

# 2SK1628, 2SK1629

Silicon N Channel MOS FET

REJ03G0960-0300

Rev.3.00

May 15, 2006

## Application

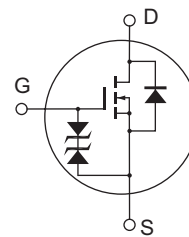
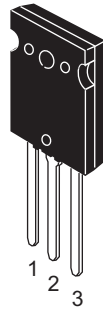
High speed power switching

## 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	2SK1628	450	V
	2SK1629	500	
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	30	A
Drain peak current	I <sub>D(pulse)</sub> *1	120	A
Body to drain diode reverse drain current	I <sub>DR</sub>	30	A
Channel dissipation	P <sub>ch</sub> *2	200	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 T<sub>C</sub> = 25°C

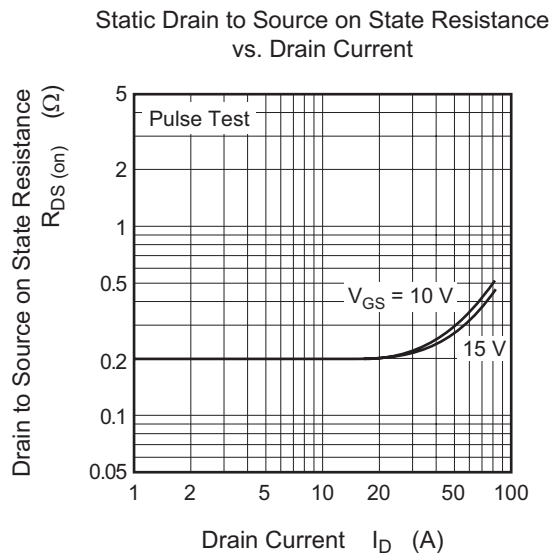
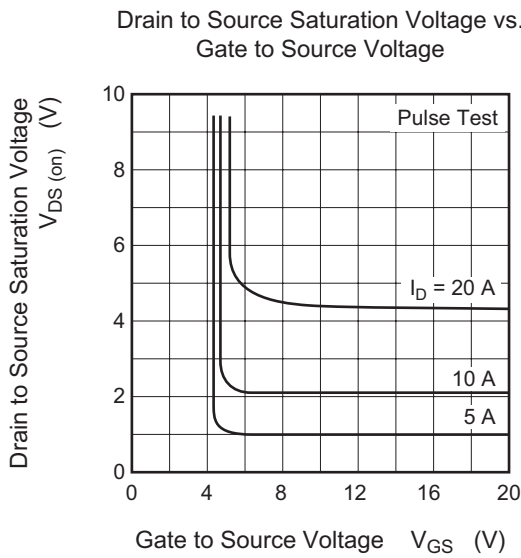
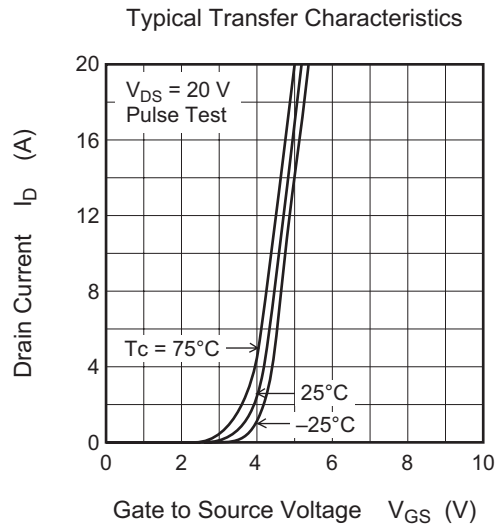
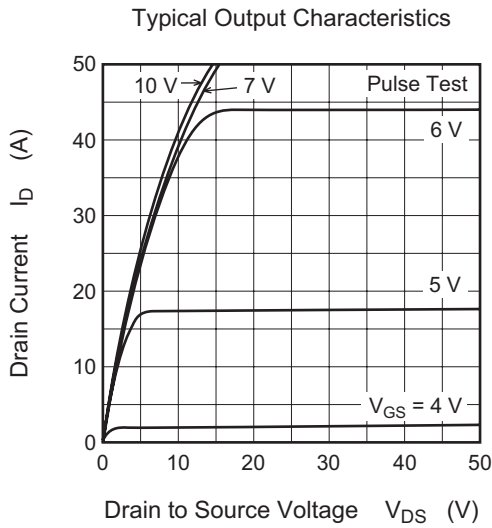
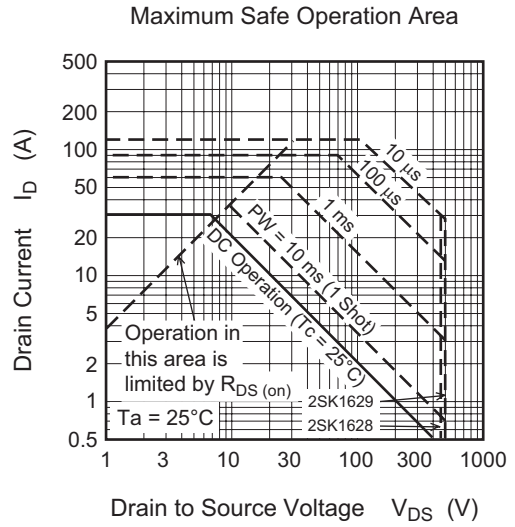
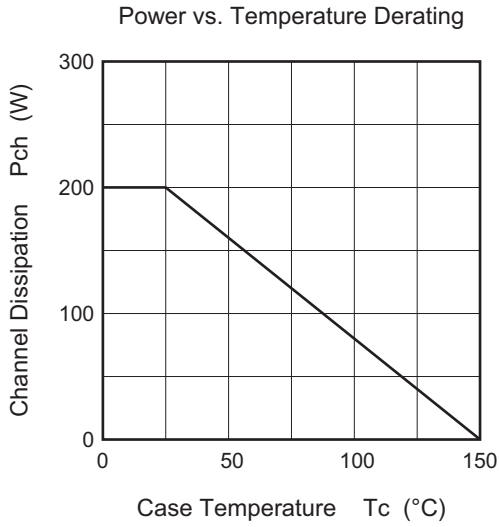
## Electrical Characteristics

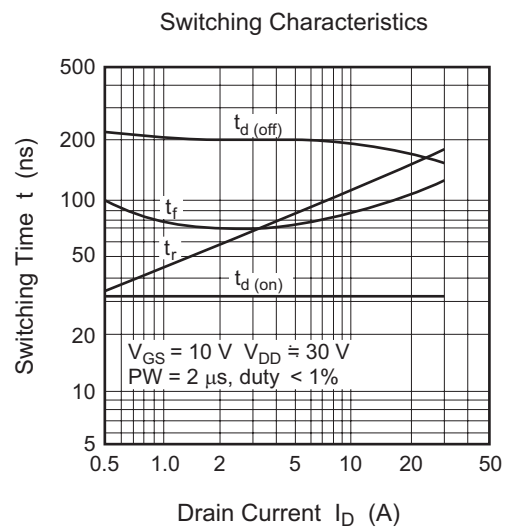
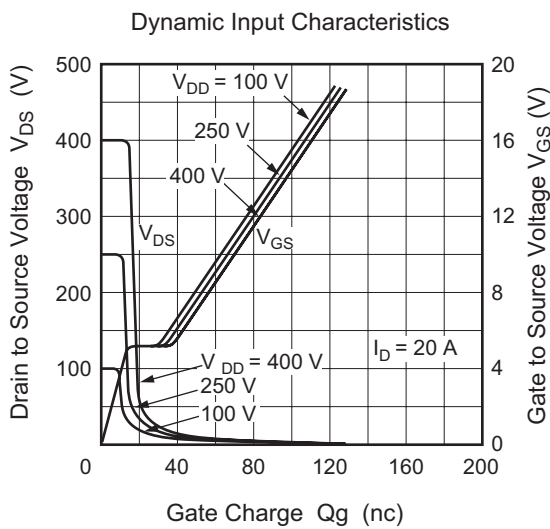
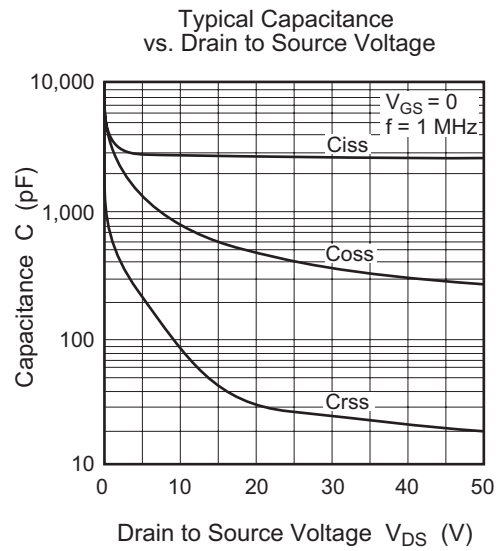
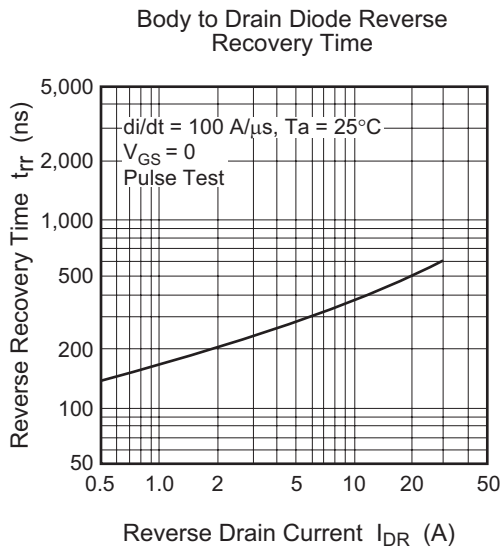
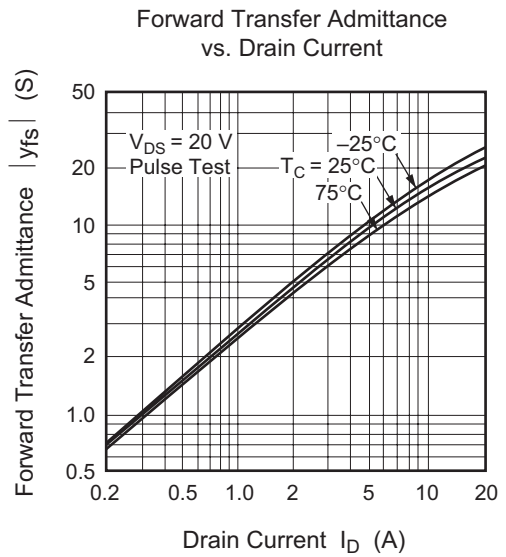
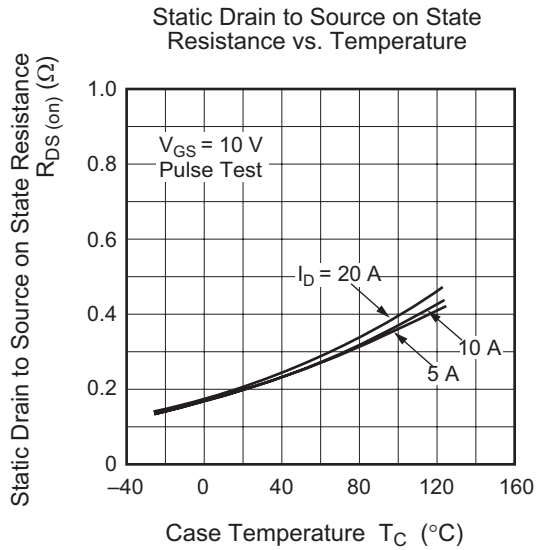
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1628	450	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
	2SK1629	500				
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±30	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±25 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	2SK1628	—	—	250	μA	V <sub>DS</sub> = 360 V, V <sub>GS</sub> = 0
	2SK1629					V <sub>DS</sub> = 400 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	2.0	—	3.0	V	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V
Static drain to source on state resistance	2SK1628	—	0.20	0.25	Ω	I <sub>D</sub> = 15 A, V <sub>GS</sub> = 10 V *3
	2SK1629		—	0.22		
Forward transfer admittance	y <sub>fs</sub>	12	20	—	S	I <sub>D</sub> = 15 A, V <sub>DS</sub> = 10 V *3
Input capacitance	C <sub>iss</sub>	—	2800	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0,
Output capacitance	C <sub>oss</sub>	—	780	—	pF	f = 1 MHz
Reverse transfer capacitance	C <sub>rss</sub>	—	90	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	32	—	ns	I <sub>D</sub> = 15 A, V <sub>GS</sub> = 10 V, R <sub>L</sub> = 2 Ω
Rise time	t <sub>r</sub>	—	140	—	ns	
Turn-off delay time	t <sub>d(off)</sub>	—	200	—	ns	
Fall time	t <sub>f</sub>	—	100	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	1.1	—	V	I <sub>F</sub> = 30 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	600	—	ns	I <sub>F</sub> = 30 A, V <sub>GS</sub> = 0, di <sub>F</sub> /dt = 100 A/μs

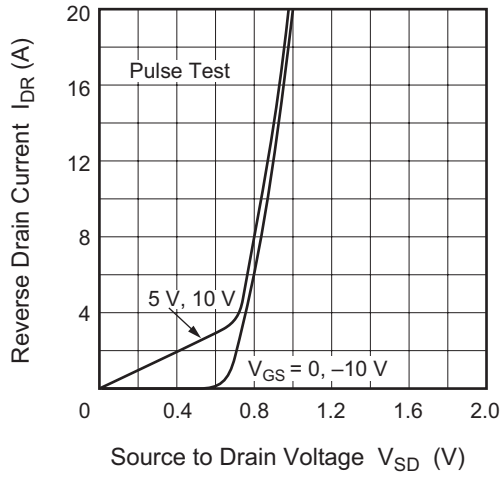
Note: 3. Pulse test

### Main Characteristics

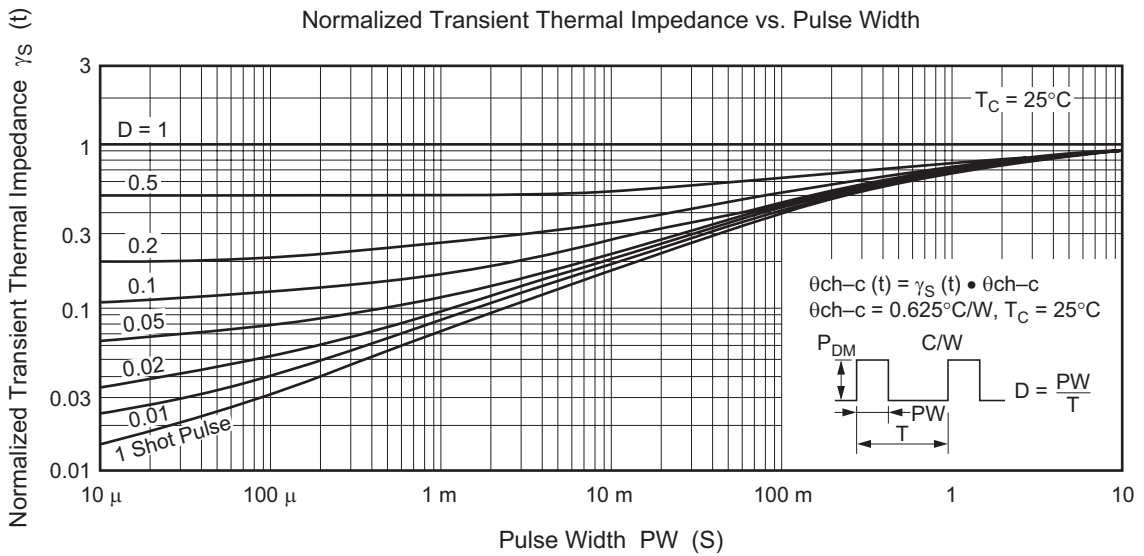




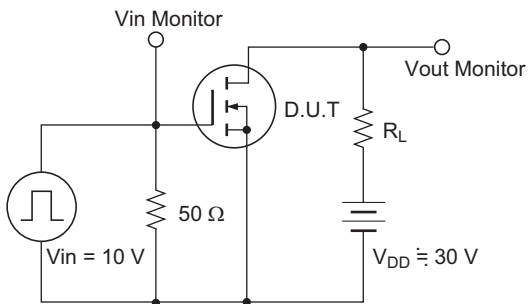
Reverse Drain Current vs. Source to Drain Voltage



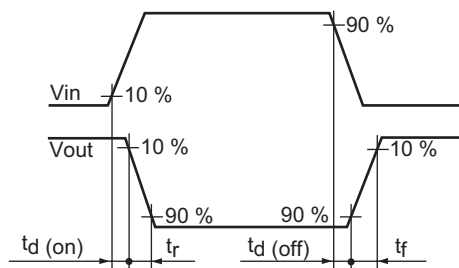
Normalized Transient Thermal Impedance vs. Pulse Width



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 technical drawing illustrates the TO-3PL package dimensions. The top view shows a rectangular body with a width of  $20.0 \pm 0.3$  mm and a height of  $6.0 \pm 0.2$  mm. The distance between the mounting holes is  $26.0 \pm 0.3$  mm. The diameter of the mounting holes is  $\phi 3.3 \pm 0.2$  mm. The side view shows a total height of  $5.0 \pm 0.2$  mm. The detail view shows the mounting hole dimensions: a diameter of  $1.4$  mm, a depth of  $3.0$  mm, a chamfered edge with a radius of  $2.2$  mm, and a bottom diameter of  $1.2$  mm with a tolerance of  $+0.25$  to  $-0.1$  mm. The distance between the mounting holes is  $5.45 \pm 0.5$  mm. The distance from the center of the mounting hole to the edge of the body is  $5.45 \pm 0.5$  mm. The distance from the center of the mounting hole to the center of the body is  $0.6$  mm with a tolerance of  $+0.25$  to  $-0.1$  mm. The distance from the center of the mounting hole to the center of the body is  $2.8 \pm 0.2$  mm. The distance from the center of the mounting hole to the center of the body is  $1.0$  mm. The distance from the center of the mounting hole to the center of the body is  $3.8$  mm. The distance from the center of the mounting hole to the center of the body is  $7.4$  mm.

## Ordering Information

Part Name	Quantity	Shipping Container
2SK1628-E	500 pcs	Box (Case)
2SK1629-E	500 pcs	Box (Case)

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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