

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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# 2SK1521, 2SK1522

Silicon N-Channel MOS FET

**RENESAS**

ADE-208-1289 (Z)  
1st. Edition  
Mar. 2001

## Application

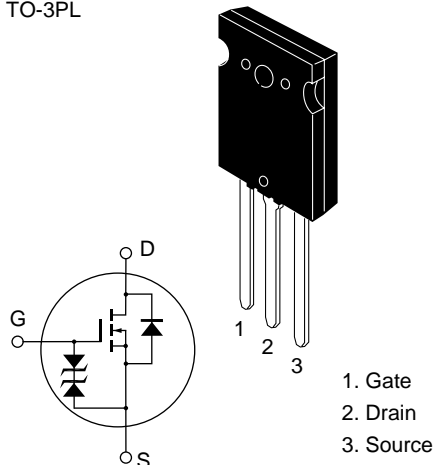
High speed power switching

## 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

TO-3PL



## 2SK1521, 2SK1522

### Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1521	$V_{DSS}$	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		$Pch^{*2}$	250	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55 to +150	°C

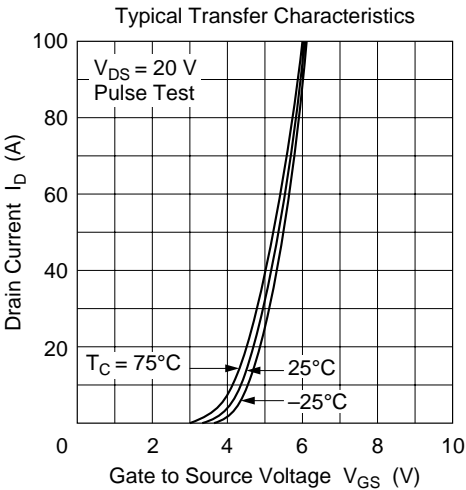
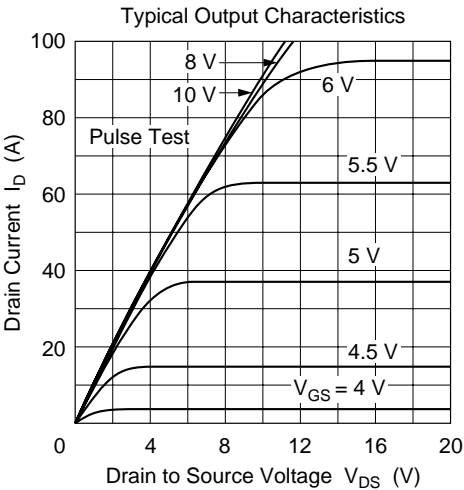
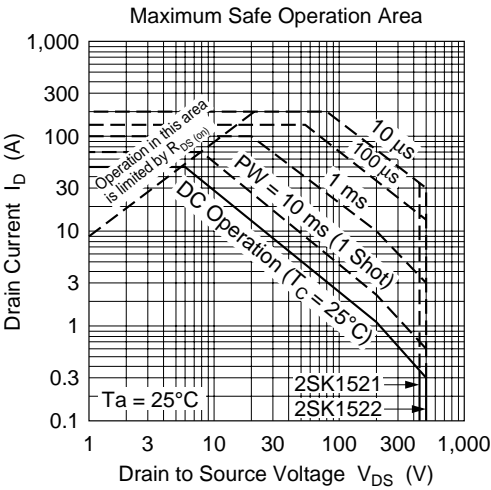
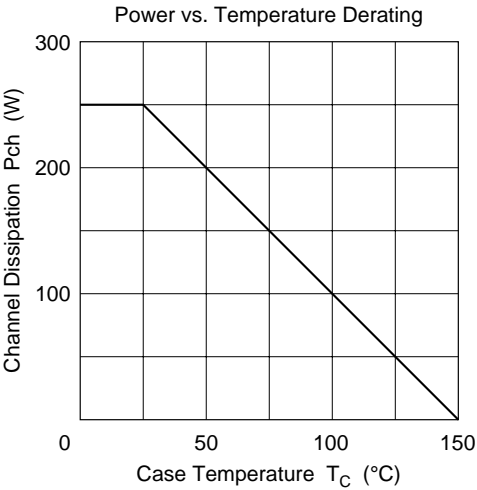
Notes: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$

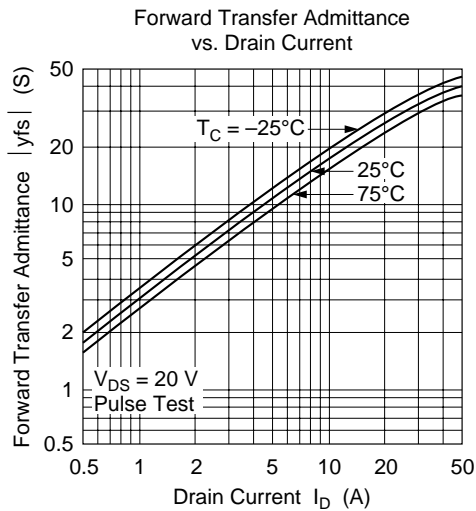
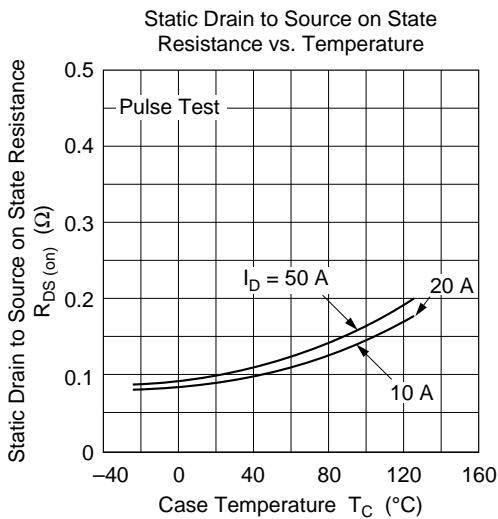
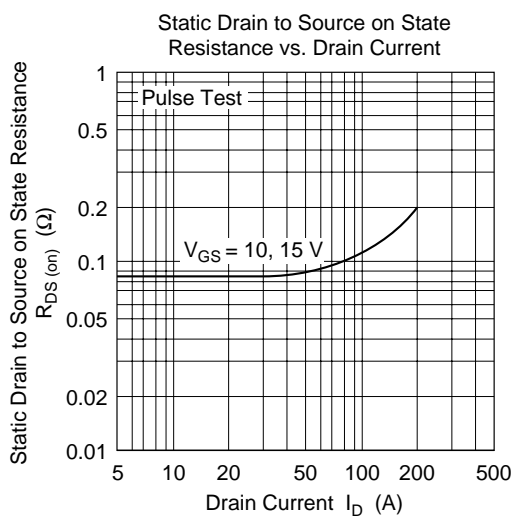
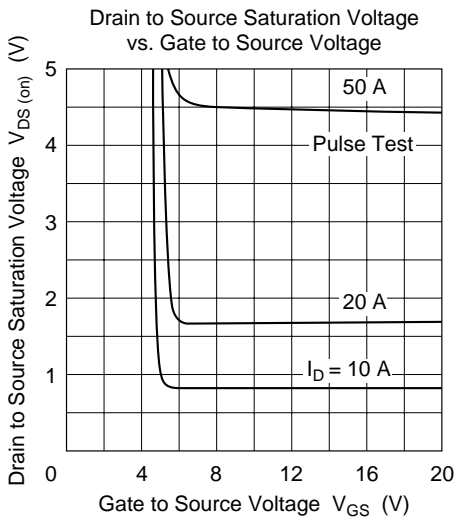
2. Value at  $T_C = 25^\circ C$

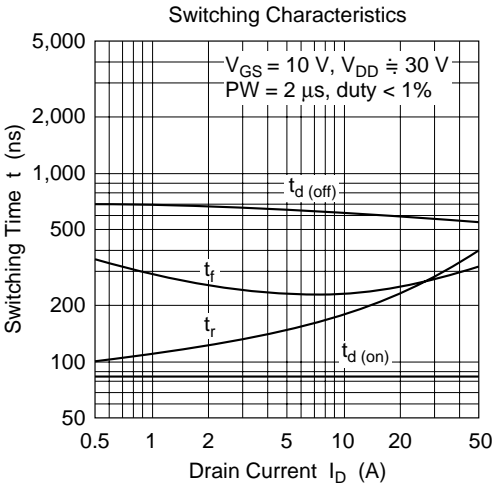
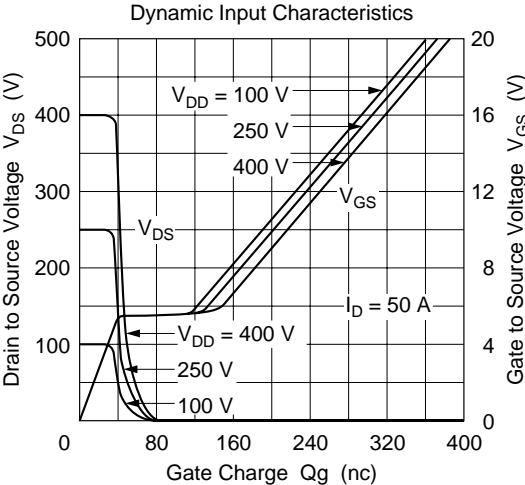
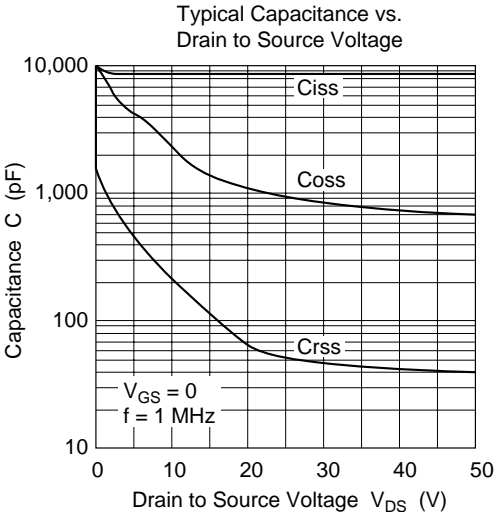
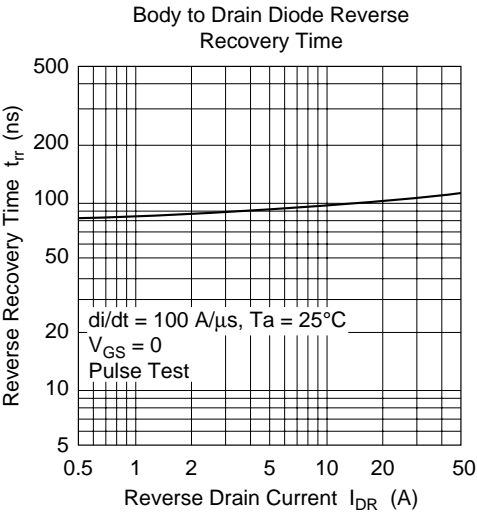
## Electrical Characteristics (Ta = 25°C)

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

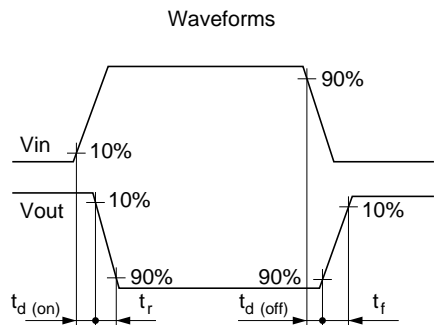
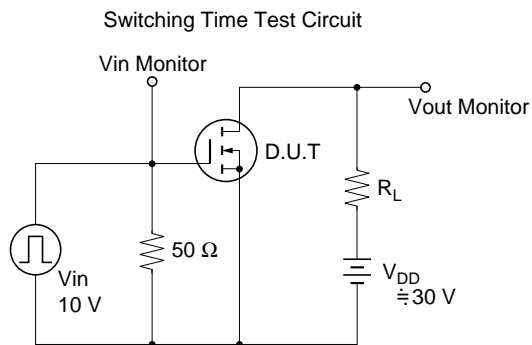
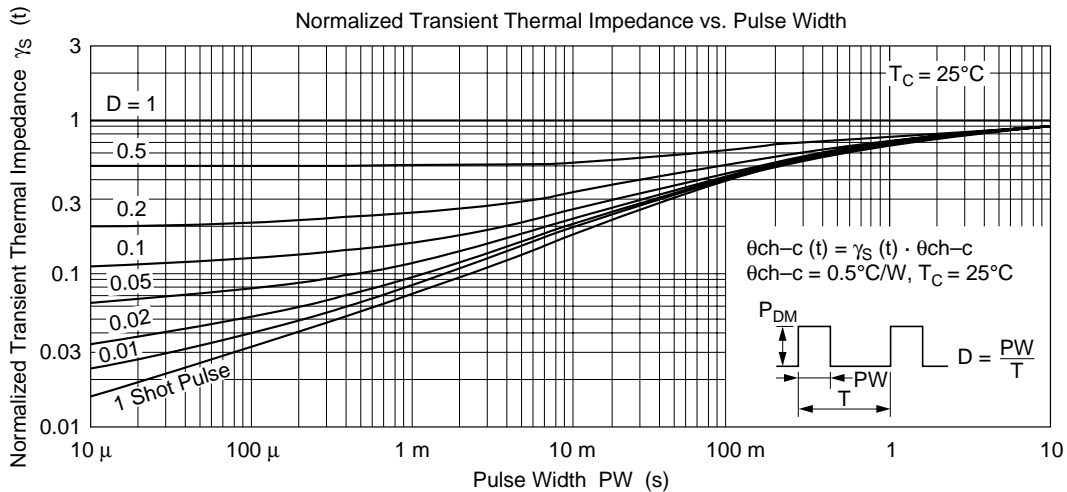
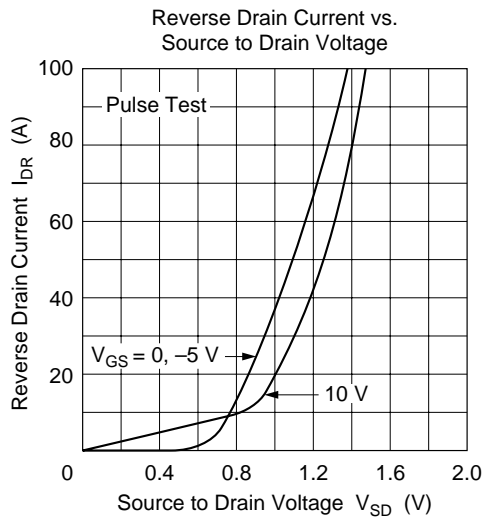
Note: 1. Pulse test





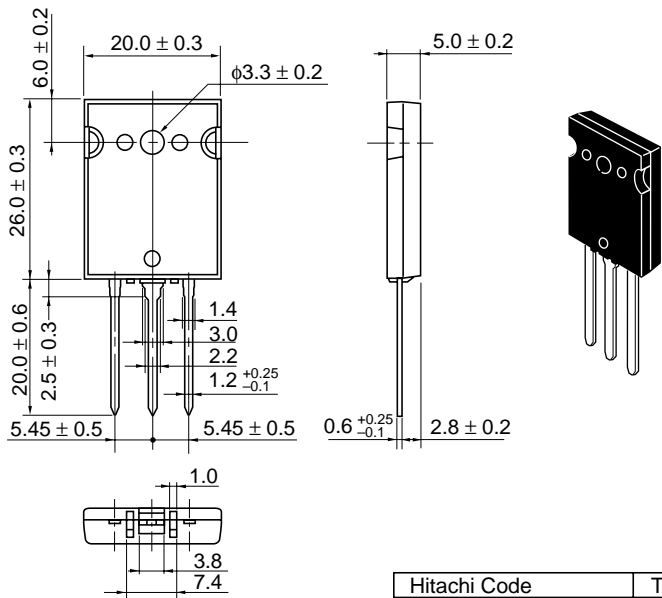






Package Dimensions

As of January, 2001  
Unit: mm



Hitachi Code	TO-3PL
JEDEC	—
EIAJ	—
Mass (reference value)	9.9 g

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