

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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# 2SK3736

## Silicon N Channel MOS FET Power Switching

REJ03G0525-0200

Rev.2.00

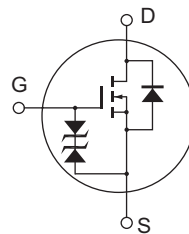
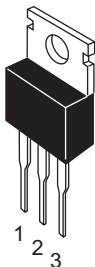
Jul 27, 2006

### Features

- Capable of 2.5 V gate drive
- Low drive current
- Low on-resistance

### Outline

RENESAS Package code: PRSS0004AC-A  
(Package name: TO-220AB)



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

### Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	250	V
Gate to source voltage	$V_{GSS}$	$\pm 10$	V
Drain current	$I_D$	6	A
Drain peak current	$I_D$ (pulse) <sup>Note1</sup>	24	A
Body-drain diode reverse drain current	$I_{DR}$	6	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	30	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  $T_c = 25^\circ C$

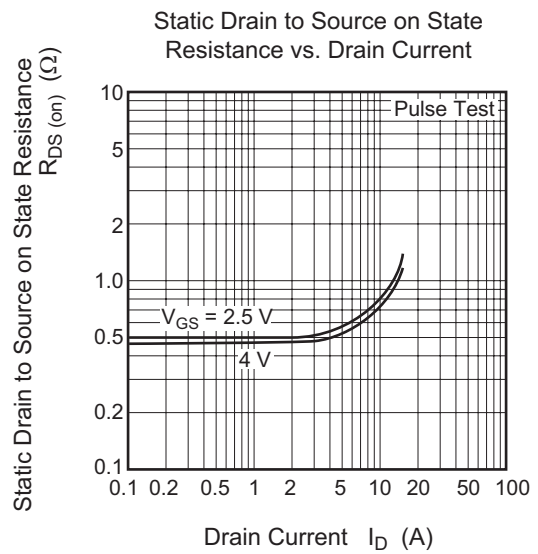
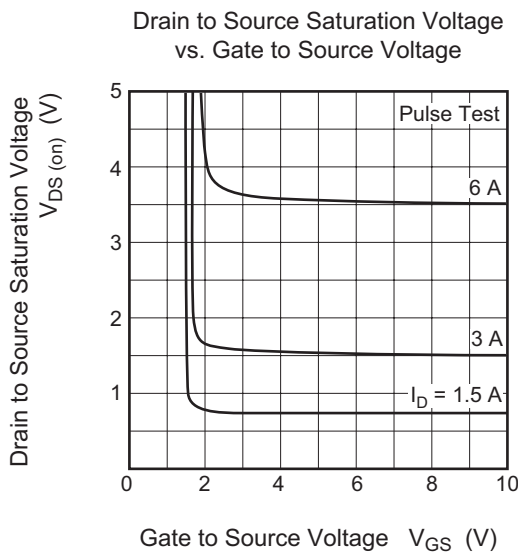
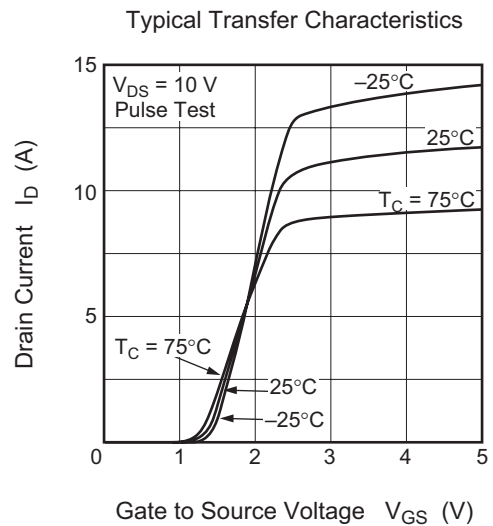
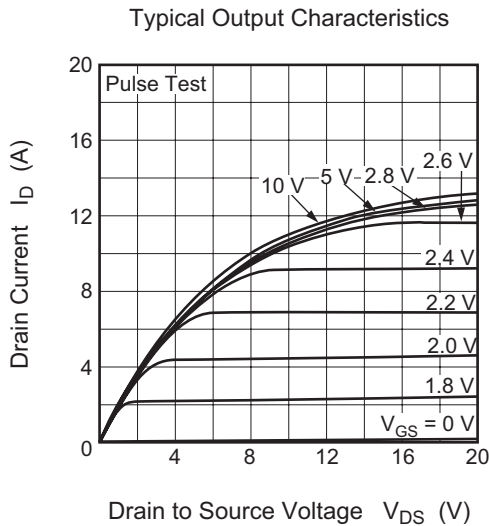
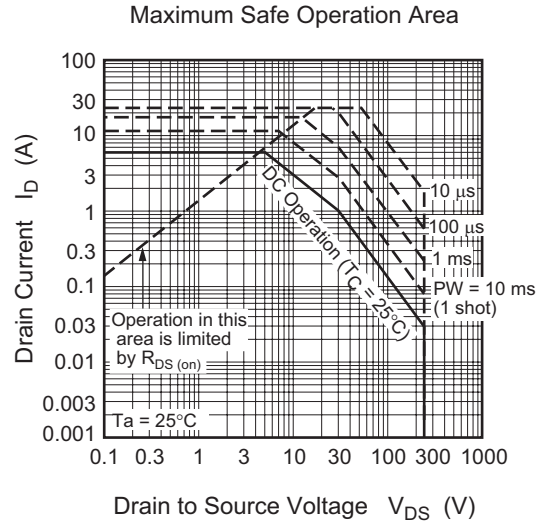
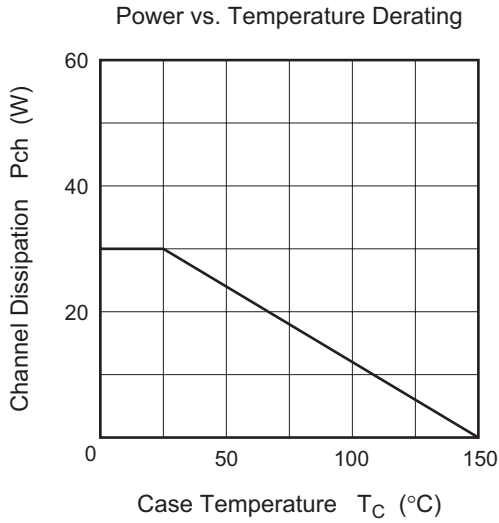
## Electrical Characteristics

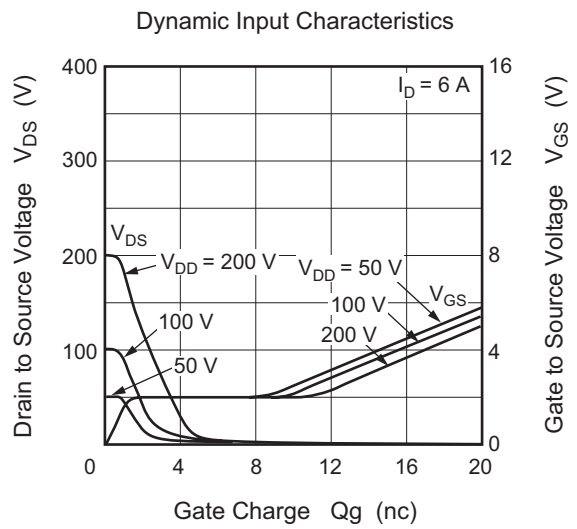
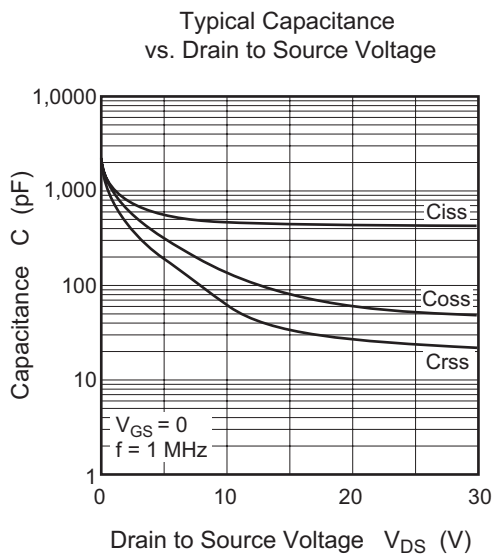
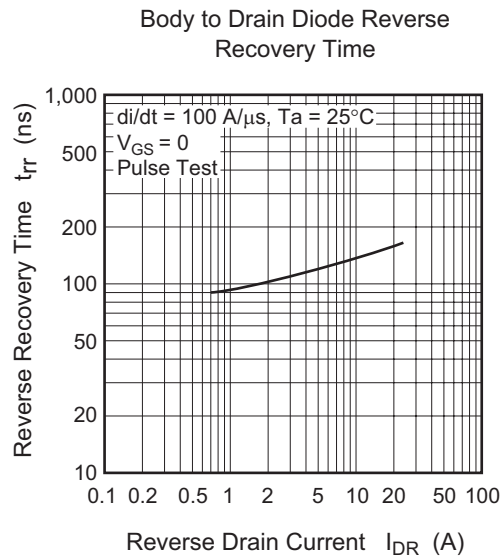
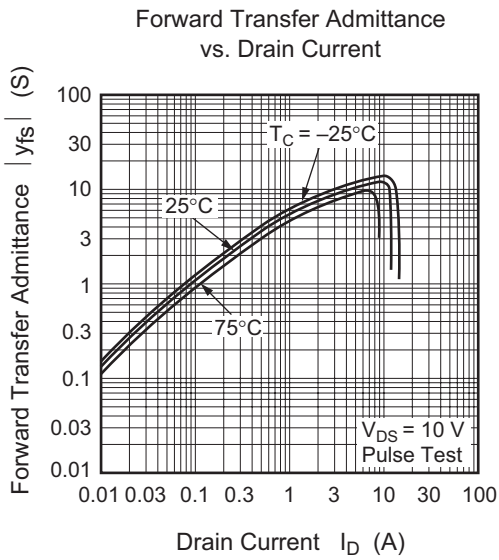
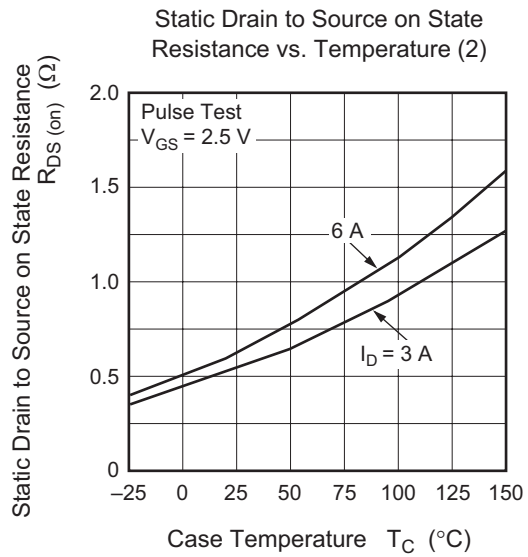
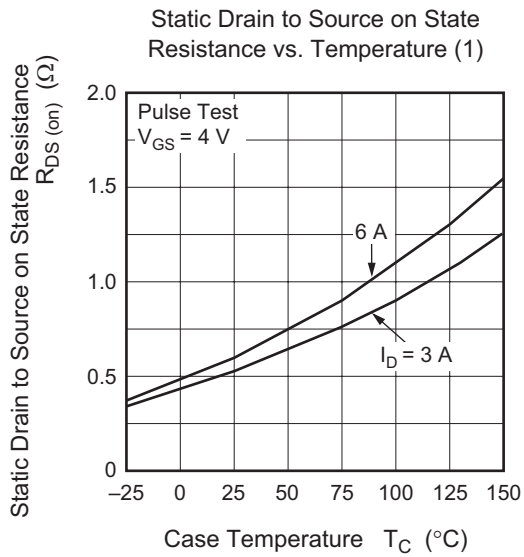
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 10$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 8 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	5	$\mu\text{A}$	$V_{DS} = 250 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.5	—	1.5	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.55	0.7	$\Omega$	$I_D = 3 \text{ A}$ , $V_{GS} = 4 \text{ V}$ <sup>Note3</sup>
	$R_{DS(on)}$	—	0.57	0.8	$\Omega$	$I_D = 3 \text{ A}$ , $V_{GS} = 2.5 \text{ V}$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	5.5	9.2	—	S	$I_D = 3 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Output capacitance	$C_{iss}$	—	450	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	100	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	60	—	pF	
Total gate charge	$Q_g$	—	17	—	nC	$V_{DD} = 200 \text{ V}$ , $V_{GS} = 4 \text{ V}$ , $I_D = 6 \text{ A}$
Gate to source charge	$Q_{gs}$	—	0.8	—	nC	
Gate to drain charge	$Q_{gd}$	—	9.5	—	nC	
Turn-on delay time	$t_{d(on)}$	—	14	—	ns	$V_{GS} = 4 \text{ V}$ , $I_D = 3 \text{ A}$ , $R_L = 10 \text{ }\Omega$ , $R_g = 10 \text{ }\Omega$
Rise time	$t_r$	—	48	—	ns	
Turn-off delay time	$t_{d(off)}$	—	88	—	ns	
Fall time	$t_f$	—	25	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.94	1.45	V	$I_F = 6 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	125	—	ns	$I_F = 6 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

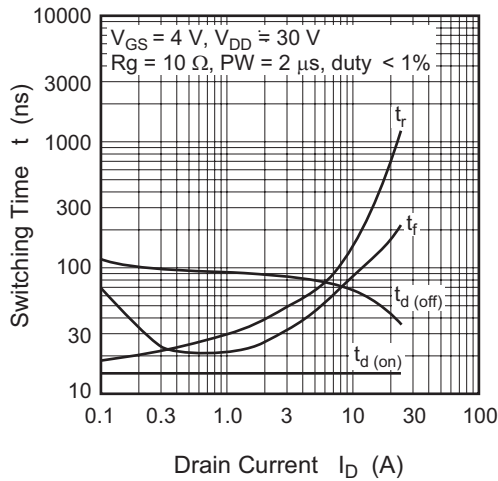
Notes: 3. Pulse test

Main Characteristics

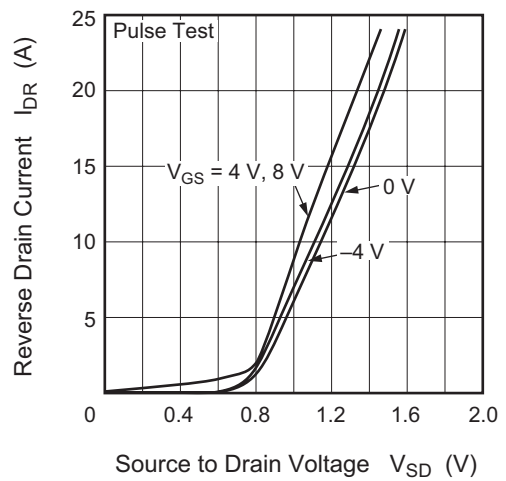




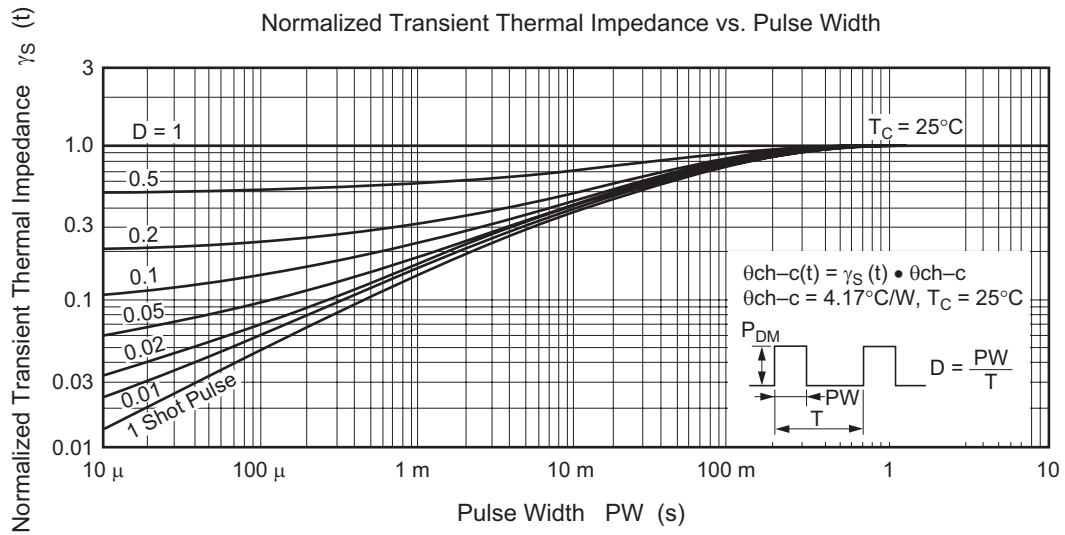
Switching Characteristics



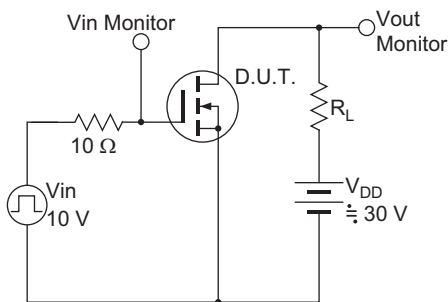
Reverse Drain Current vs. Source to Drain Voltage



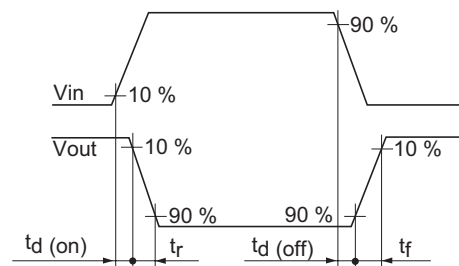
Normalized Transient Thermal Impedance vs. Pulse Width



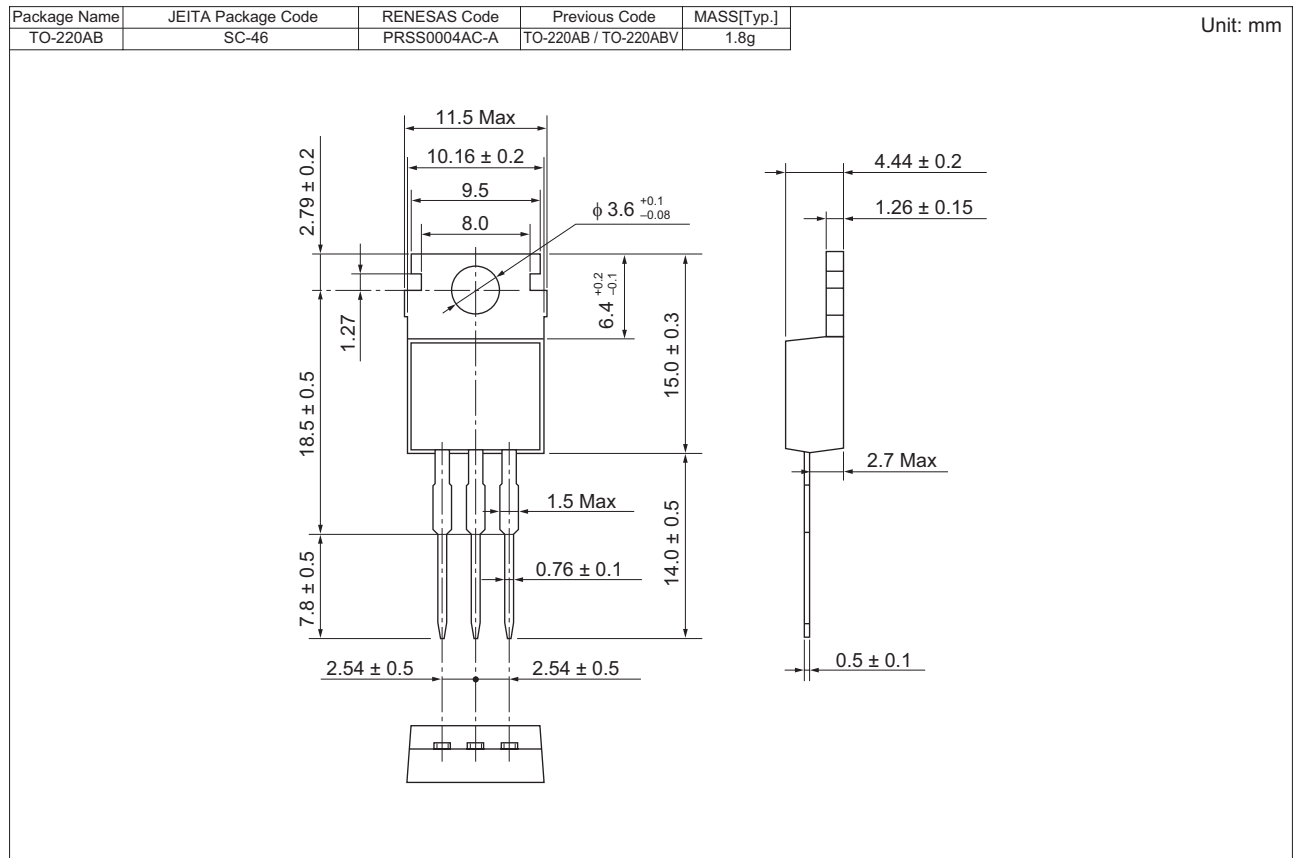
Switching Time Test Circuit



Waveforms



## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
2SK3736	50 pcs.	Sack

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