

# 2SK1519, 2SK1520

Silicon N Channel MOS FET

REJ03G0948-0300  
(Previous: ADE-208-1288)  
Rev.3.00  
Apr 27, 2006

## Application

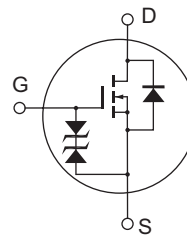
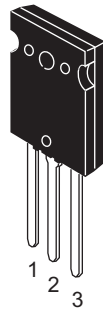
High speed power switching

## Features

- Low on-resistance
- High speed switching
- Low drive current
- Built-in fast recovery diode ( $t_{rr} = 120$  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	2SK1519	450	V
	2SK1520	500	
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	30	A
Drain peak current	I <sub>D(pulse)</sub> *1	120	A
Body to drain diode reverse drain current	I <sub>DR</sub>	30	A
Channel dissipation	P <sub>ch</sub> *2	200	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T<sub>C</sub> = 25°C

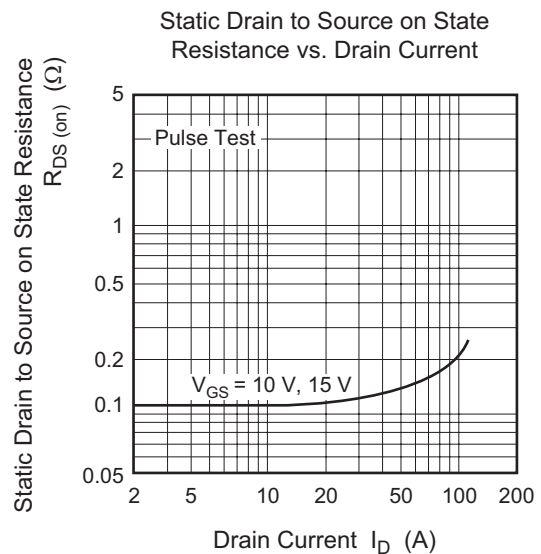
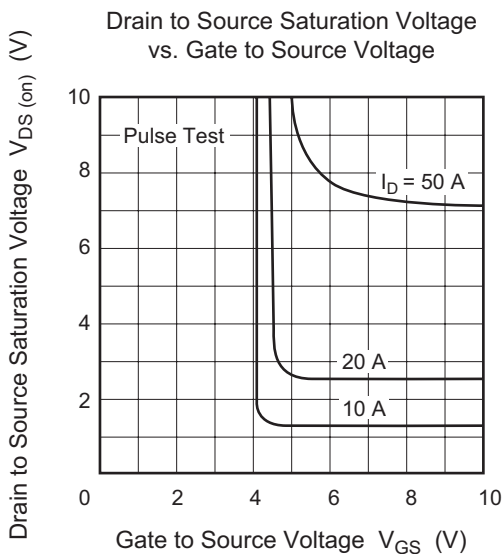
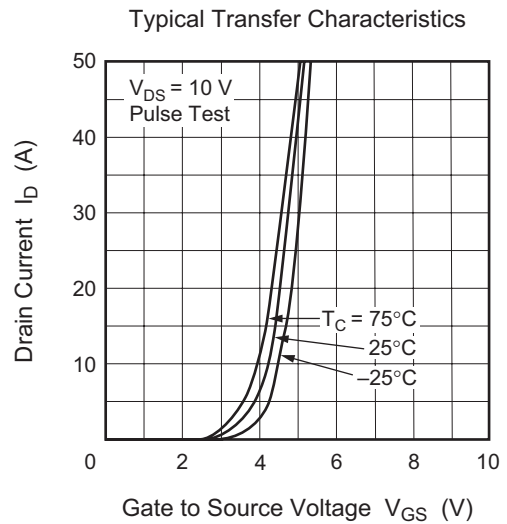
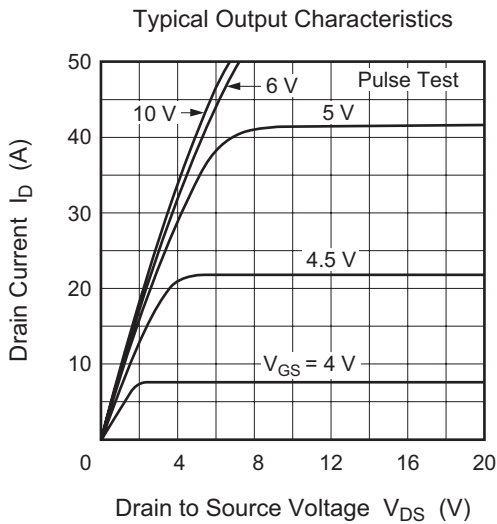
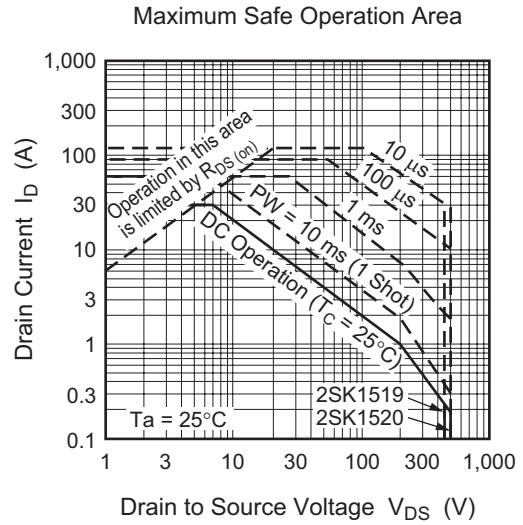
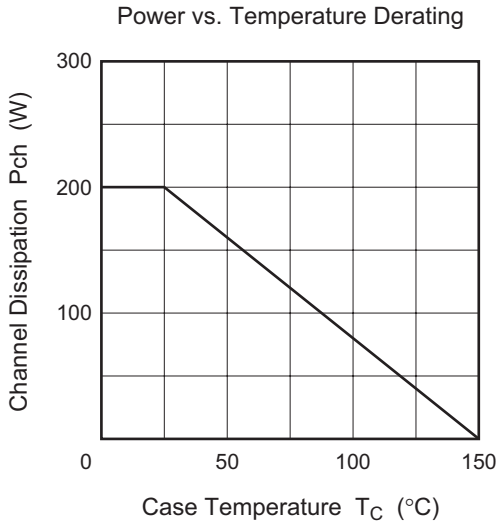
## Electrical Characteristics

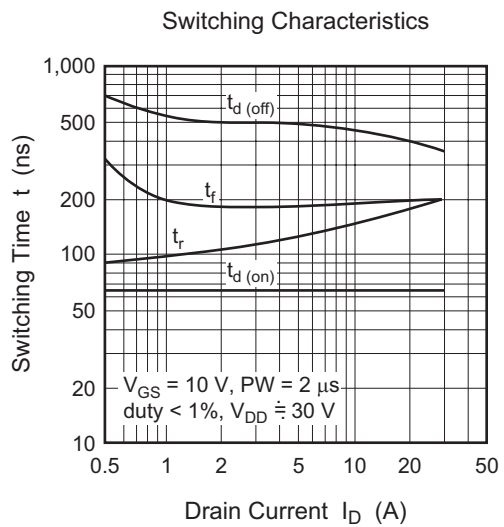
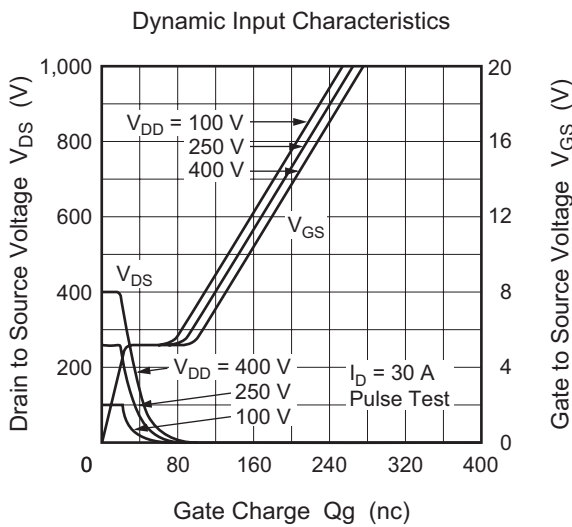
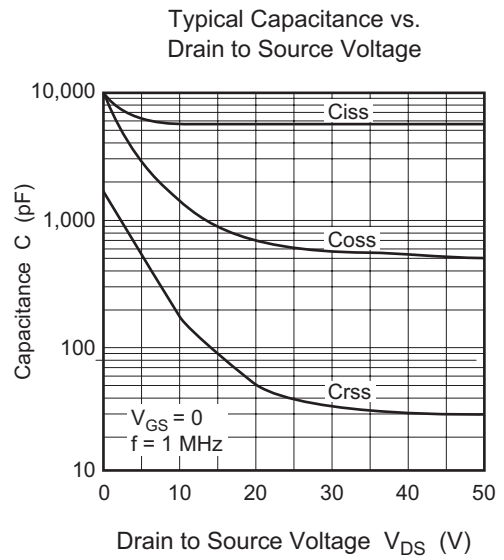
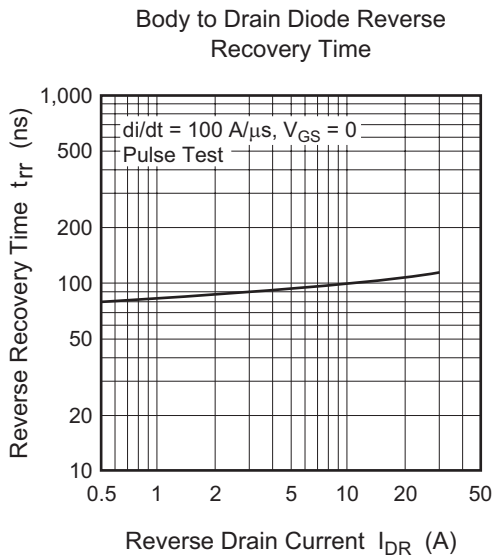
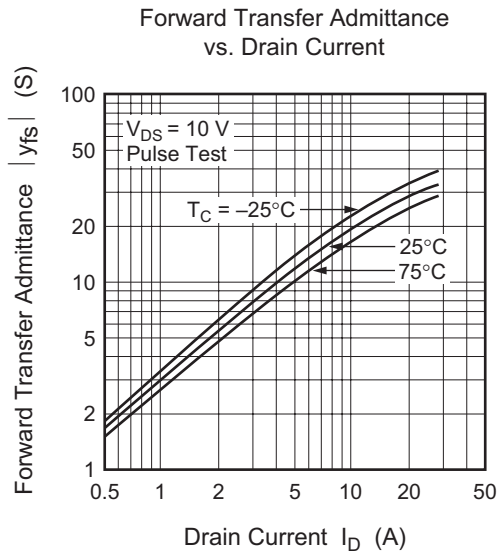
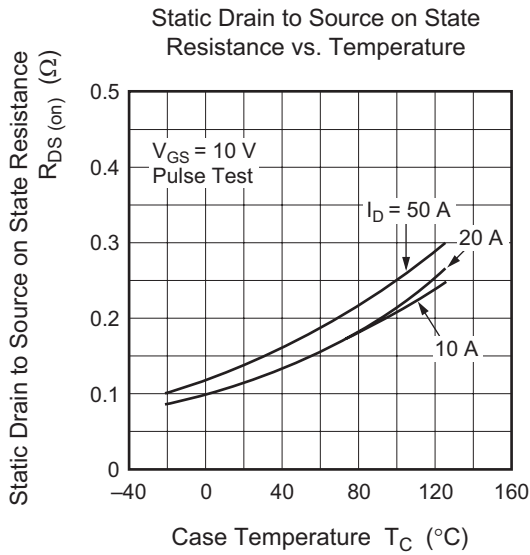
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1519	450	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
	2SK1520	500				
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±30	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±25 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	2SK1519	—	—	250	μA	V <sub>DS</sub> = 360 V, V <sub>GS</sub> = 0
	2SK1520					V <sub>DS</sub> = 400 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	2.0	—	3.0	V	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V
Static drain to source on state resistance	2SK1519	—	0.11	0.15	Ω	I <sub>D</sub> = 15 A, V <sub>GS</sub> = 10 V *3
	2SK1520		—	0.12		
Forward transfer admittance	y <sub>fs</sub>	15	25	—	S	I <sub>D</sub> = 15 A, V <sub>DS</sub> = 10 V *3
Input capacitance	C <sub>iss</sub>	—	5800	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0, f = 1 MHz
Output capacitance	C <sub>oss</sub>	—	1550	—	pF	
Reverse transfer capacitance	C <sub>rss</sub>	—	170	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	65	—	ns	
Rise time	t <sub>r</sub>	—	170	—	ns	I <sub>D</sub> = 15 A, V <sub>GS</sub> = 10 V, R <sub>L</sub> = 2 Ω
Turn-off delay time	t <sub>d(off)</sub>	—	415	—	ns	
Fall time	t <sub>f</sub>	—	200	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	1.1	—	V	I <sub>F</sub> = 30 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	120	—	ns	I <sub>F</sub> = 30 A, V <sub>GS</sub> = 0, di <sub>F</sub> /dt = 100 A/μs

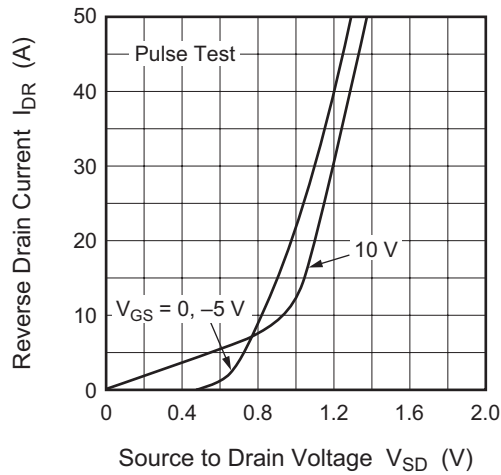
Note: 3. Pulse test

Main Characteristics

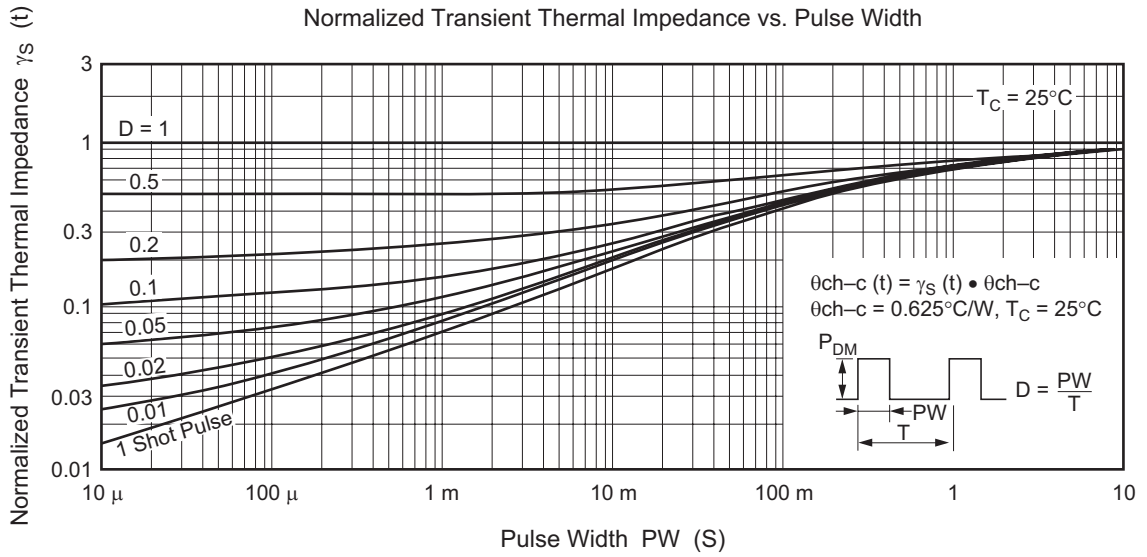




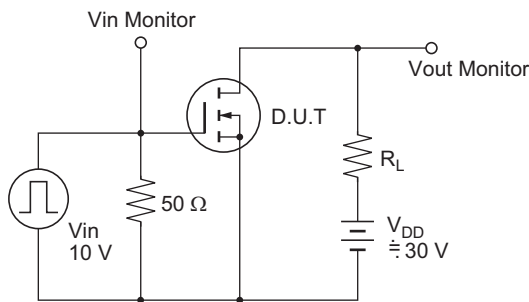
Reverse Drain Current vs. Source to Drain Voltage



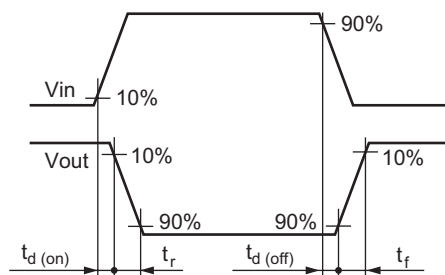
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveforms



## Package Dimensions

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

Unit: mm

The technical drawing illustrates the TO-3PL package dimensions. The top view shows a square body with a width of  $20.0 \pm 0.3$  mm and a height of  $26.0 \pm 0.3$  mm. The distance from the top edge to the center of the mounting holes is  $6.0 \pm 0.2$  mm. The diameter of the mounting holes is  $\phi 3.3 \pm 0.2$  mm. The side view shows a total height of  $5.0 \pm 0.2$  mm. The bottom view shows a width of  $5.45 \pm 0.5$  mm and a height of  $2.8 \pm 0.2$  mm. The distance from the bottom edge to the center of the mounting holes is  $2.5 \pm 0.3$  mm. The distance from the bottom edge to the center of the mounting holes is  $2.0 \pm 0.6$  mm. The distance from the bottom edge to the center of the mounting holes is  $1.2 \pm 0.1$  mm. The distance from the bottom edge to the center of the mounting holes is  $1.4$  mm. The distance from the bottom edge to the center of the mounting holes is  $3.0$  mm. The distance from the bottom edge to the center of the mounting holes is  $2.2$  mm. The distance from the bottom edge to the center of the mounting holes is  $0.6^{+0.25}_{-0.1}$  mm. The distance from the bottom edge to the center of the mounting holes is  $1.0$  mm. The distance from the bottom edge to the center of the mounting holes is  $3.8$  mm. The distance from the bottom edge to the center of the mounting holes is  $7.4$  mm.

## Ordering Information

Part Name	Quantity	Shipping Container
2SK1519-E	360 pcs	Box (Tube)
2SK1520-E	360 pcs	Box (Tube)

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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**Renesas Technology America, Inc.**

450 Holger Way, San Jose, CA 95134-1368, U.S.A  
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

**Renesas Technology (Shanghai) Co., Ltd.**

Unit 204, 205, AZIACenter, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120  
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7898

**Renesas Technology Hong Kong Ltd.**

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong  
Tel: <852> 2265-6688, Fax: <852> 2730-6071

**Renesas Technology Taiwan Co., Ltd.**

10th Floor, No.99, Fushing North Road, Taipei, Taiwan  
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

**Renesas Technology Singapore Pte. Ltd.**

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001

**Renesas Technology Korea Co., Ltd.**

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

**Renesas Technology Malaysia Sdn. Bhd**

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510