

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

April 1<sup>st</sup>, 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

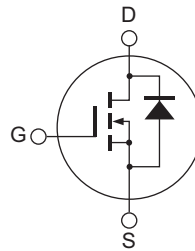
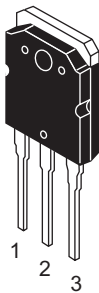
REJ03G1088-0300  
(Previous: ADE-208-736A)  
Rev.3.00  
Sep 07, 2005

### 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 <sub>DSS</sub>	60	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	75	A
Drain peak current	I <sub>D(pulse)</sub> <sup>Note 1</sup>	300	A
Body-drain diode reverse drain current	I <sub>DR</sub>	75	A
Avalanche current	I <sub>AP</sub> <sup>Note 3</sup>	50	A
Avalanche energy	E <sub>AR</sub> <sup>Note 3</sup>	214	mJ
Channel dissipation	P <sub>ch</sub> <sup>Note 2</sup>	110	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

- Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%  
 2. Value at Tc = 25°C  
 3. Value at Tch = 25°C, Rg ≥ 50 Ω

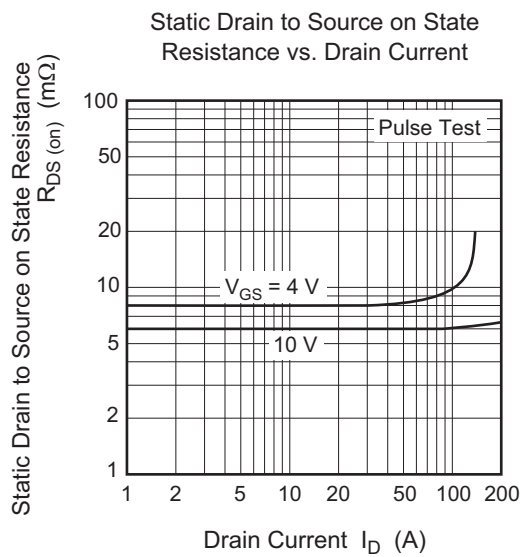
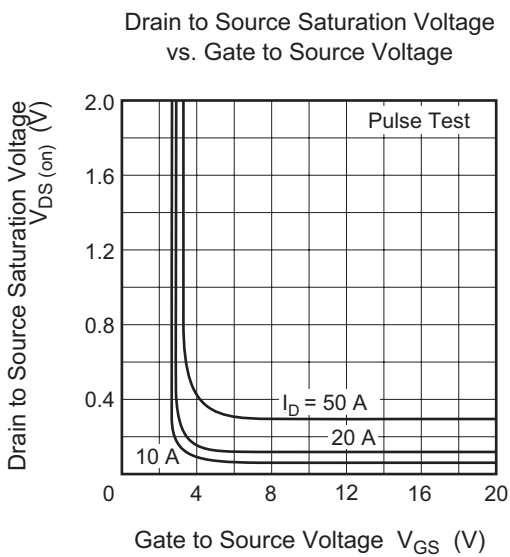
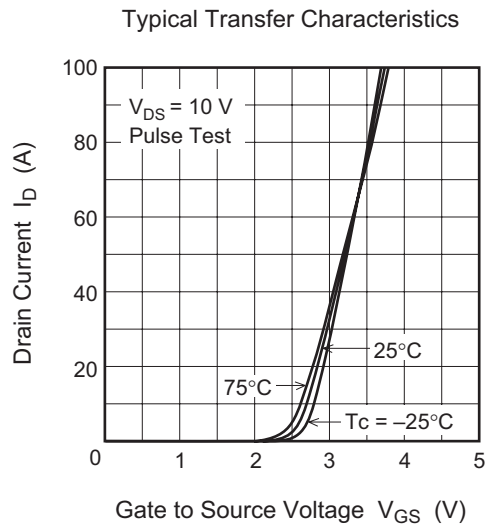
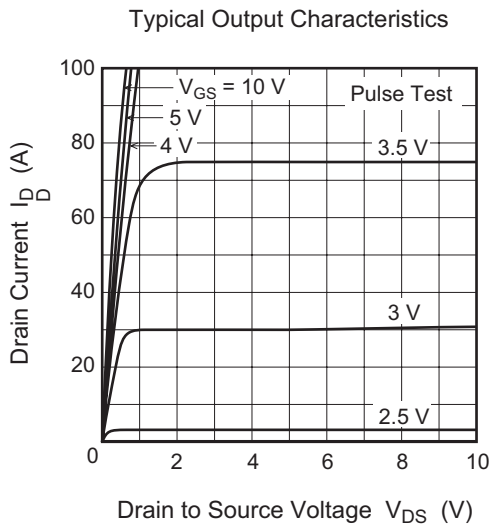
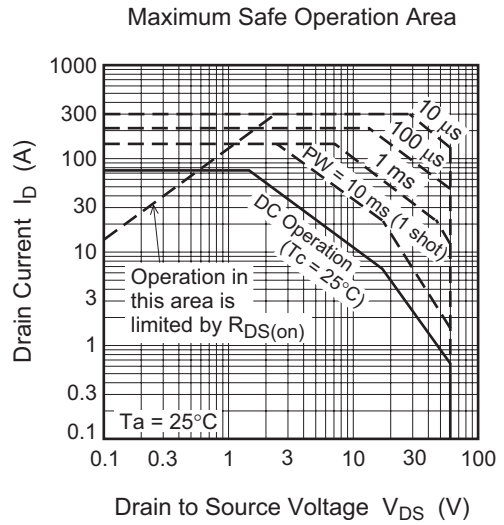
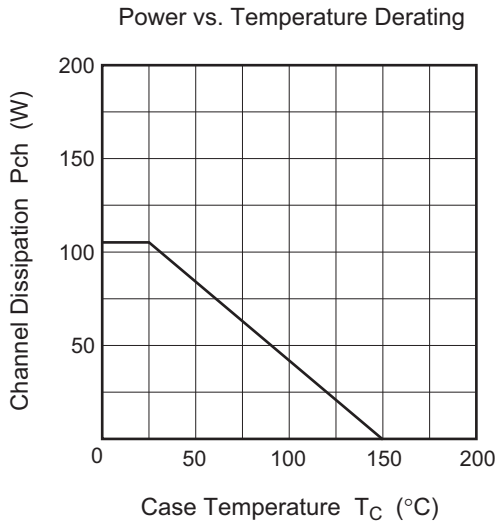
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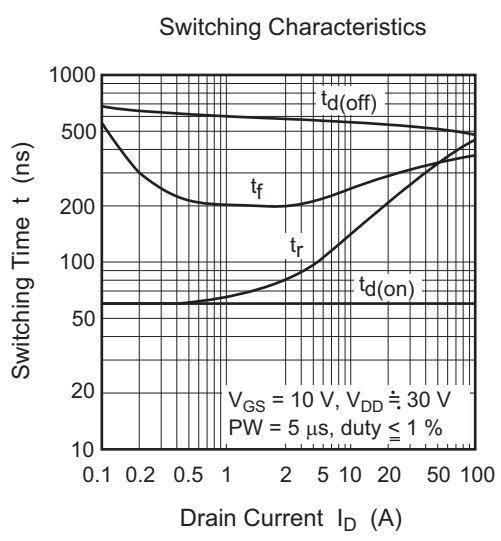
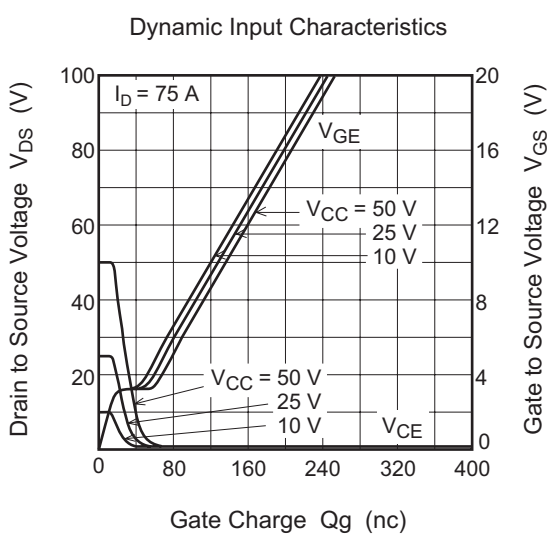
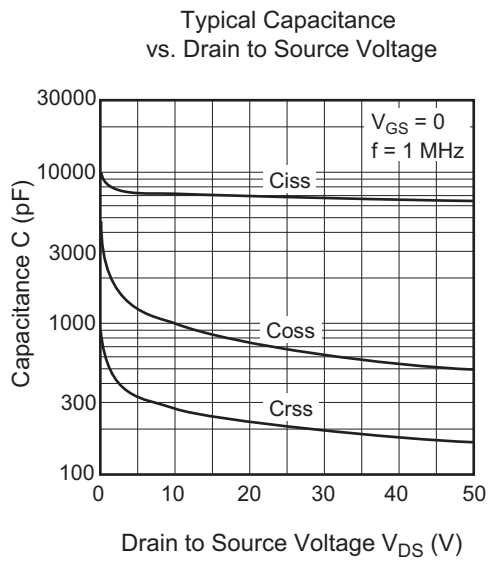
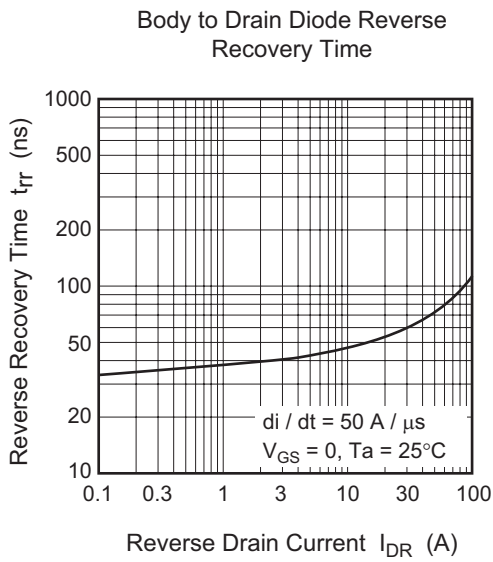
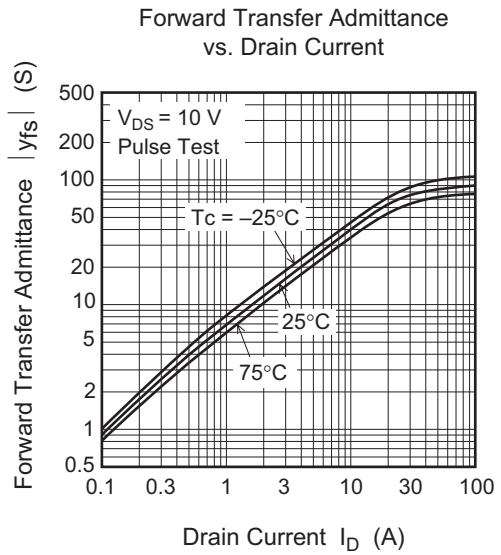
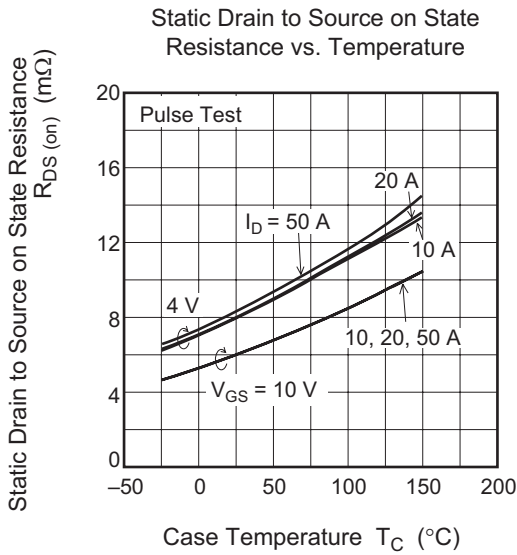
(Ta = 25°C)

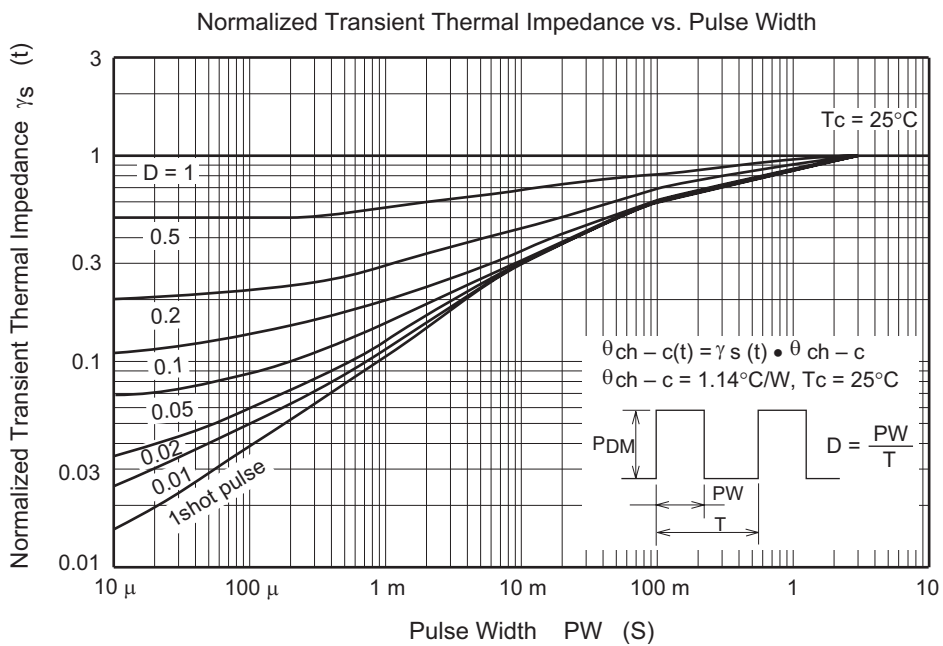
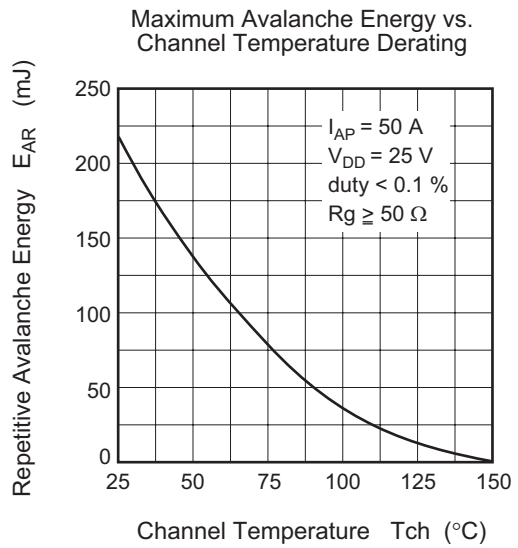
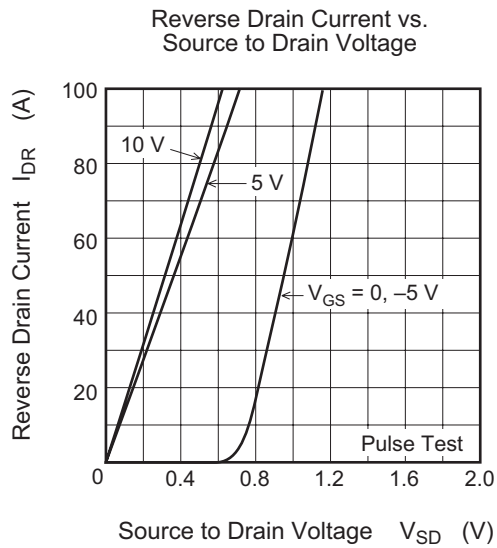
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	60	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±0.1	μA	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>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

- Note: 1. Pulse test

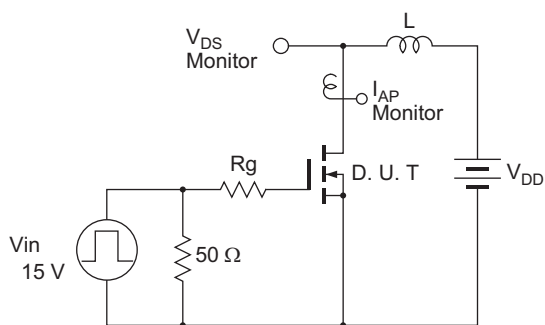
### Main Characteristics



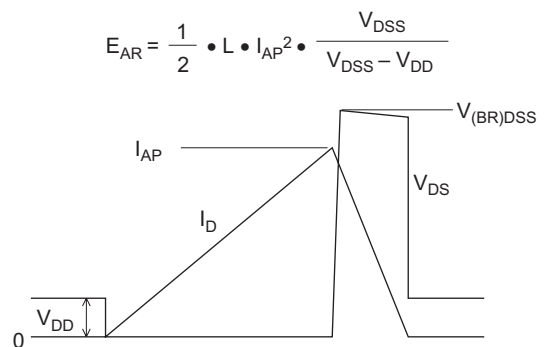


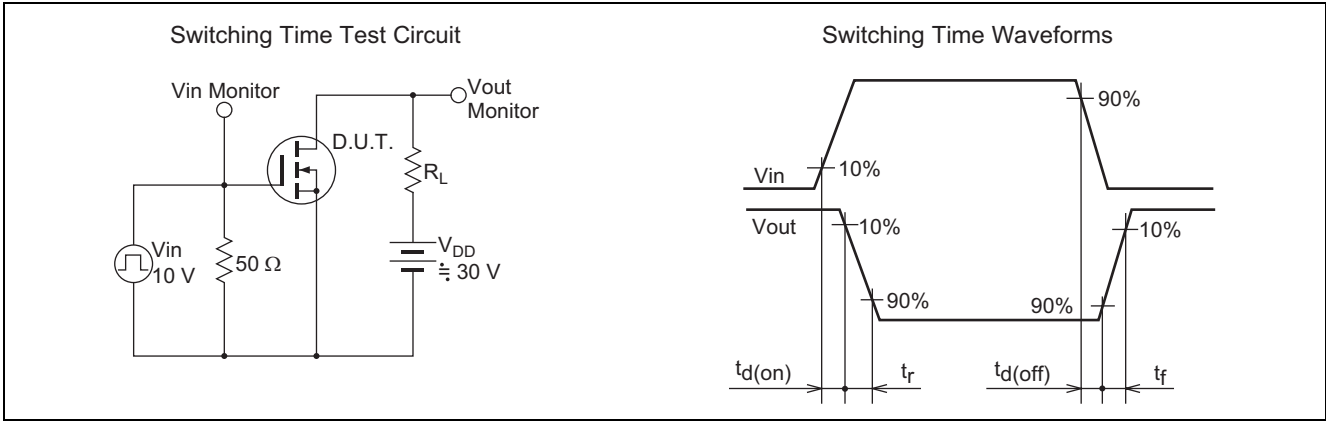


Avalanche Test Circuit

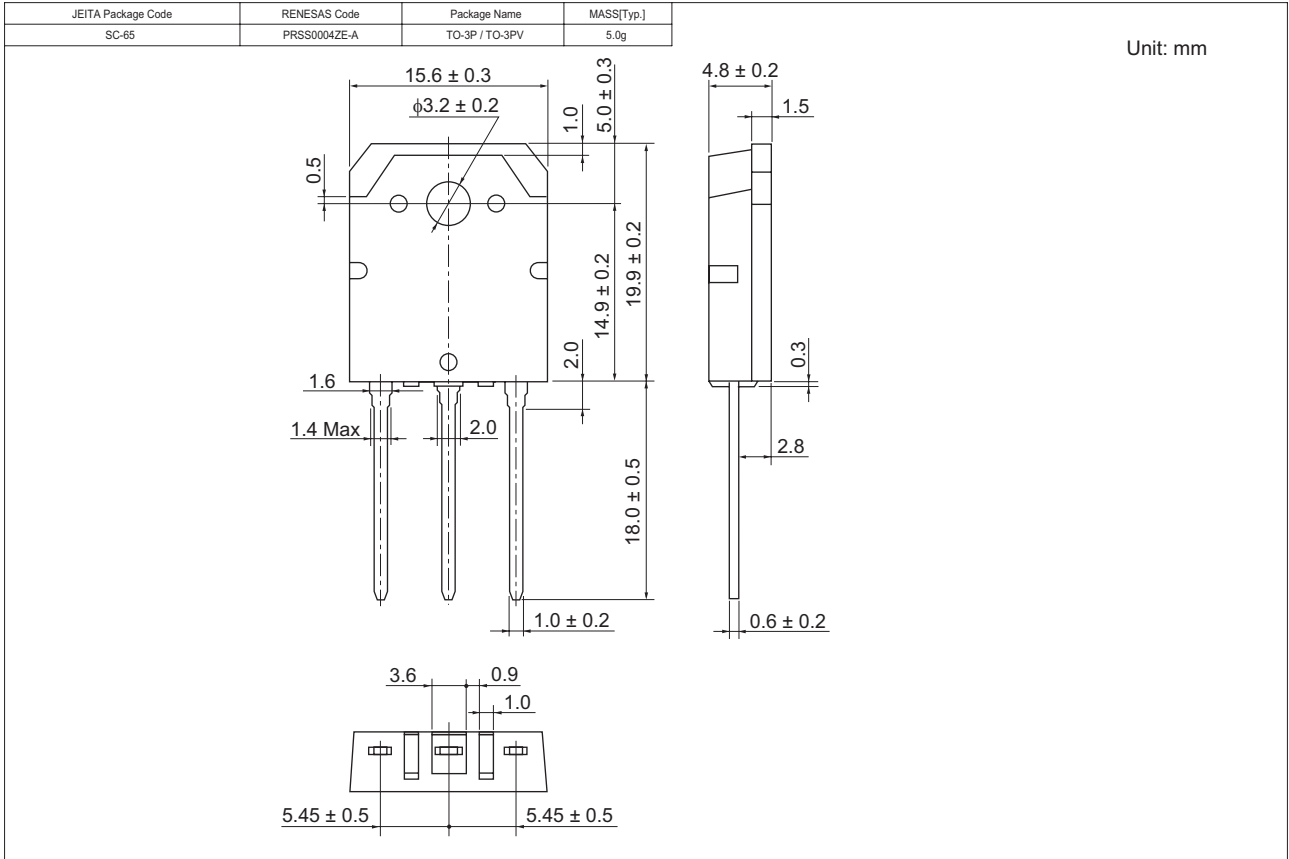


Avalanche Waveform





### Package Dimensions



### Ordering Information

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

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