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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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2SK3736

Silicon N Channel MOS FET Power Switching

REJ03G0525-0200

Rev.2.00

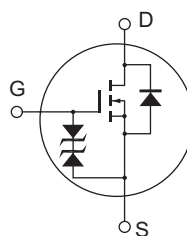
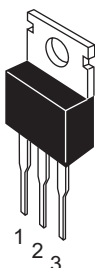
Jul 27, 2006

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}	± 10	V
Drain current	I_D	6	A
Drain peak current	I_D (pulse) ^{Note1}	24	A
Body-drain diode reverse drain current	I_{DR}	6	A
Channel dissipation	P_{ch} ^{Note2}	30	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$

2. Value at $T_c = 25^\circ C$

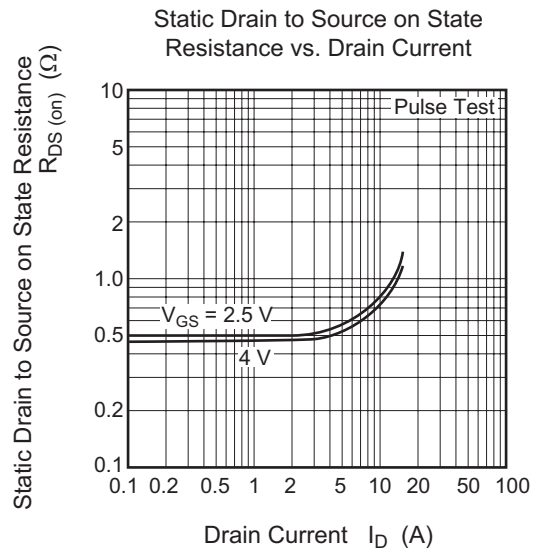
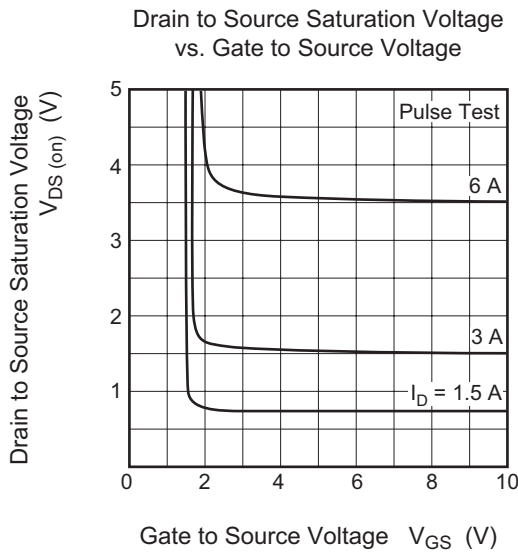
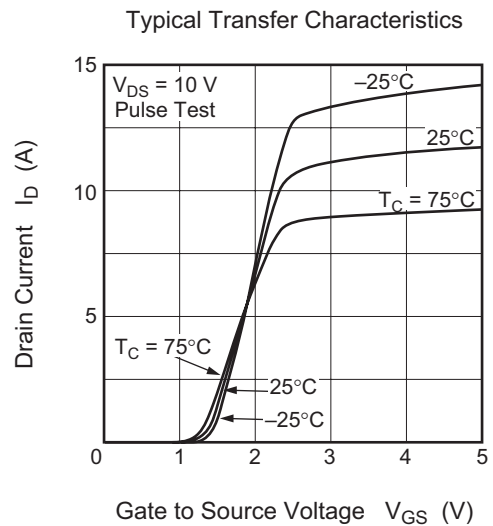
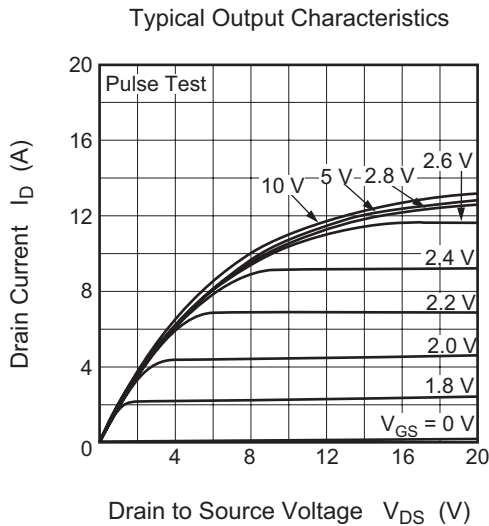
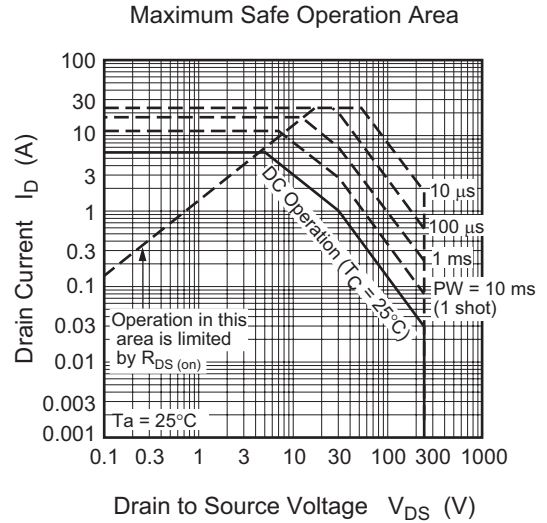
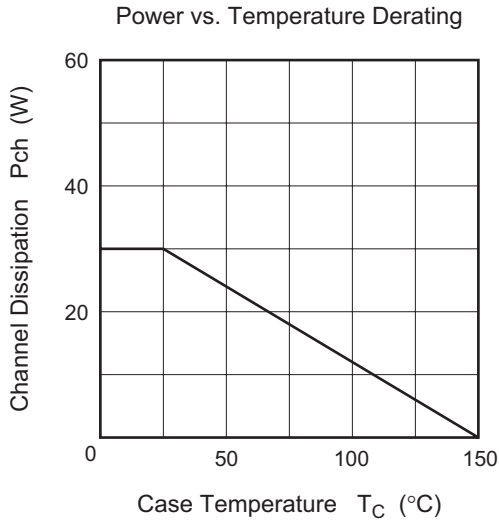
Electrical Characteristics

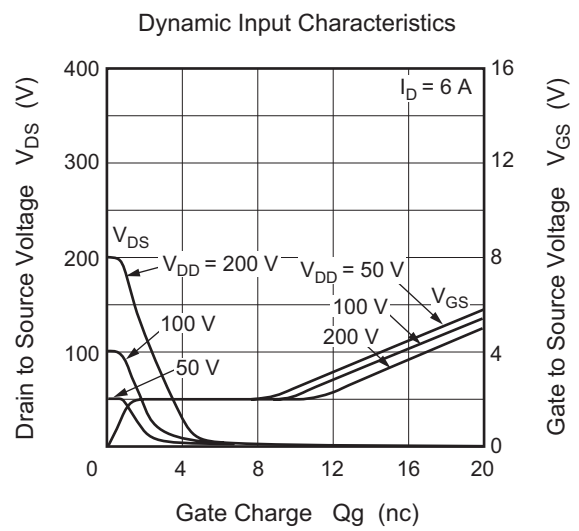
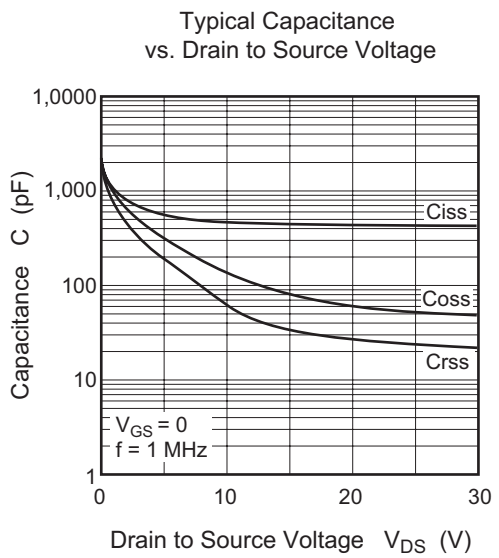
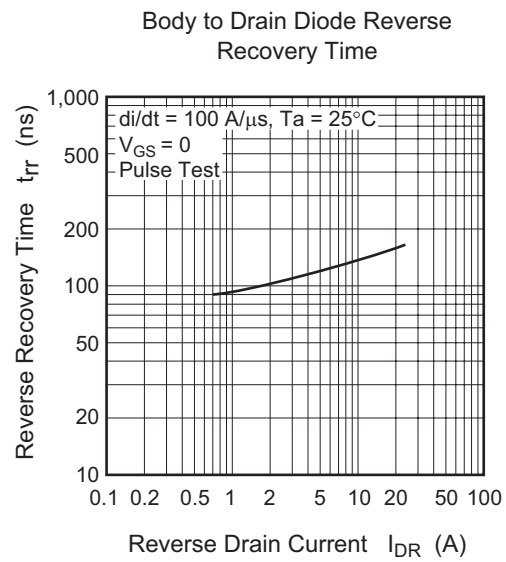
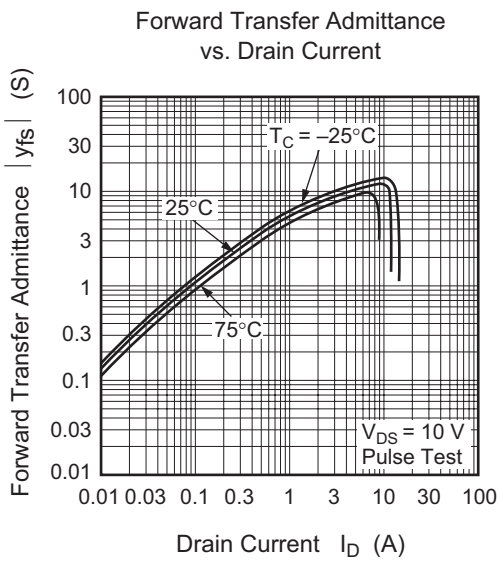
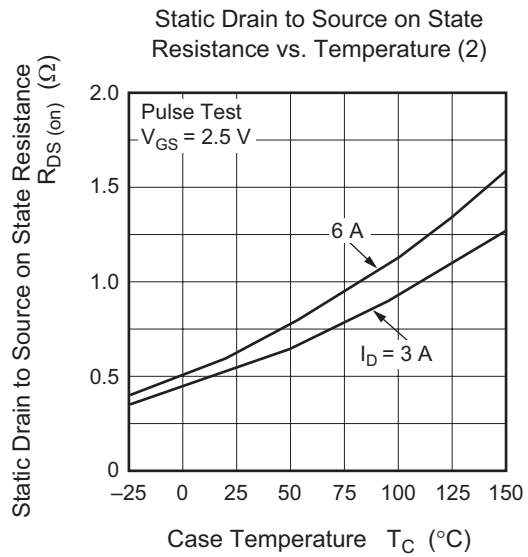
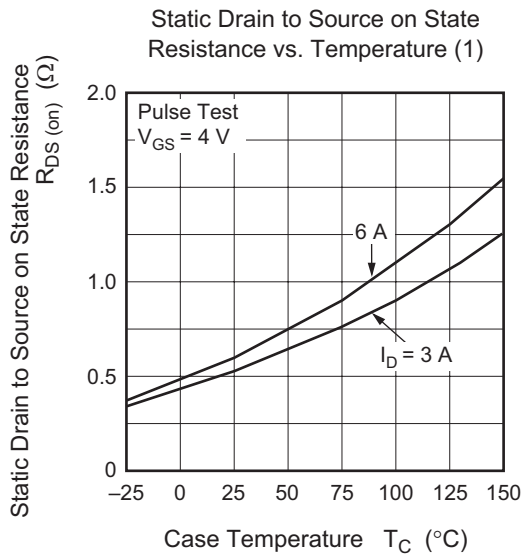
(Ta = 25°C)

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	$V_{(BR)GSS}$	± 10	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 8 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	5	μA	$V_{DS} = 250 \text{ V}$, $V_{GS} = 0$
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	Ω	$I_D = 3 \text{ A}$, $V_{GS} = 4 \text{ V}$ ^{Note3}
	$R_{DS(on)}$	—	0.57	0.8	Ω	$I_D = 3 \text{ A}$, $V_{GS} = 2.5 \text{ V}$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	5.5	9.2	—	S	$I_D = 3 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note3}
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	$I_F = 6 \text{ A}$, $V_{GS} = 0$ ^{Note3}
Body-drain diode reverse recovery time	t_{rr}	—	125	—	ns	$I_F = 6 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

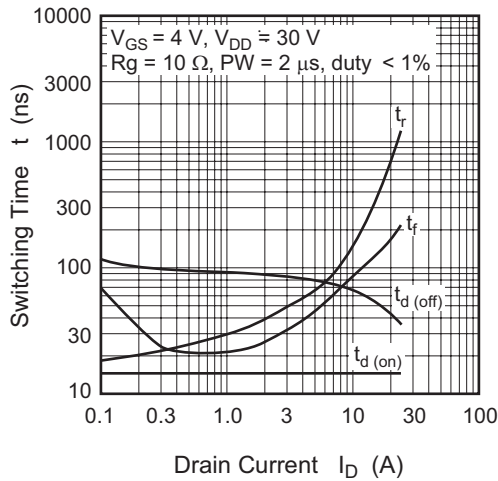
Notes: 3. Pulse test

Main Characteristics

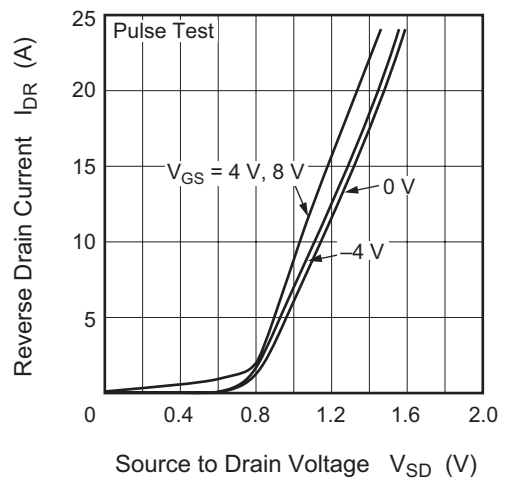




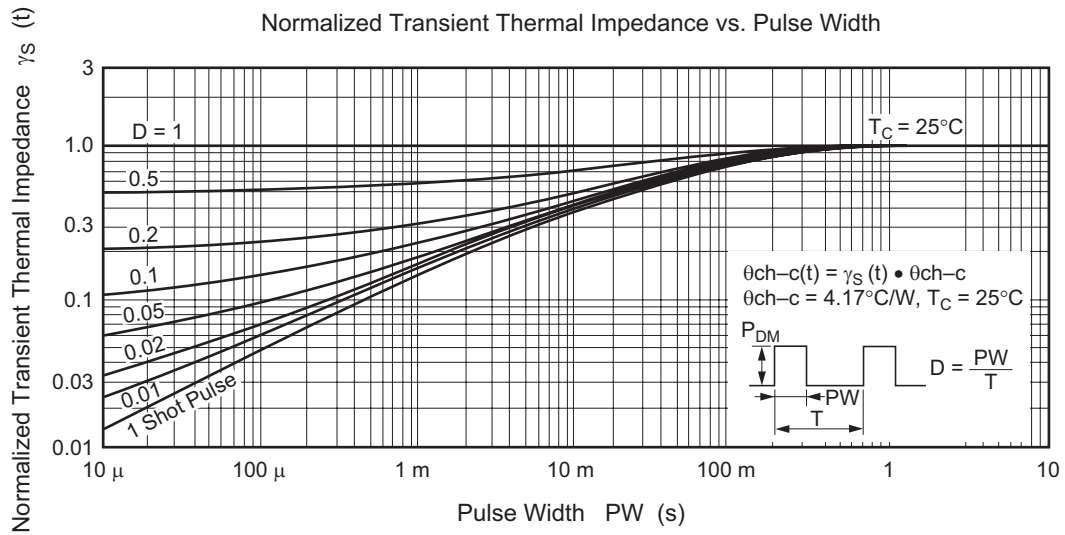
Switching Characteristics



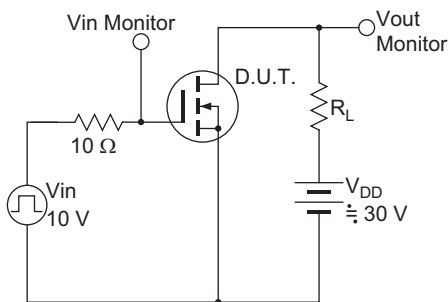
Reverse Drain Current vs. Source to Drain Voltage



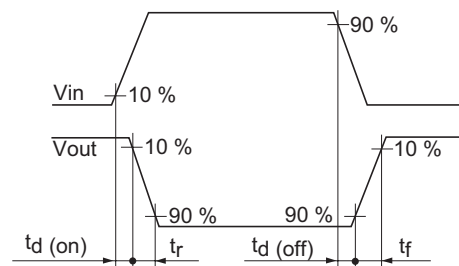
Normalized Transient Thermal Impedance vs. Pulse Width



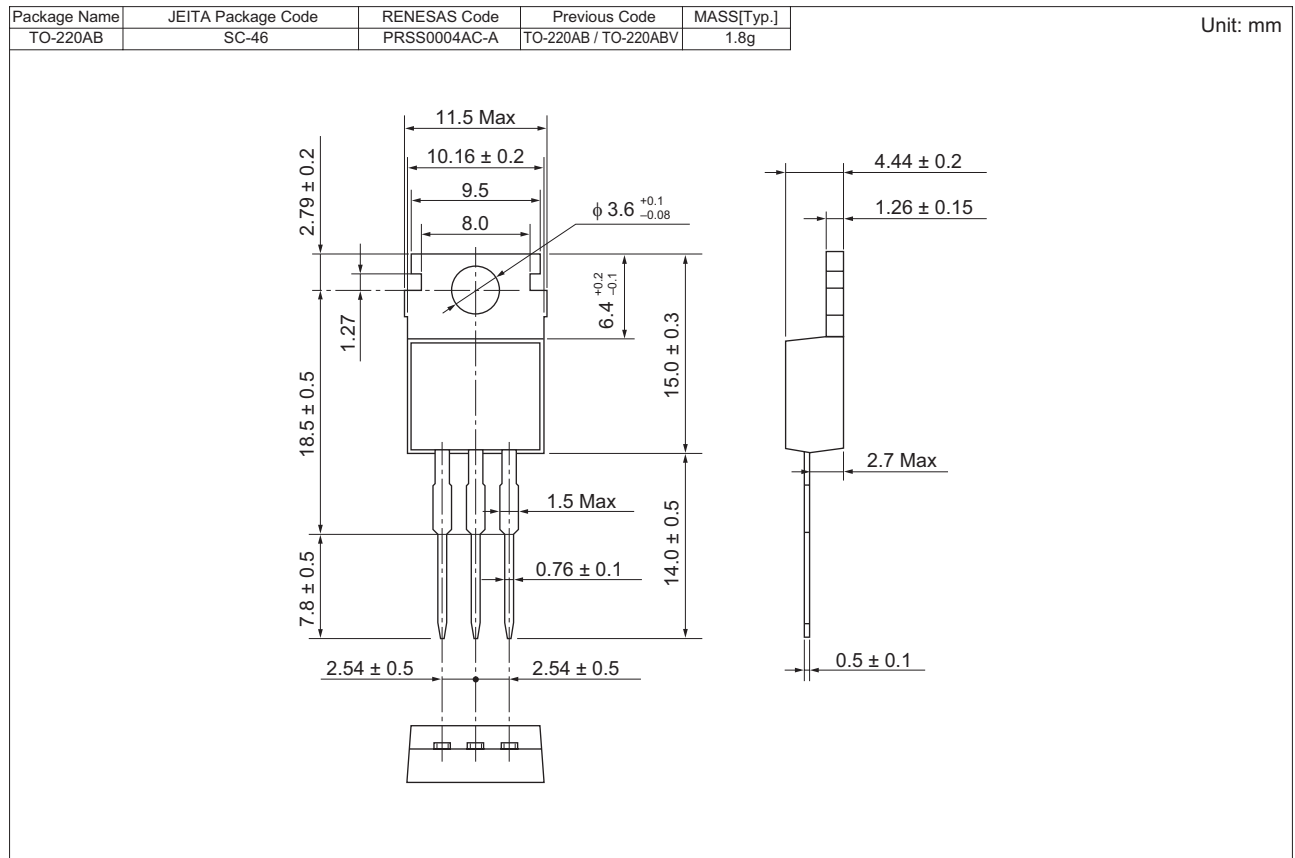
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK3736	50 pcs.	Sack

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