

2SK1521, 2SK1522

Silicon N Channel MOS FET

REJ03G0949-0200
(Previous: ADE-208-1289)
Rev.2.00
Sep 07, 2005

Application

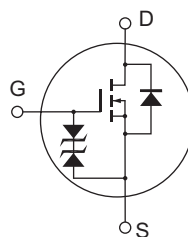
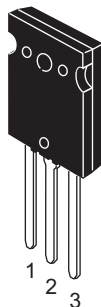
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- Built-in fast recovery diode ($t_{tr} = 120 \text{ ns}$)
- Suitable for motor control, switching regulator, 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	2SK1521	V_{DS}	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	°C
Storage temperature		T_{stg}	-55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$ 2. Value at $T_C = 25^\circ C$

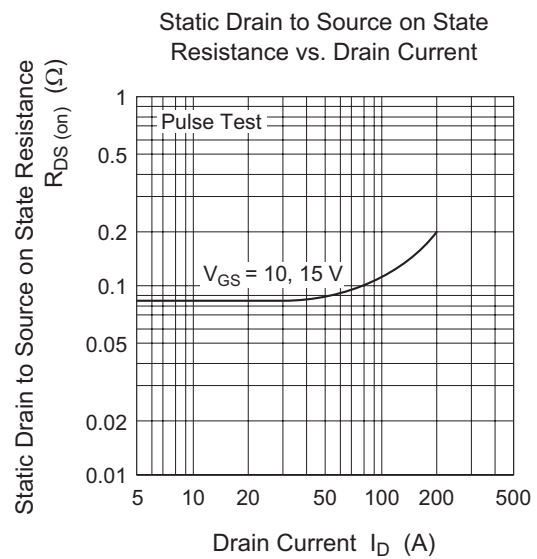
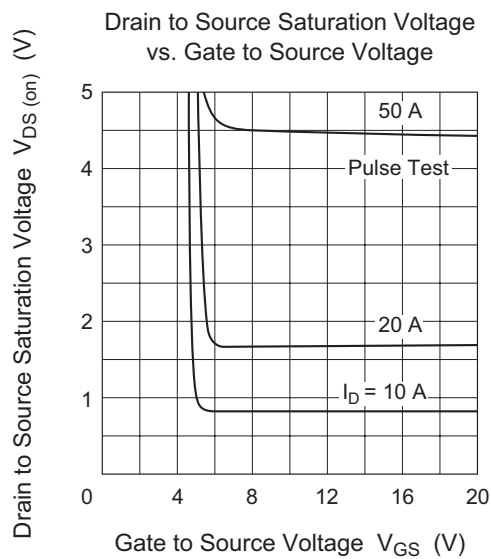
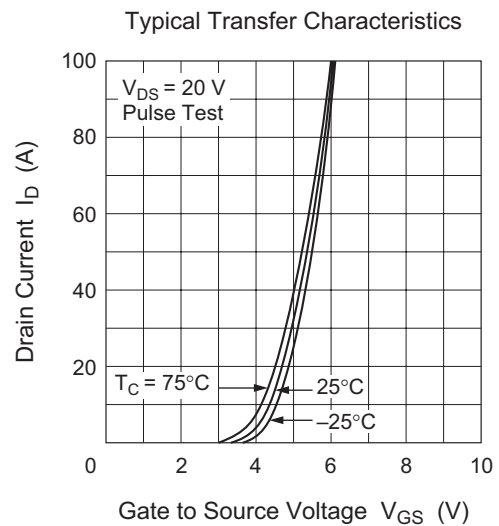
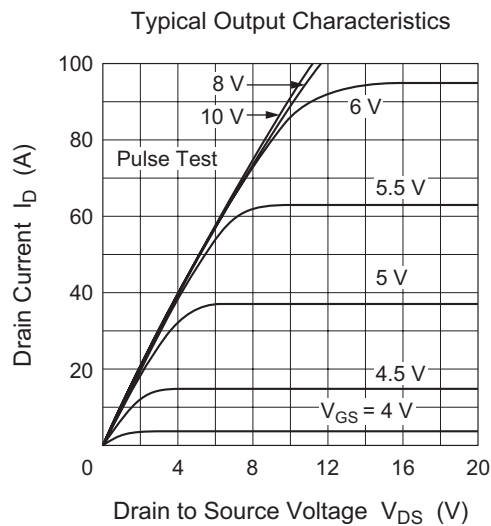
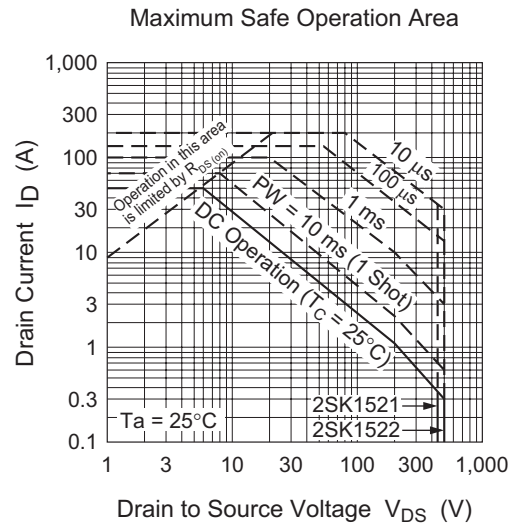
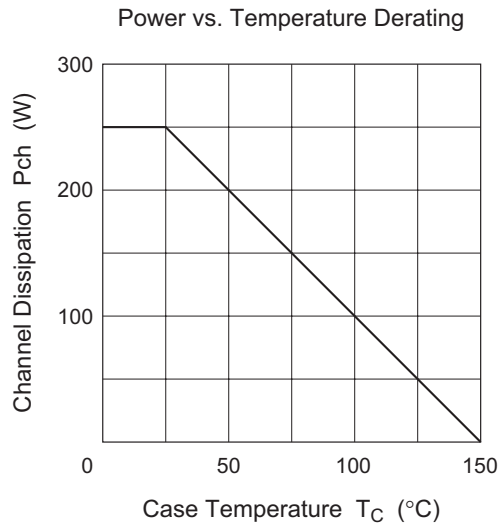
Electrical Characteristics

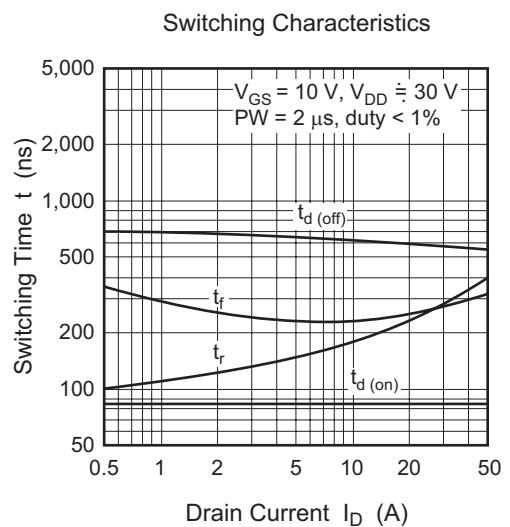
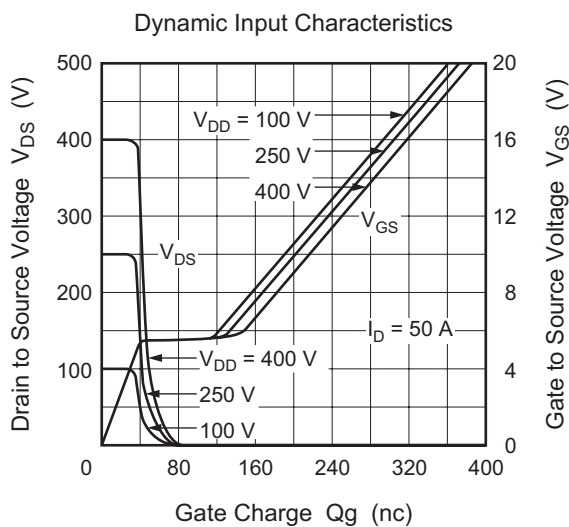
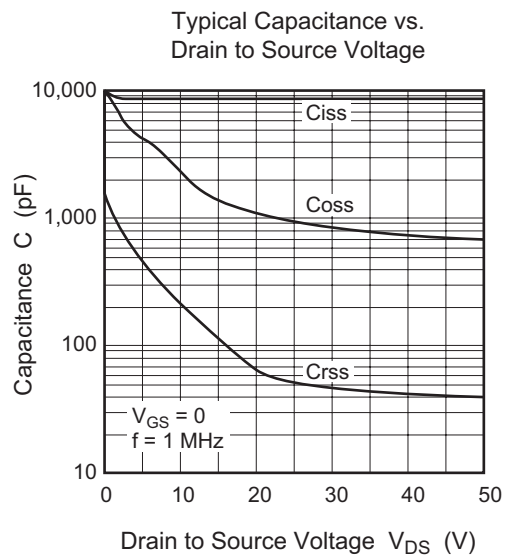
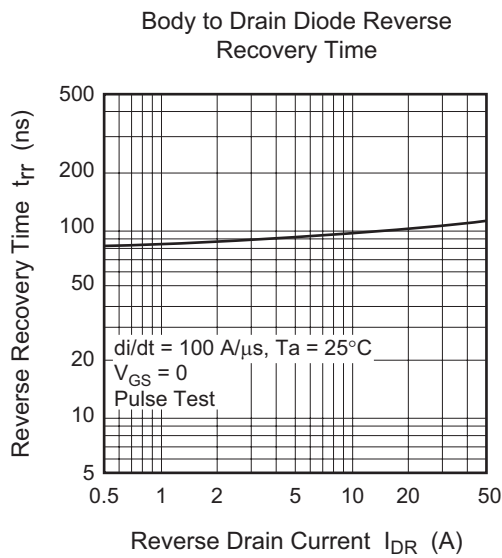
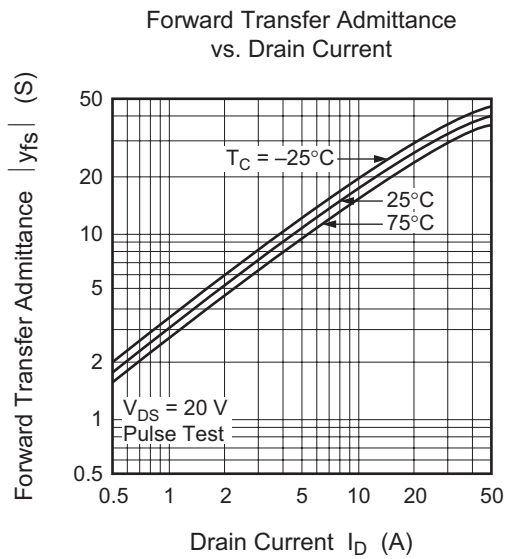
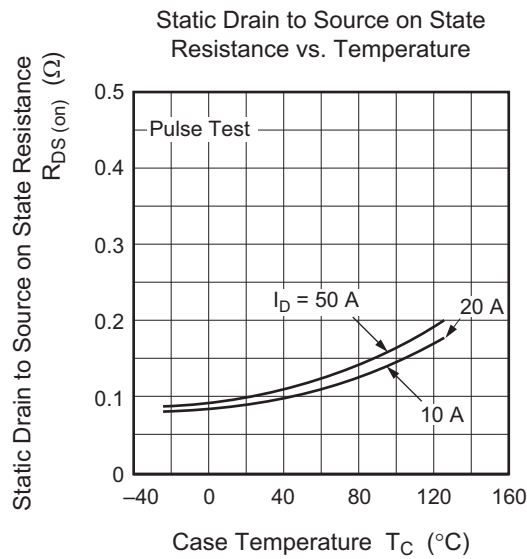
(Ta = 25°C)

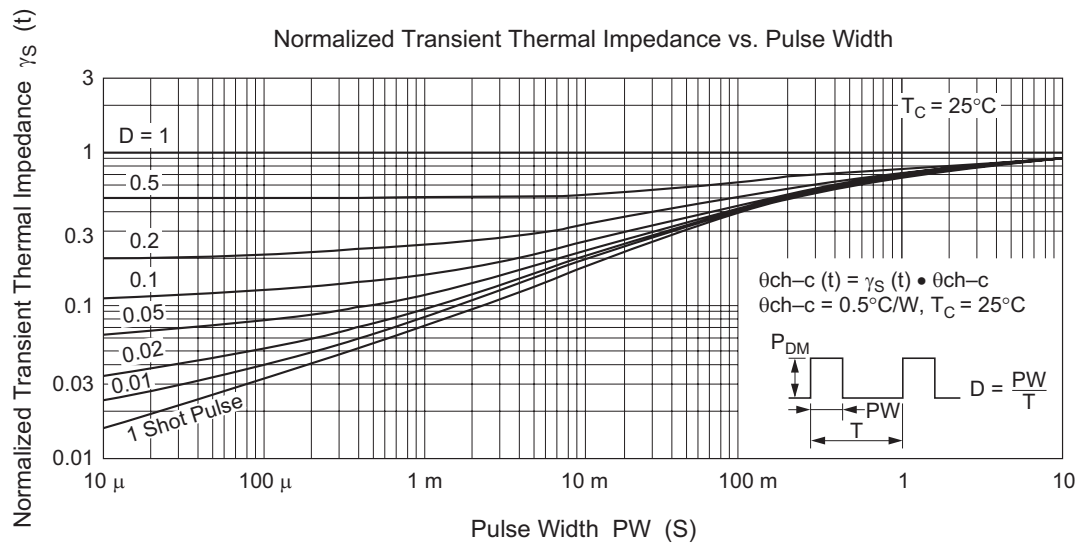
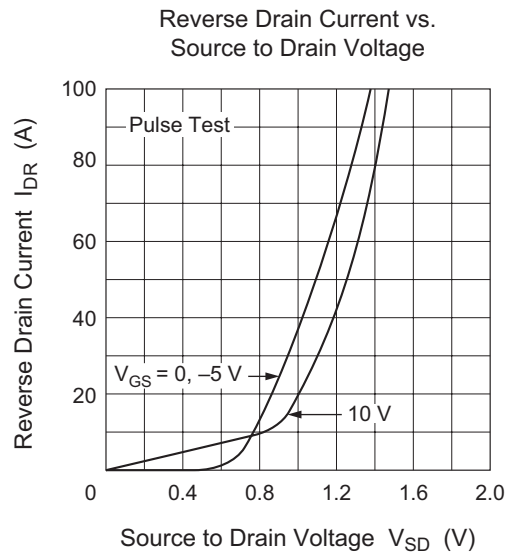
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1521	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
	2SK1522		500				
Gate to source breakdown voltage		$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \mu A$, $V_{DS} = 0$
Gate to source leak current		I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	2SK1521	I_{DSS}	—	—	250	μA	$V_{DS} = 360 \text{ V}$, $V_{GS} = 0$
	2SK1522						$V_{DS} = 400 \text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.08	0.10	Ω	$I_D = 25 \text{ A}$, $V_{GS} = 10 \text{ V}^{*3}$
	2SK1522		—	0.085	0.11		
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	$I_F = 50 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu s$

Note: 3. Pulse test

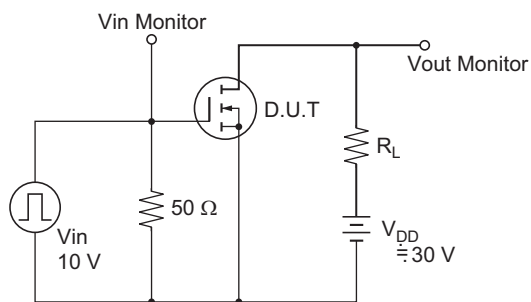
Main Characteristics



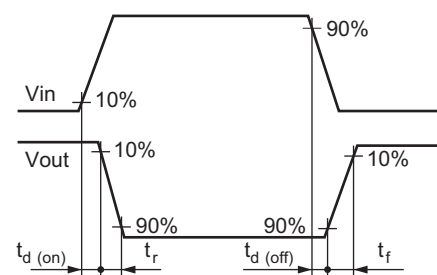




Switching Time Test Circuit



Waveforms



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