

## 2SK2729

Silicon N Channel MOS FET  
High Speed Power Switching

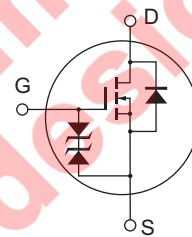
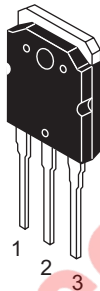
REJ03G1027-0300  
(Previous: ADE-208-455A)  
Rev.3.00  
Sep 07, 2005

### 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	$V_{DS}$	500	V
Gate to source voltage	$V_{GS}$	±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

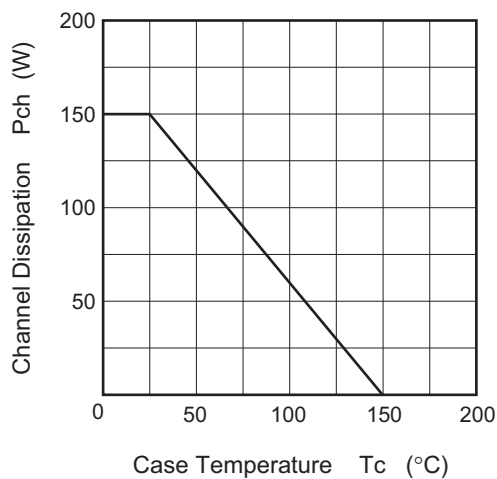
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DS}$	500	—	—	V	$I_D = 10\text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GS}$	±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	$I_D = 20\text{ A}$ , $V_{GS} = 0$
Body to drain diode forward voltage	$V_{DF}$	—	1.0	—	V	
Body to drain diode reverse recovery time	$t_{rr}$	—	400	—	ns	$I_F = 20\text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100\text{ A}/\mu s$

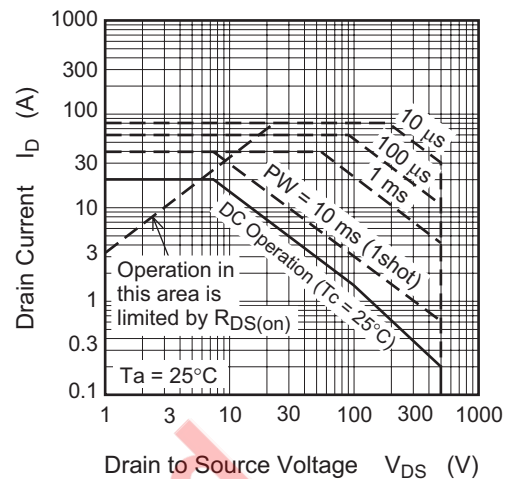
Note: 4. Pulse test

## Main Characteristics

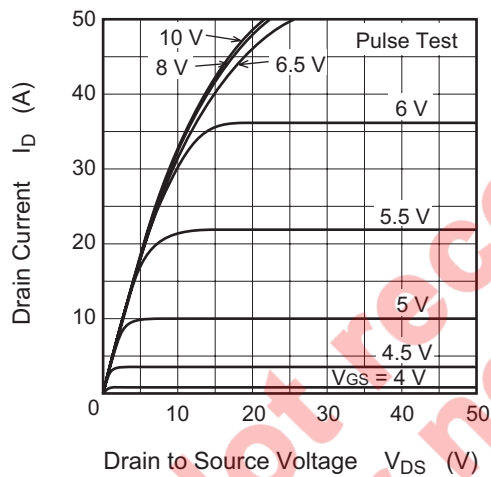
Power vs. Temperature Derating



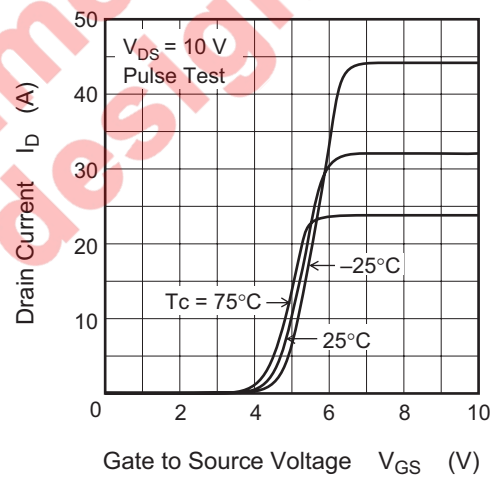
Maximum Safe Operation Area



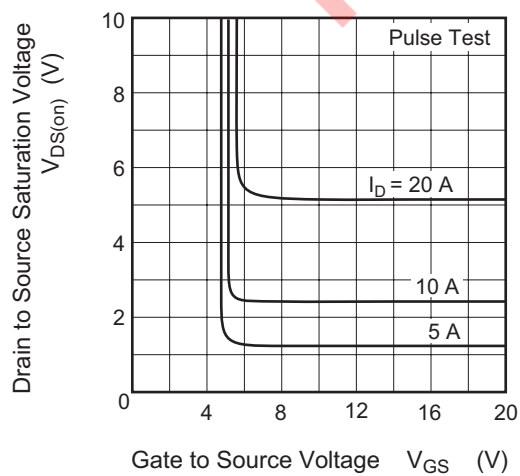
Typical Output Characteristics



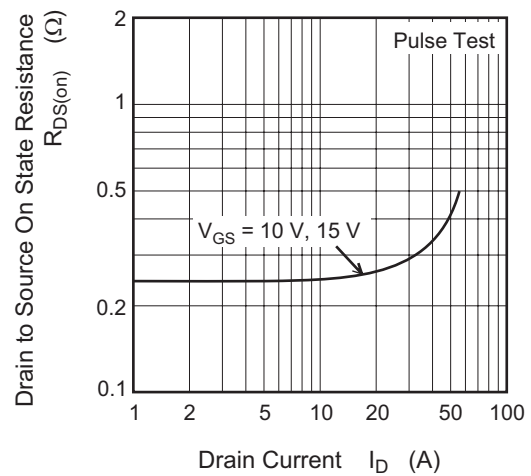
Typical Transfer Characteristics

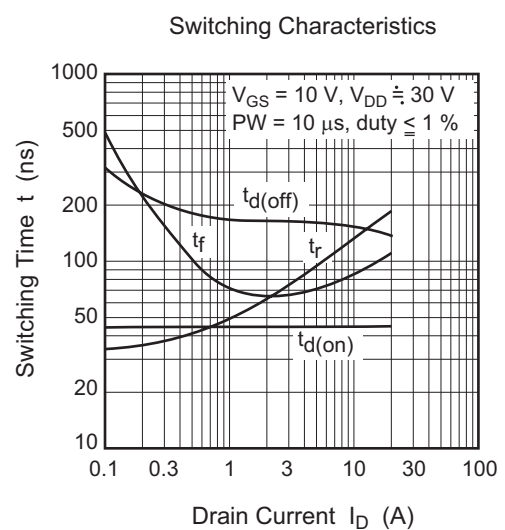
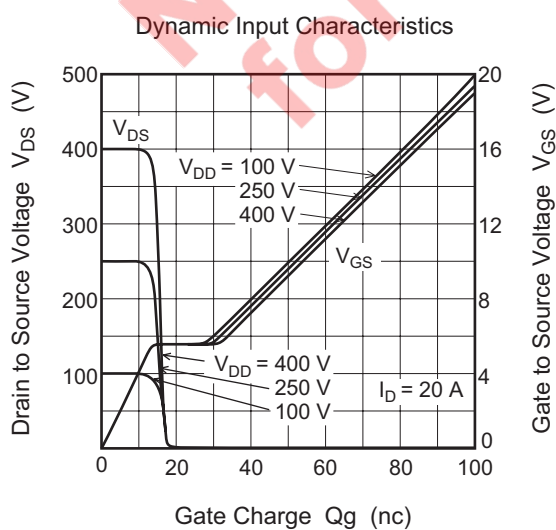
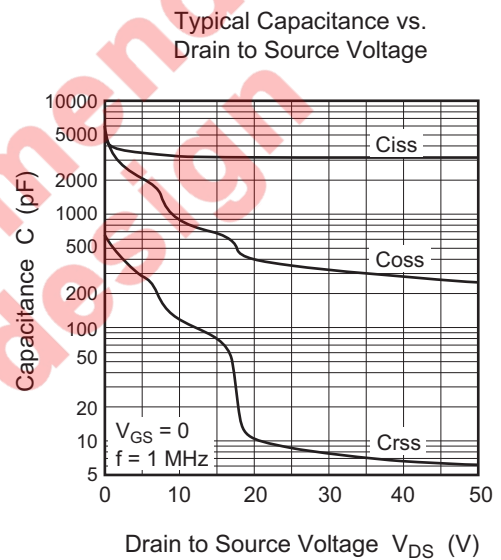
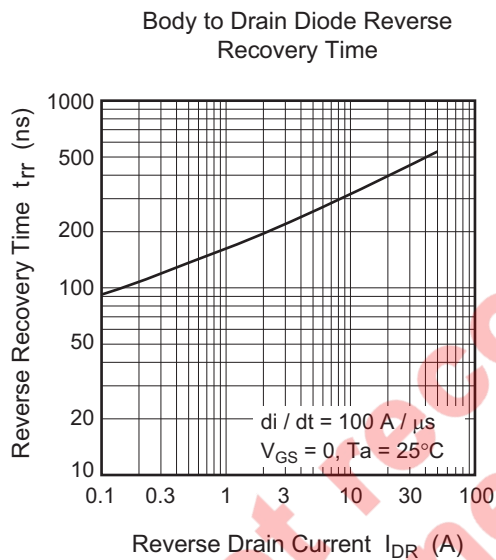
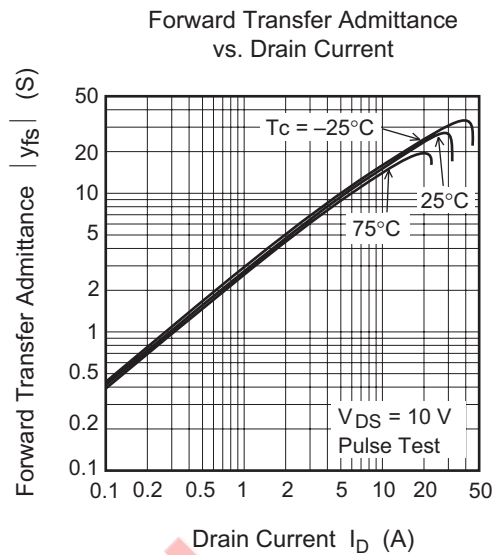
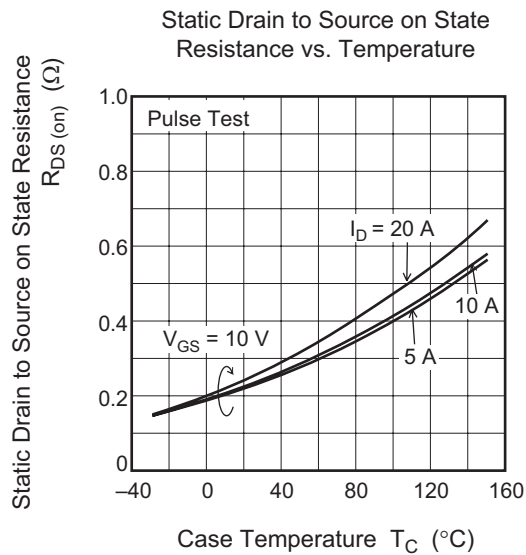


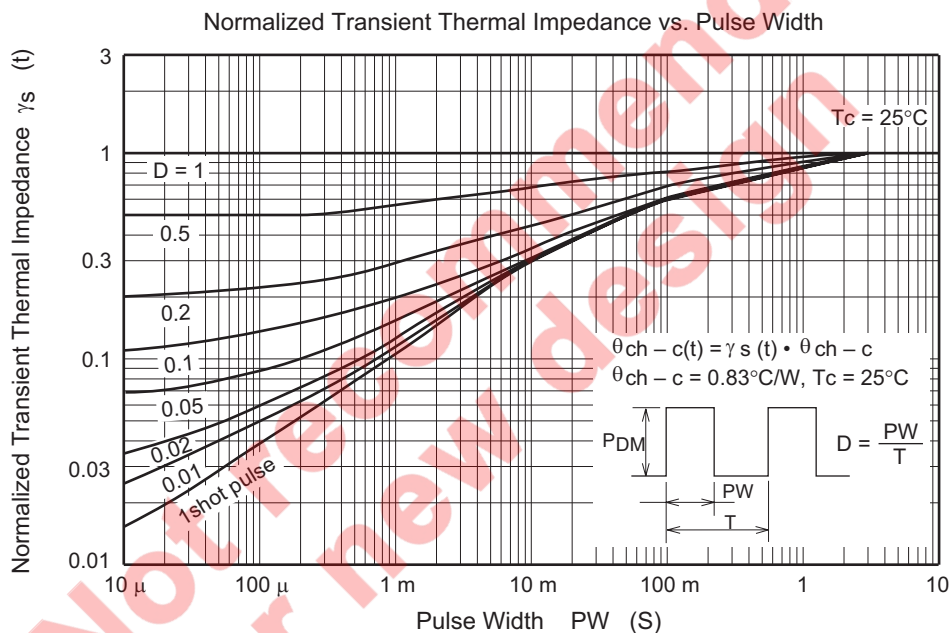
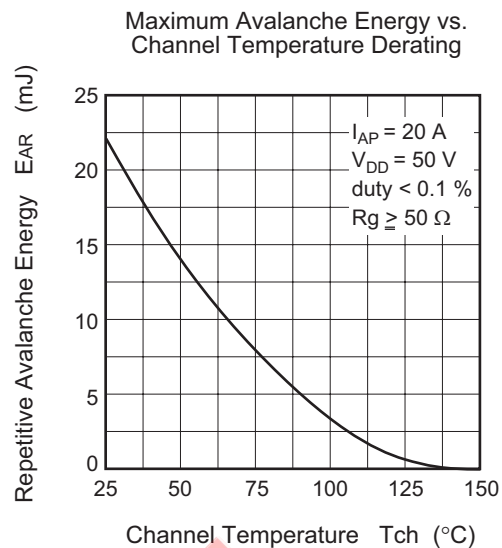
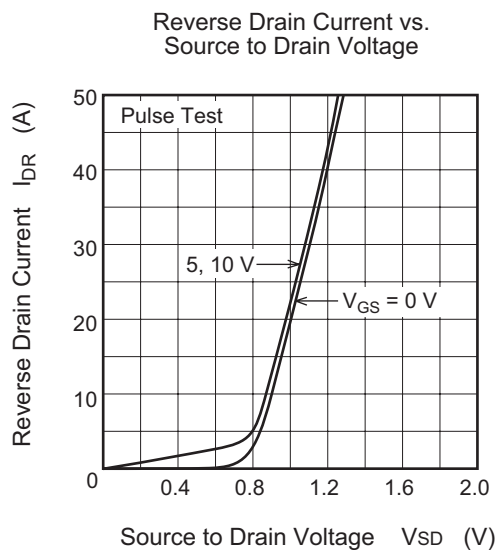
Drain to Source Saturation Voltage vs. Gate to Source Voltage



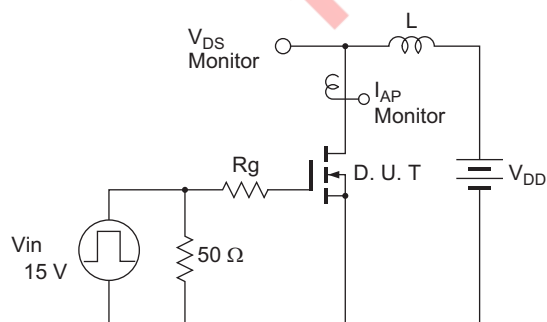
Static Drain to Source on State Resistance vs. Drain Current



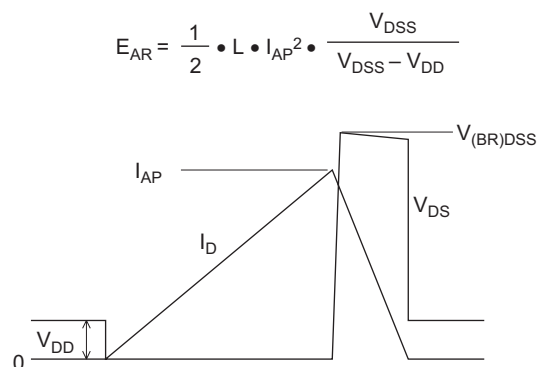




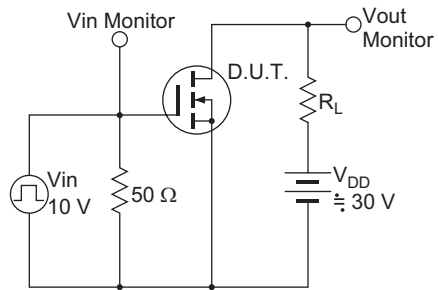
Avalanche Test Circuit



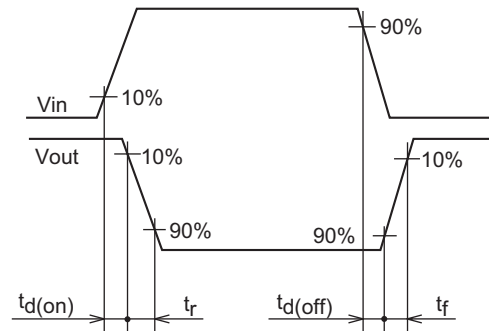
Avalanche Waveform



Switching Time Test Circuit

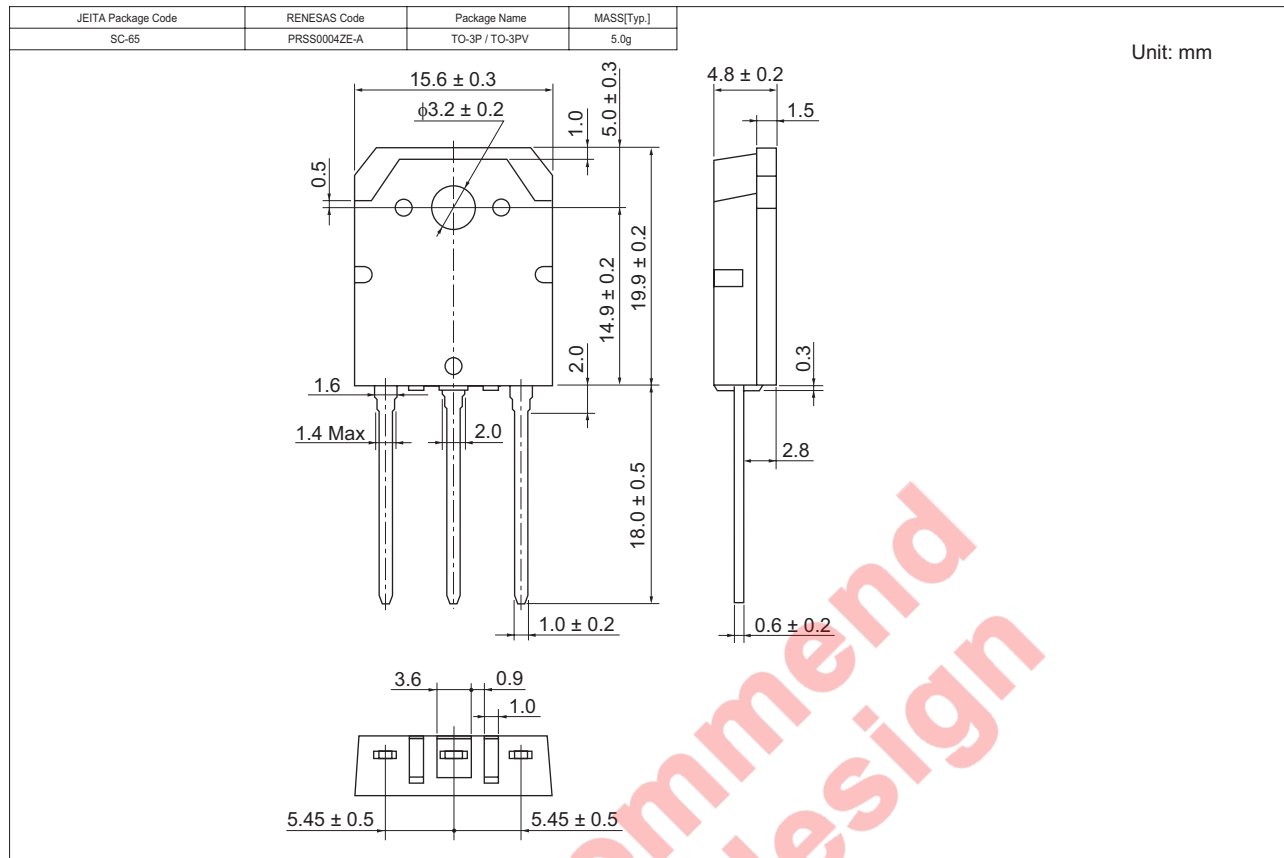


Switching Time Waveforms



Not recommend  
for new design

## 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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