

## 2SK2393

### Silicon N Channel MOS FET

REJ03G1010-0200  
(Previous: ADE-208-1357)  
Rev.2.00  
Sep 07, 2005

#### Application

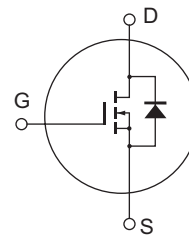
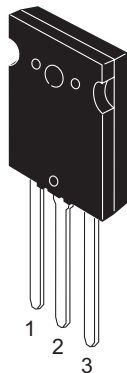
High voltage / High speed power switching

#### Features

- Low on-resistance, High breakdown voltage
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, motor control

#### Outline

RENESAS Package code: PRSS0004ZF-A  
(Package name: TO-3PL)



1. Gate
2. Drain  
(Flange)
3. Source

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	1500	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	8	A
Drain peak current	I <sub>D(pulse)</sub> * <sup>1</sup>	20	A
Body to drain diode reverse drain current	I <sub>DR</sub>	8	A
Channel dissipation	P <sub>ch</sub> * <sup>2</sup>	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 Tc = 25°C

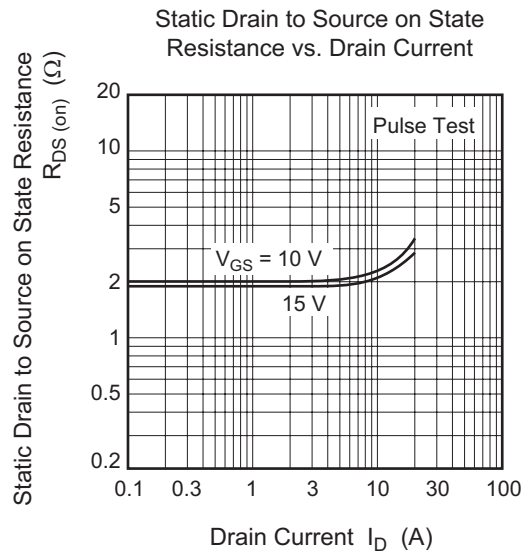
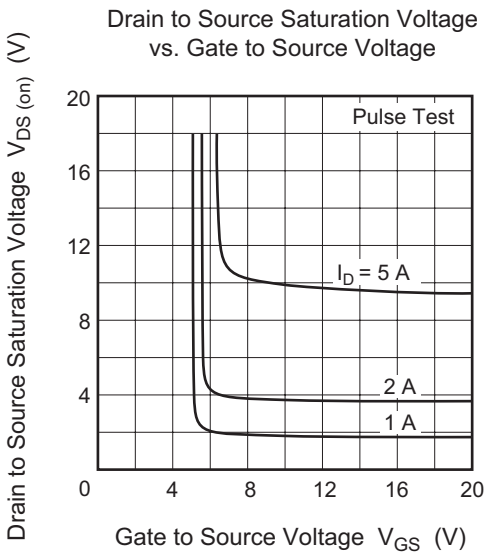
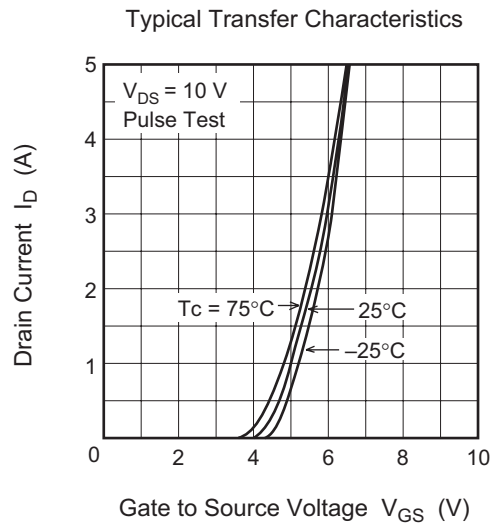
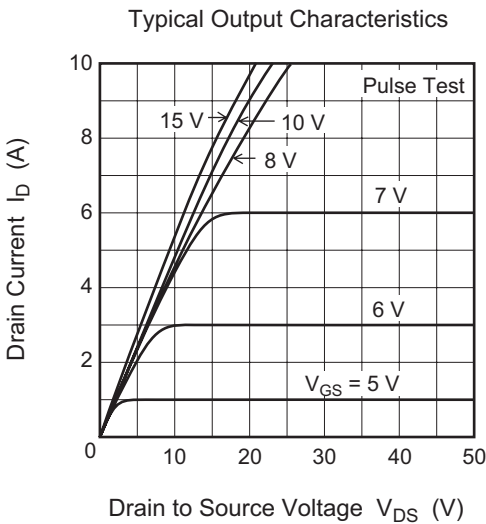
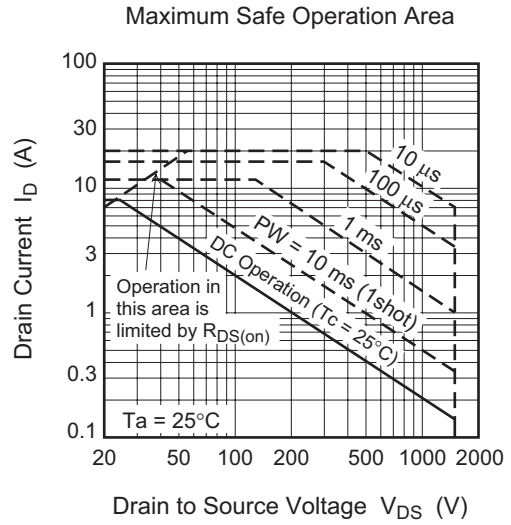
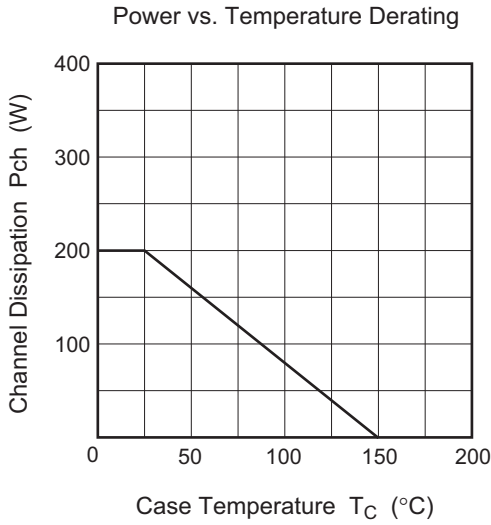
## Electrical Characteristics

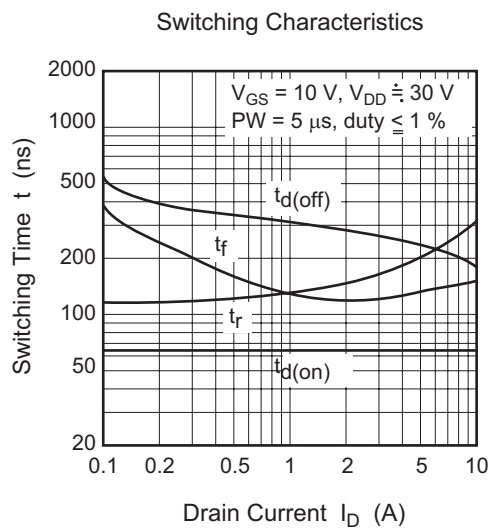
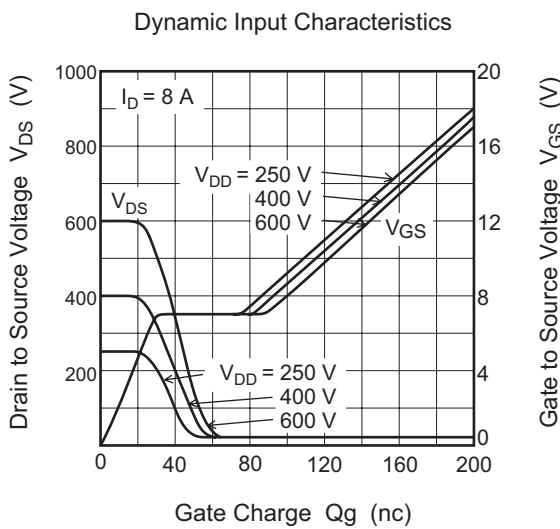
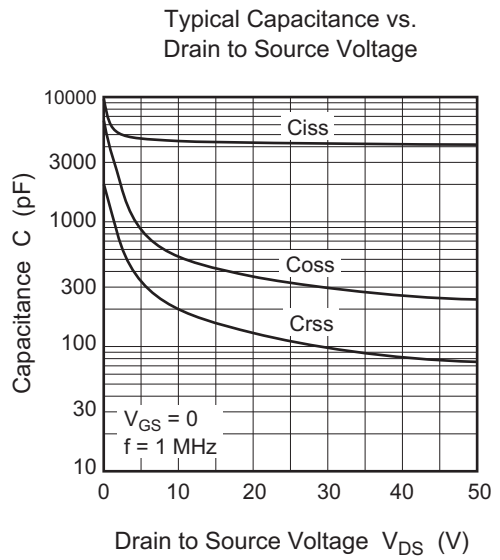
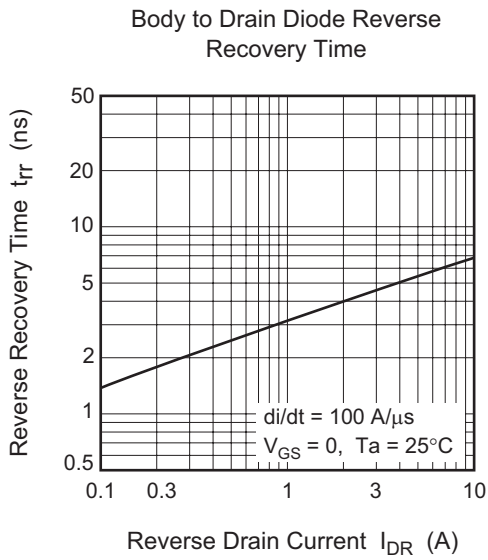
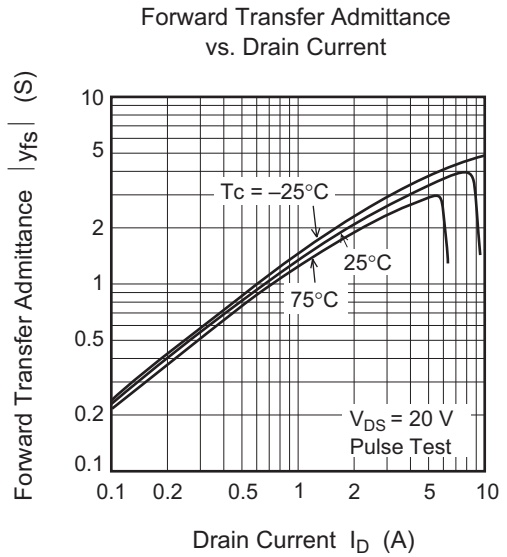
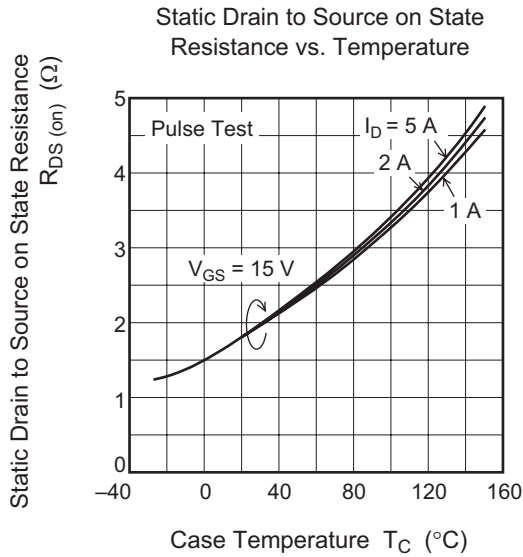
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	1500	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0* <sup>1</sup>
Gate to source leak current	I <sub>GSS</sub>	—	—	±1	μA	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	500	μA	V <sub>DS</sub> = 1200 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	2.0	—	4.0	V	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V
Static drain to source on state resistance	R <sub>DS(on)</sub>	—	1.9	2.8	Ω	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 15 V* <sup>3</sup>
Forward transfer admittance	y <sub>fs</sub>	1.8	3.0	—	S	I <sub>D</sub> = 4 A, V <sub>DS</sub> = 20 V* <sup>3</sup>
Input capacitance	C <sub>iss</sub>	—	4370	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0, f = 1 MHz
Output capacitance	C <sub>oss</sub>	—	560	—	pF	
Reverse transfer capacitance	C <sub>rss</sub>	—	200	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	75	—	ns	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 10 V, R <sub>L</sub> = 7.5 Ω
Rise time	t <sub>r</sub>	—	180	—	ns	
Turn-off delay time	t <sub>d(off)</sub>	—	260	—	ns	
Fall time	t <sub>f</sub>	—	125	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	0.9	—	V	I <sub>F</sub> = 8 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	6.5	—	μs	I <sub>F</sub> = 8 A, V <sub>GS</sub> = 0, di <sub>F</sub> / dt = 100 A / μs

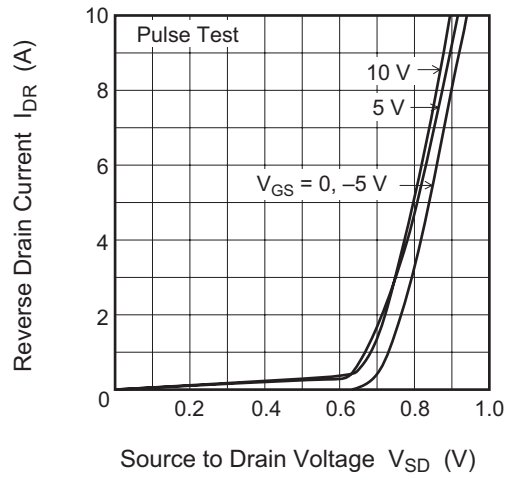
Note: 3. Pulse Test

Main Characteristics

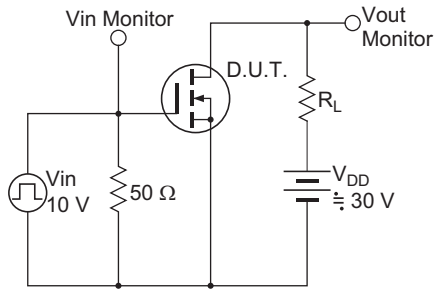




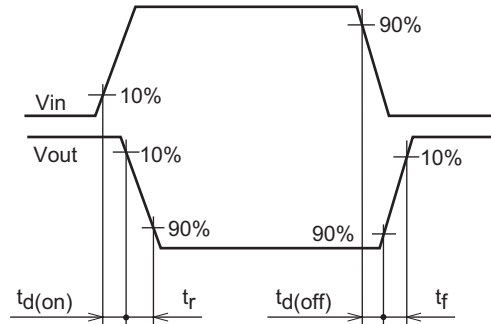
Reverse Drain Current vs. Source to Drain Voltage



Switching Time Test Circuit



Waveforms





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#### Renesas Technology Singapore Pte. Ltd.

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
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Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

#### Renesas Technology Malaysia Sdn. Bhd.

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