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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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EOL announced Product

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2SK1521, 2SK1522

Silicon N Channel MOS FET

REJ03G0949-0300

Rev.3.00

May 13, 2009

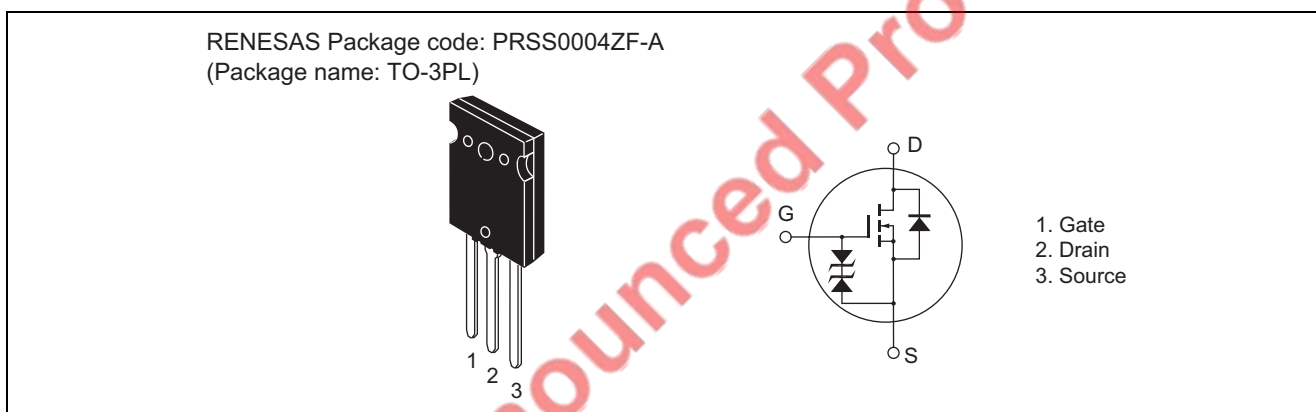
Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- Built-in fast recovery diode ($t_{tr} = 120$ ns)
- Suitable for motor control, switching regulator, DC-DC converter

Outline



Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit	
Drain to source voltage	V_{DSS}	2SK1521	450	V
		2SK1522	500	
Gate to source voltage	V_{GSS}	± 30	V	
Drain current	I_D	50	A	
Drain peak current	$I_{D(pulse)}^{*1}$	200	A	
Body to drain diode reverse drain current	I_{DR}	50	A	
Channel dissipation	P_{ch}^{*2}	250	W	
Channel temperature	T_{ch}	150	$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$	

Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$

2. Value at $T_C = 25^\circ\text{C}$

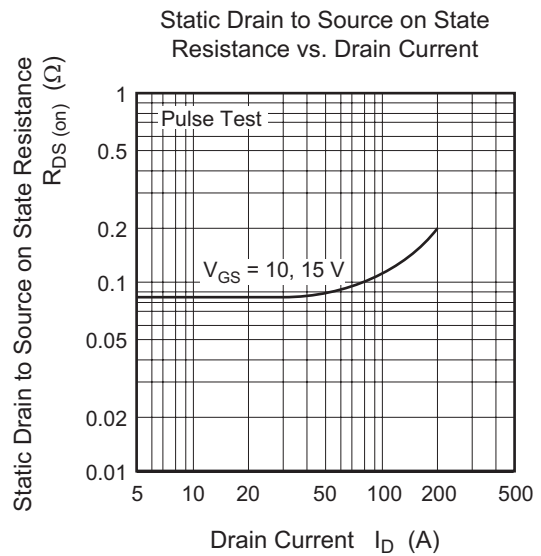
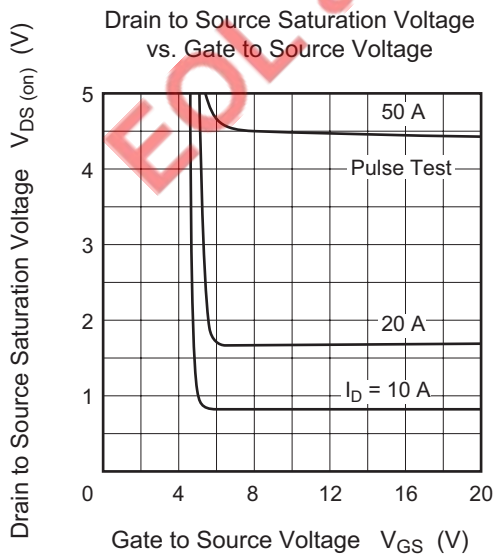
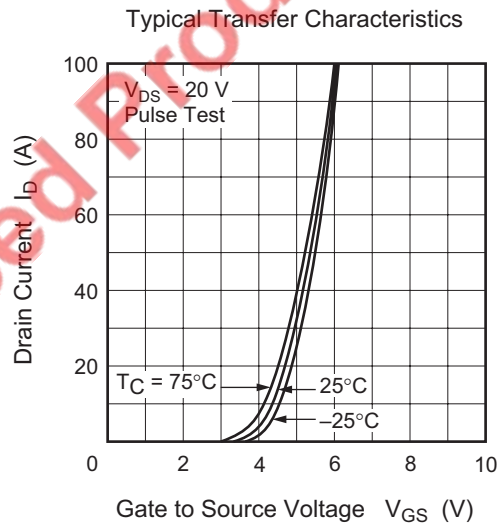
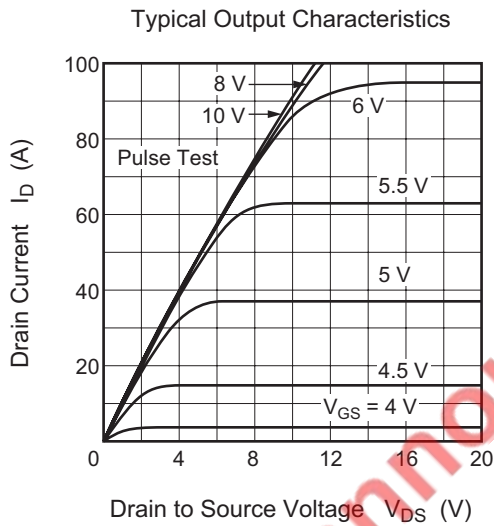
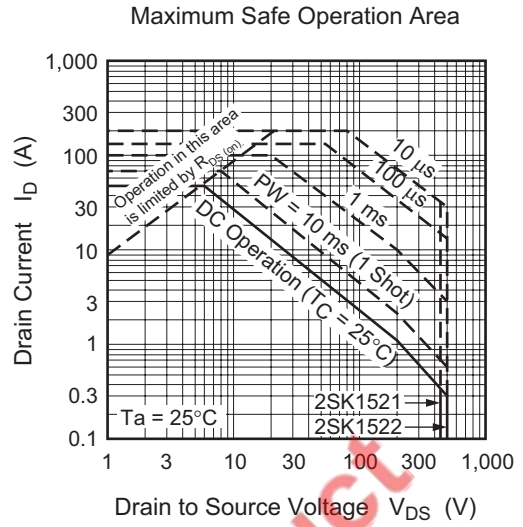
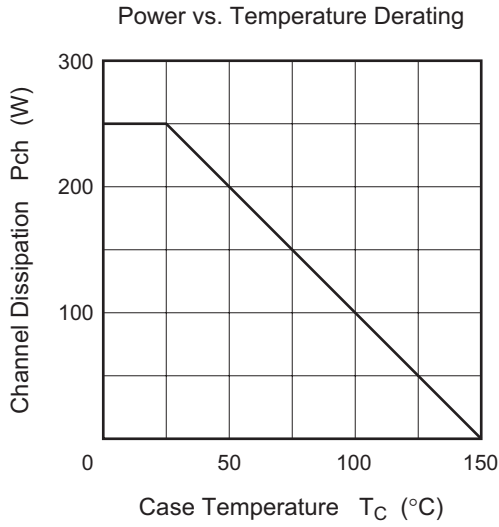
Electrical Characteristics

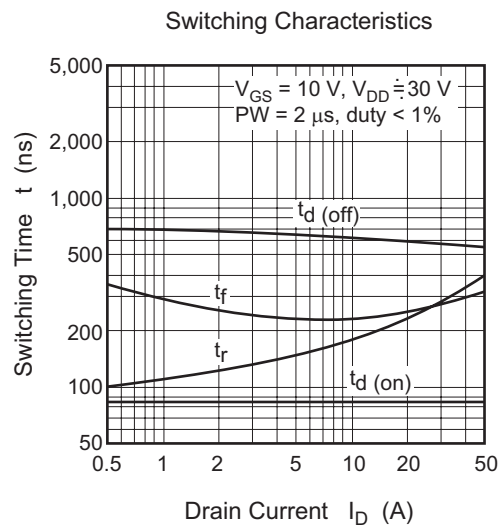
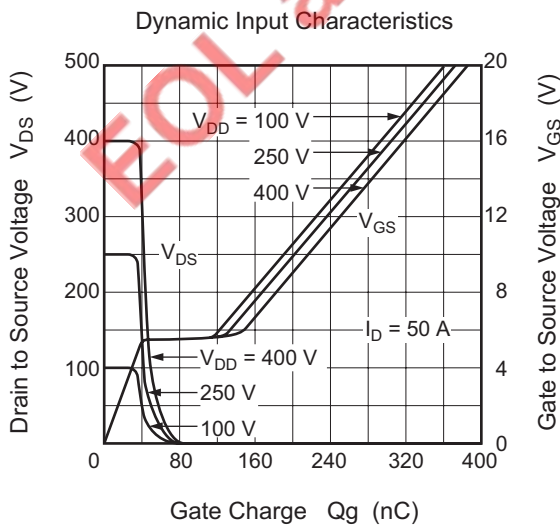
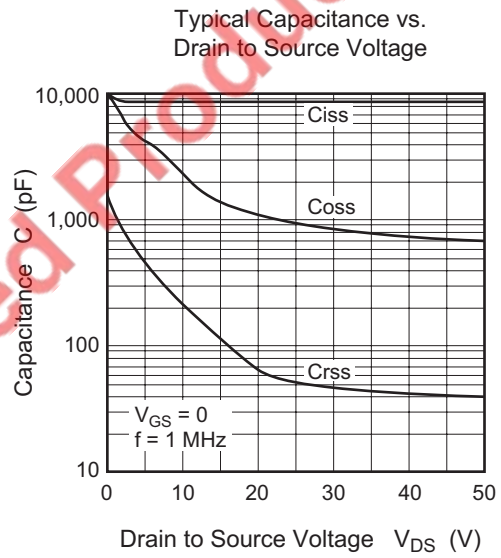
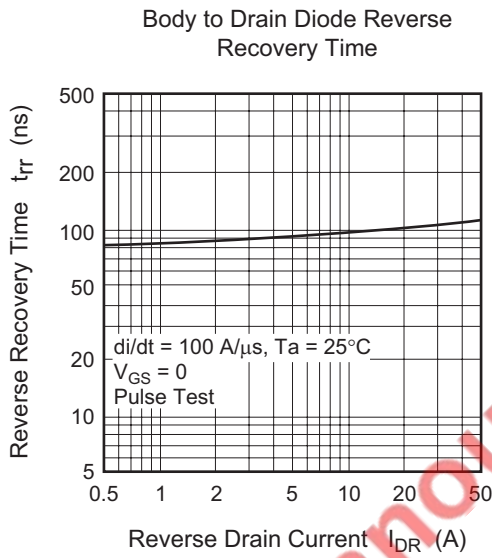
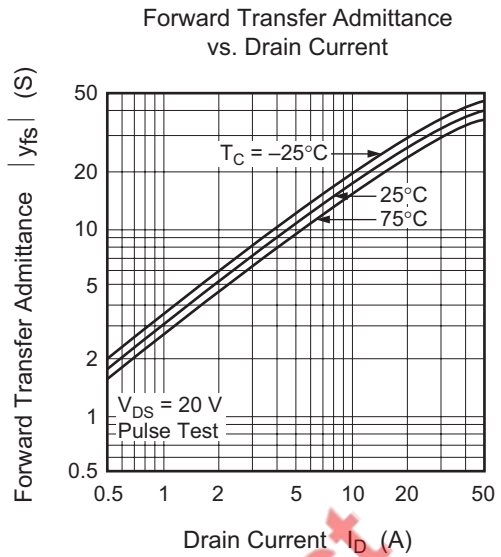
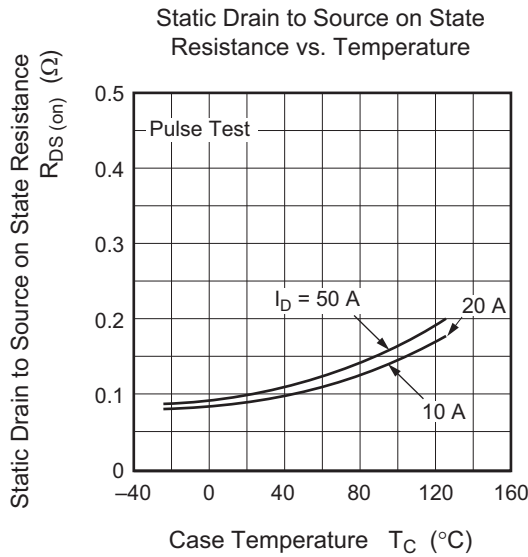
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1521	450	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
	2SK1522	500	—	—	V	
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	2SK1521	—	—	250	μA	$V_{DS} = 360 \text{ V}, V_{GS} = 0$
	2SK1522	—	—	—	μA	$V_{DS} = 400 \text{ V}, V_{GS} = 0$
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	2SK1521	—	0.08	0.10	Ω	$I_D = 25 \text{ A}, V_{GS} = 10 \text{ V}^{*3}$
	2SK1522	—	0.085	0.11	Ω	
Forward transfer admittance	$ y_{fs} $	22	35	—	S	$I_D = 25 \text{ A}, V_{DS} = 10 \text{ V}^{*3}$
Input capacitance	C_{iss}	—	8700	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	2400	—	pF	
Reverse transfer capacitance	C_{rss}	—	235	—	pF	
Turn-on delay time	$t_{d(on)}$	—	85	—	ns	$I_D = 25 \text{ A}, V_{GS} = 10 \text{ V},$ $R_L = 1.2 \Omega$
Rise time	t_r	—	250	—	ns	
Turn-off delay time	$t_{d(off)}$	—	600	—	ns	
Fall time	t_f	—	250	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.1	—	V	$I_F = 50 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	120	—	ns	$I_F = 50 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

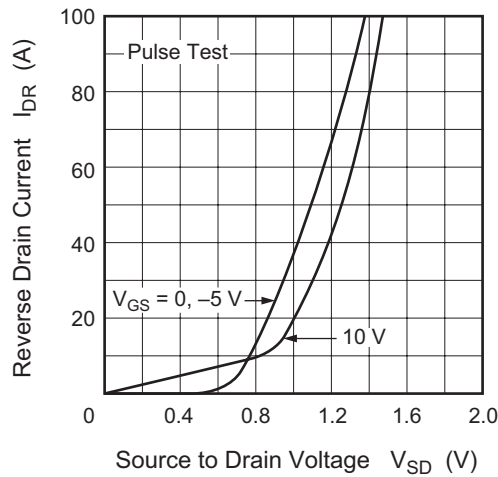
Note: 3. Pulse test

Main Characteristics

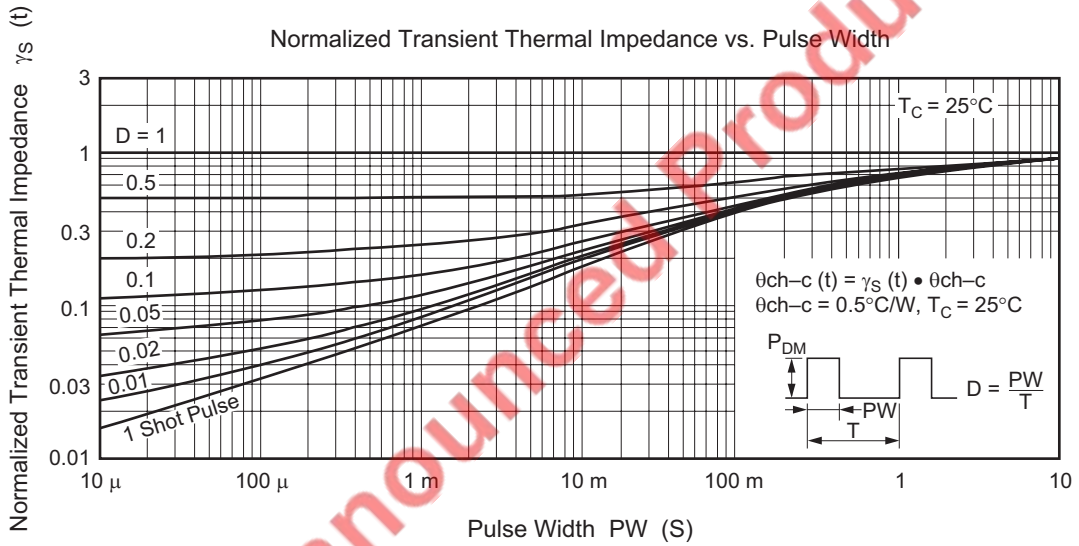




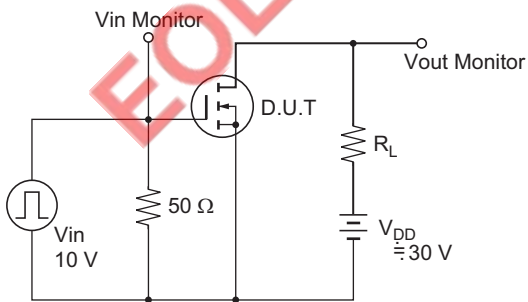
Reverse Drain Current vs. Source to Drain Voltage



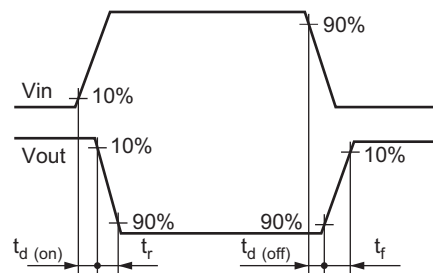
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveforms



Package Dimensions

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

The drawing shows the following dimensions:

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

Ordering Information

Part Name	Quantity	Shipping Container
2SK1521-E	250 pcs	Box (Tube)
2SK1522-E	250 pcs	Box (Tube)

Notes:

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