

To our customers,

Old Company Name in Catalogs and Other Documents

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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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Not recommended
for new design

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**N-CHANNEL MOSFET
 FOR SWITCHING**

DESCRIPTION

The 2SK1658 is an N-channel vertical type MOSFET which can be driven by 2.5 V power supply.

As the MOSFET is low Gate Leakage Current, it is suitable for appliances including Filter Circuit.

FEATURES

- Directly driven by ICs having a 3 V power supply.
- Has low Gate Leakage Current
 $I_{GSS} = \pm 5 \text{ nA MAX. (} V_{GS} = \pm 3.0 \text{ V)}$

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK1658	SC-70 (SSP)

Marking: G20

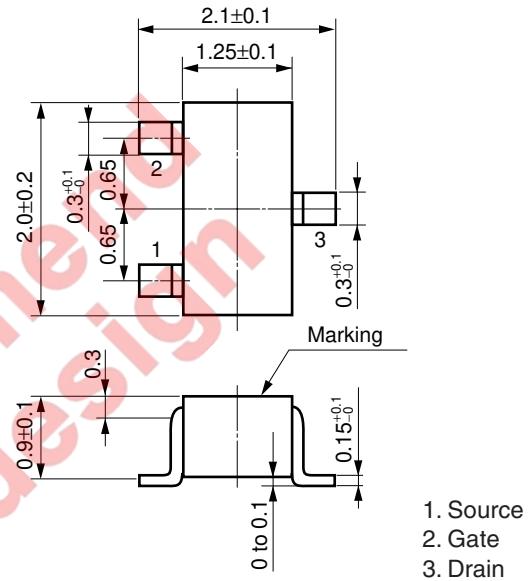
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V _{GS} = 0 V)	V _{DSS}	30	V
Gate to Source Voltage (V _{DS} = 0 V)	V _{GSS}	±7	V
Drain Current (DC)	I _{D(DC)}	±100	mA
Drain Current (pulse)	I _{D(pulse)}	±200	mA
Total Power Dissipation	P _T	150	mW
Channel Temperature	T _{ch}	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

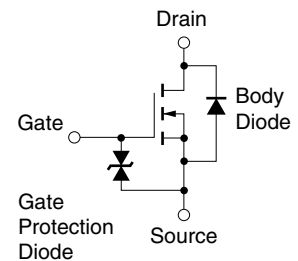
Note PW ≤ 10 ms, Duty Cycle ≤ 50%

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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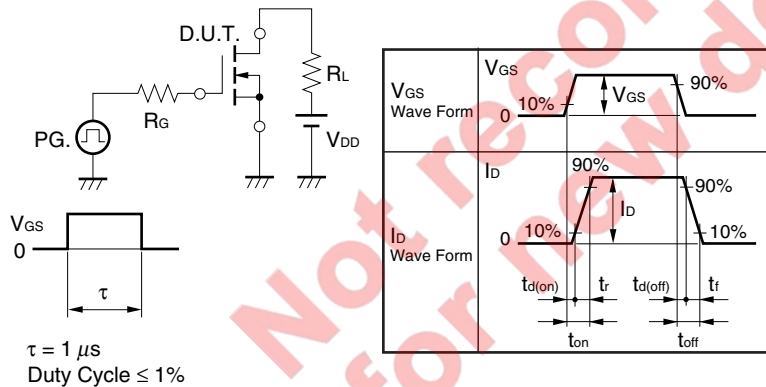
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

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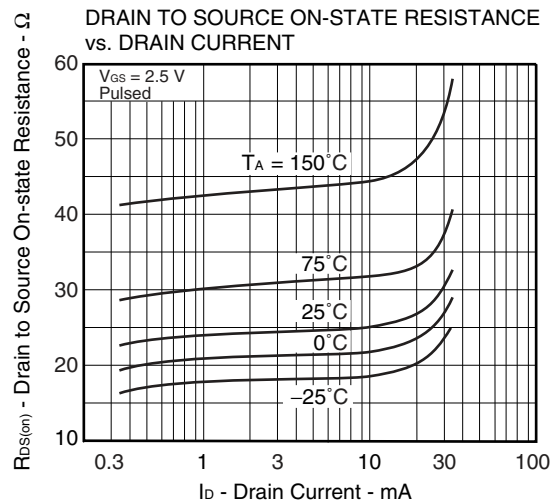
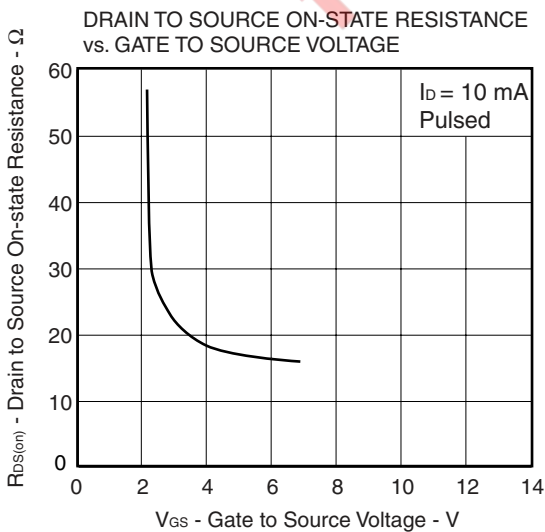
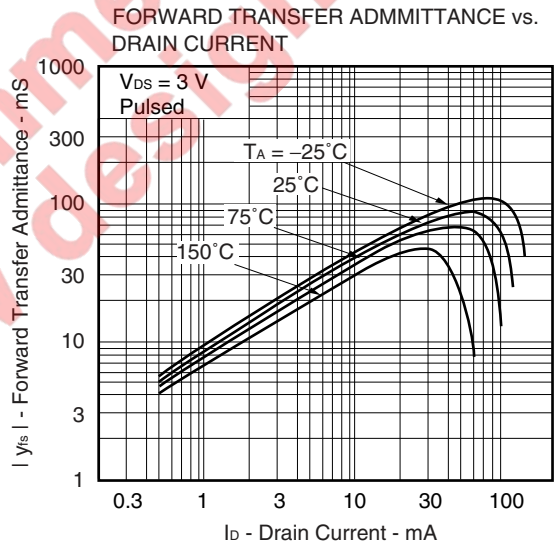
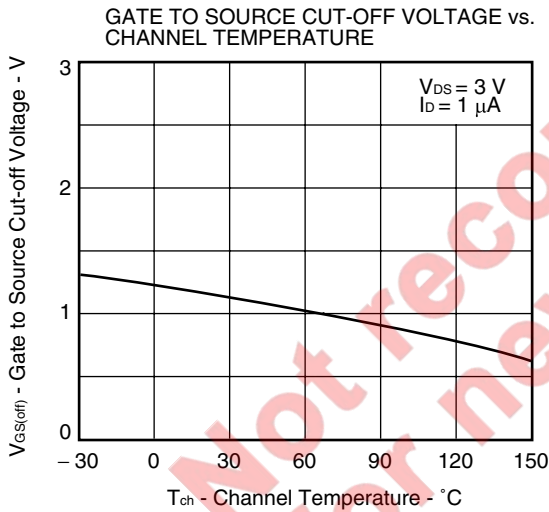
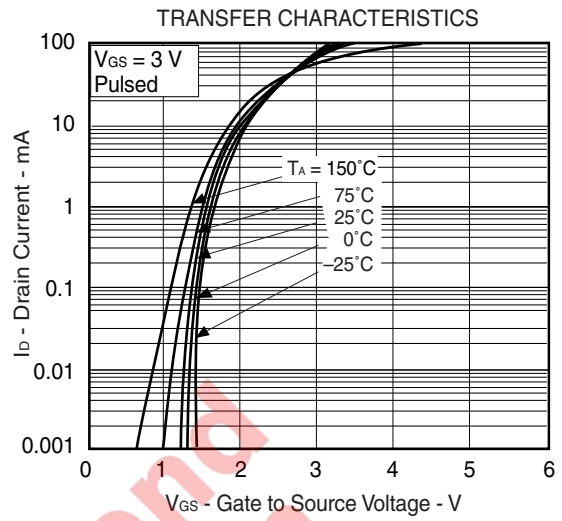
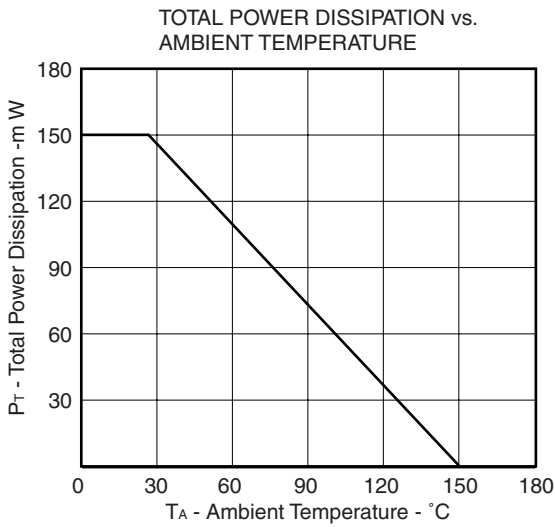
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			10	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±3.0 V, V _{DS} = 0 V			±5.0	nA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 3.0 V, I _D = 1.0 μA	0.9	1.2	1.5	V
Forward Transfer Admittance Note	y _{fs}	V _{DS} = 3.0 V, I _D = 10 mA	20	40		mS
Drain to Source On-state Resistance Note	R _{DS(on)1}	V _{GS} = 2.5 V, I _D = 10 mA		25	45	Ω
	R _{DS(on)2}	V _{GS} = 4.0 V, I _D = 10 mA		18	25	Ω
Input Capacitance	C _{iss}	V _{DS} = 3.0 V		15		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		10		pF
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz		1.5		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = 3.0 V, I _D = 10 mA		50		ns
Rise Time	t _r	V _{GS} = 3.0 V		23		ns
Turn-off Delay Time	t _{d(off)}	R _G = 10 Ω		34		ns
Fall Time	t _f			43		ns

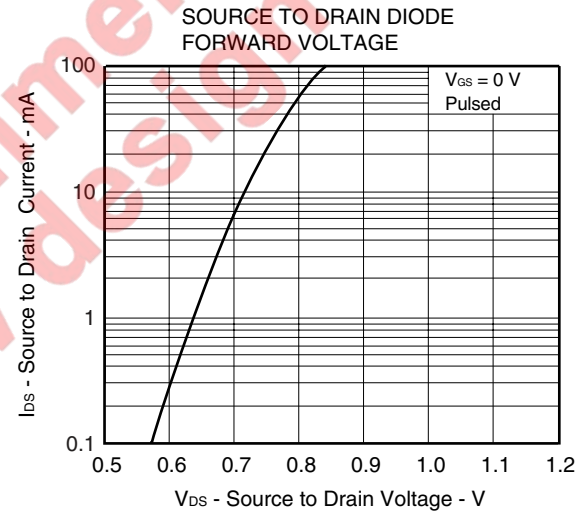
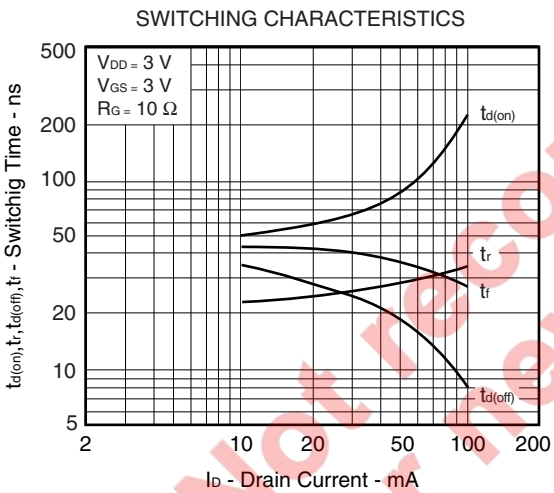
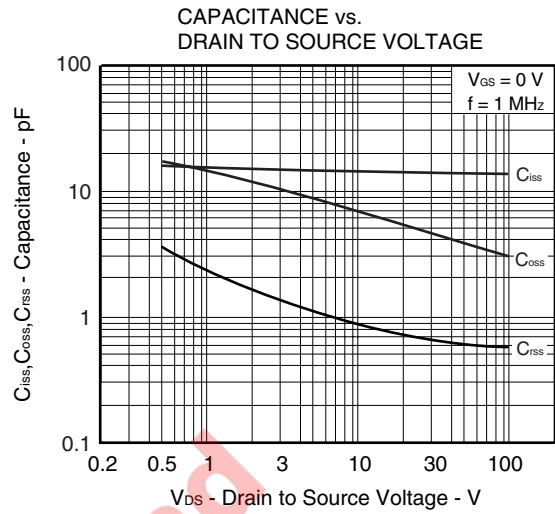
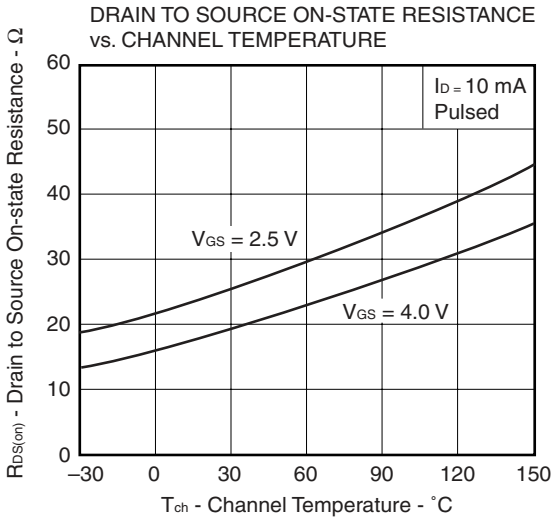
Note Pulsed

TEST CIRCUIT SWITCHING TIME



TYPICAL CHARACTERISTICS (T_A = 25°C)





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