

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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MOS FIELD EFFECT TRANSISTOR 2SK3107

N-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR HIGH SPEED SWITCHING

DESCRIPTION

The 2SK3107 is a switching device which can be driven directly by a 2.5 V power source.

The 2SK3107 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
2SK3107	SC-75 (USM)

Marking: D1

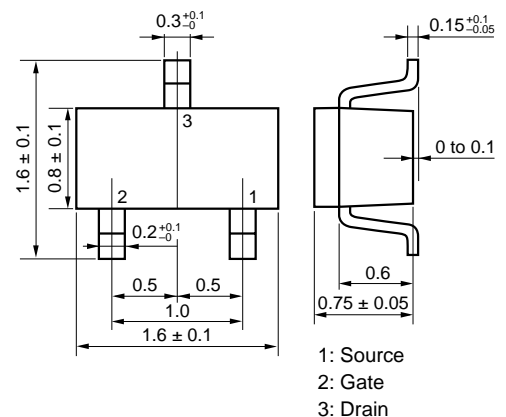
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage	V _{DSS}	30	V
Gate to Source Voltage	V _{GSS}	±20	V
Drain Current (DC)	I _{D(DC)}	±0.1	A
Drain Current (pulse) ^{Note1}	I _{D(pulse)}	±0.4	A
Total Power Dissipation ^{Note2}	P _T	200	mW
Channel Temperature	T _{ch}	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

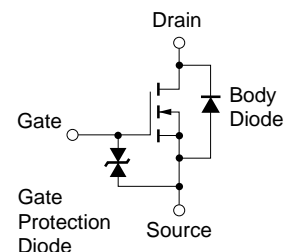
- Notes**
1. PW ≤ 10 μs, Duty Cycle ≤ 1%
 2. Mounted on ceramic substrate of 3.0 cm² x 0.64 mm

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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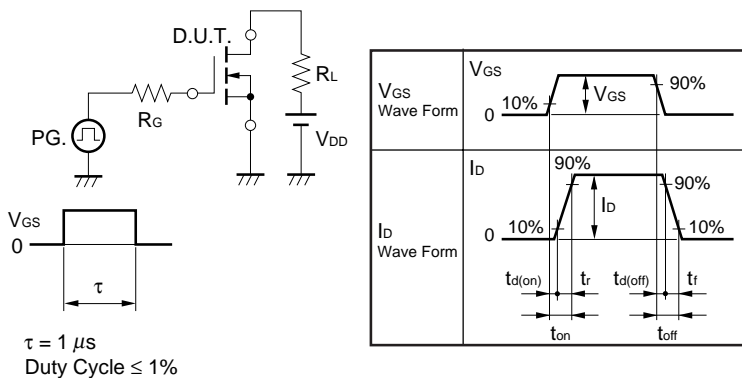
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ELECTRICAL CHARACTERISTICS (TA = 25 °C)

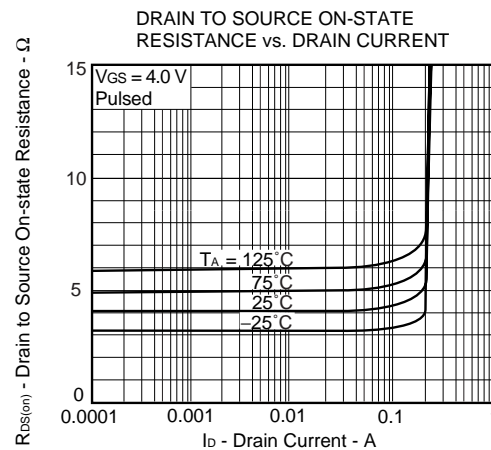
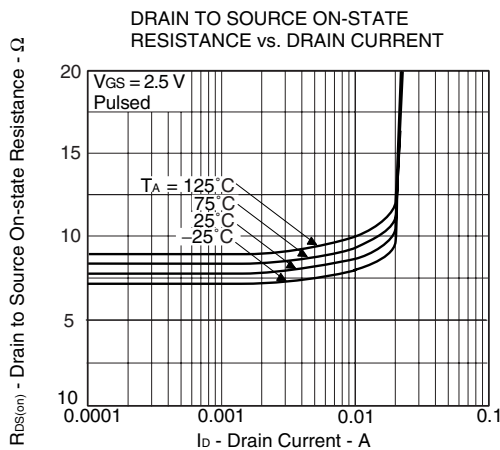
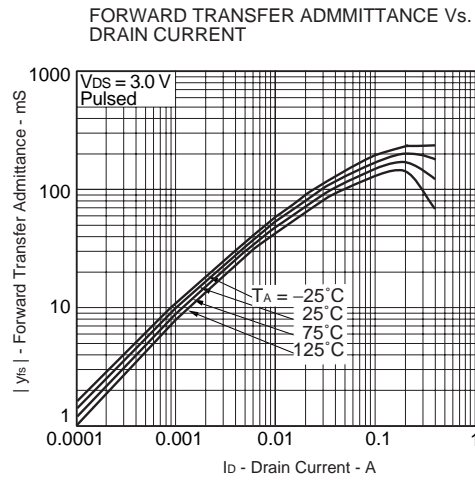
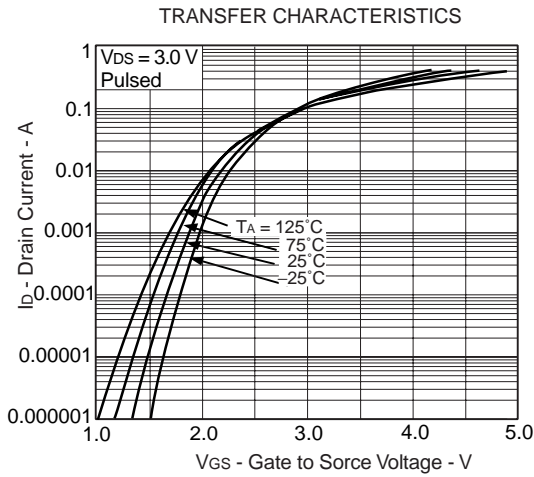
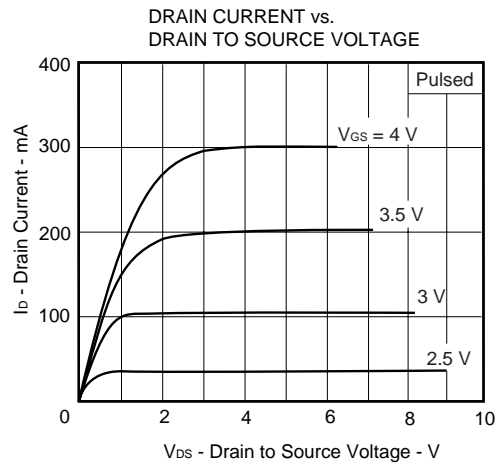
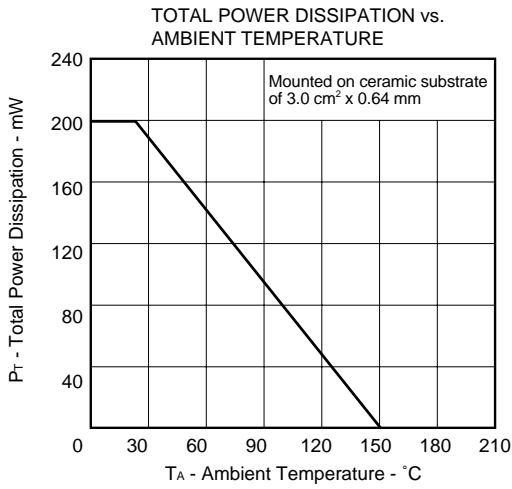
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			1.0	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$			± 10	μA
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = 3.0\text{ V}, I_D = 10\ \mu\text{A}$	1.0	1.4	1.8	V
Forward Transfer Admittance ^{Note}	$ y_{fs} $	$V_{DS} = 3.0\text{ V}, I_D = 10\text{ mA}$	20			mS
Drain to Source On-state Resistance ^{Note}	$R_{DS(on)1}$	$V_{GS} = 2.5\text{ V}, I_D = 1.0\text{ mA}$		8.0	15	Ω
	$R_{DS(on)2}$	$V_{GS} = 4.0\text{ V}, I_D = 10\text{ mA}$		4.0	8.0	Ω
	$R_{DS(on)3}$	$V_{GS} = 10\text{ V}, I_D = 10\text{ mA}$		3.0	5.0	Ω
Input Capacitance	C_{iss}	$V_{DS} = 3.0\text{ V}$		9.0		pF
Output Capacitance	C_{oss}	$V_{GS} = 0\text{ V}$		12		pF
Reverse Transfer Capacitance	C_{rss}	$f = 1\text{ MHz}$		2.1		pF
Turn-on Delay Time	$T_{d(on)}$	$V_{DD} = 3.0\text{ V}$		40		ns
Rise Time	t_r	$I_D = 10\text{ mA}$		55		ns
Turn-off Delay Time	$t_{d(off)}$	$V_{GS} = 4.0\text{ V}$		68		ns
Fall Time	t_f	$R_G = 10\ \Omega, R_L = 300\ \Omega$		64		ns

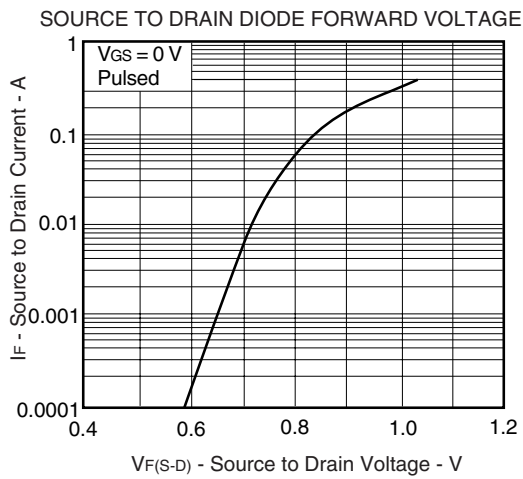
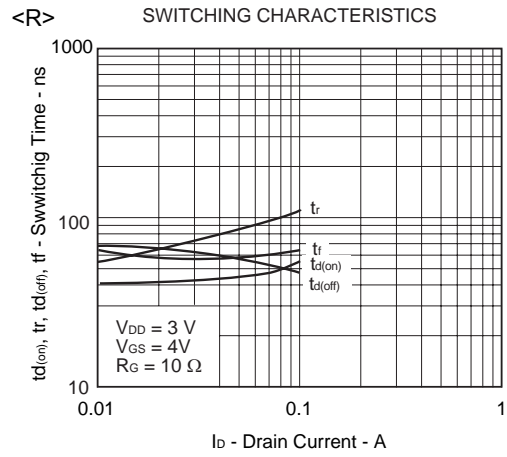
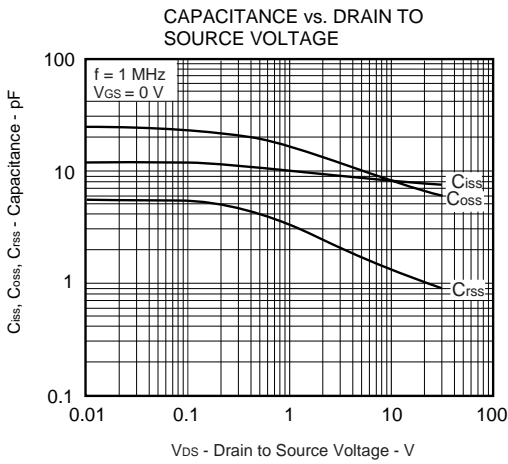
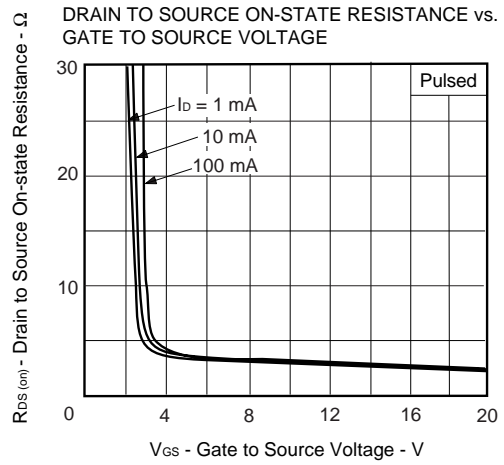
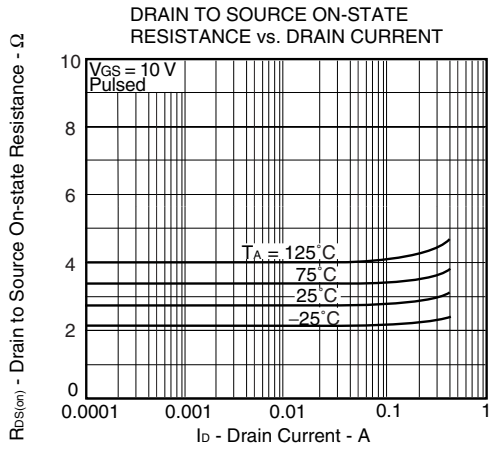
Note Pulsed

TEST CIRCUIT SWITCHING TIME



TYPICAL CHARACTERISTICS (T_A = 25 °C)





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