

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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EOL announced Product

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N-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR SWITCHING

DESCRIPTION

The 2SK3054 is a switching device which can be driven directly by a 2.5-V power source.

The 2SK3054 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

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V _{GS} = 0 V)	V _{DSS}	50	V
Gate to Source Voltage (V _{DS} = 0 V)	V _{GSS}	±7	V
Drain Current (DC)	I _{D(DC)}	±0.1	A
Drain Current (pulse) ^{Note}	I _{D(pulse)}	±0.2	A
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 %

ORDERING INFORMATION

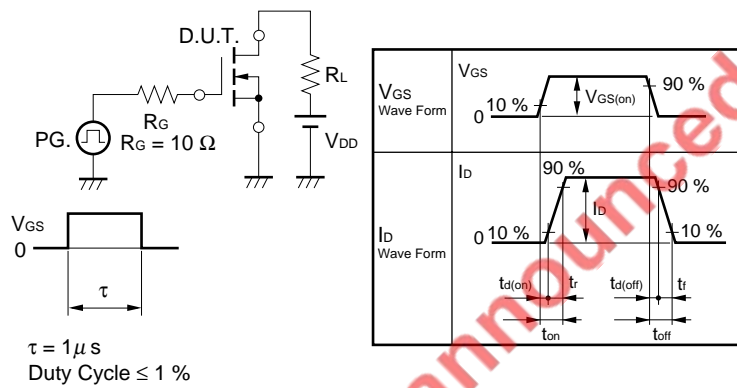
PART NUMBER	PACKAGE
2SK3054	SC-70

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

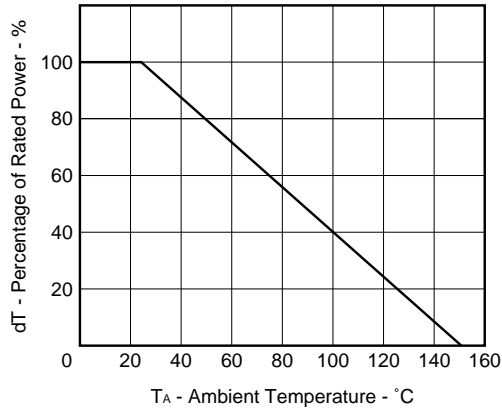
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-off Current	I _{DSS}	V _{DS} = 50 V, V _{GS} = 0 V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±7 V, V _{DS} = 0 V			±5	μA
Gate to Source Cut-off Voltage	V _{GS(off)}	V _{DS} = 3 V, I _D = 1 μA	0.9	1.2	1.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 3 V, I _D = 10 mA	20	38		mS
Drain to Source On-state Resistance	R _{DS(on)1}	V _{GS} = 2.5 V, I _D = 10 mA		22	40	Ω
	R _{DS(on)2}	V _{GS} = 4.0 V, I _D = 10 mA		14	20	Ω
Input Capacitance	C _{iss}	V _{DS} = 3 V		8		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		7		pF
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz		3		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = 3 V		15		ns
Rise Time	t _r	I _D = 20 mA		100		ns
Turn-off Delay Time	t _{d(off)}	V _{GS(on)} = 3 V		30		ns
Fall Time	t _f	R _G = 10 Ω, R _L = 150 Ω		35		ns

TEST CIRCUIT SWITCHING TIME

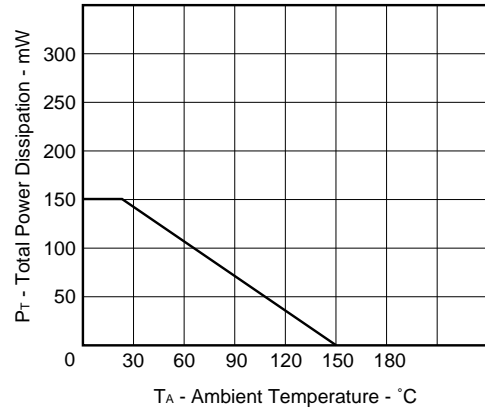


TYPICAL CHARACTERISTICS (T_A = 25 °C)

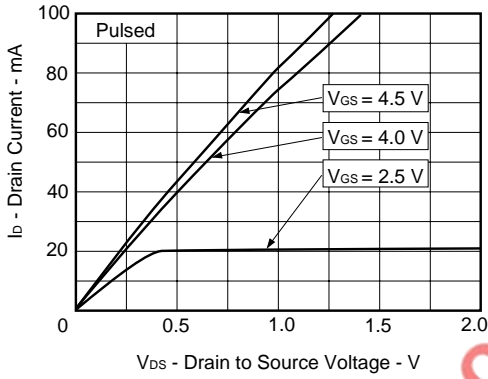
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



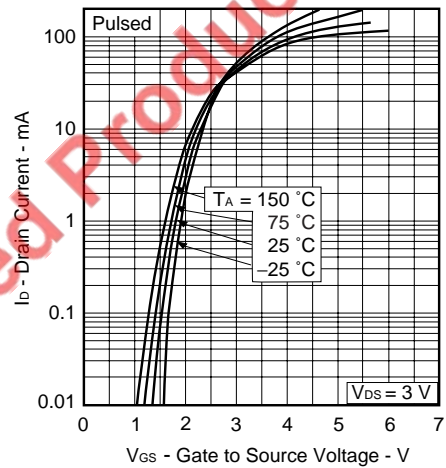
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



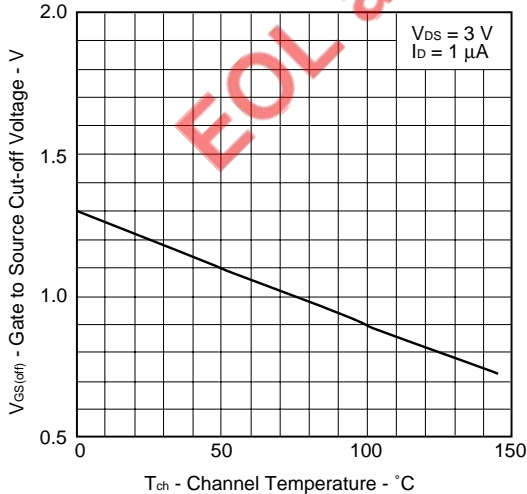
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



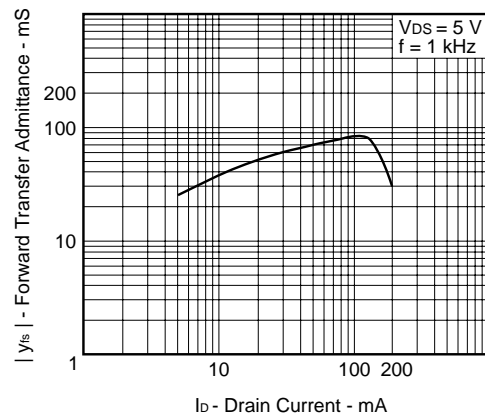
FORWARD TRANSFER CHARACTERISTICS

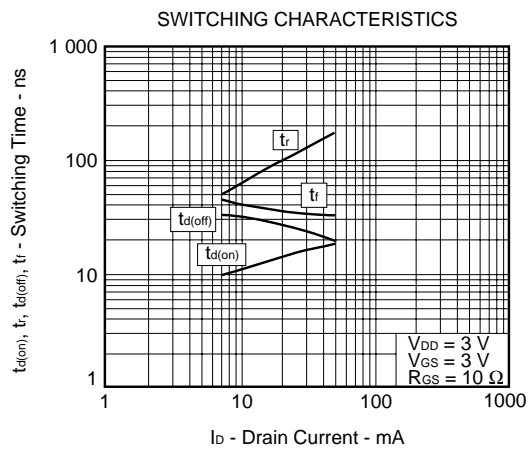
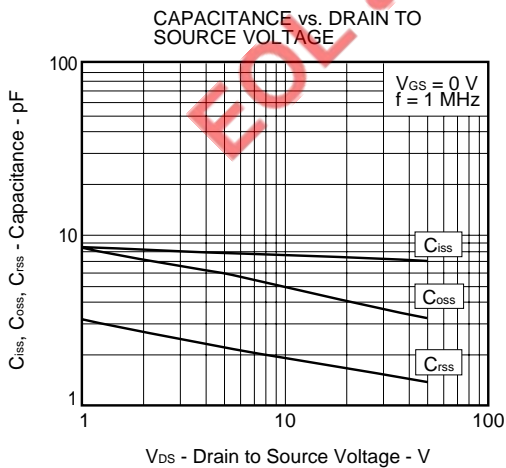
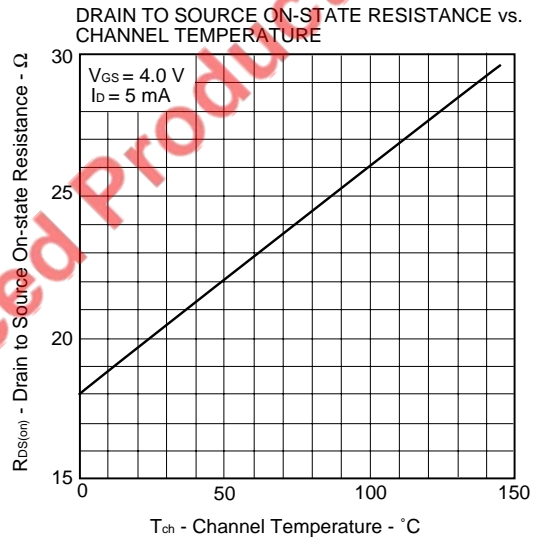
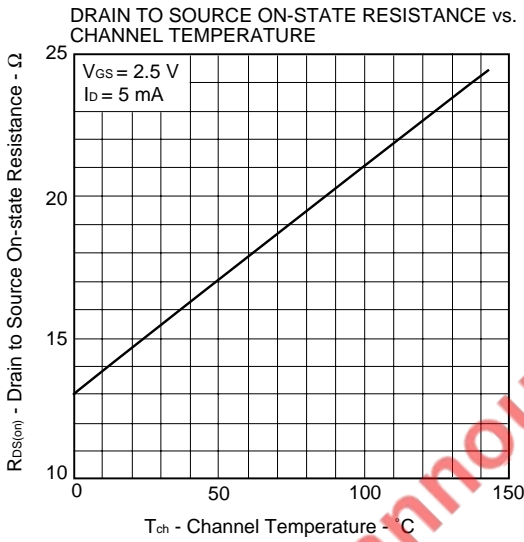
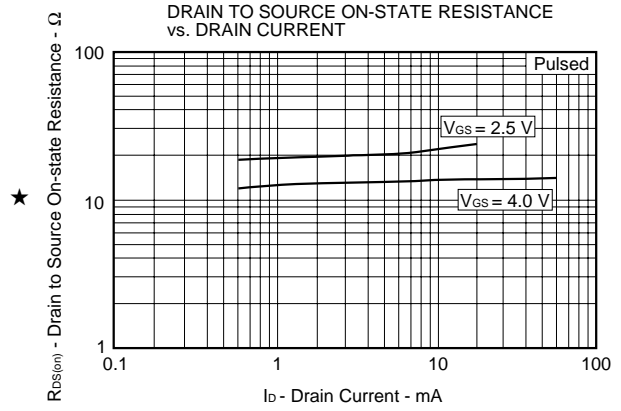
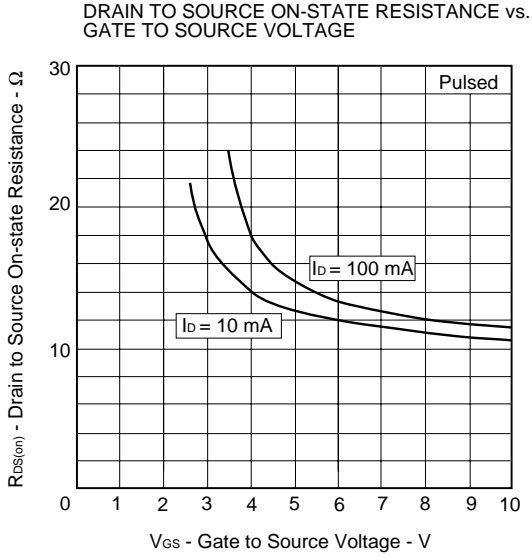


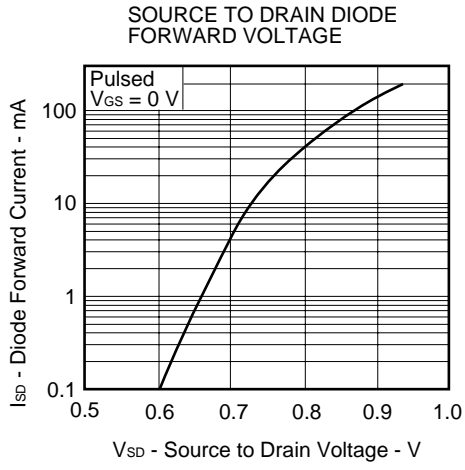
GATE TO SOURCE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



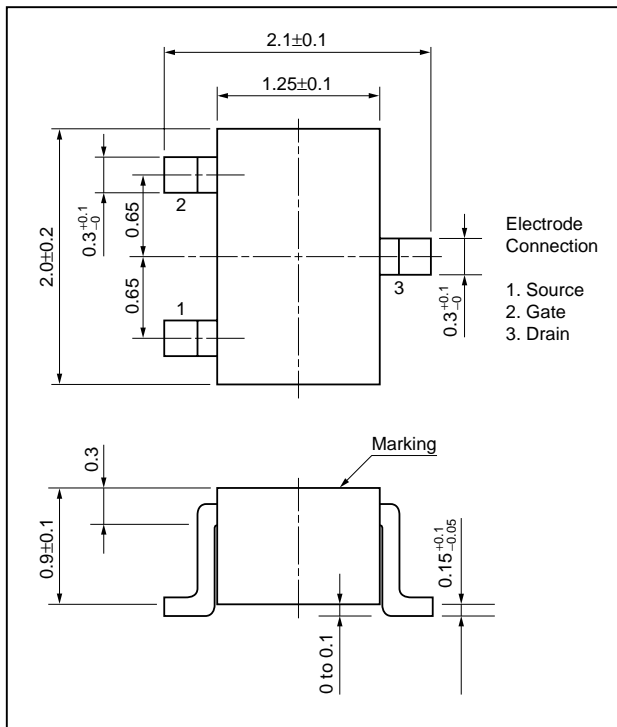




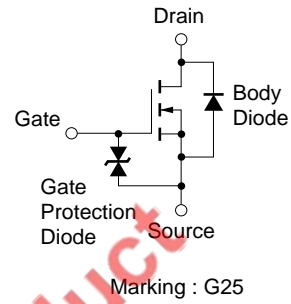
EOL announced Product

PACKAGE DRAWING (Unit: mm)

SC-70



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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[MEMO]

EOL announced Product

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 - Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots
 - Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
 - Specific: Aircraft, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.
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