

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## 2SK3209

Silicon N Channel MOS FET  
High Speed Power Switching

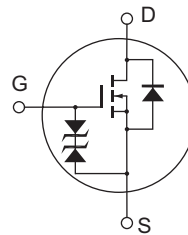
REJ03G1090-0300  
(Previous: ADE-208-759A)  
Target Specification  
Rev.3.00  
Sep 07, 2005

### Features

- Low on-resistance  
 $R_{DS} = 40 \text{ m}\Omega$  typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

### 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	$V_{DSS}$	150	V
Gate to source voltage	$V_{GSS}$	±20	V
Drain current	$I_D$	25	A
Drain peak current	$I_{D(pulse)}^{*1}$	100	A
Body-drain diode reverse drain current	$I_{DR}$	25	A
Avalanche current	$I_{AP}^{*3}$	25	A
Avalanche energy	$E_{AR}^{*3}$	46	mJ
Channel dissipation	$P_{ch}^{*2}$	35	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  $T_c = 25^\circ C$   
 3. Value at  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50 \Omega$

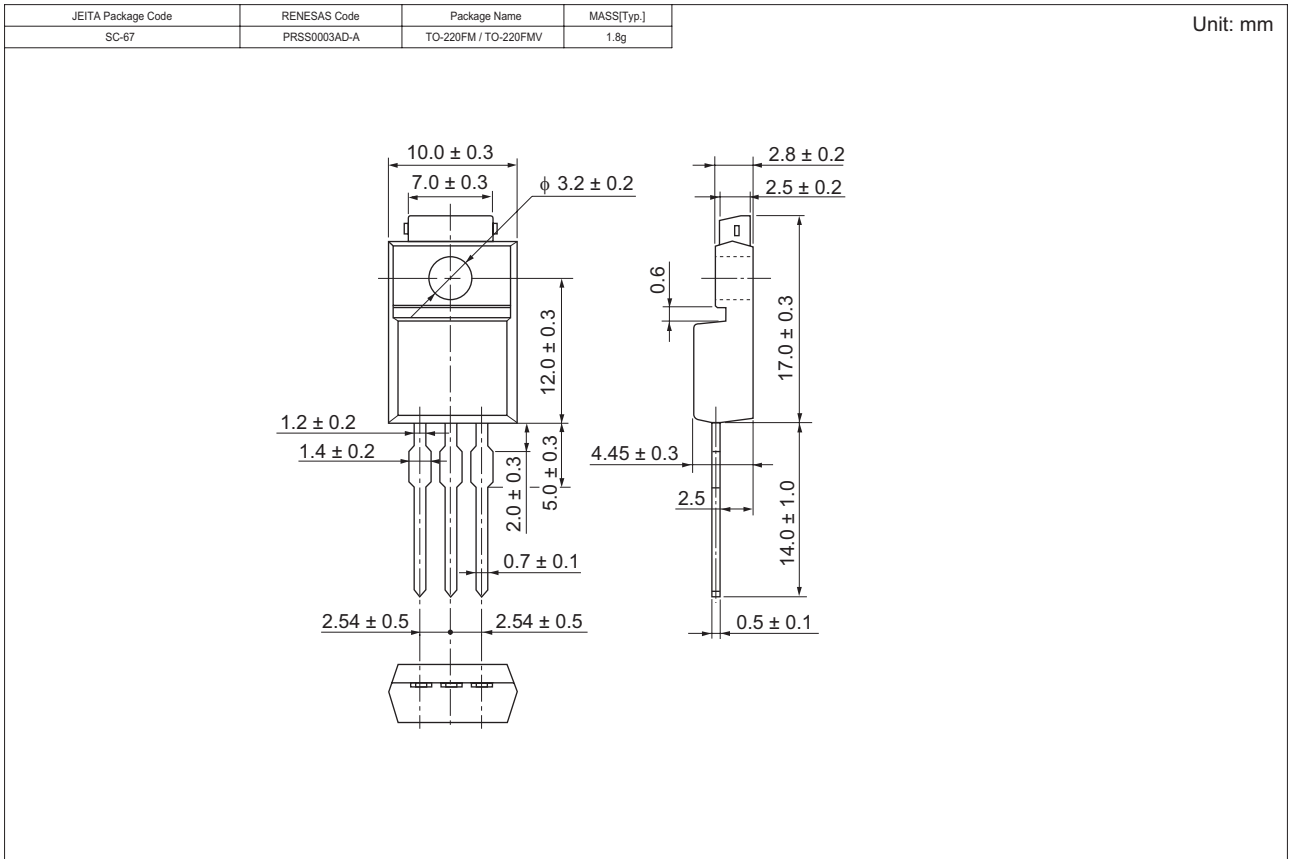
## Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	μA	$V_{DS} = 150 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	40	45	mΩ	$I_D = 15 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*4}$
	$R_{DS(on)}$	—	45	63	mΩ	$I_D = 15 \text{ A}$ , $V_{GS} = 4 \text{ V}^{*4}$
Forward transfer admittance	$ y_{fs} $	18	30	—	S	$I_D = 15 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*4}$
Input capacitance	$C_{iss}$	—	2600	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	820	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	350	—	pF	
Turn-on delay time	$t_{d(on)}$	—	25	—	ns	$I_D = 15 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_L = 2 \Omega$
Rise time	$t_r$	—	180	—	ns	
Turn-off delay time	$t_{d(off)}$	—	600	—	ns	
Fall time	$t_f$	—	280	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.90	—	V	$I_F = 25 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	100	—	ns	$I_F = 25 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu s$

- Note: 4. Pulse test

### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SK3209-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.

## Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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