

# 2SK1521, 2SK1522

## Silicon N Channel MOS FET

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

### Application

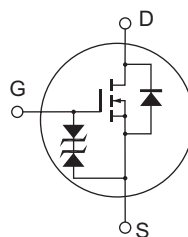
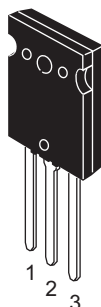
High speed power switching

### Features

- Low on-resistance
- High speed switching
- Low drive current
- Built-in fast recovery diode ( $t_{rr} = 120 \text{ ns}$ )
- 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		$V_{GS}$	±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  $T_C = 25^\circ C$ 

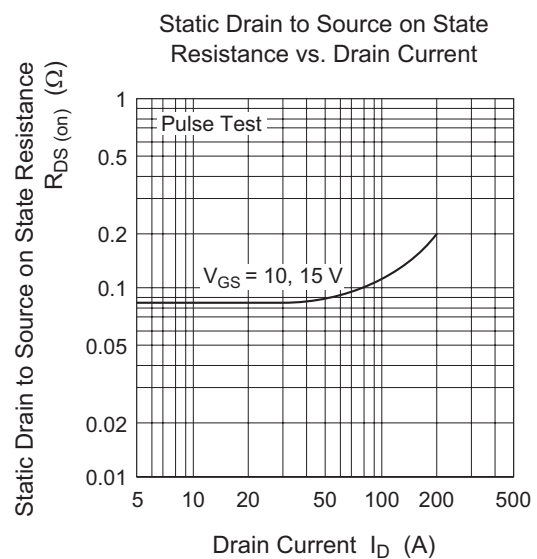
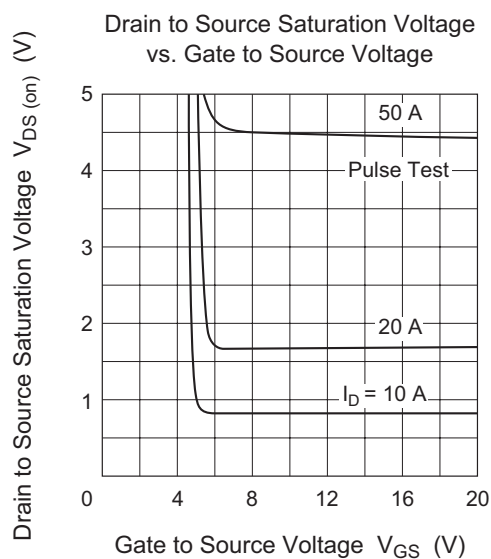
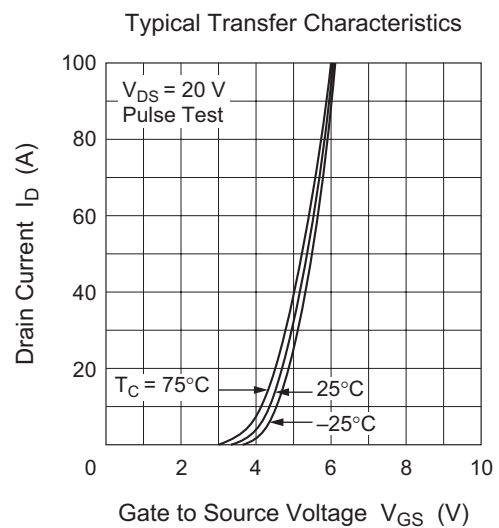
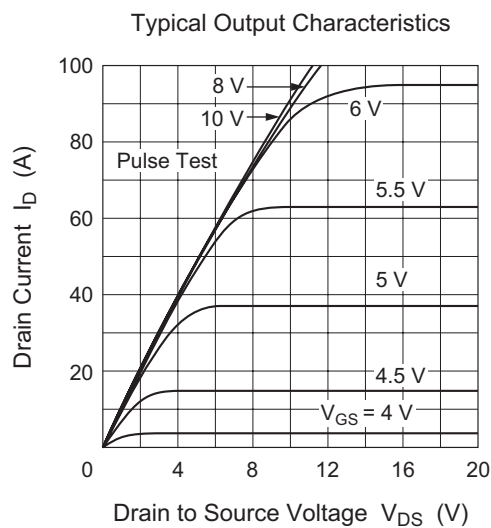
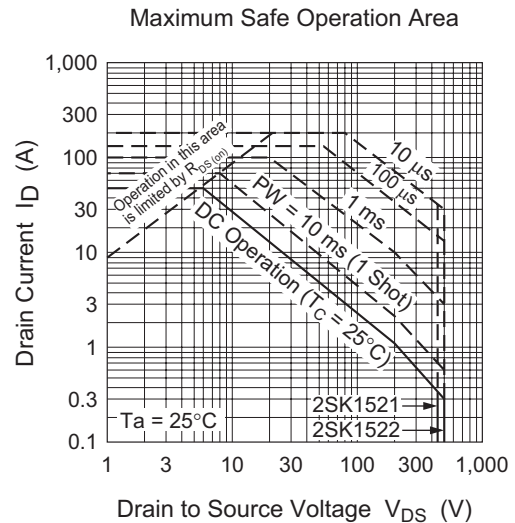
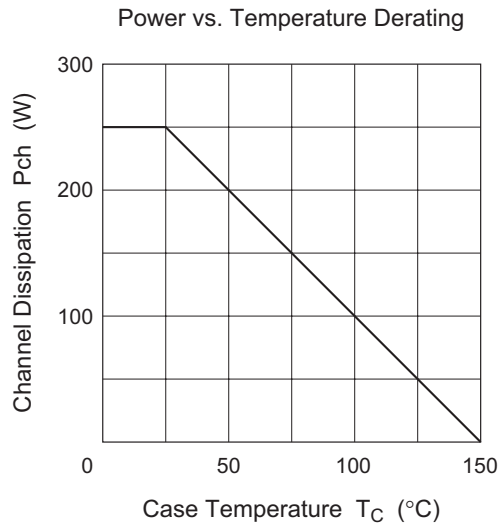
## Electrical Characteristics

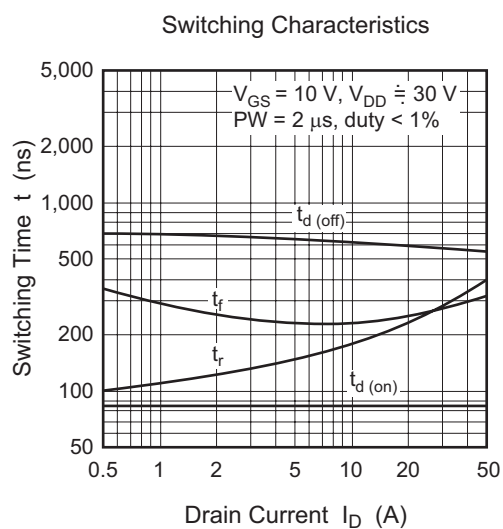
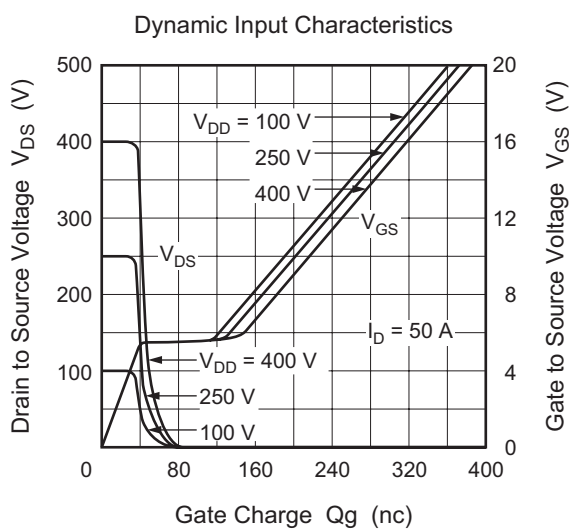
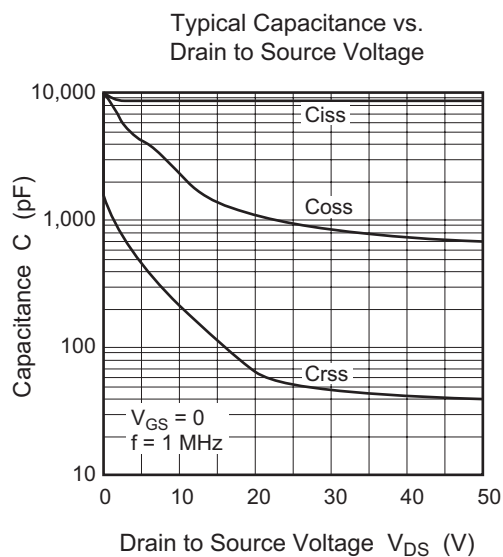
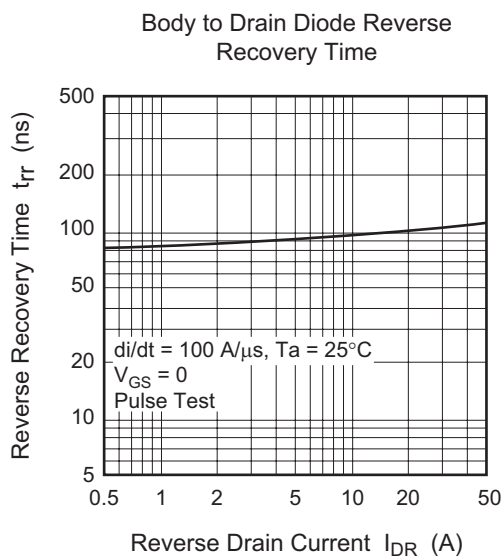
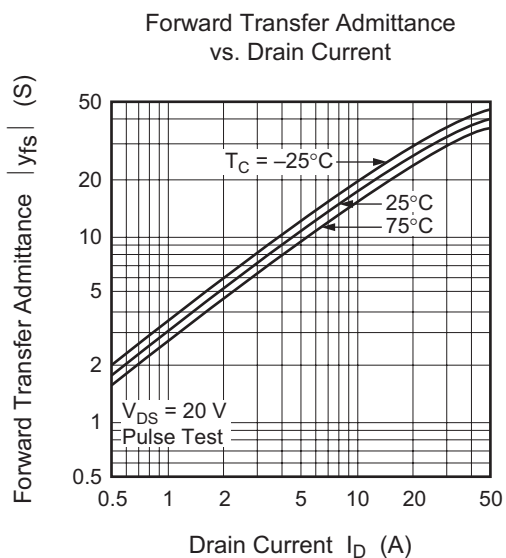
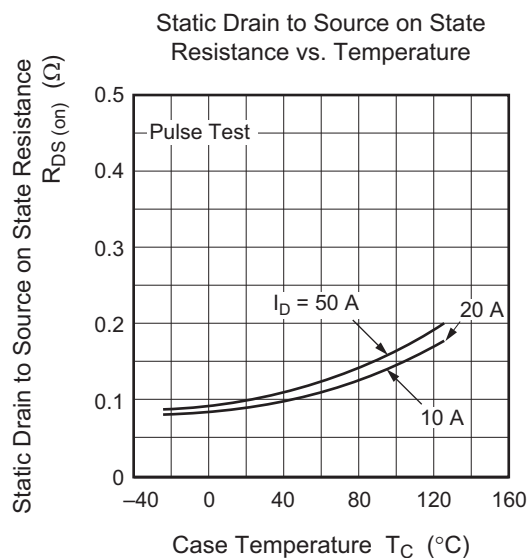
(Ta = 25°C)

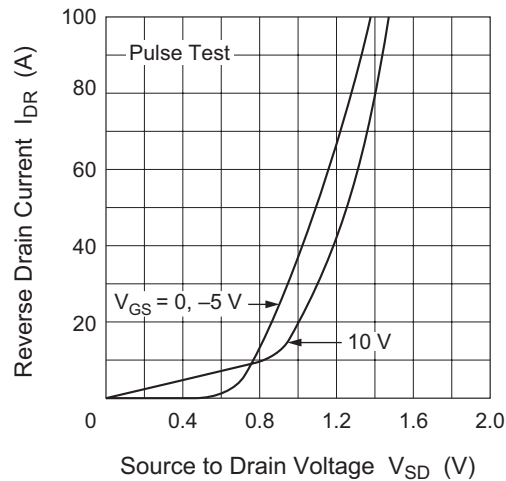
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1521	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
	2SK1522		500				
Gate to source breakdown voltage		$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current		$I_{GSS}$	—	—	±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

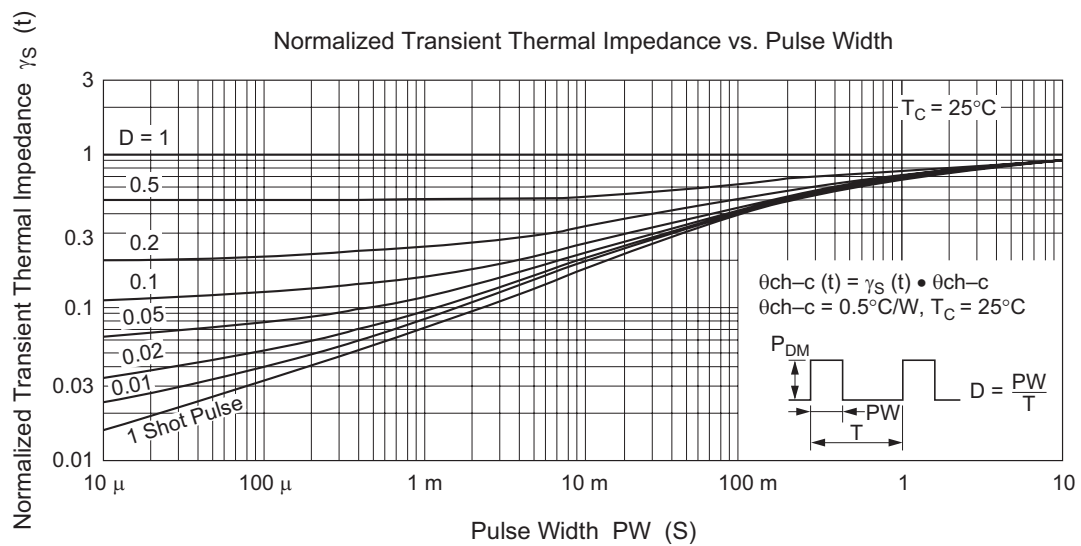
## Main Characteristics



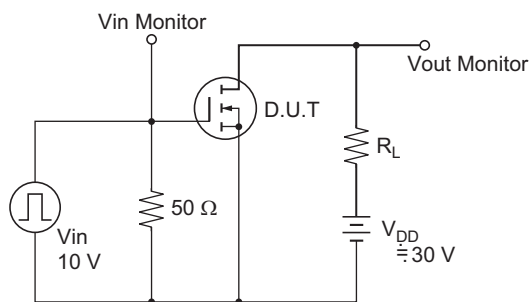


Reverse Drain Current vs.  
Source to Drain Voltage

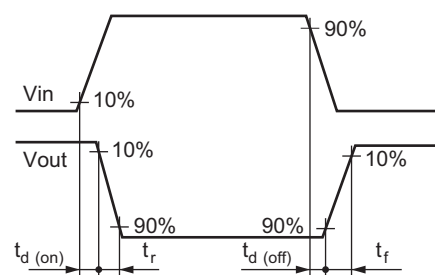
Normalized Transient Thermal Impedance vs. Pulse Width



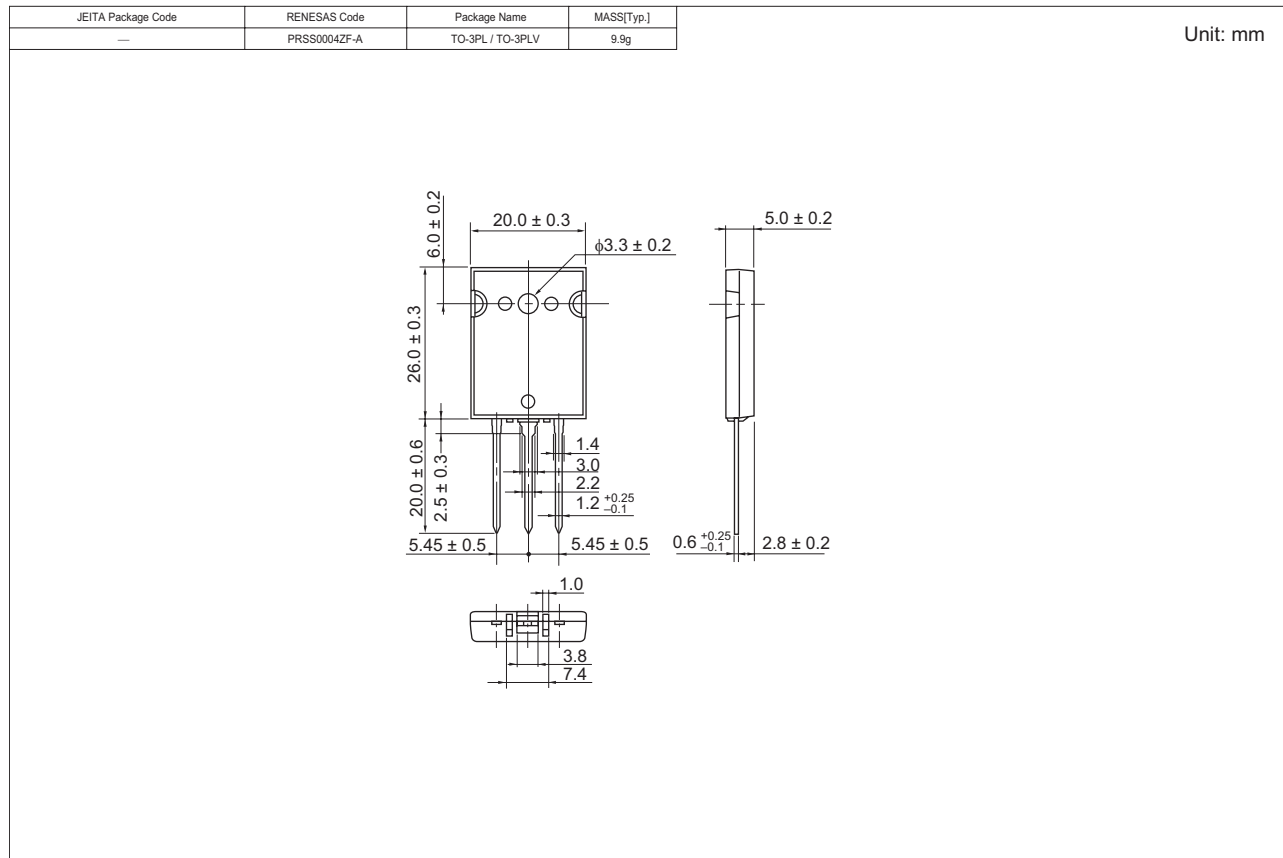
Switching Time Test Circuit



Waveforms



## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
2SK1521-E	500 pcs	Box (Case)
2SK1522-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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