

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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SWITCHING

N-CHANNEL MOS FET

DESCRIPTION

The 2SK1580 is an N-channel vertical type MOS FET which can be driven by 2.5 V power supply.

As the 2SK1580 is driven by low voltage and does not require consideration of driving current, it is suitable for appliance including VCR cameras and headphone stereos which need power saving.

FEATURES

- Directly driven by ICs having a 3 V power supply.
- Not necessary to consider driving current because of its high input impedance.
- Possible to reduce the number of parts by omitting the bias resistor.

★ ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK1580	SC-70 (SSP)

Marking: G13

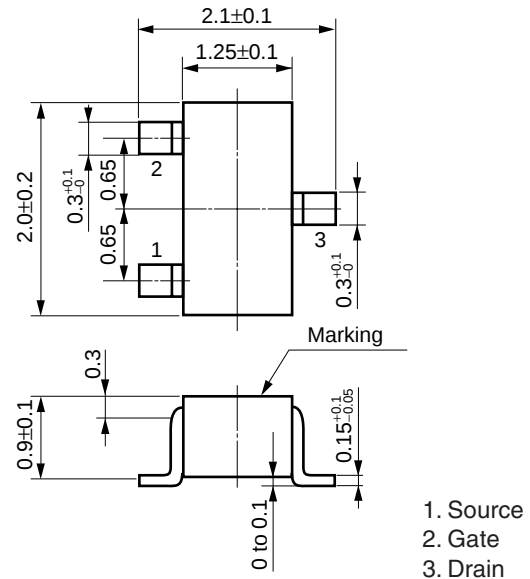
★ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0\text{ V}$)	V_{DS}	16	V
Gate to Source Voltage ($V_{DS} = 0\text{ V}$)	V_{GS}	± 16	V
Drain Current (DC) ($T_C = 25^\circ\text{C}$)	$I_{D(DC)}$	± 100	mA
Drain Current (pulse) ^{Note}	$I_{D(pulse)}$	± 200	mA
Total Power Dissipation ($T_A = 25^\circ\text{C}$)	P_T	150	mW
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to $+150$	$^\circ\text{C}$

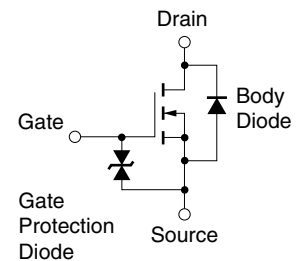
Note $PW \leq 10\text{ ms}$, Duty Cycle $\leq 50\%$

- ★ **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



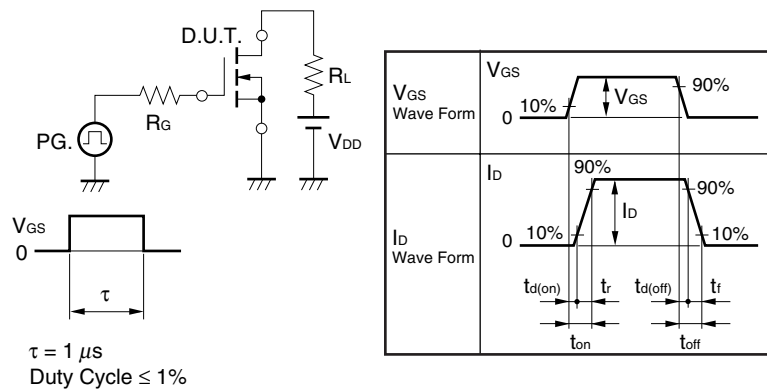
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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

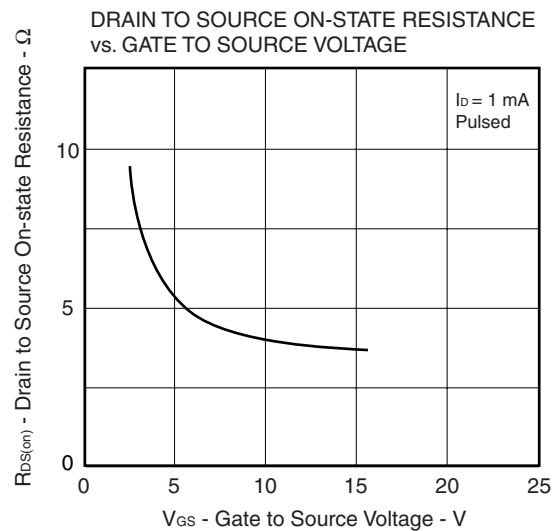
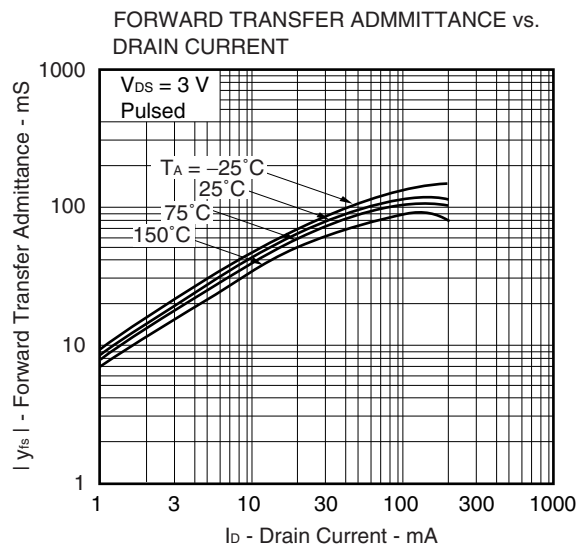
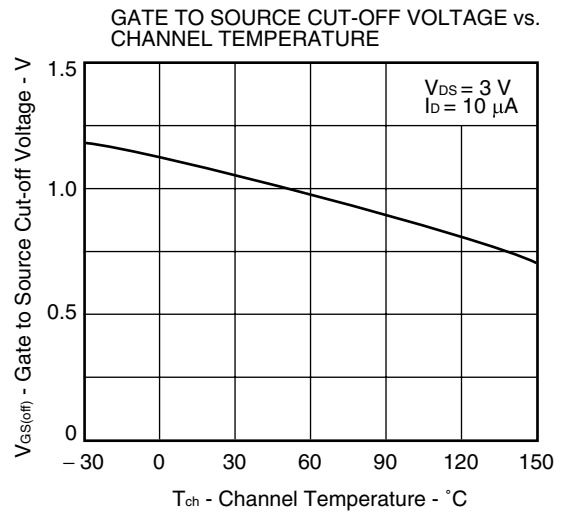
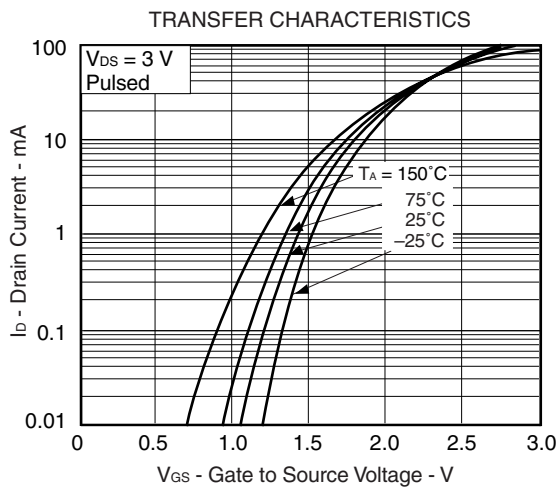
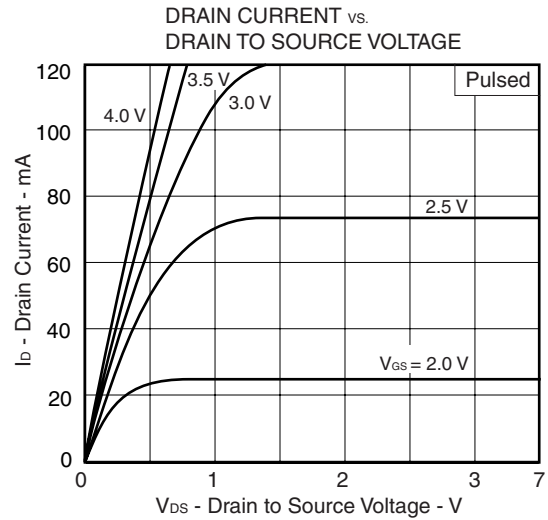
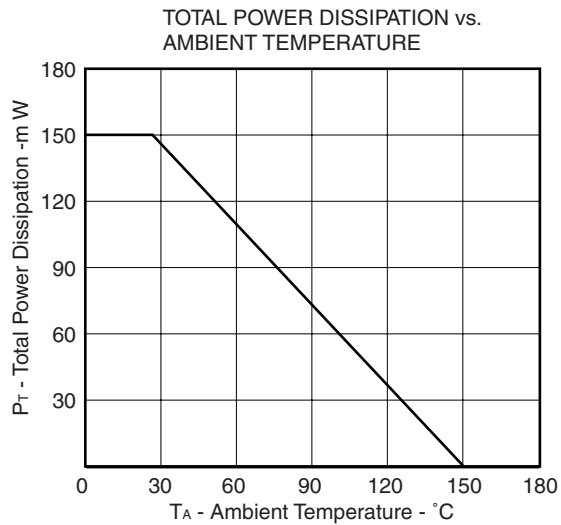
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16 V, V _{GS} = 0 V			1.0	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±3.0 V, V _{DS} = 0 V			±5.0	μA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 3.0 V, I _D = 10 μA	0.8	1.1	1.6	V
Forward Transfer Admittance Note	y _{fs}	V _{DS} = 3.0 V, I _D = 10 mA	20	44		mS
Drain to Source On-state Resistance Note	R _{DS(on)1}	V _{GS} = 2.5 V, I _D = 1.0 mA		9.0	15	Ω
	R _{DS(on)2}	V _{GS} = 4.0 V, I _D = 1.0 mA		6.0	10	Ω
Input Capacitance	C _{iss}	V _{DS} = 3.0 V		18		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		22		pF
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz		4.0		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = 3.0 V, I _D = 10 mA		27		ns
Rise Time	t _r	V _{GS} = 3.0 V		75		ns
Turn-off Delay Time	t _{d(off)}	R _G = 10 Ω		78		ns
Fall Time	t _f			80		ns

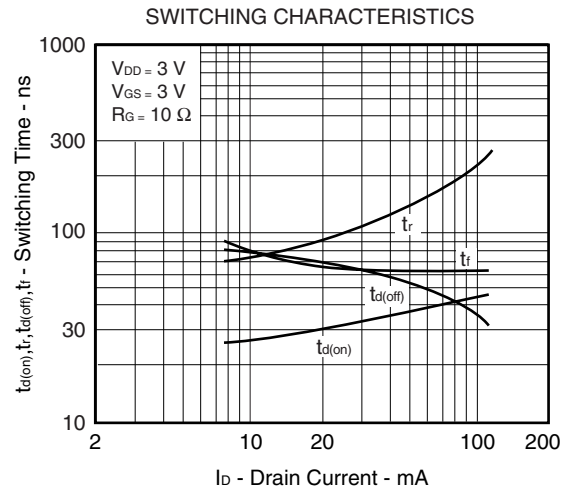
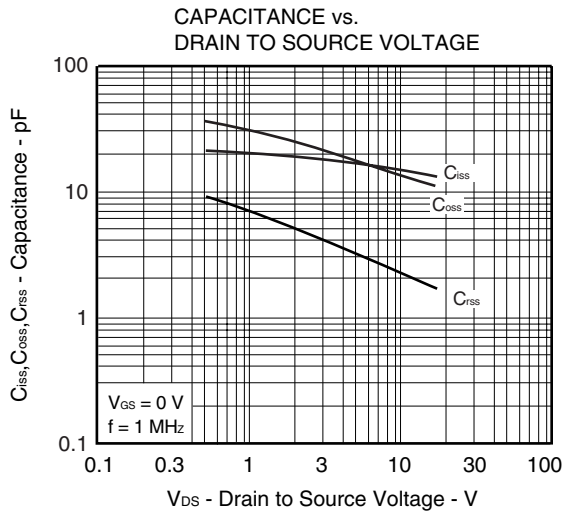
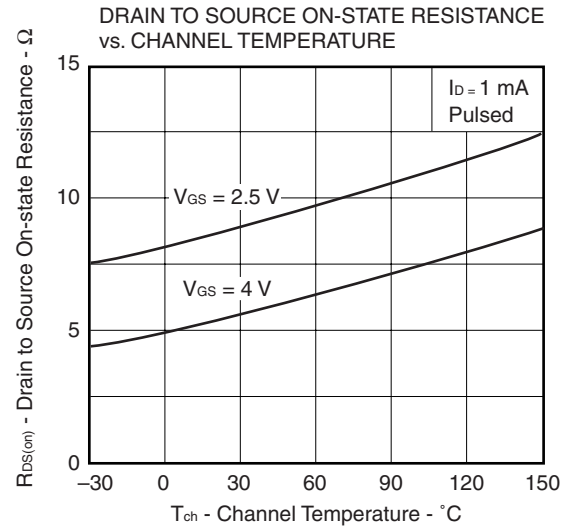
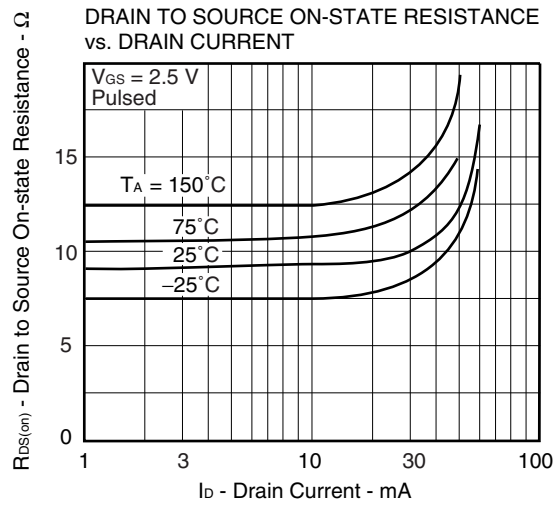
Note Pulsed

TEST CIRCUIT SWITCHING TIME



★ TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)





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