To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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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RENESAS

JUNCTION FIELD EFFECT TRANSISTOR
2SK4028

N-CHANNEL SILICON JUNCTION FIELD EFFECT TRANSISTOR FOR IMPEDANCE CONVERTER OF ECM

DESCRIPTION

The 2SK4028 is suitable for converter of ECM.

FEATURES

- High gain

  –1.0 dB (V_{DD} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ)

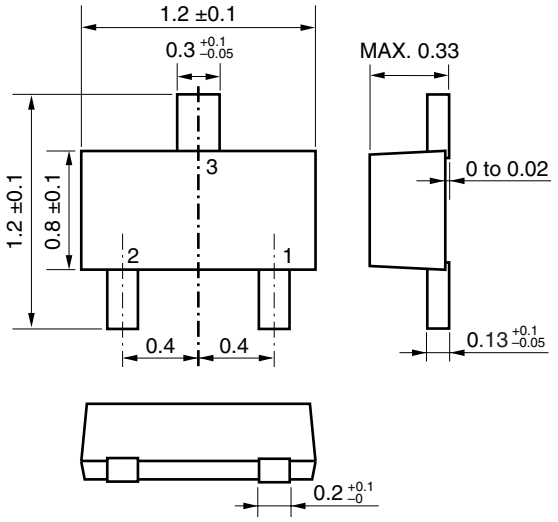
- Low noise

  –115 dB (V_{DD} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ)

- Ultra thin thickness package

  t = 0.3 mm TYP.

PACKAGE DRAWING (Unit: mm)



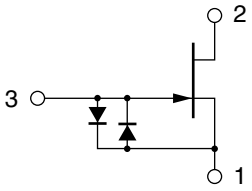
ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK4028	3pXSOF03 (0812)

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = –1.0 V)	V_{DSX}	20	V
Gate to Drain Voltage	V_{GDO}	–20	V
Drain Current	I_D	10	mA
Gate Current	I_G	10	mA
Total Power Dissipation	P_T	100	mW
Junction Temperature	T_j	125	°C
Storage Temperature	T_{stg}	–55 to +125	°C

EQUIVALENT CIRCUIT



1: Source
2: Drain
3: Gate

Caution Please take care of ESD (Electro Static Discharge) when you handle the device in this document.

Document No. D17529EJ1V0DS00 (1st edition)
Date Published April 2005 NS CP(K)
Printed in Japan

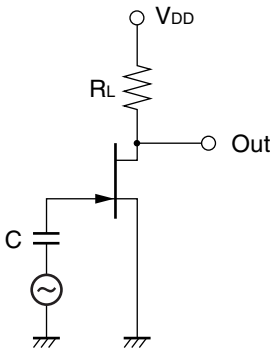
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Cut-off Current	I_{DSS}	V_{DS} = 2.0 V, V_{GS} = 0 V	90	250	430	μA
Gate Cut-off Voltage	$V_{GS(off)}$	V_{DS} = 2.0 V, I_D = 1.0 μA		−0.37	−1.0	V
Forward Transfer Admittance	$\lvert y_{fs1} \rvert$	V_{DS} = 2.0 V, I_D = 30 μA, f = 1.0 kHz	320	470		μS
	$\lvert y_{fs2} \rvert$	V_{DS} = 2.0 V, V_{GS} = 0 V, f = 1.0 kHz	800	1600		μS
Input Capacitance	C_{iss}	V_{DS} = 2.0 V, V_{GS} = 0 V, f = 1.0 MHz		4.0		pF
Voltage Gain	G_V	V_{DD} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ, V_{IN} = 10 mV, f = 1 kHz		−1.0		dB
Noise Voltage	NV	V_{DD} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ, A-curve		−115		dB

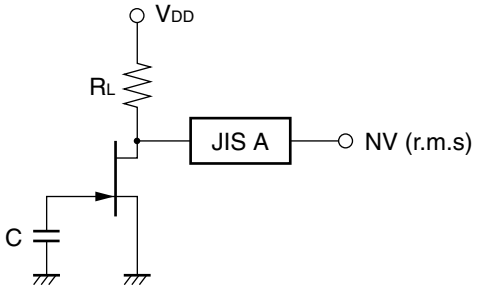
I_{DSS} CLASSIFICATION

MARKING	DE	DF	DH	DJ
I_{DSS} (μA)	90 to 180	150 to 240	210 to 350	320 to 430

GAIN TEST CIRCUIT

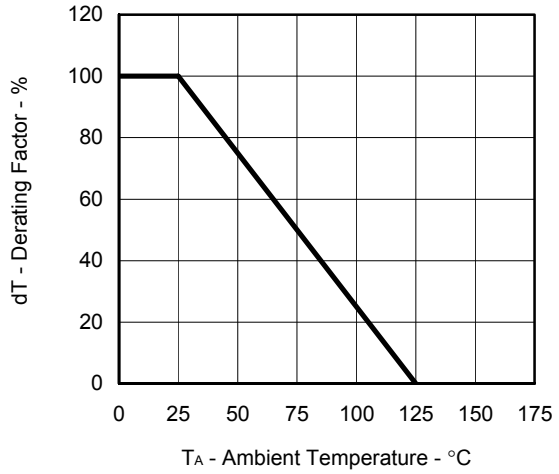


NOISE VOLTAGE TEST CIRCUIT

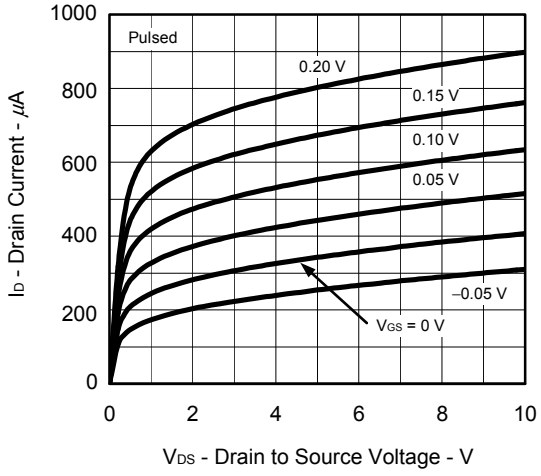


TYPICAL CHARACTERISTICS (T_A = 25°C)

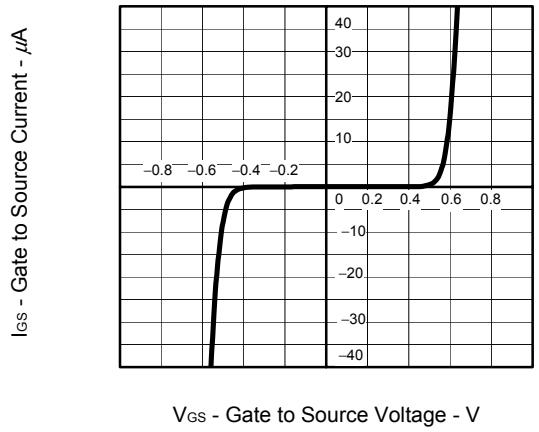
DERATING FACTOR OF POWER DISSIPATION



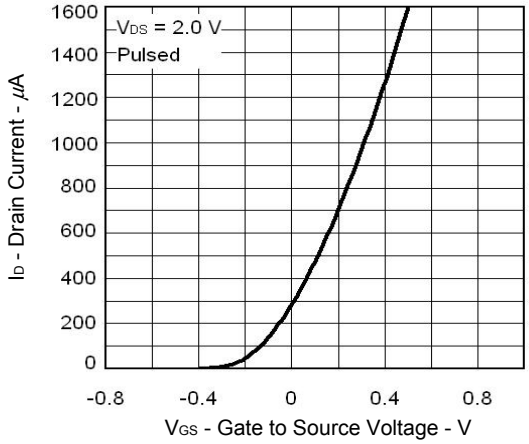
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



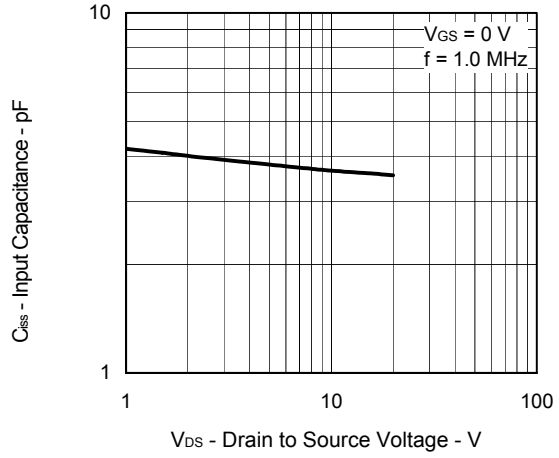
GATE TO SOURCE CURRENT vs.
GATE TO SOURCE VOLTAGE



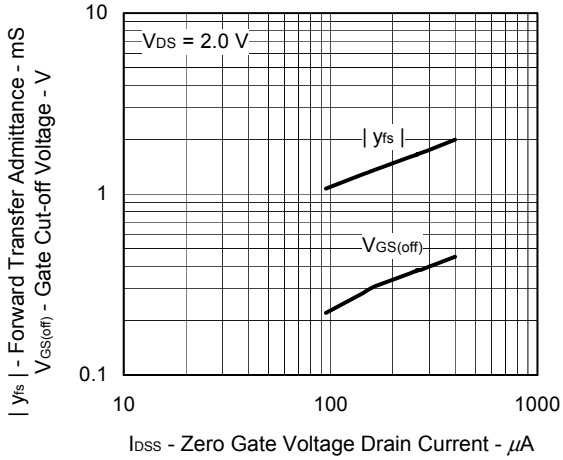
DRAIN CURRENT vs.
GATE TO SOURCE VOLTAGE



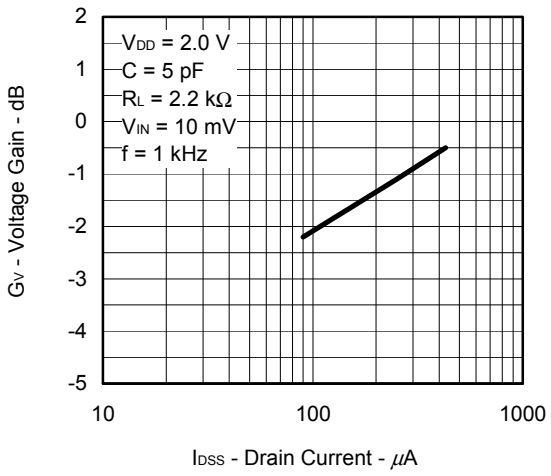
INPUT CAPACITANCE vs.
DRAIN TO SOURCE VOLTAGE



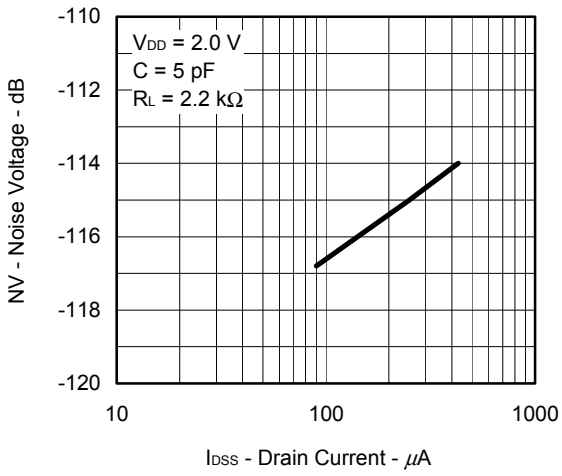
FORWARD TRANSFER ADMITTANCE AND GATE CUT-OFF VOLTAGE vs. ZERO GATE VOLTAGE DRAIN CURRENT



VOLTAGE GAIN vs. DRAIN CURRENT



NOISE VOLTAGE vs. DRAIN CURRENT



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