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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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2SK1628, 2SK1629

Silicon N Channel MOS FET

REJ03G0960-0400

Rev.4.00

May 13, 2009

Application

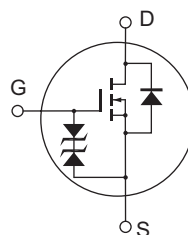
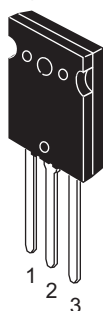
High speed power switching

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}	450	V
		500	
Gate to source voltage	V_{GSS}	± 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_C = 25°C

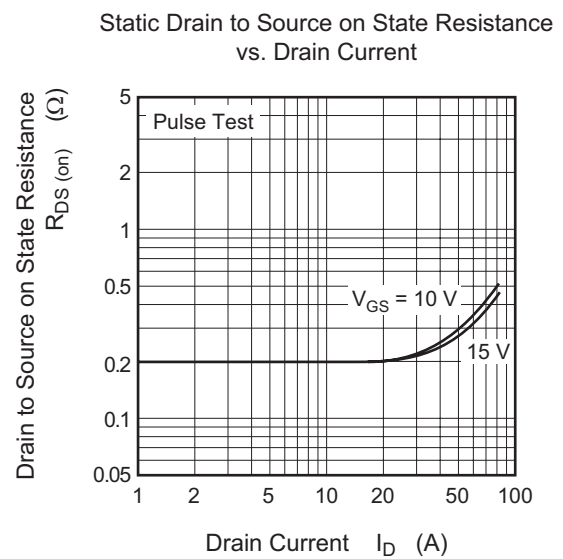
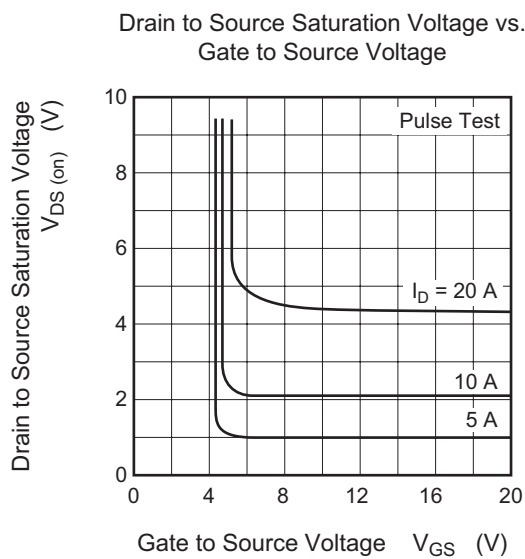
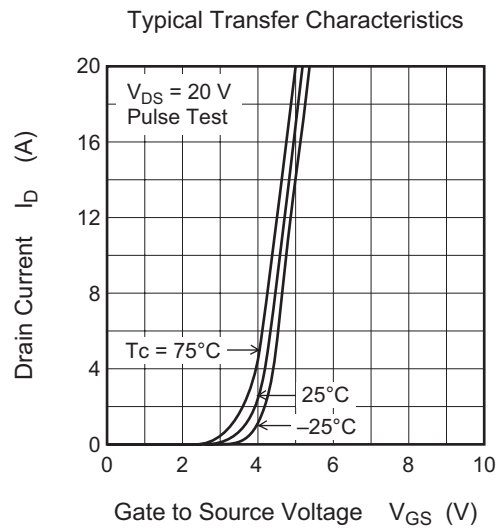
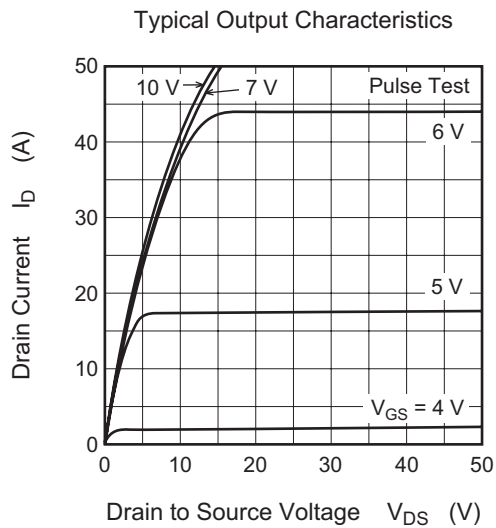
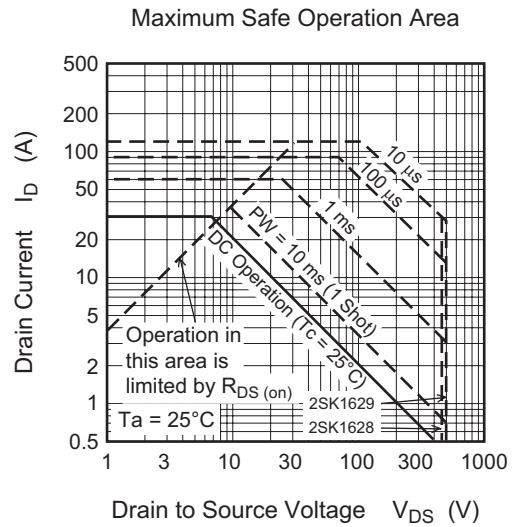
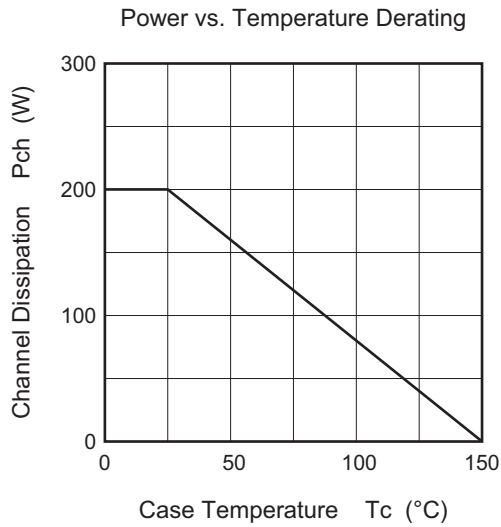
Electrical Characteristics

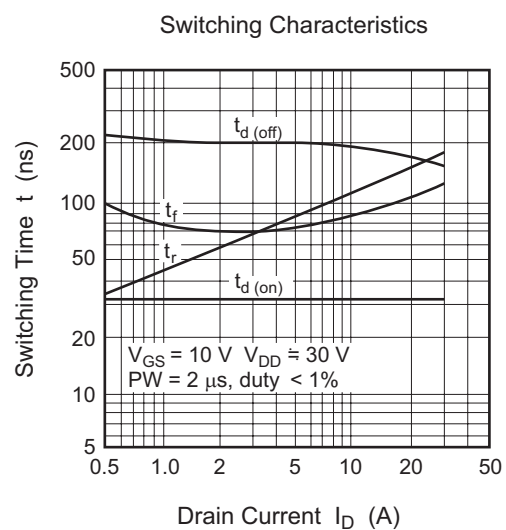
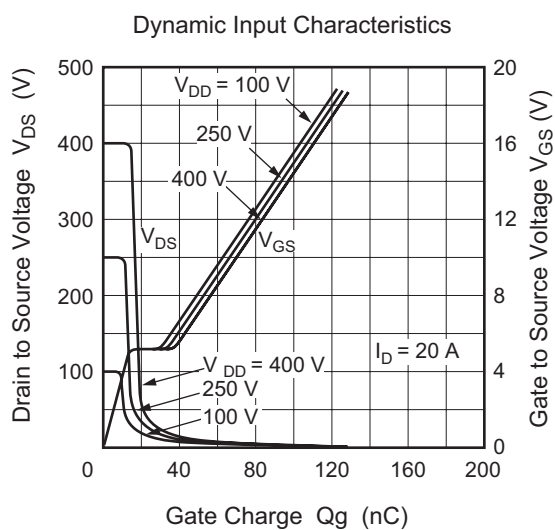
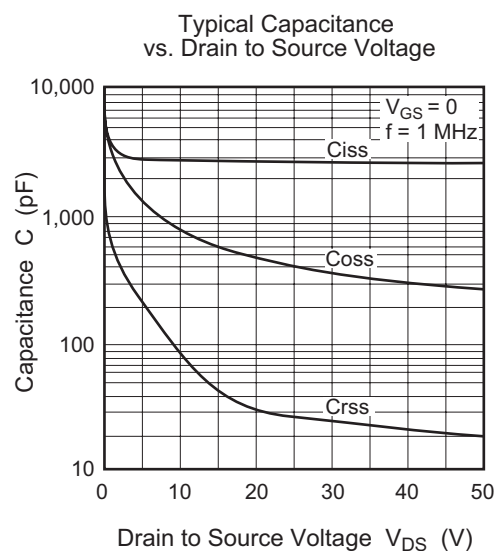
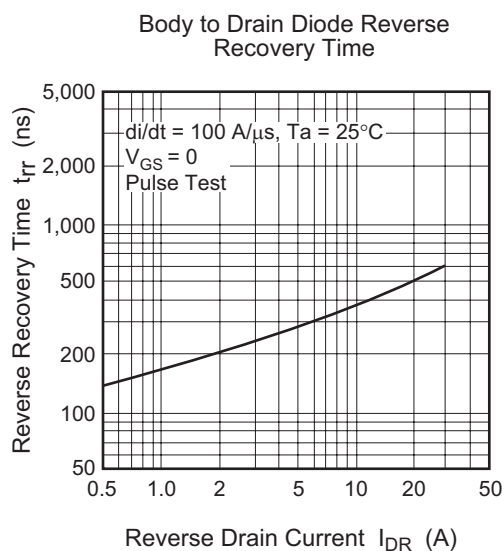
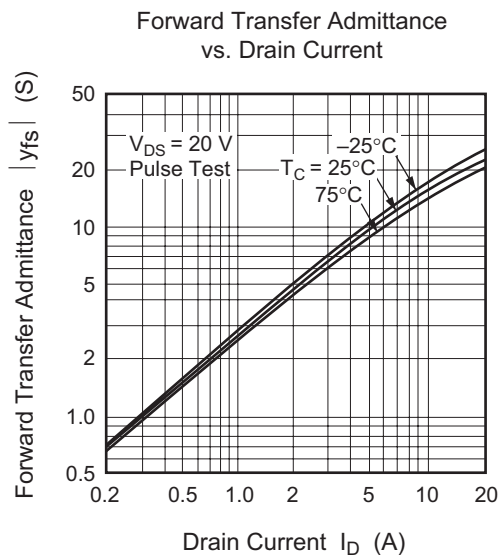
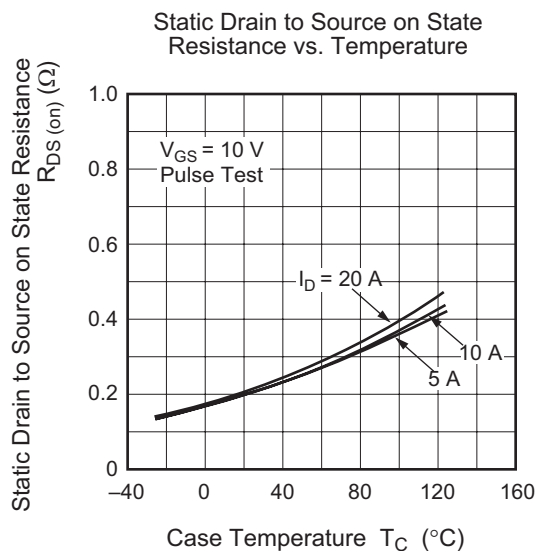
(Ta = 25°C)

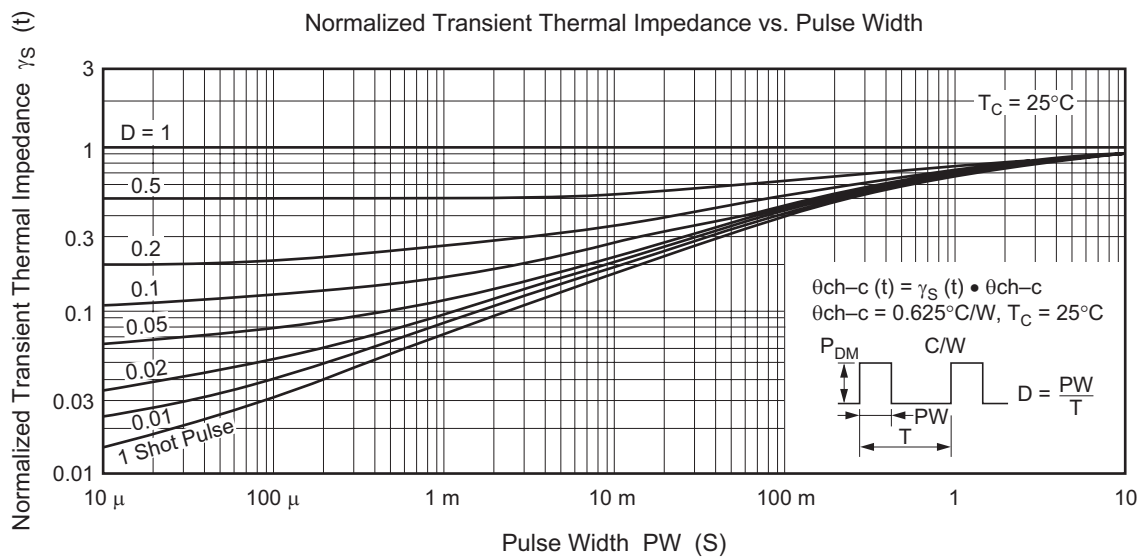
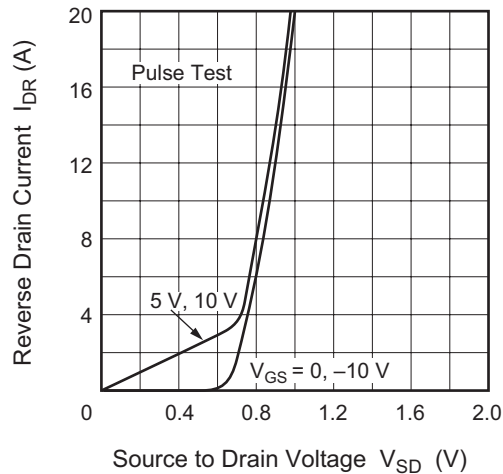
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1628	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
	2SK1629		500				
Gate to source breakdown voltage		$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current		I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	2SK1628	I_{DSS}	—	—	250	μA	$V_{DS} = 360 \text{ V}$, $V_{GS} = 0$
	2SK1629						$V_{DS} = 400 \text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.20	0.25	Ω	$I_D = 15 \text{ A}$, $V_{GS} = 10 \text{ V}$ *3
	2SK1629		—	0.22	0.27		
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

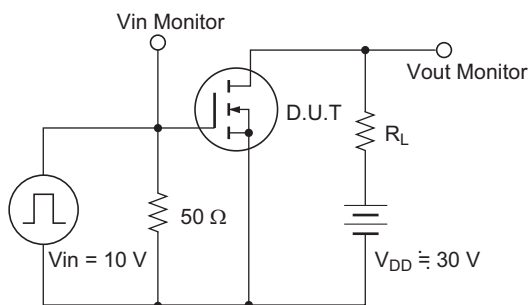
Main Characteristics



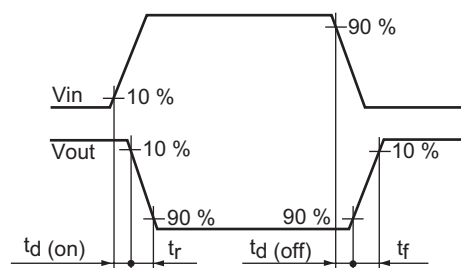


Reverse Drain Current vs.
Source to Drain Voltage

Switching Time Test Circuit



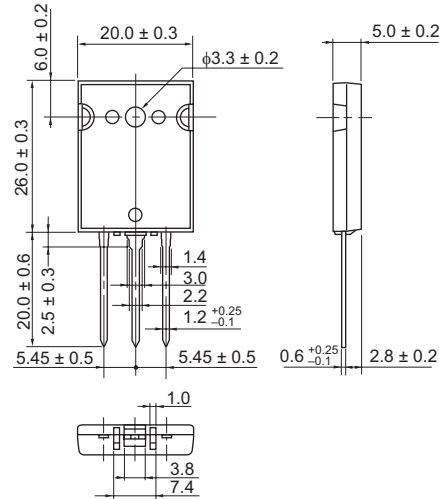
Waveforms



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



Ordering Information

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

Notes:

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