

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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EOL announced Product

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# 2SK1628, 2SK1629

Silicon N Channel MOS FET

REJ03G0960-0400

Rev.4.00

May 13, 2009

## Application

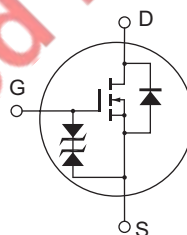
High speed power switching

## Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter

## Outline

RENESAS Package code: PRSS0004ZF-A  
(Package name: TO-3PL)



1. Gate
2. Drain
3. Source

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit	
Drain to source voltage	$V_{DSS}$	2SK1628	450	V
		2SK1629	500	
Gate to source voltage	$V_{GSS}$	$\pm 30$	V	
Drain current	$I_D$	30	A	
Drain peak current	$I_{D(pulse)}^{*1}$	120	A	
Body to drain diode reverse drain current	$I_{DR}$	30	A	
Channel dissipation	$P_{ch}^{*2}$	200	W	
Channel temperature	Tch	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T<sub>C</sub> = 25°C

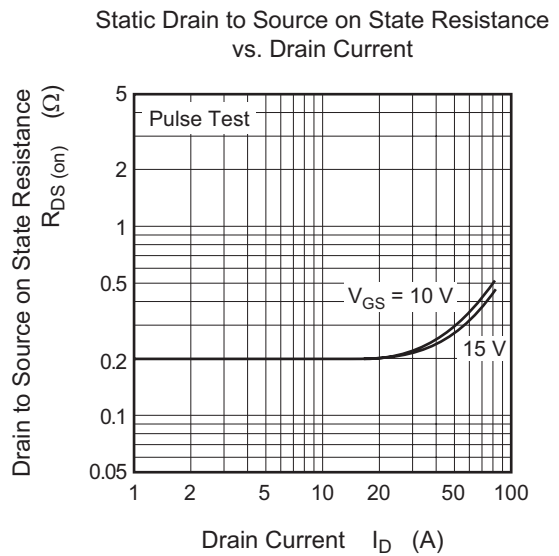
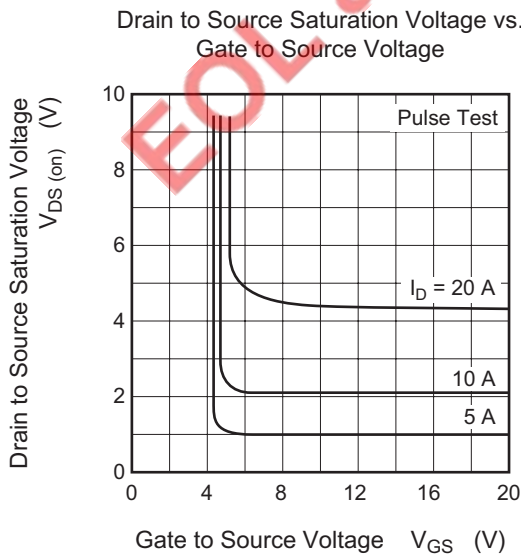
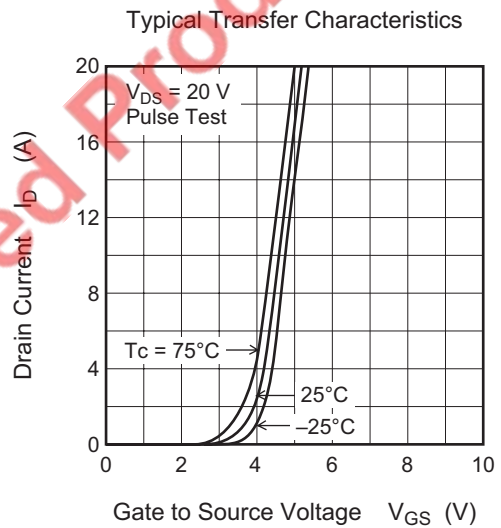
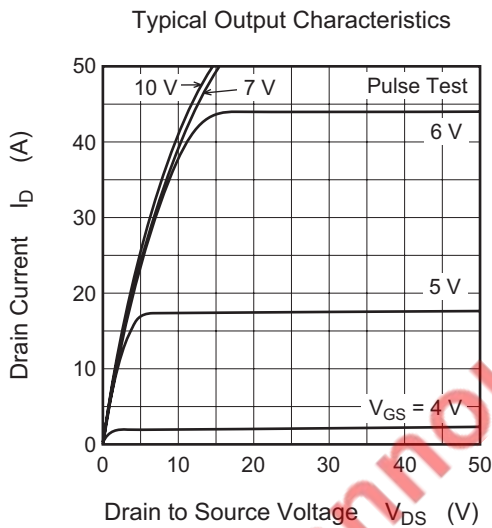
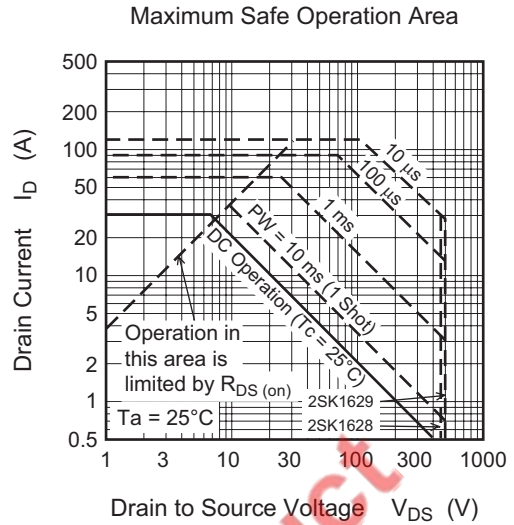
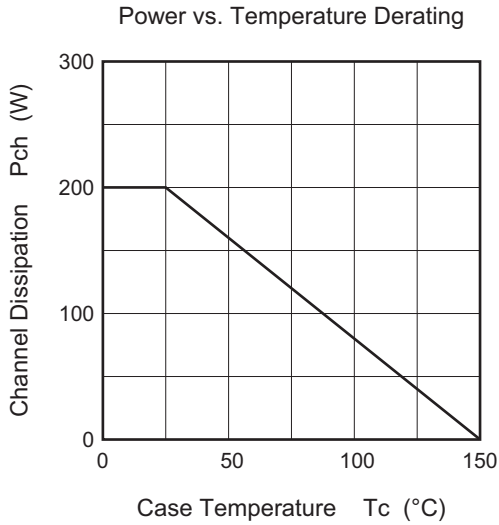
## Electrical Characteristics

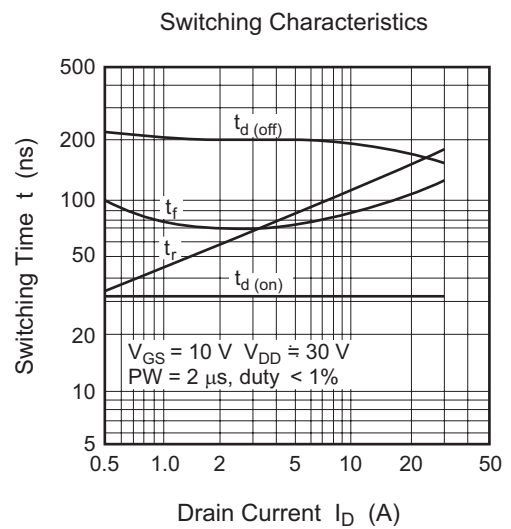
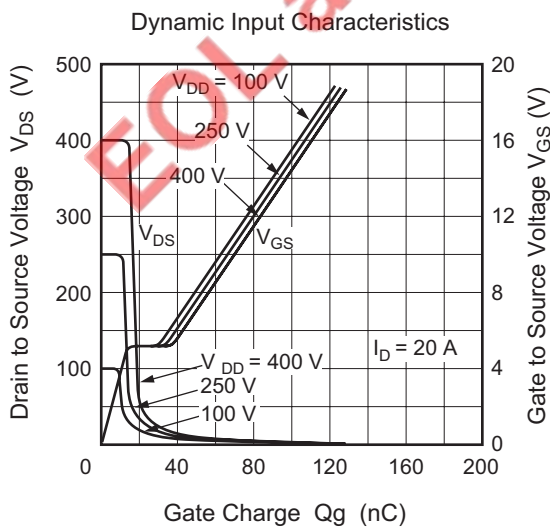
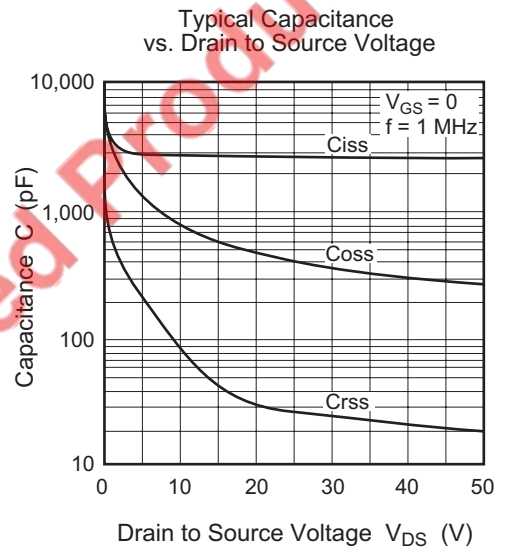
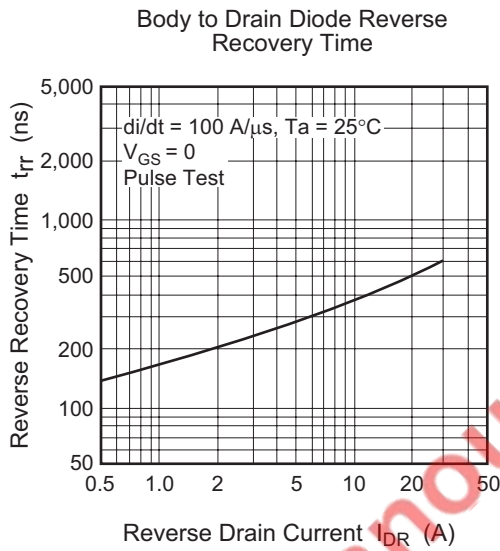
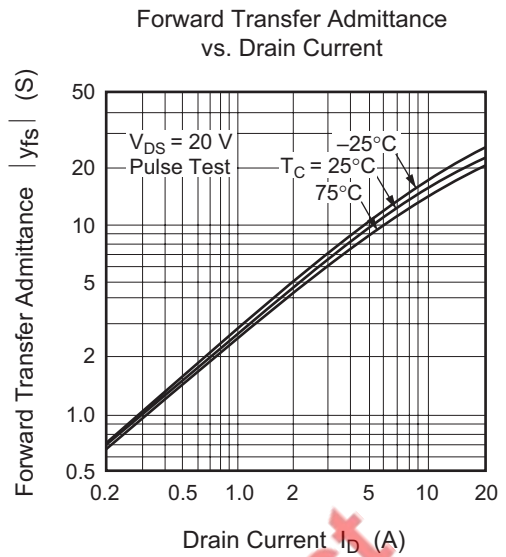
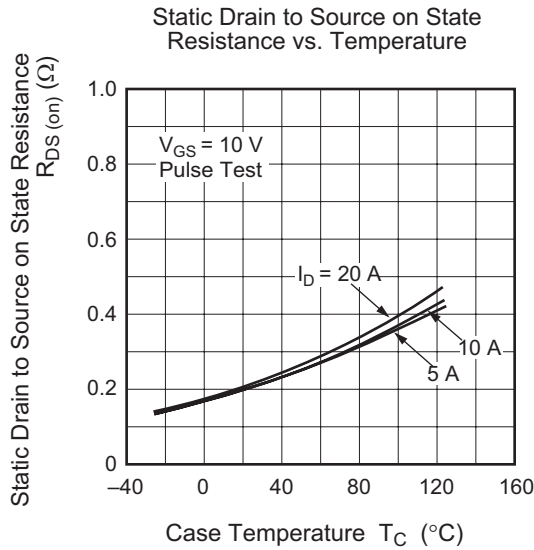
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1628	450	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
	2SK1629	500	—	—	V	
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 30$	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	2SK1628	—	—	250	$\mu\text{A}$	$V_{DS} = 360 \text{ V}, V_{GS} = 0$
	2SK1629	—	—	—	$\mu\text{A}$	$V_{DS} = 400 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	2SK1628	—	0.20	0.25	$\Omega$	$I_D = 15 \text{ A}, V_{GS} = 10 \text{ V}^{*3}$
	2SK1629	—	0.22	0.27	$\Omega$	
Forward transfer admittance	$ y_{fs} $	12	20	—	S	$I_D = 15 \text{ A}, V_{DS} = 10 \text{ V}^{*3}$
Input capacitance	$C_{iss}$	—	2800	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	780	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	90	—	pF	
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$I_D = 15 \text{ A}, V_{GS} = 10 \text{ V},$ $R_L = 2 \Omega$
Rise time	$t_r$	—	140	—	ns	
Turn-off delay time	$t_{d(off)}$	—	200	—	ns	
Fall time	$t_f$	—	100	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.1	—	V	$I_F = 30 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	600	—	ns	$I_F = 30 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

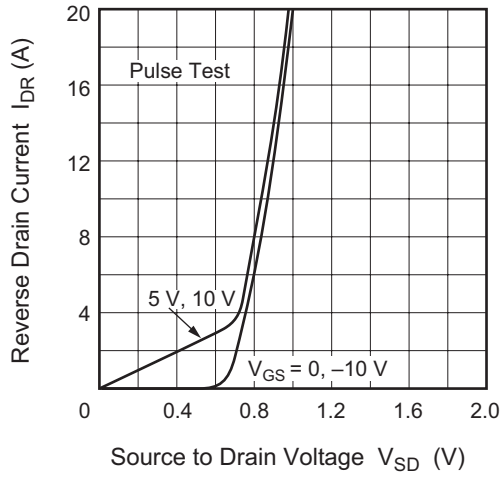
Note: 3. Pulse test

### Main Characteristics

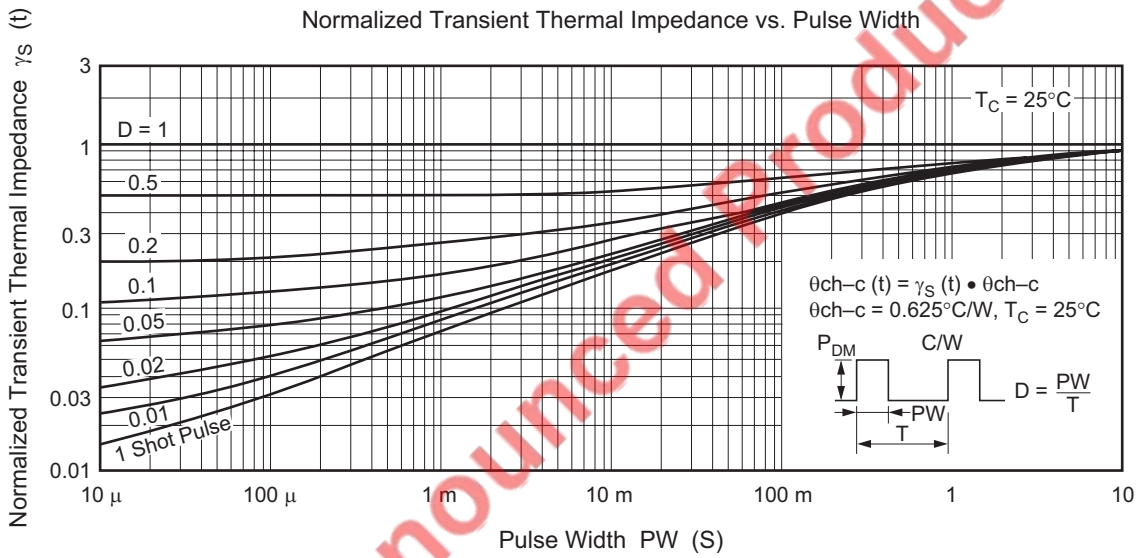




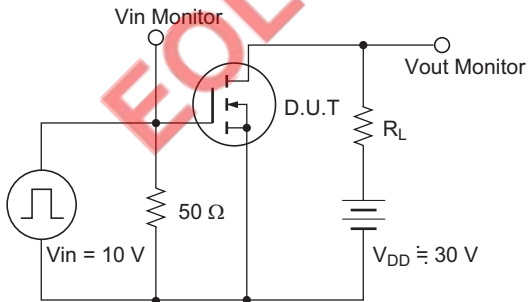
Reverse Drain Current vs. Source to Drain Voltage



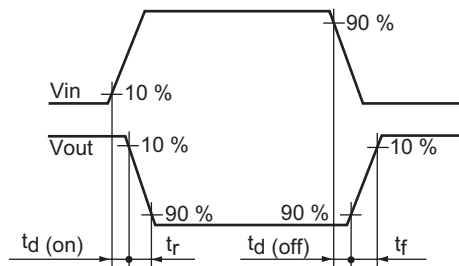
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveforms



## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-3PL	—	PRSS0004ZF-A	TO-3PL / TO-3PLV	9.9g

Unit: mm

The drawing shows the following dimensions:

- Top view: Overall width  $20.0 \pm 0.3$ , overall height  $26.0 \pm 0.3$ , mounting hole diameter  $\phi 3.3 \pm 0.2$ , distance from top edge to mounting holes  $6.0 \pm 0.2$ , distance between mounting holes  $2.5 \pm 0.3$ , distance from bottom edge to mounting holes  $20.0 \pm 0.6$ , distance from center to mounting holes  $5.45 \pm 0.5$ , distance from center to lead tip  $1.2$ , lead thickness  $1.4$ , lead length  $3.0$ , lead width  $2.2$ , and lead tip width  $1.2$  with a tolerance of  $^{+0.25}_{-0.1}$ .
- Side view: Overall height  $5.0 \pm 0.2$ , distance from top edge to lead tip  $2.8 \pm 0.2$ , and lead tip width  $0.6$  with a tolerance of  $^{+0.25}_{-0.1}$ .
- Detail view: Lead width  $1.0$ , lead length  $3.8$ , and lead tip width  $7.4$ .

## Ordering Information

Part Name	Quantity	Shipping Container
2SK1628-E	250 pcs	Box (Tube)
2SK1629-E	250 pcs	Box (Tube)



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