	12	mΩ	I _D = 40 A, V _{GS} = 4 V ^{Note 1}
Forward transfer admittance	y _{fs}	50	80	—	S	I _D = 40 A, V _{DS} = 10 V ^{Note 1}
Input capacitance	C _{iss}	—	7100	—	pF	V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz
Output capacitance	C _{oss}	—	1000	—	pF	
Reverse transfer capacitance	C _{rss}	—	280	—	pF	
Total gate charge	Q _g	—	125	—	nC	V _{DD} = 25 V, V _{GS} = 10 V, I _D = 75 A
Gate to source charge	Q _{gs}	—	25	—	nC	
Gate to drain charge	Q _{gd}	—	25	—	nC	
Turn-on delay time	t _{d(on)}	—	60	—	ns	V _{GS} = 10 V, I _D = 40 A, R _L = 0.75 Ω
Rise time	t _r	—	300	—	ns	
Turn-off delay time	t _{d(off)}	—	520	—	ns	
Fall time	t _f	—	330	—	ns	
Body-drain diode forward voltage	V _{DF}	—	1.05	—	V	I _F = 75 A, V _{GS} = 0
Body-drain diode reverse recovery time	t _{rr}	—	90	—	ns	I _F = 75 A, V _{GS} = 0 di _F /dt = 50 A/μs

Note: 1. Pulse test

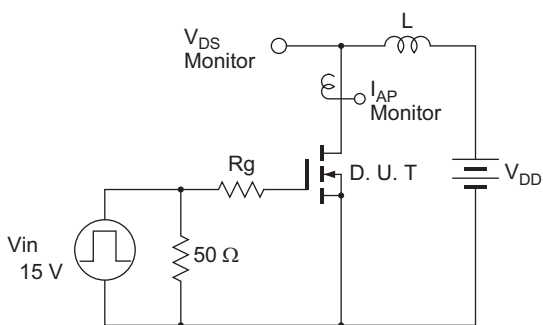
Main Characteristics



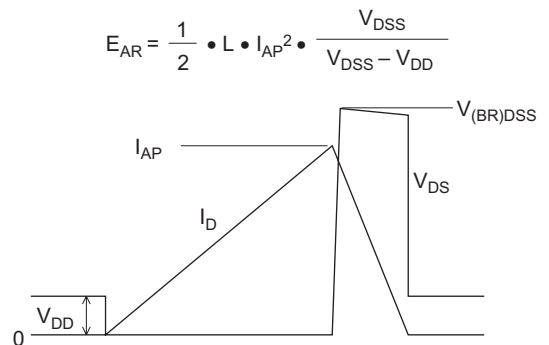


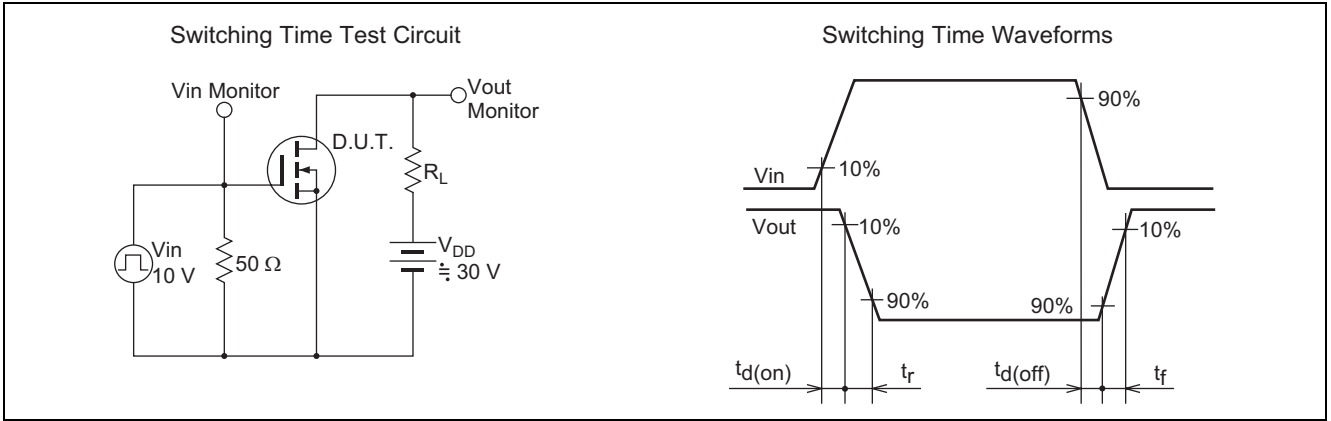


Avalanche Test Circuit

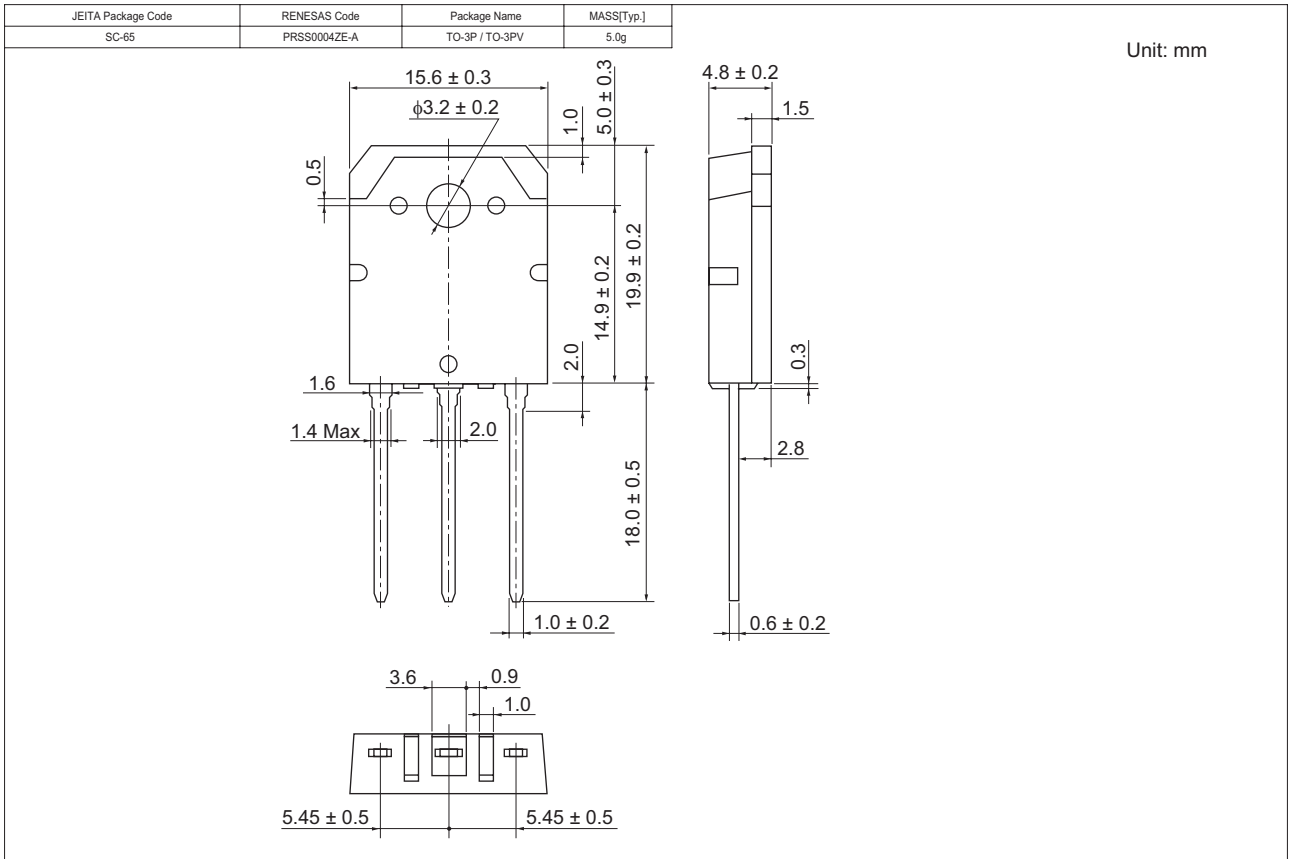


Avalanche Waveform





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK3163-E	30 pcs	Plastic magazine

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