

# 2SK2212

## Silicon N Channel MOS FET

REJ03G1003-0200  
(Previous: ADE-208-1351)  
Rev.2.00  
Sep 07, 2005

### Application

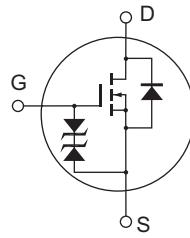
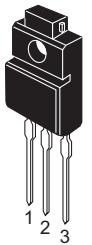
High speed power switching

### Features

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

### Outline

RENESAS Package code: PRSS0003AD-A  
(Package name: TO-220FM)



1. Gate
2. Drain
3. Source

**Absolute Maximum Ratings**

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	200	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	10	A
Drain peak current	I <sub>D(pulse)</sub> <sup>*1</sup>	40	A
Body to drain diode reverse drain current	I <sub>DR</sub>	10	A
Channel dissipation	P <sub>ch</sub> <sup>*2</sup>	30	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 %

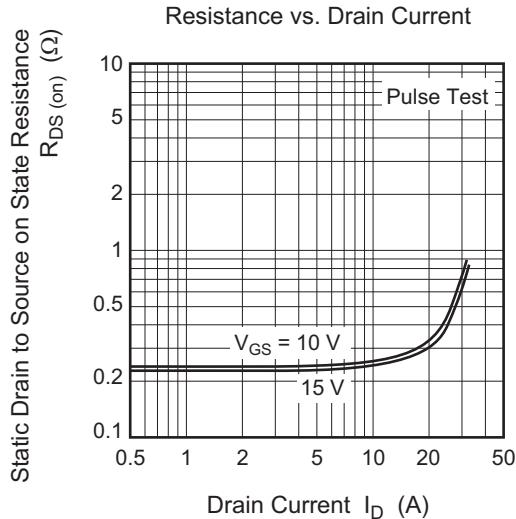
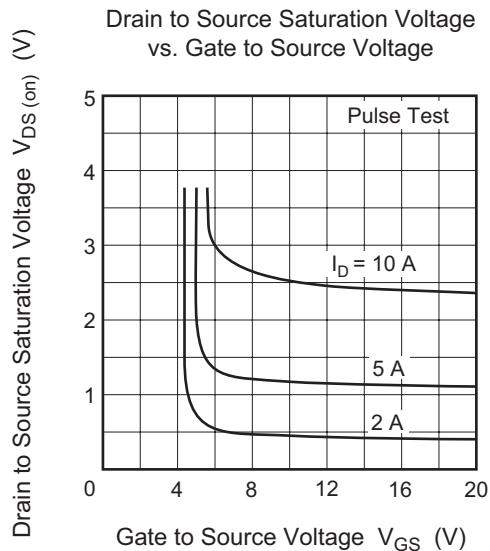
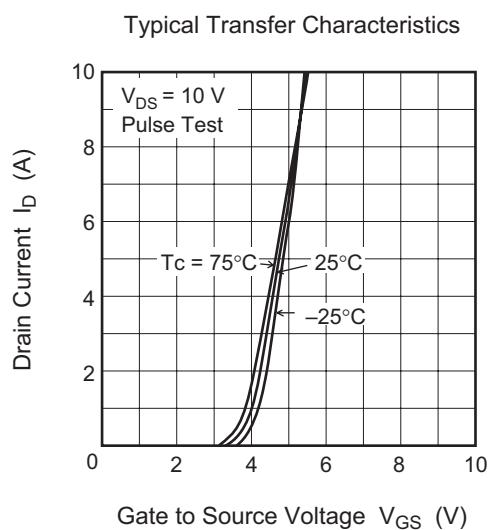
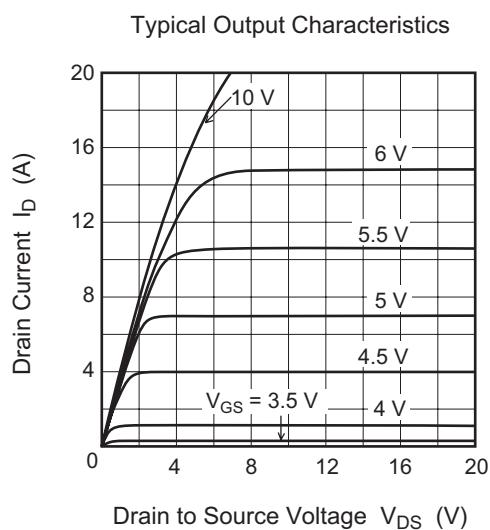
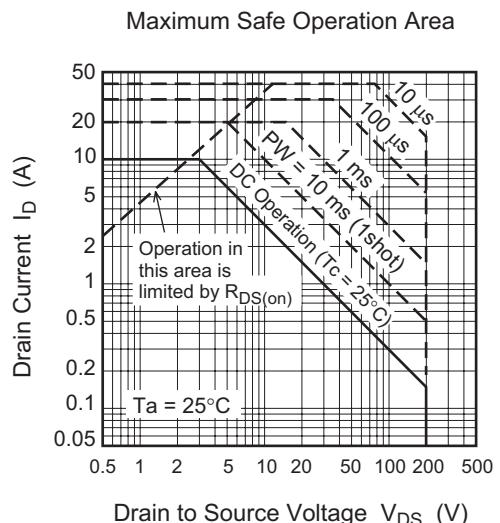
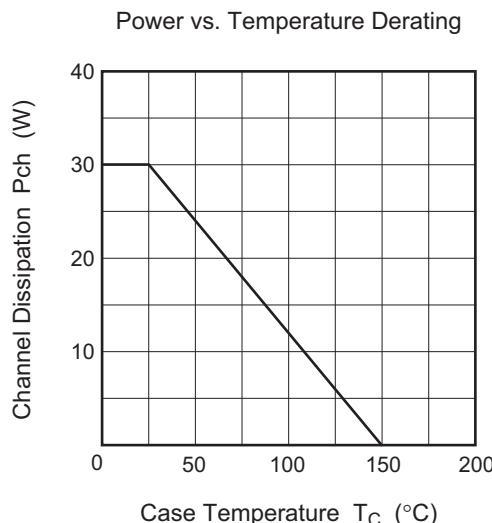
2. Value at T<sub>c</sub> = 25°C**Electrical Characteristics**

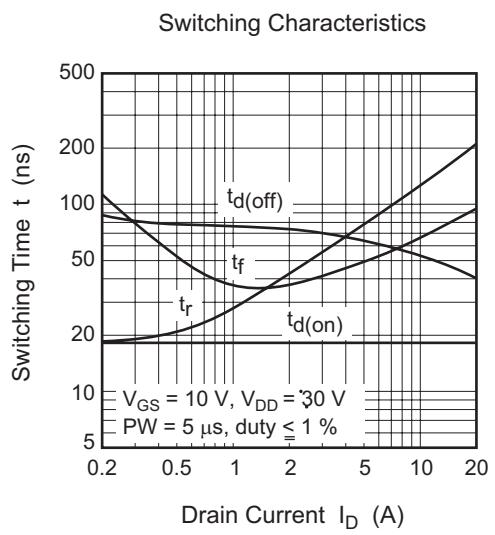
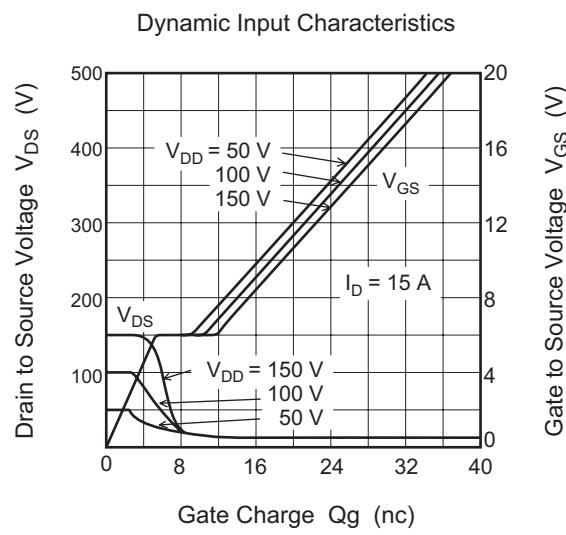
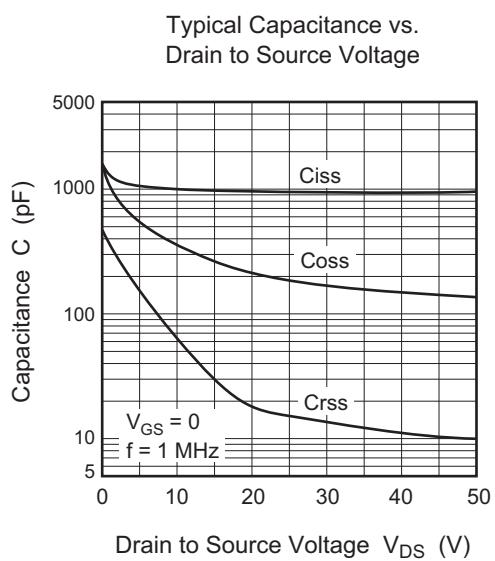
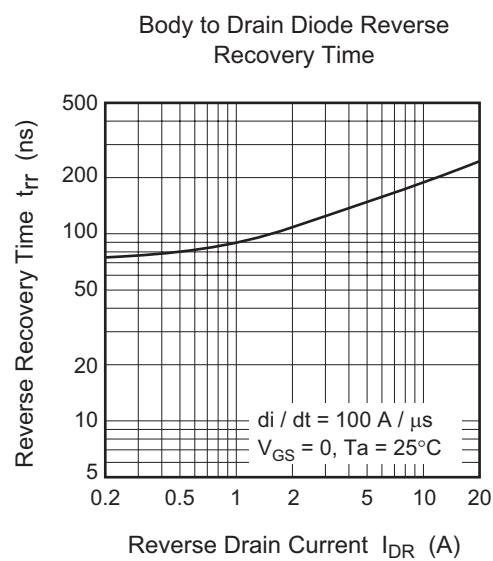
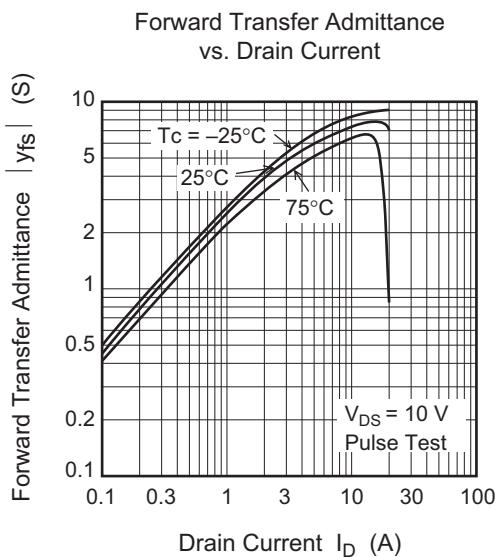
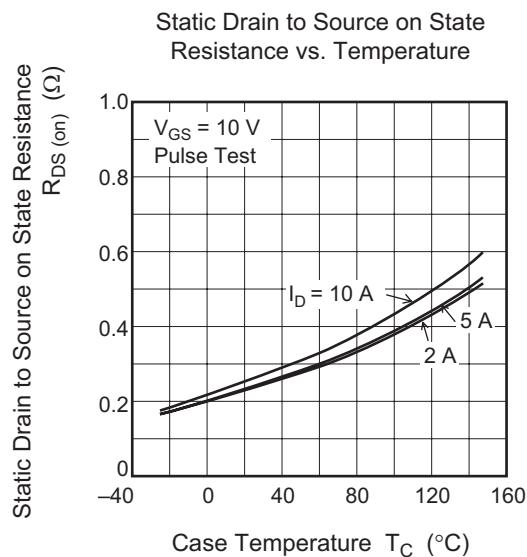
(Ta = 25°C)

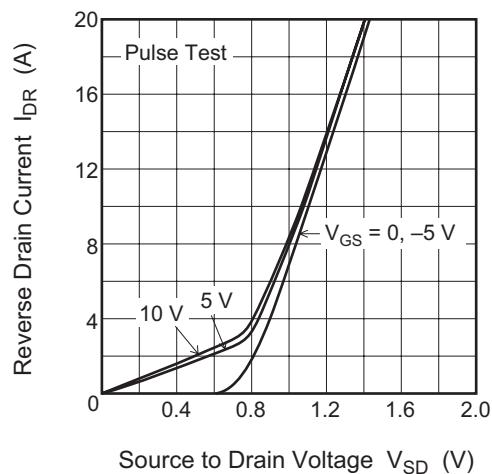
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	200	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±20	—	—	V	I <sub>G</sub> = ±100 µA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	µA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	250	µA	V <sub>DS</sub> = 160 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>	—	0.24	0.3	Ω	I <sub>D</sub> = 5 A, V <sub>GS</sub> = 10 V <sup>*1</sup>
Forward transfer admittance	y <sub>fs</sub>	3.5	6	—	S	I <sub>D</sub> = 5 A, V <sub>DS</sub> = 10 V <sup>*1</sup>
Input capacitance	C <sub>iss</sub>	—	1000	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0,
Output capacitance	C <sub>oss</sub>	—	360	—	pF	f = 1 MHz
Reverse transfer capacitance	C <sub>rss</sub>	—	65	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	18	—	ns	I <sub>D</sub> = 5 A, V <sub>GS</sub> = 10 V,
Rise time	t <sub>r</sub>	—	80	—	ns	R <sub>L</sub> = 6 Ω
Turn-off delay time	t <sub>d(off)</sub>	—	65	—	ns	
Fall time	t <sub>f</sub>	—	50	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	1.1	—	V	I <sub>F</sub> = 10 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	190	—	ns	I <sub>F</sub> = 10 A, V <sub>GS</sub> = 0, di <sub>F</sub> / dt = 100 A / µs

Note: 1. Pulse Test

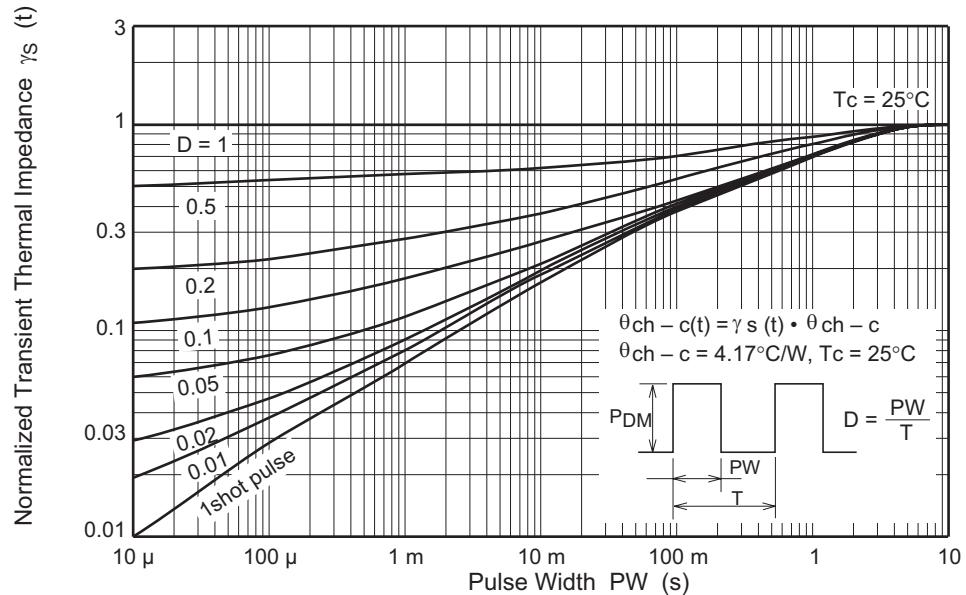
## Main Characteristics



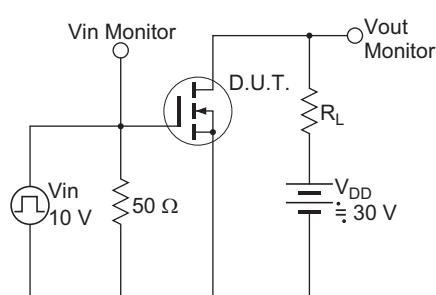


Reverse Drain Current vs.  
Source to Drain Voltage

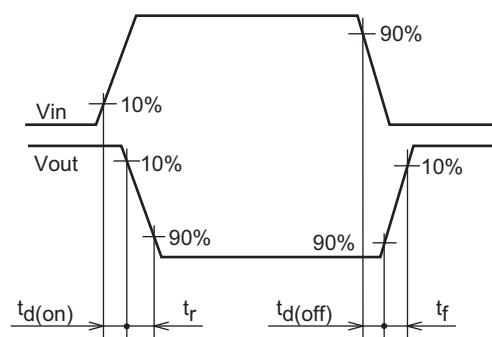
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveforms



## Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]	Unit: mm
SC-67	PRSS0003AD-A	TO-220FM / TO-220FMV	1.8g	

## Ordering Information

Part Name	Quantity	Shipping Container
2SK2212-E	500 pcs	Box (Sack)

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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