

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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EOL announced Product

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P-CHANNEL MOS FIELD EFFECT TRANSISTOR  
FOR HIGH SPEED SWITCHING

DESCRIPTION

The 2SJ559 is a switching device which can be driven directly by a 2.5 V power source.

The 2SJ559 has excellent switching characteristics, and is suitable for use as a high-speed switching device in digital circuits.

FEATURES

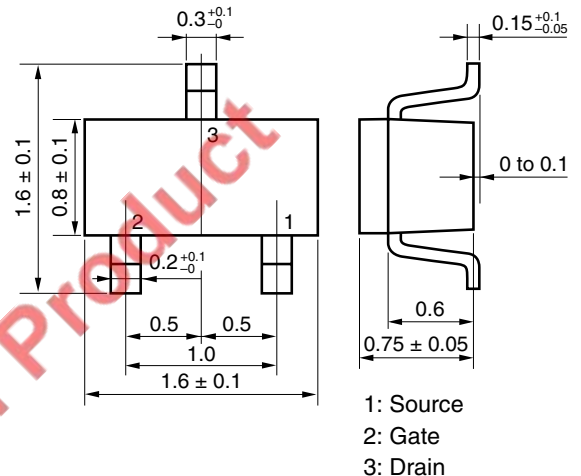
- Can be driven by a 2.5 V power source.
- Low gate cut-off voltage.

★ ORDERING INFORMATION

PART NUMBER	PACKAGE
2SJ559	SC-75 (USM)

Marking: C1

★ PACKAGE DRAWING (Unit: mm)

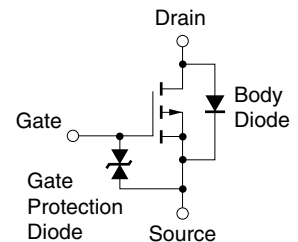


ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Drain to Source Voltage	V <sub>DSS</sub>	-30	V
Gate to Source Voltage	V <sub>GSS</sub>	±20	V
Drain Current (DC)	I <sub>D(DC)</sub>	±0.1	A
Drain Current (pulse) <sup>Note1</sup>	I <sub>D(pulse)</sub>	±0.4	A
Total Power Dissipation <sup>Note2</sup>	P <sub>T</sub>	200	mW
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. Mounted on ceramic substrate of 3.0 cm<sup>2</sup> x 0.64 mm

EQUIVALENT CIRCUIT



**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.

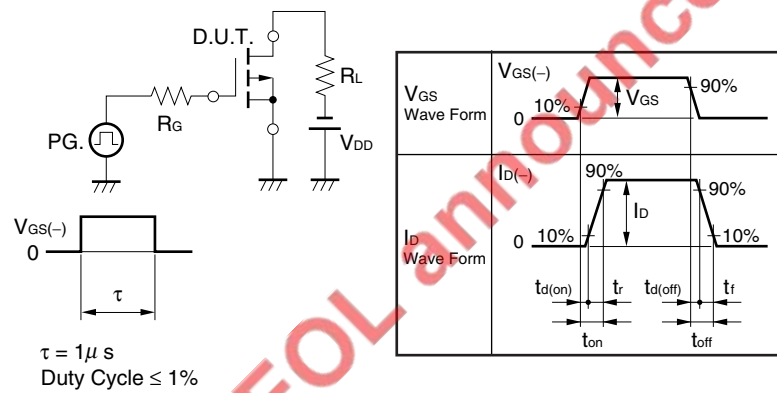
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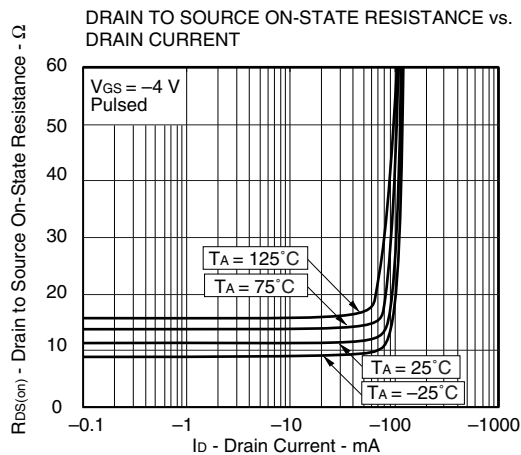
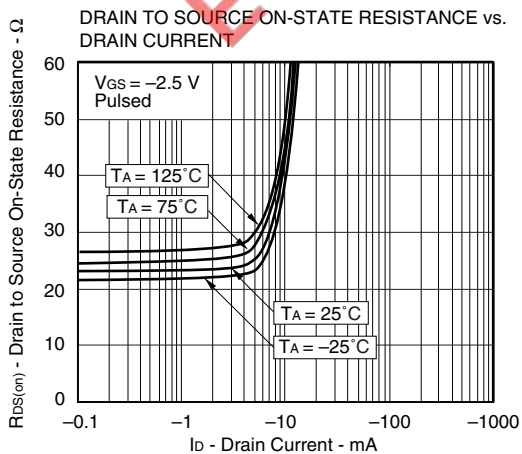
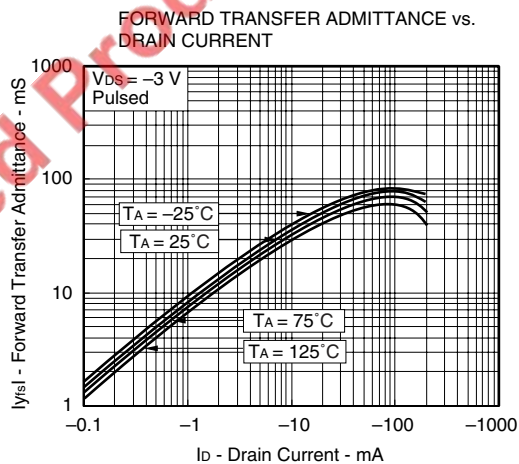
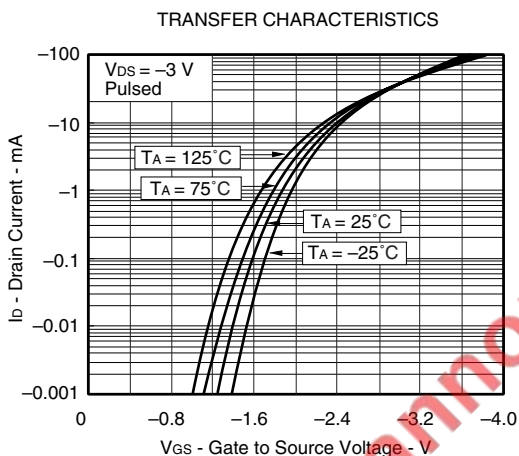
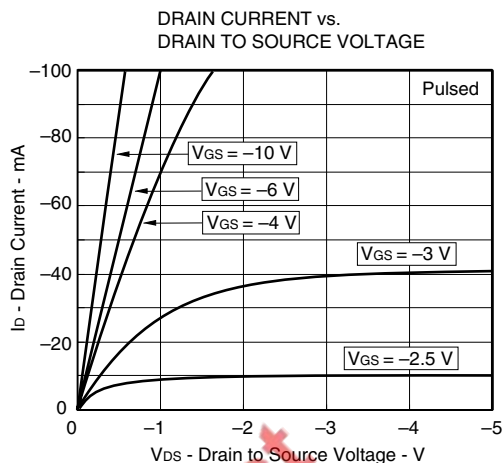
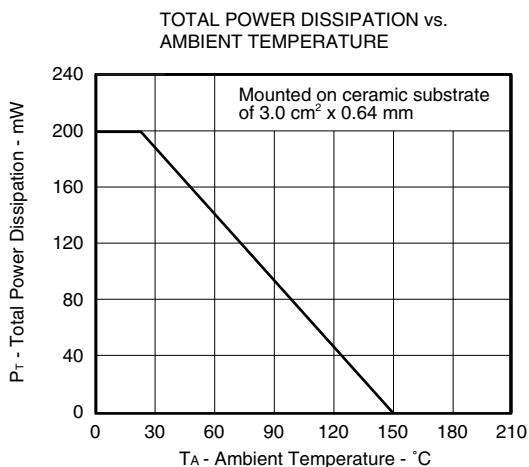
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}$			-1.0	$\mu\text{A}$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$			$\mp 10$	$\mu\text{A}$
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = -3.0\text{ V}, I_D = -10\ \mu\text{A}$	-1.0	-1.4	-1.7	V
Forward Transfer Admittance <sup>Note</sup>	$ y_{fs} $	$V_{DS} = -3.0\text{ V}, I_D = -10\text{ mA}$	20			mS
Drain to Source On-state Resistance <sup>Note</sup>	$R_{DS(on)1}$	$V_{GS} = -2.5\text{ V}, I_D = -1.0\text{ mA}$		23	60	$\Omega$
	$R_{DS(on)2}$	$V_{GS} = -4.0\text{ V}, I_D = -10\text{ mA}$		11	23	$\Omega$
	$R_{DS(on)3}$	$V_{GS} = -10\text{ V}, I_D = -10\text{ mA}$		6.0	13	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -3.0\text{ V}$		5.0		pF
Output Capacitance	$C_{oss}$	$V_{GS} = 0\text{ V}$		15		pF
Reverse Transfer Capacitance	$C_{rss}$	$f = 1\text{ MHz}$		1.3		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -3.0\text{ V}$		140		ns
Rise Time	$t_r$	$I_D = -10\text{ mA}$		330		ns
Turn-off Delay Time	$t_{d(off)}$	$V_{GS} = -4.0\text{ V}$		220		ns
Fall Time	$t_f$	$R_G = 10\ \Omega$		320		ns

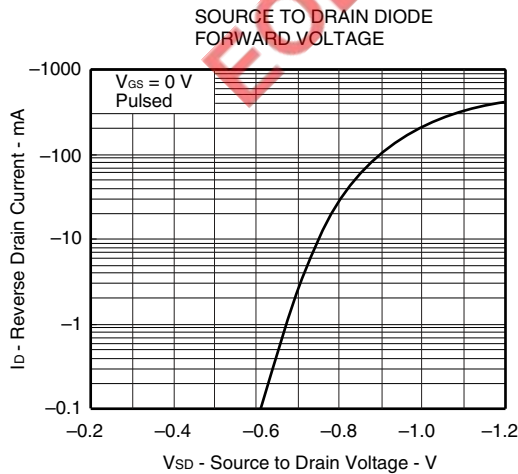
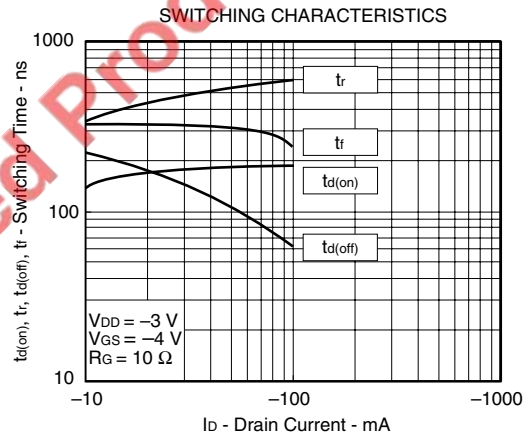
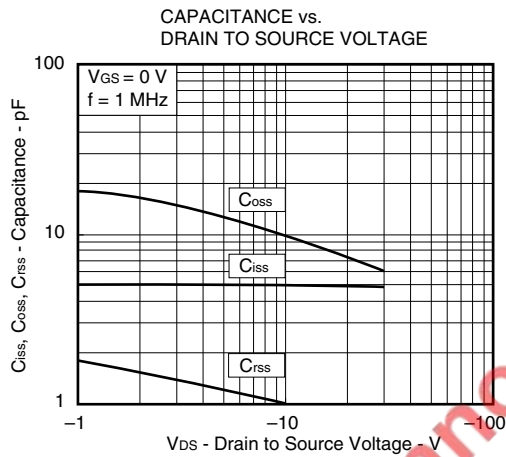
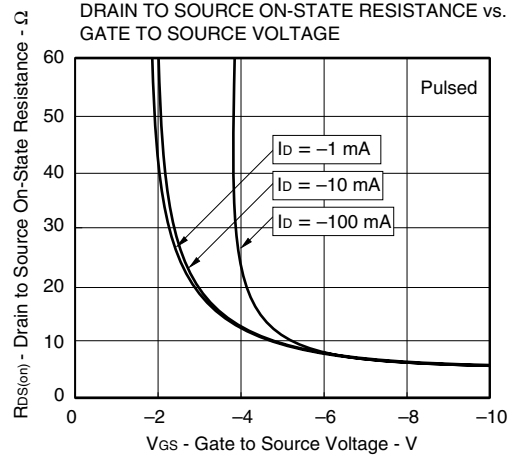
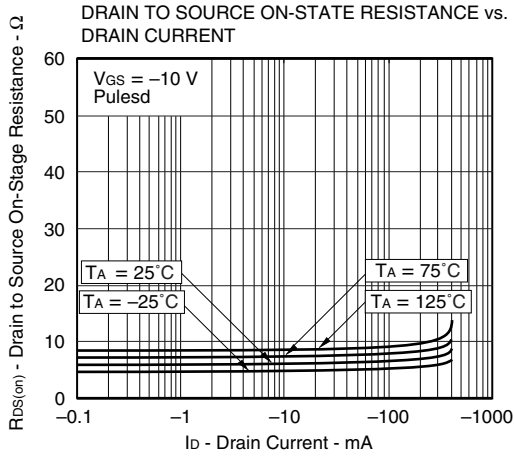
**Note** Plused

★ **TEST CIRCUIT SWITCHING TIME**



TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)





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