

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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N-CHANNEL MOSFET  
FOR HIGH-SPEED SWITCHING

DESCRIPTION

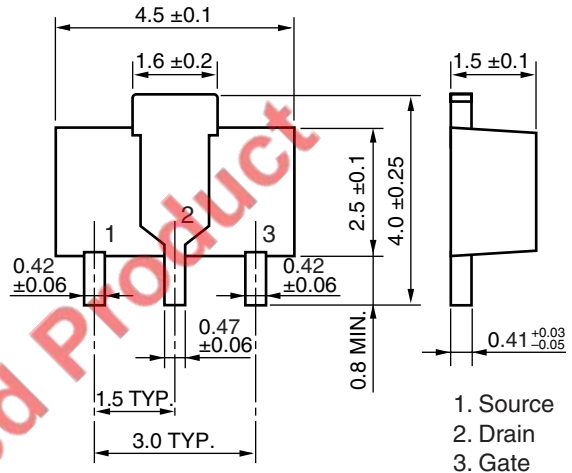
The 2SK2110 is a N-channel MOSFET of a vertical type and is a switching element that can be directly driven by the output of an IC operating at 5 V.

This product has a low on-state resistance and superb switching characteristics and is ideal for driving the actuators, such as motors and DC/DC converters.

FEATURES

- Low on-state resistance  
 $R_{DS(on)} = 1.5 \Omega$  MAX. ( $V_{GS} = 4.0$  V,  $I_D = 0.3$  A)
- High switching speed  
 $t_{on} + t_{off} < 100$  ns
- Low parasitic capacitance

PACKAGE DRAWING (Unit: mm)



<R> ORDERING INFORMATION

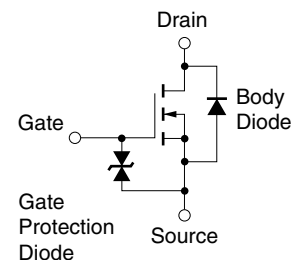
PART NUMBER	PACKAGE
2SK2110	SC-62 (Power Mini Mold)

Marking: NT

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

Drain to Source Voltage ( $V_{GS} = 0$ V)	$V_{DSS}$	100	V
Gate to Source Voltage ( $V_{DS} = 0$ V)	$V_{GSS}$	±20	V
Drain Current (DC)	$I_{D(DC)}$	±0.5	A
Drain Current (pulse) <sup>Note1</sup>	$I_{D(pulse)}$	±1.0	A
Total Power Dissipation <sup>Note2</sup>	$P_T$	2.0	W
Channel Temperature	$T_{ch}$	150	°C
Storage Temperature	$T_{stg}$	-55 to +150	°C

EQUIVALENT CIRCUIT



Notes 1.  $PW \leq 10$  ms, Duty Cycle  $\leq 50\%$

2. Mounted on ceramic substrate of  $16 \text{ cm}^2 \times 0.7$  mm

<R> **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.

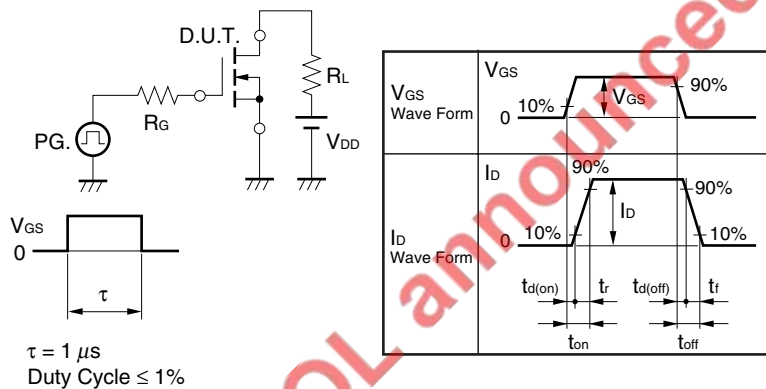
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<R> ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

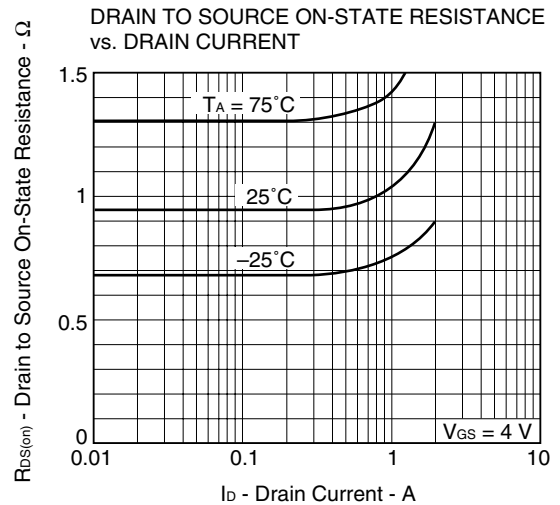
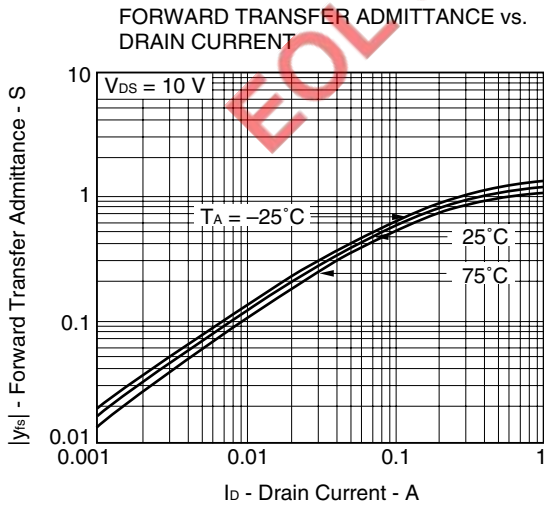
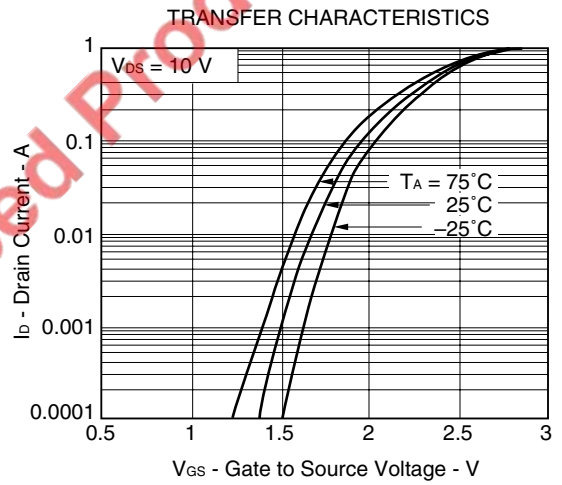
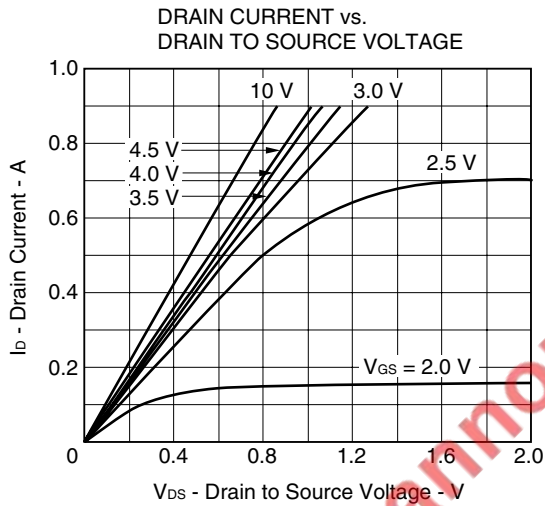
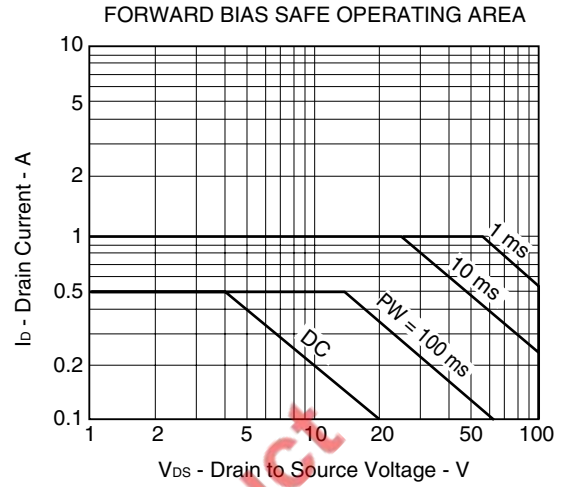
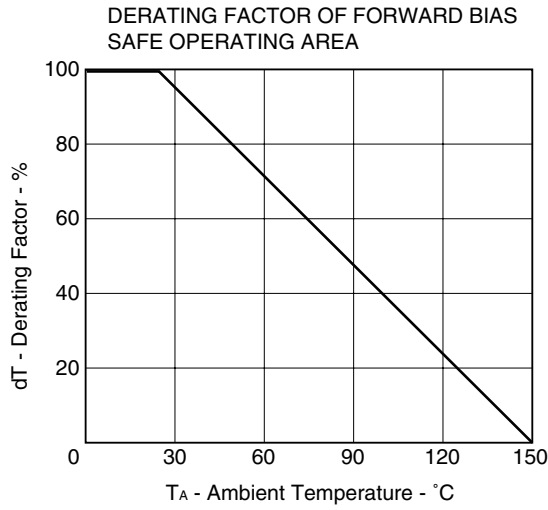
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 100 V, V <sub>GS</sub> = 0 V			10	μA
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0 V			±10	μA
Gate Cut-off Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 1 mA	0.8	1.5	2.0	V
Forward Transfer Admittance <b>Note</b>	y <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 0.3 A	0.4			S
Drain to Source On-state Resistance <b>Note</b>	R <sub>DS(on)1</sub>	V <sub>GS</sub> = 4.0 V, I <sub>D</sub> = 0.3 A		0.95	1.5	Ω
	R <sub>DS(on)2</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.3 A		0.82	1.2	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 10 V		100		pF
Output Capacitance	C <sub>oss</sub>	V <sub>GS</sub> = 0 V		38		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f = 1.0 MHz		10		pF
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 25 V, I <sub>D</sub> = 0.3 A		2.0		ns
Rise Time	t <sub>r</sub>	V <sub>GS</sub> = 10 V		1.3		ns
Turn-off Delay Time	t <sub>d(off)</sub>	R <sub>G</sub> = 10 Ω		38		ns
Fall Time	t <sub>f</sub>			13		ns

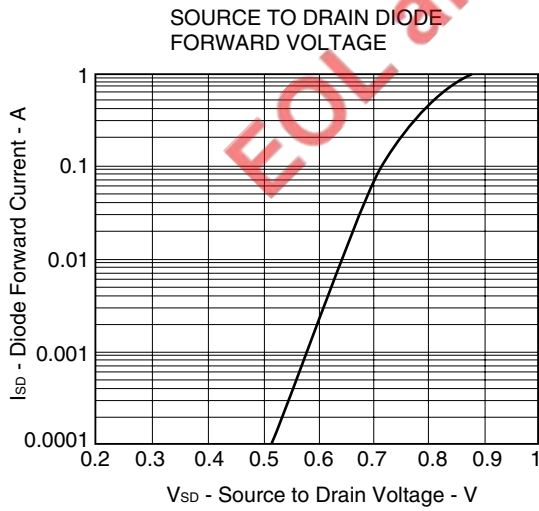
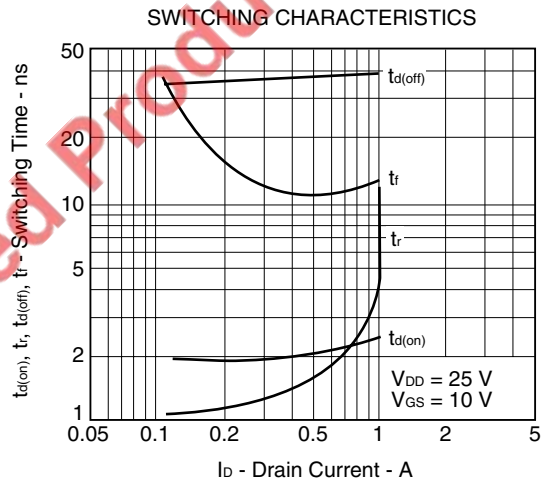
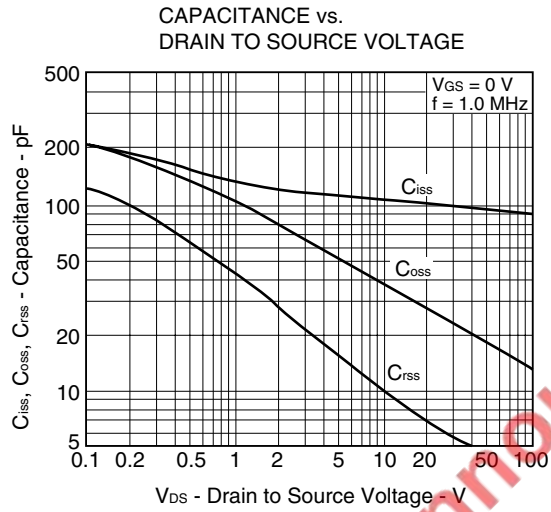
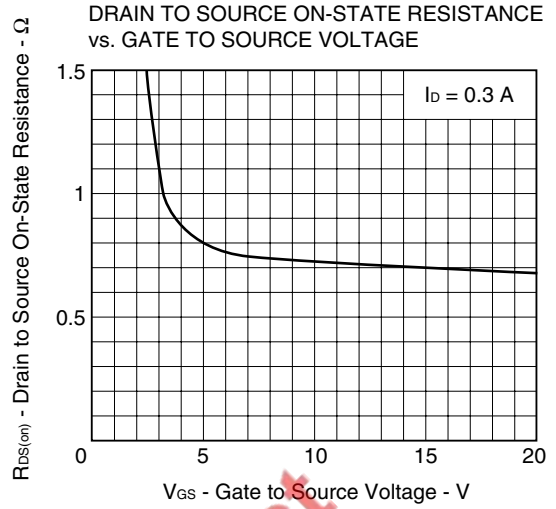
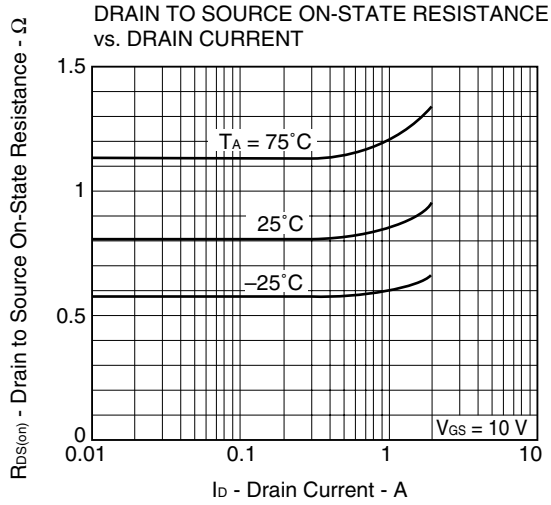
**Note** Pulsed

<R> TEST CIRCUIT SWITCHING TIME



TYPICAL CHARACTERISTICS (TA = 25°C)





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