

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

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

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Not recommended  
for new design

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P-CHANNEL MOSFET  
FOR SWITCHING

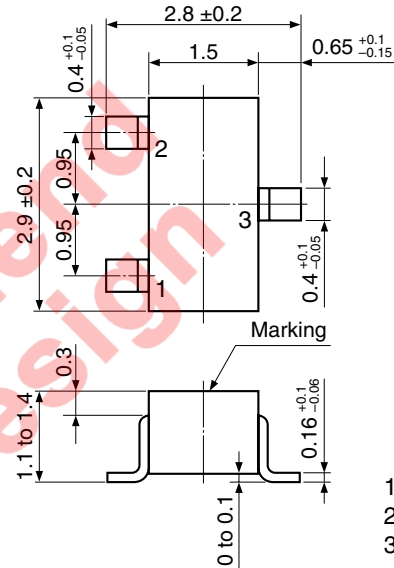
The 2SJ210, P-channel vertical type MOSFET, is a switching device which can be driven directly by the output of ICs having a 5 V power source.

The 2SJ210 has excellent switching characteristics and is suitable as a high-speed switching device in digital circuits.

FEATURES

- Directly driven by the output of ICs having a 5 V power source.
- Not necessary to consider driving current because of its high input impedance.
- Possible to reduce the number of parts by omitting the bias resistor.

PACKAGE DRAWING (Unit: mm)



1. Source
2. Gate
3. Drain

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SJ210	SC-59 (Mini Mold)

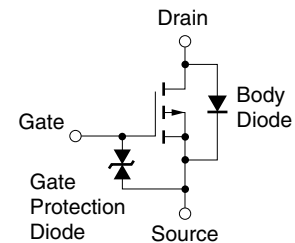
Marking: H16

ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

Drain to Source Voltage (VGS = 0 V)	V <sub>DSS</sub>	-60	V
Gate to Source Voltage (VDS = 0 V)	V <sub>GSS</sub>	±20	V
Drain Current (DC)	ID(DC)	±200	mA
Drain Current (pulse) <sup>Note</sup>	ID(pulse)	±400	mA
Total Power Dissipation	PT	200	mW
Channel Temperature	T <sub>ch</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

Note PW ≤ 10 ms, Duty Cycle ≤ 50%

EQUIVALENT CIRCUIT



<R>

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**Remark** The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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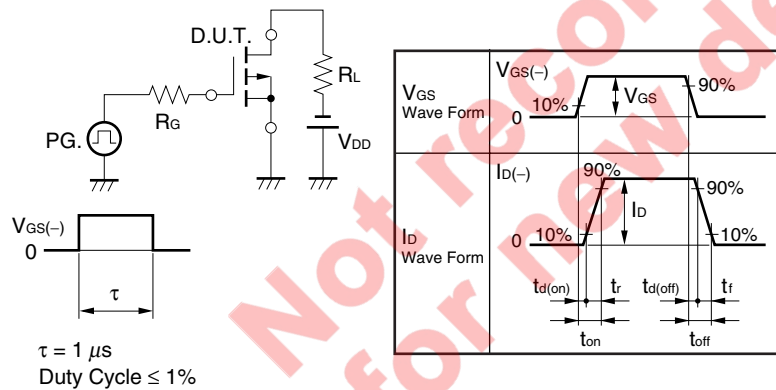
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -60V, V_{GS} = 0V$			-1.0	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \mp 20V, V_{DS} = 0V$			$\mp 1.0$	$\mu A$
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = -5.0V, I_D = -1.0\mu A$	-1.4	-1.8	-2.4	V
Forward Transfer Admittance <b>Note</b>	$ y_{fs} $	$V_{DS} = -5.0V, I_D = -10mA$	20	45		mS
Drain to Source On-state Resistance <b>Note</b>	$R_{DS(on)1}$	$V_{GS} = -4.0V, I_D = -10mA$		10	15	$\Omega$
	$R_{DS(on)2}$	$V_{GS} = -10V, I_D = -10mA$		6	10	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -5.0V$		27		pF
Output Capacitance	$C_{oss}$	$V_{GS} = 0V$		21		pF
Reverse Transfer Capacitance	$C_{rss}$	$f = 1MHz$		3		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = -4.0V, R_G = 10\Omega$		120		ns
Rise Time	$t_r$	$V_{DD} = -5.0V$		190		ns
Turn-off Delay Time	$t_{d(off)}$	$I_D = -10mA$		150		ns
Fall Time	$t_f$			180		ns

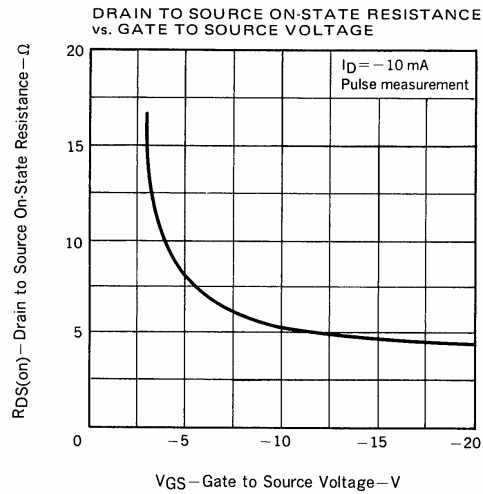
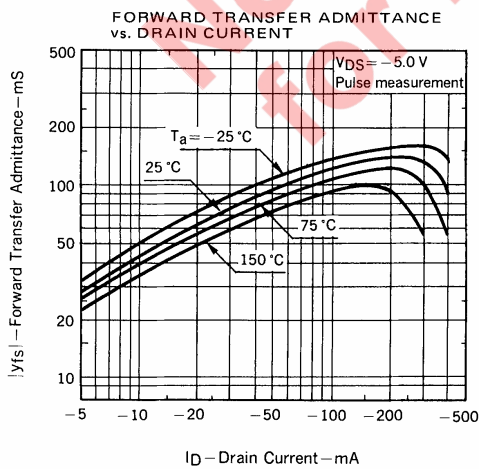
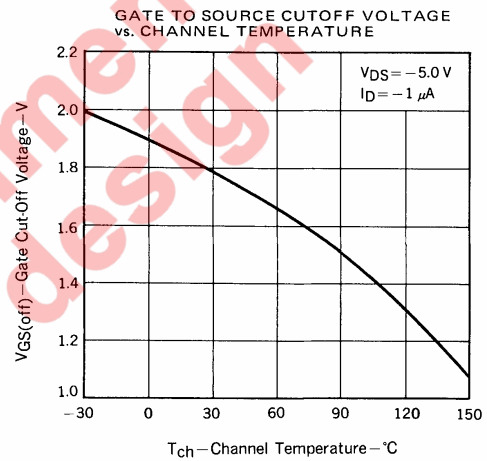
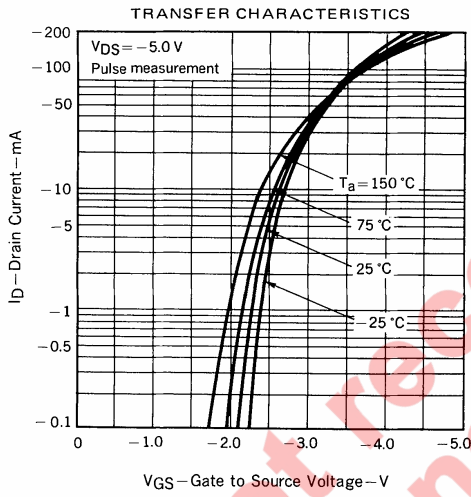
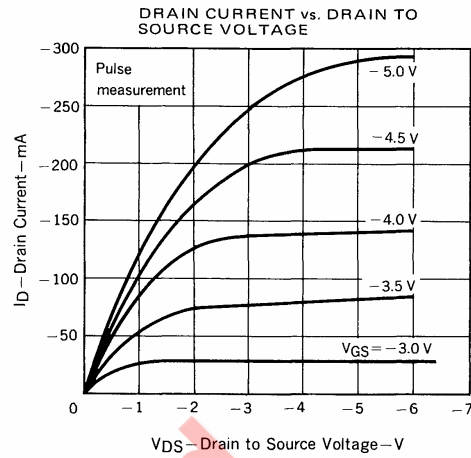
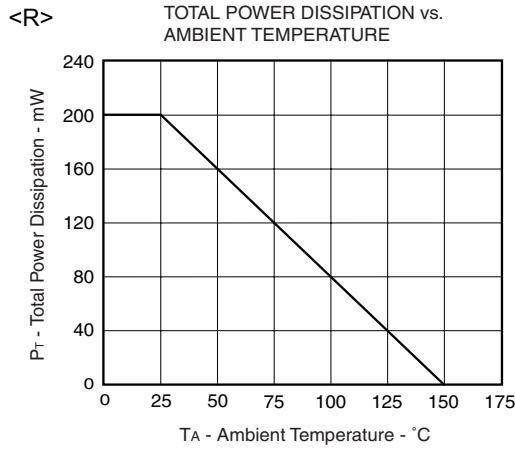
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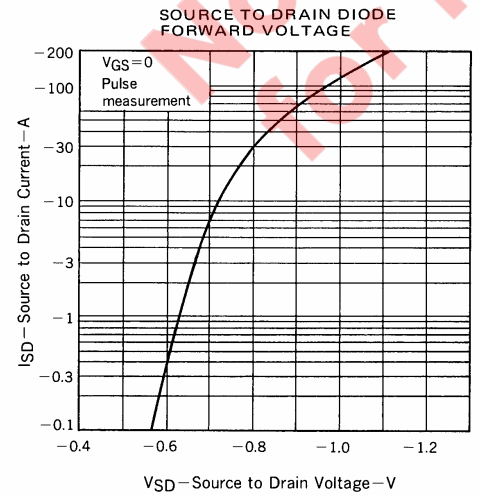
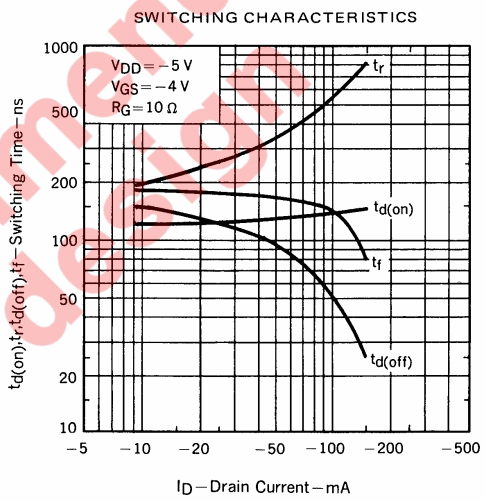
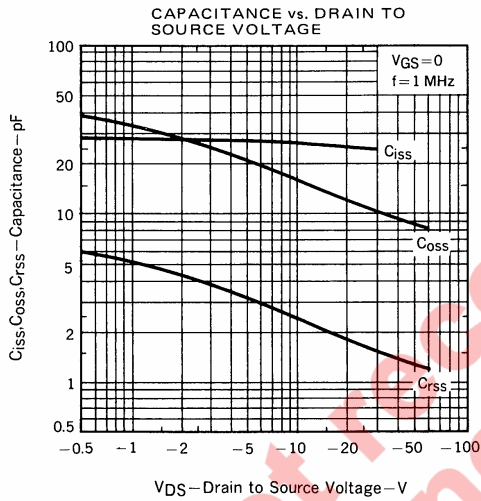
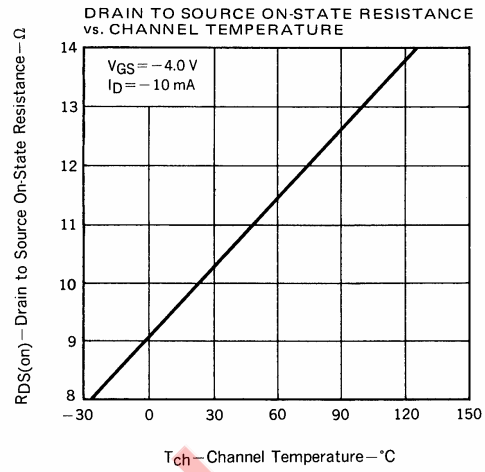
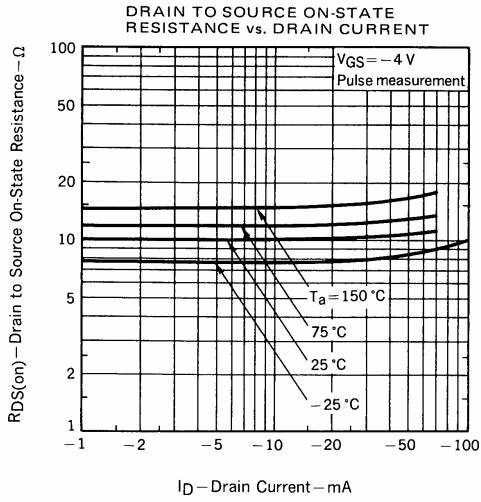
**Note** Pulsed

**TEST CIRCUIT SWITCHING TIME**



TYPICAL CHARACTERISTICS (TA = 25°C)





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