

## 2SK2729

Silicon N Channel MOS FET  
High Speed Power Switching

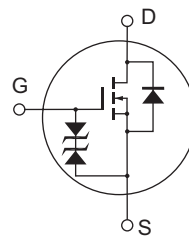
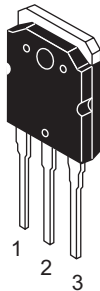
REJ03G1027-0300  
(Previous: ADE-208-455A)  
Rev.3.00  
Sep 07, 2005

### Features

- Low on-resistance
- High speed switching
- Low drive current
- Avalanche ratings

### 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	$V_{DSS}$	500	V
Gate to source voltage	$V_{GSS}$	±30	V
Drain current	$I_D$	20	A
Drain peak current	$I_{D(pulse)}^{*1}$	80	A
Body to drain diode reverse drain current	$I_{DR}$	20	A
Avalanche current	$I_{AP}^{*3}$	20	A
Avalanche energy	$E_{AR}^{*3}$	22	mJ
Channel dissipation	$P_{ch}^{*2}$	150	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  $T_c = 25^\circ C$   
 3. Value at  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50 \Omega$

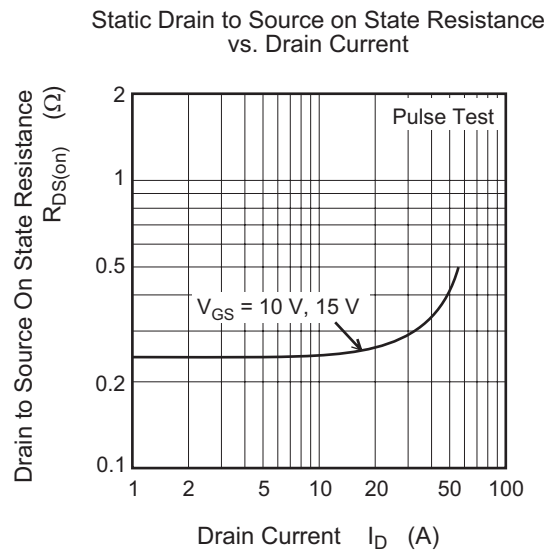
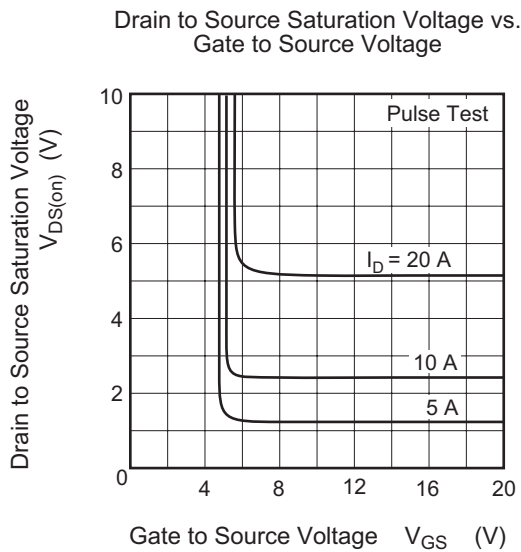
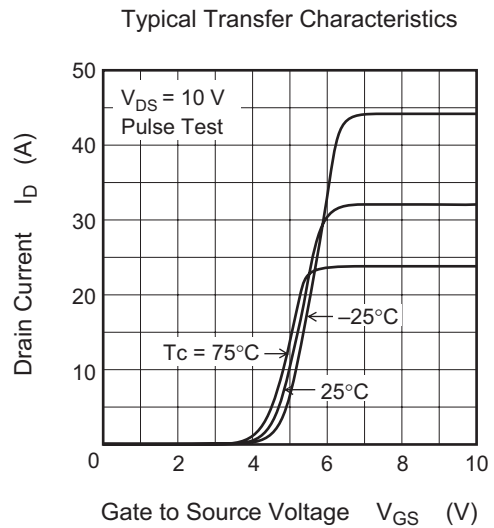
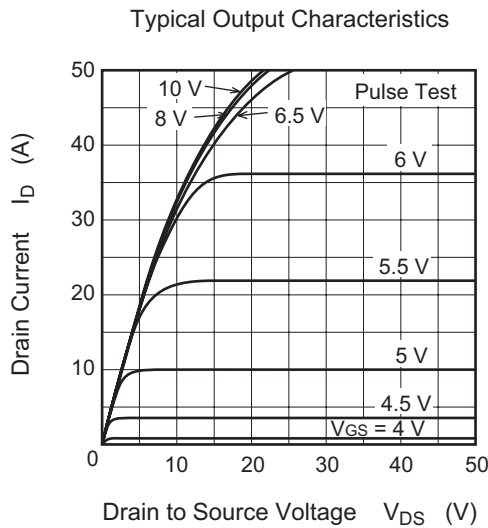
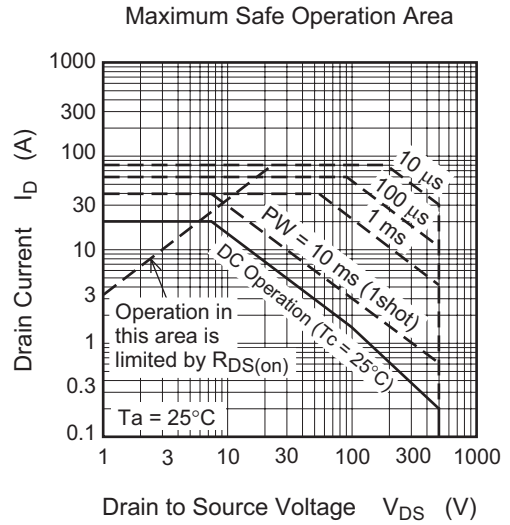
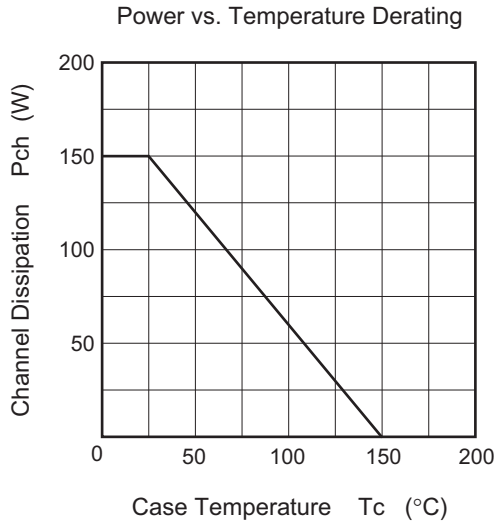
## Electrical Characteristics

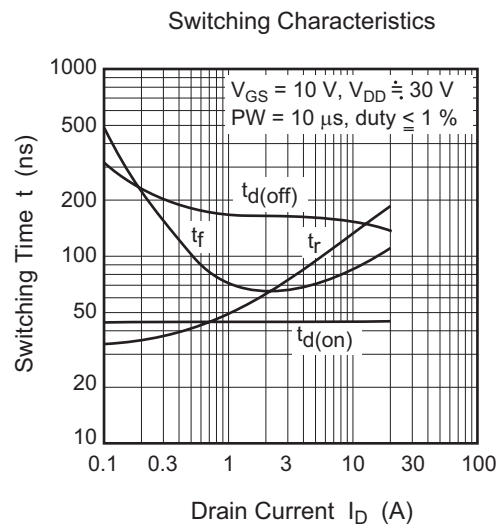
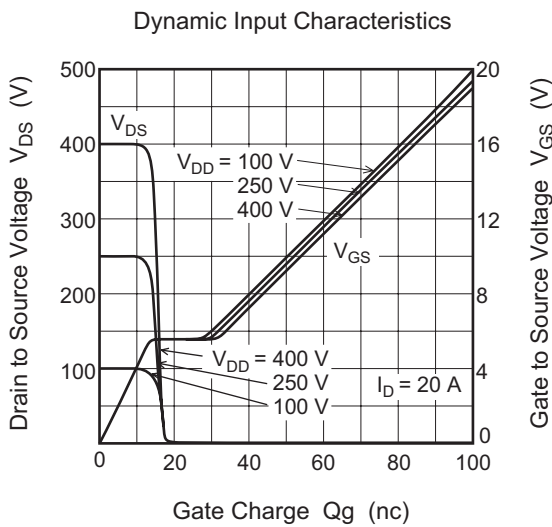
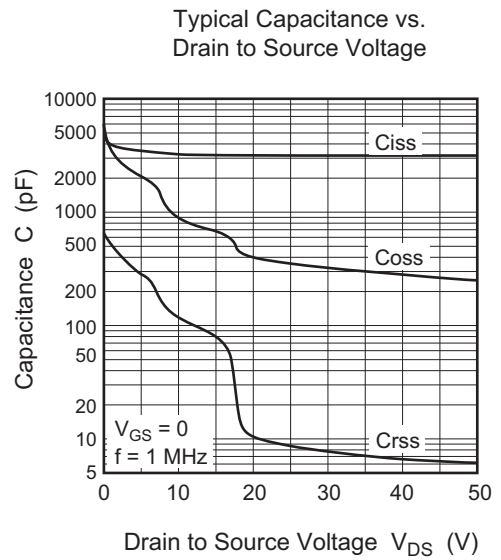
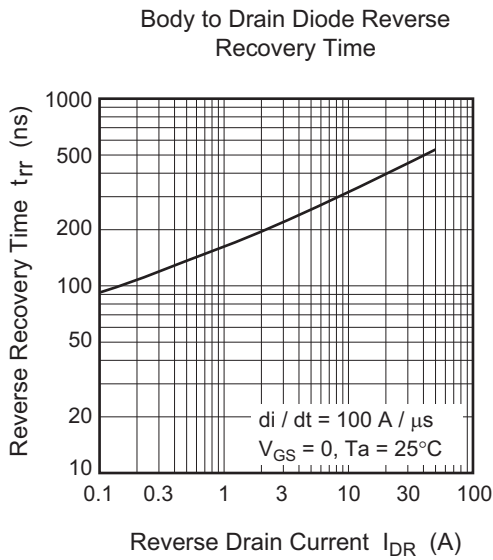
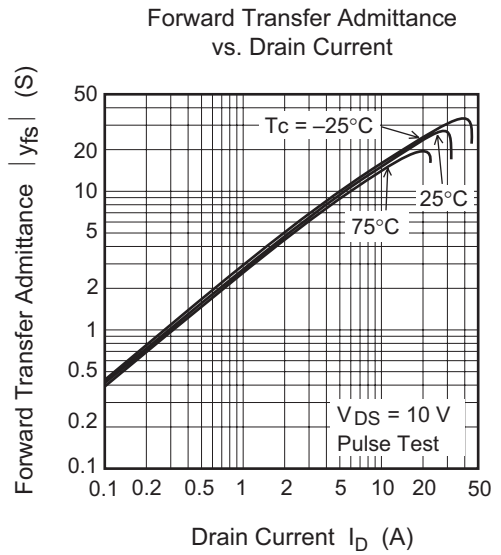
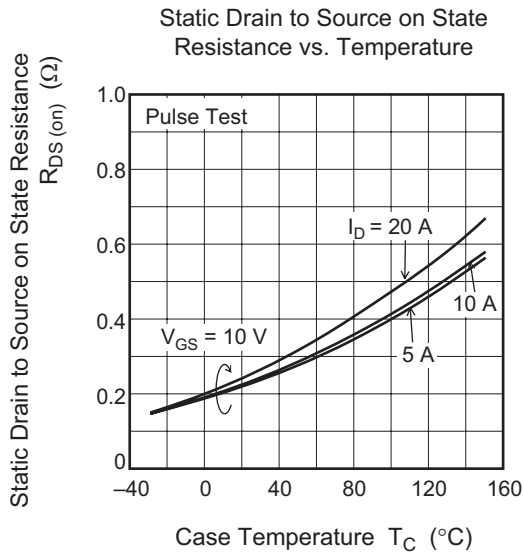
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	μA	$V_{DS} = 500 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.5	—	3.5	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}^{*4}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.24	0.29	Ω	$I_D = 10 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*4}$
Forward transfer admittance	$ y_{fs} $	9	15	—	S	$I_D = 10 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*4}$
Input capacitance	$C_{iss}$	—	3300	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	900	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	120	—	pF	
Total gate charge	$Q_g$	—	55	—	nc	$V_{DD} = 400 \text{ V}$ , $V_{GS} = 10 \text{ V}$ , $I_D = 20 \text{ A}$
Gate to source charge	$Q_{gs}$	—	14	—	nc	
Gate to drain charge	$Q_{gd}$	—	17	—	nc	
Turn-on delay time	$t_{d(on)}$	—	45	—	ns	$V_{GS} = 10 \text{ V}$ , $I_D = 10 \text{ A}$ , $R_L = 3 \Omega$
Rise time	$t_r$	—	140	—	ns	
Turn-off delay time	$t_{d(off)}$	—	150	—	ns	
Fall time	$t_f$	—	85	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.0	—	V	$I_D = 20 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	400	—	ns	$I_F = 20 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu s$

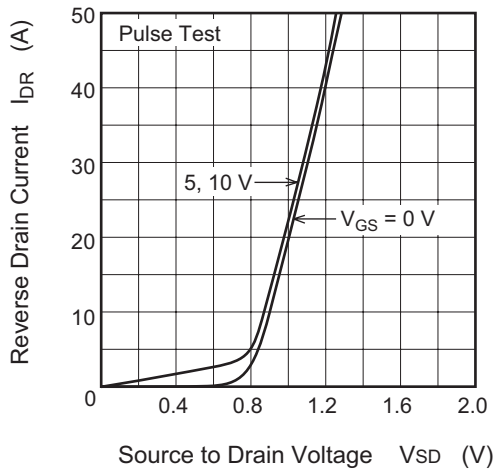
Note: 4. Pulse test

### Main Characteristics

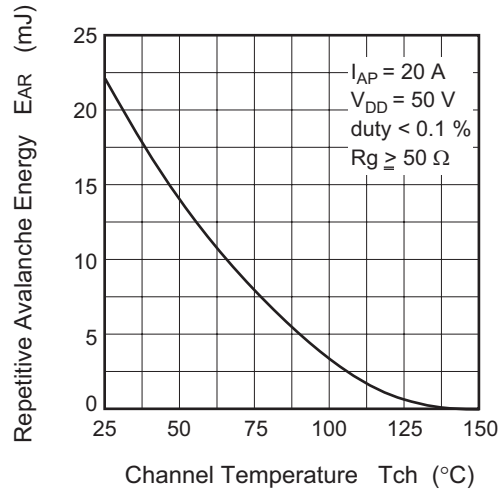




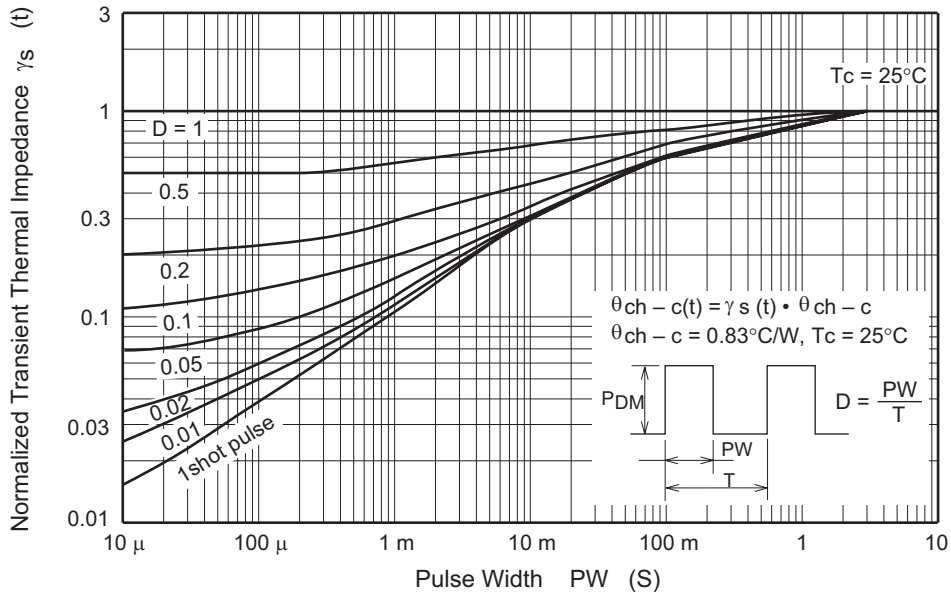
Reverse Drain Current vs. Source to Drain Voltage



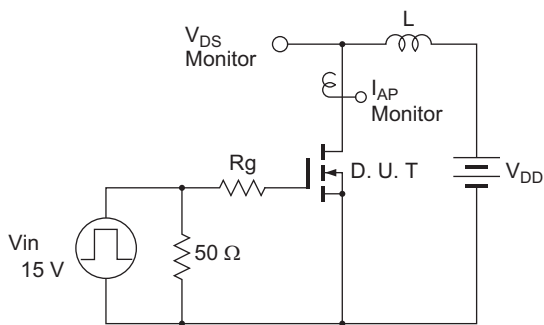
Maximum Avalanche Energy vs. Channel Temperature Derating



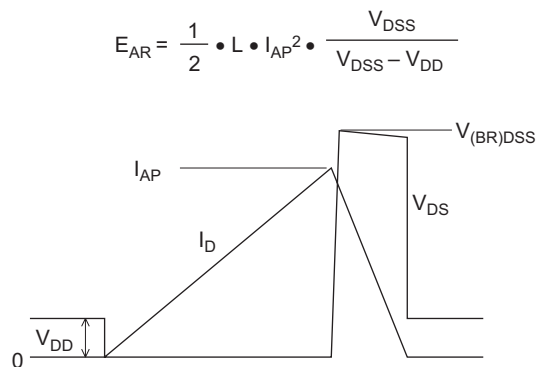
Normalized Transient Thermal Impedance vs. Pulse Width

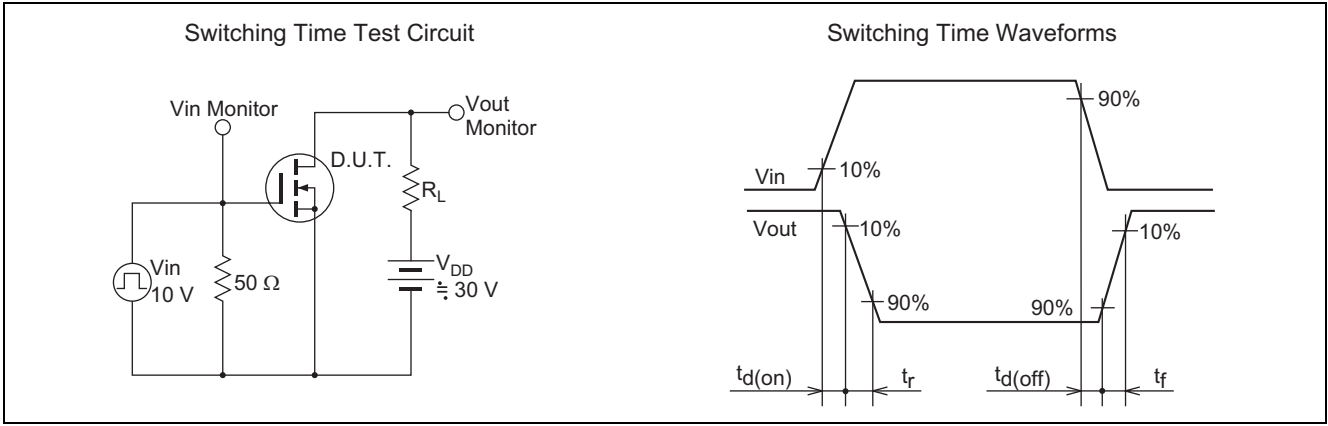


Avalanche Test Circuit

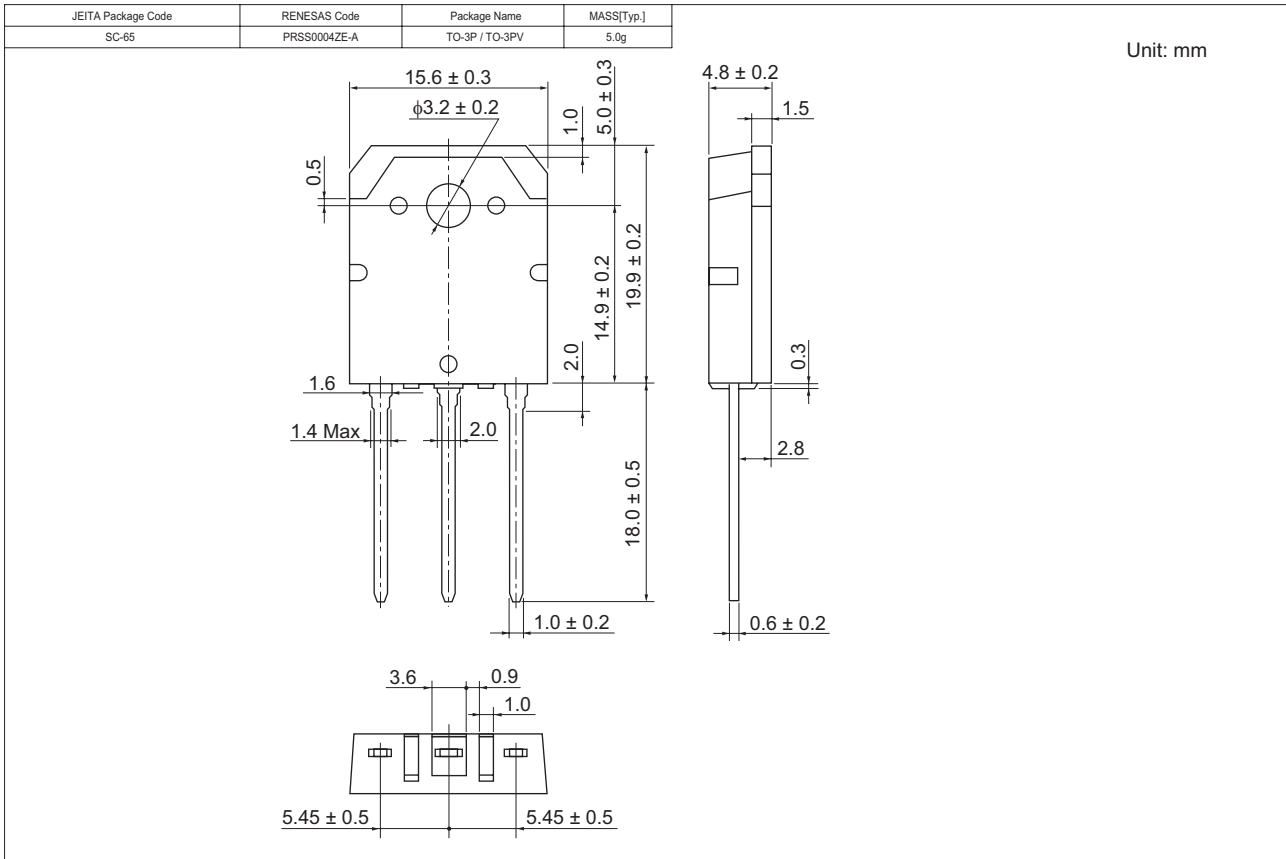


Avalanche Waveform





## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
2SK2729-E	360 pcs	Box (Tube)

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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