

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

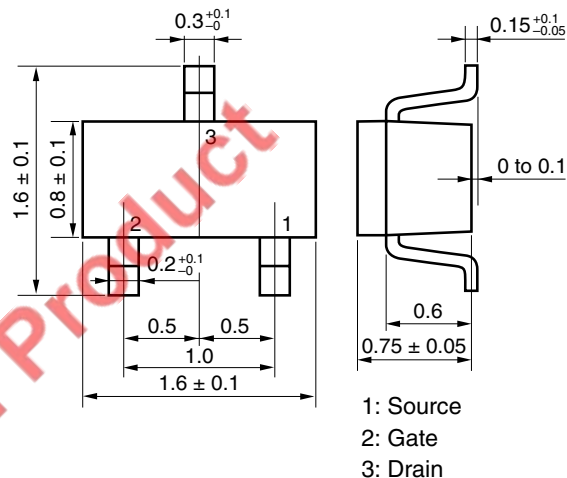
### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

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

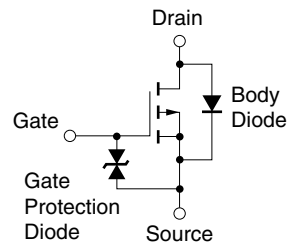
- Notes**
1. PW ≤ 10 μs, Duty Cycle ≤ 1%
  2. Mounted on ceramic substrate of 3.0 cm<sup>2</sup> x 0.64 mm

**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.

### ★ PACKAGE DRAWING (Unit: mm)



### EQUIVALENT CIRCUIT



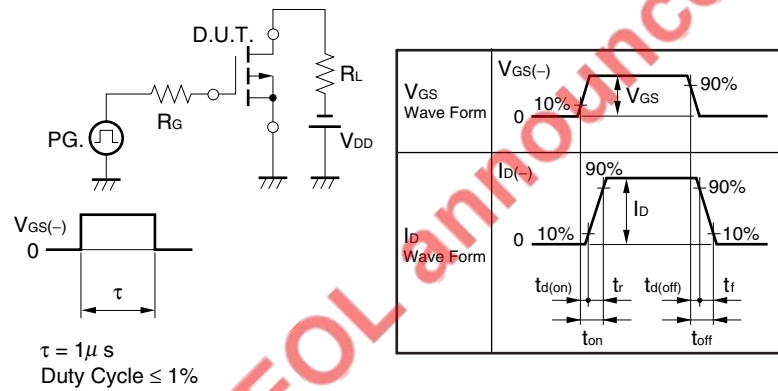
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**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

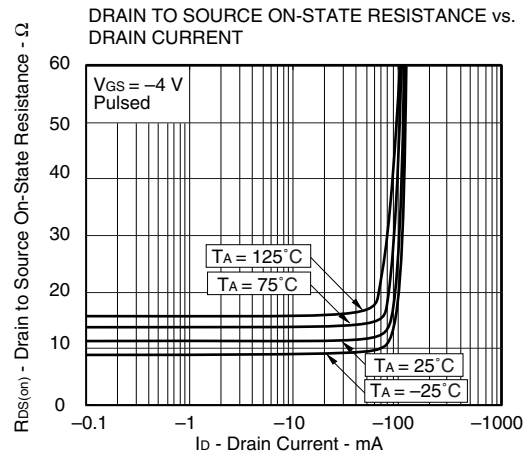
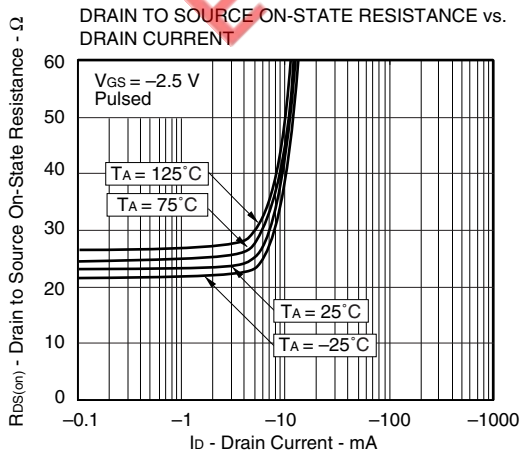
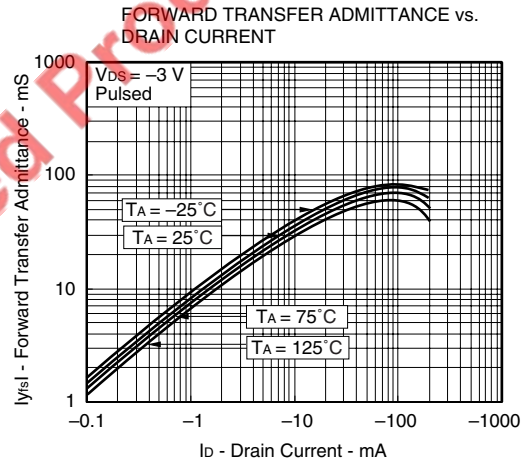
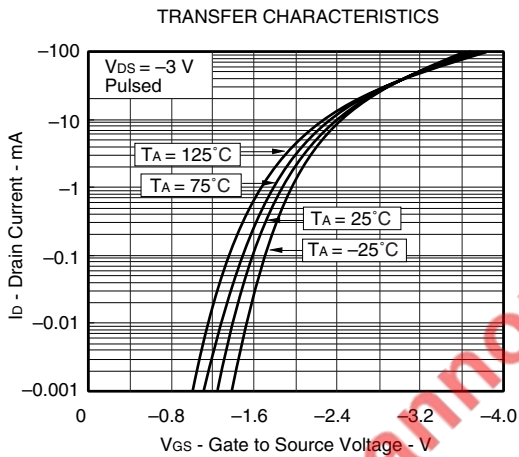
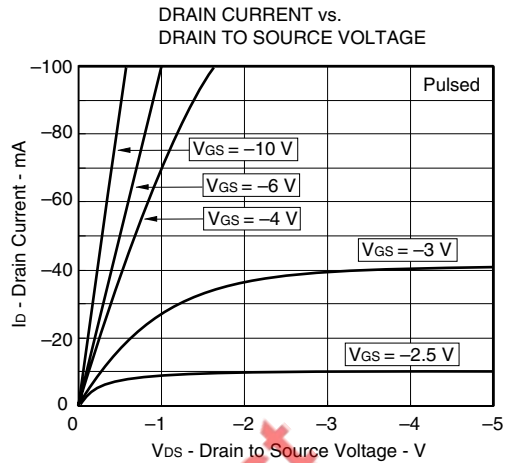
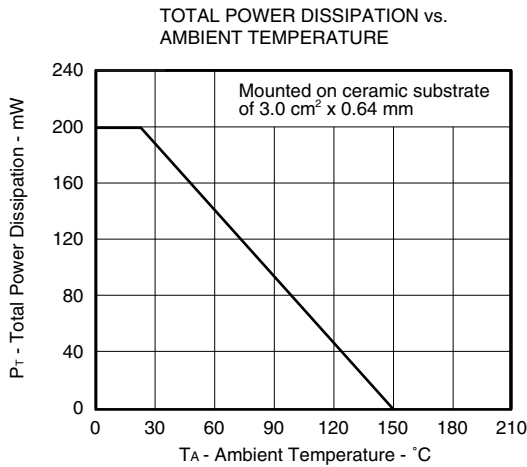
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -30 V, V <sub>GS</sub> = 0 V			-1.0	μA
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0 V			±10	μA
Gate Cut-off Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> = -3.0 V, I <sub>D</sub> = -10 μA	-1.0	-1.4	-1.7	V
Forward Transfer Admittance <sup>Note</sup>	y <sub>fs</sub>	V <sub>DS</sub> = -3.0 V, I <sub>D</sub> = -10 mA	20			mS
Drain to Source On-state Resistance <sup>Note</sup>	R <sub>DS(on)1</sub>	V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -1.0 mA		23	60	Ω
	R <sub>DS(on)2</sub>	V <sub>GS</sub> = -4.0 V, I <sub>D</sub> = -10 mA		11	23	Ω
	R <sub>DS(on)3</sub>	V <sub>GS</sub> = -10 V, I <sub>D</sub> = -10 mA		6.0	13	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -3.0 V		5.0		pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> = 0 V		15		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f = 1 MHz		1.3		pF
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -3.0 V		140		ns
Rise Time	t <sub>r</sub>	I <sub>D</sub> = -10 mA		330		ns
Turn-off Delay Time	t <sub>d(off)</sub>	V <sub>GS</sub> = -4.0 V		220		ns
Fall Time	t <sub>f</sub>	R <sub>G</sub> = 10 Ω		320		ns

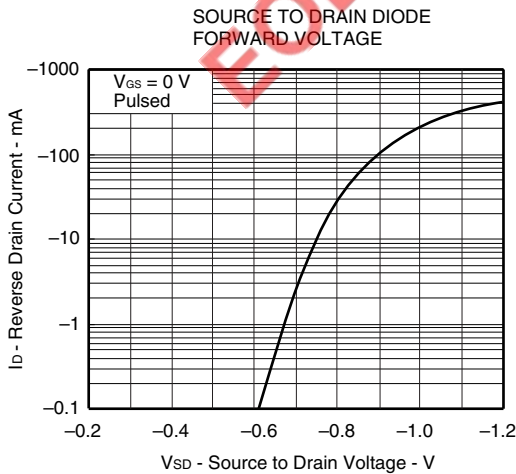
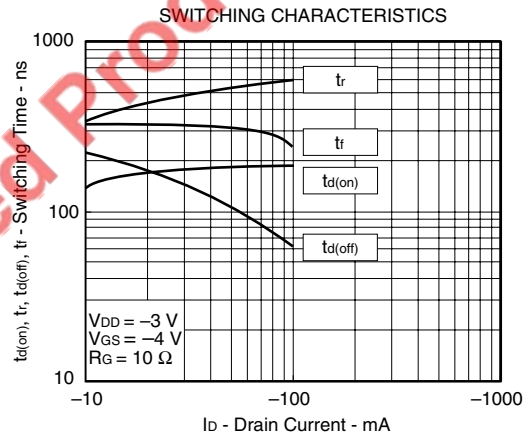
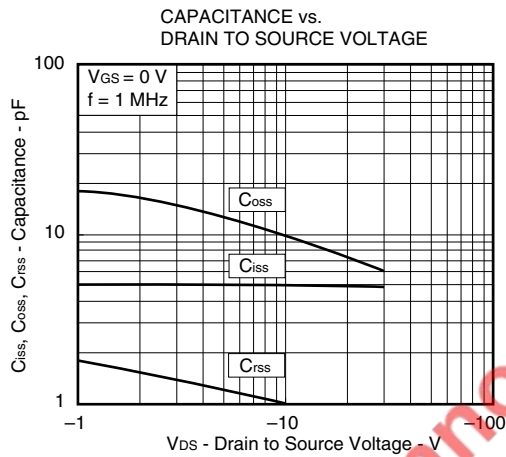
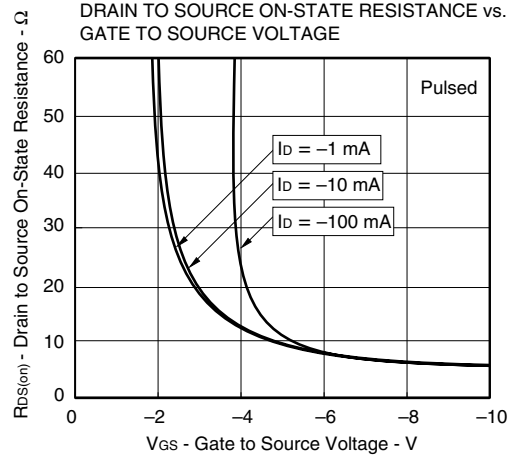
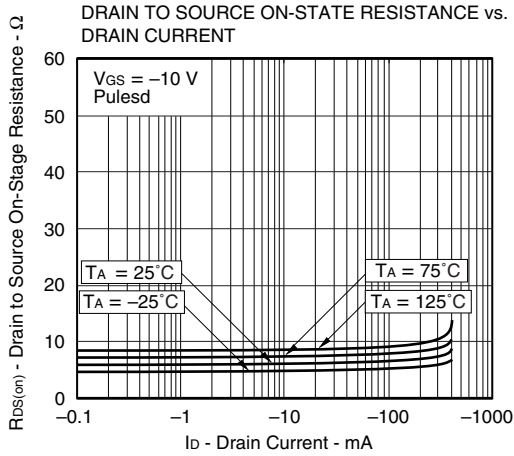
**Note** Plused

★ **TEST CIRCUIT SWITCHING TIME**



TYPICAL CHARACTERISTICS (TA = 25°C)





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