

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>)

Send any inquiries to <http://www.renesas.com/inquiry>.

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Phase-out/Discontinued

**RF AMPLIFIER FOR FM TUNER AND VHF TV TUNER
N-CHANNEL Si DUAL GATE MOS FIELD-EFFECT TRANSISTOR
4 PINS MINI MOLD**

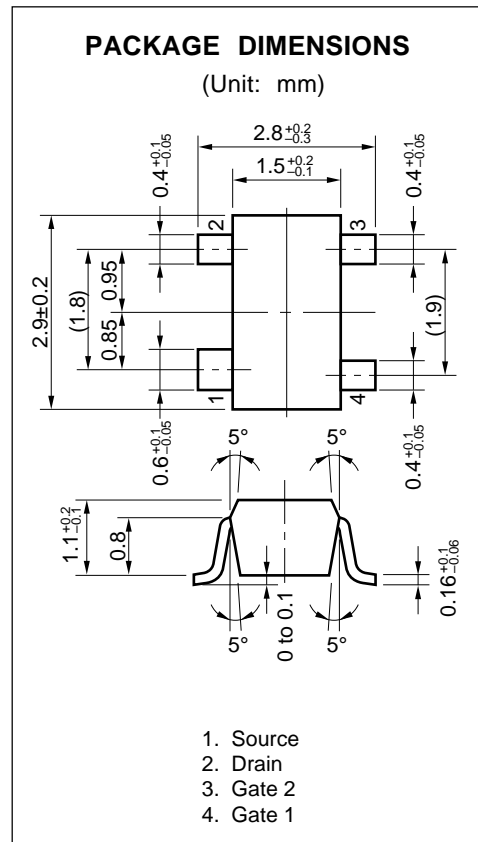
FEATURES

- The Characteristic of Cross-Modulation is good.
CM = 92 dB μ TYP. @ f = 200 MHz, GR = -30 dB
- Low Noise Figure: NF1 = 1.2 dB TYP. (f = 200 MHz)
NF2 = 1.0 dB TYP. (f = 55 MHz)
- High Power Gain: GPS = 23 dB TYP. (f = 200 MHz)
- Enhancement Type.
- Suitable for use as RF amplifier in FM tuner and VHF TV tuner.
- Automatically Mounting: Embossed Type Taping
- Small Package: 4 Pins Mini Mold

ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

Drain to Source Voltage	V _{DSX}	18	V
Gate1 to Source Voltage	V _{G1S}	±8 (±10)*1	V
Gate2 to Source Voltage	V _{G2S}	±8 (±10)*1	V
Gate1 to Drain Voltage	V _{G1D}	18	V
Gate2 to Drain Voltage	V _{G2D}	18	V
Drain Current	I _D	25	mA
Total Power Dissipation	P _D	200	mW
Channel Temperature	T _{ch}	125	°C
Storage Temperature	T _{stg}	-55 to +125	°C

*1 RL ≥ 10 kΩ



PRECAUTION

Avoid high static voltages or electric fields so that this device would not suffer from any damage due to those voltage or fields.

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV _{DSX}	18			V	V _{G1S} = V _{G2S} = -2 V, I _D = 10 μA
Drain Current	I _{DSX}	0.01		8.0	mA	V _{DS} = 6 V, V _{G2S} = 3 V, V _{G1S} = 0.75 V
Gate1 to Source Cutoff Voltage	V _{G1S(off)}	0		+1.0	V	V _{DS} = 6 V, V _{G2S} = 3 V, I _D = 10 μA
Gate2 to Source Cutoff Voltage	V _{G2S(off)}	0		+1.0	V	V _{DS} = 6 V, V _{G2S} = 3 V, I _D = 10 μA
Gate1 Reverse Current	I _{G1SS}			±20	nA	V _{DS} = 0, V _{G2S} = 0, V _{G1S} = ±8 V
Gate2 Reverse Current	I _{G2SS}			±20	nA	V _{DS} = 0, V _{G1S} = 0, V _{G2S} = ±8 V
Forward Transfer Admittance	y _{fs}	15	19.5		mS	V _{DS} = 5 V, V _{G2S} = 4 V, I _D = 10 mA f = 1 kHz
Input Capacitance	C _{iss}	3.6	4.3	5.0	pF	V _{DS} = 6 V, V _{G2S} = 3 V, I _D = 10 mA f = 1 MHz
Output Capacitance	C _{DSS}	1.0	1.5	2.0	pF	
Reverse Transfer Capacitance	C _{rss}		0.02	0.03	pF	
Power Gain	G _{PS}	21.0	23.0		dB	V _{DS} = 6 V, V _{G2S} = 4 V, I _D = 10 mA f = 200 MHz
Noise Figure 1	NF1		1.2	2.0	dB	V _{DS} = 6 V, V _{G2S} = 4 V, I _D = 10 mA f = 55 MHz
Noise Figure 2	NF2		1.0	2.0	dB	

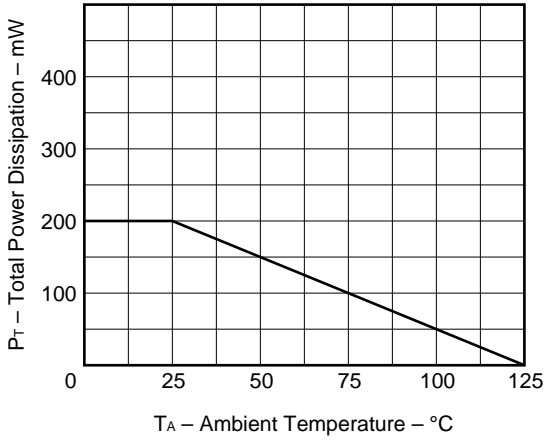
I_{DSX} Classification

Class	V21/VBA*	V22/VBB*
Marking	V21	V22
I _{DSX} (mA)	0.01 to 3.0	1.0 to 8.0

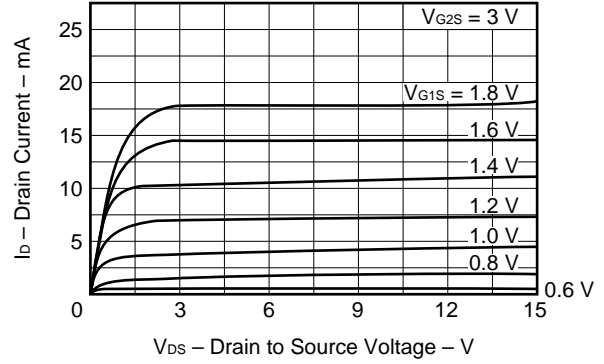
* Old specification/New specification

TYPICAL CHARACTERISTICS (TA = 25 °C)

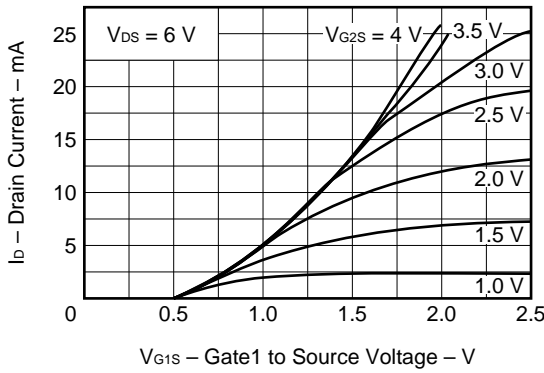
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



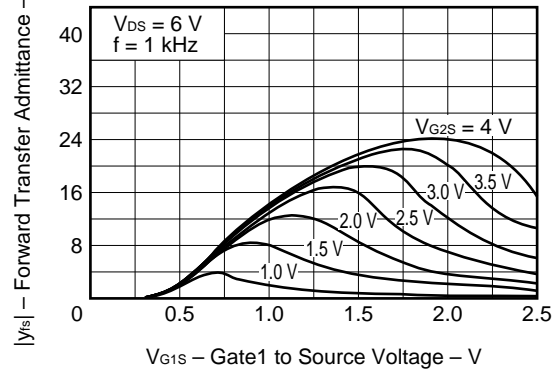
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



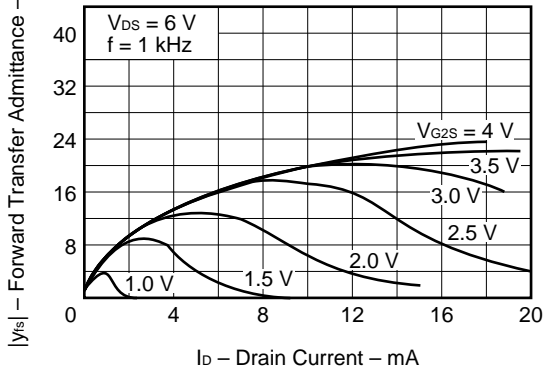
DRAIN CURRENT vs. GATE1 TO SOURCE VOLTAGE



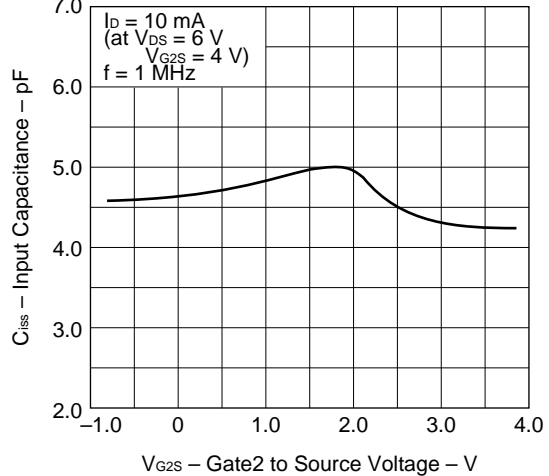
FORWARD TRANSFER ADMITTANCE vs. GATE1 TO SOURCE VOLTAGE



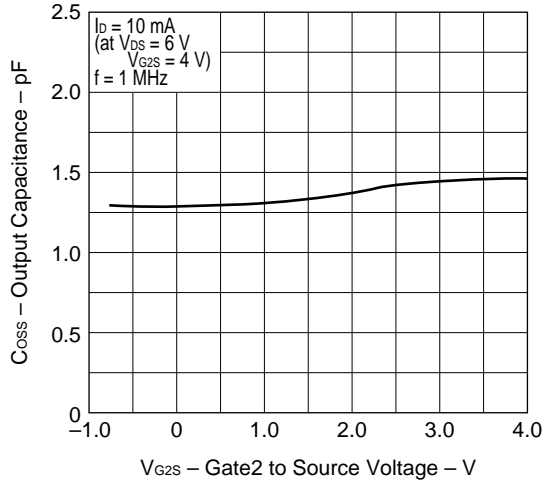
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



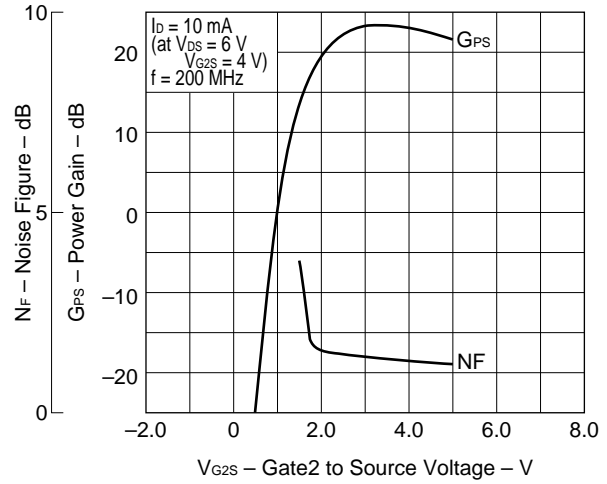
INPUT CAPACITANCE vs. GATE2 TO SOURCE VOLTAGE



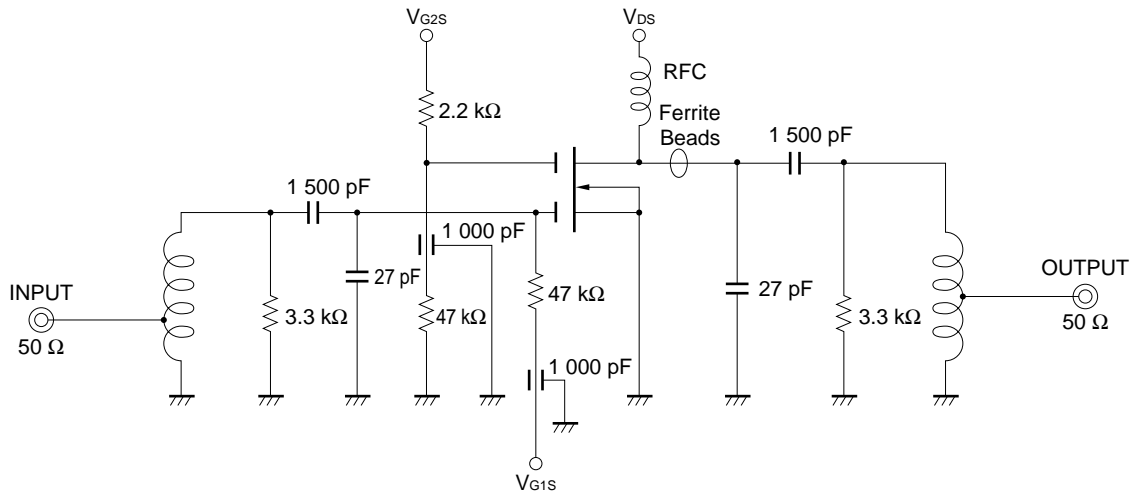
OUTPUT CAPACITANCE vs.
GATE2 TO SOURCE VOLTAGE



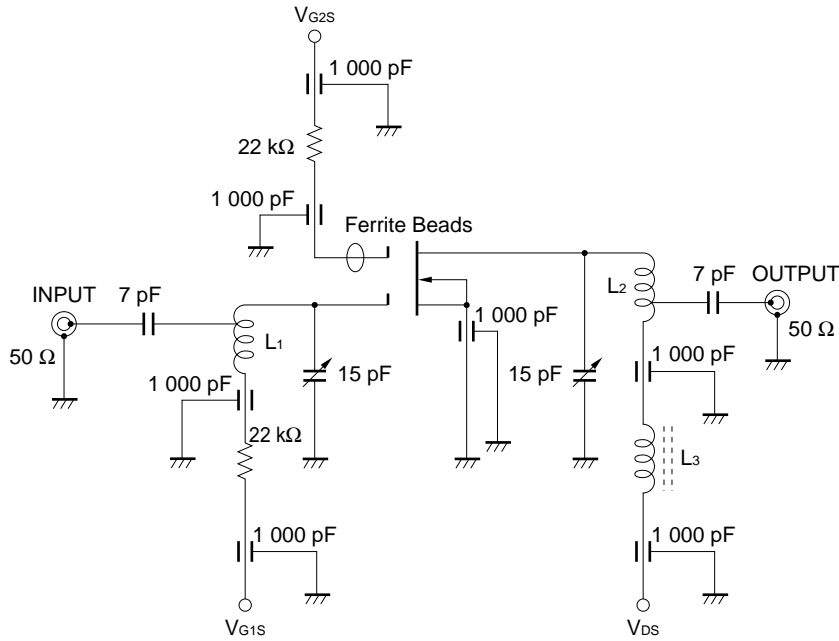
POWER GAIN AND NOISE FIGURE vs.
GATE2 TO SOURCE VOLTAGE



NF TEST CIRCUIT AT f = 55 MHz



GPS AND NF TEST CIRCUIT AT f = 200 MHz



- L1: ϕ 0.6 mm U.E.W ϕ 7 mm 3 T
- L2: ϕ 0.6 mm U.E.W ϕ 7 mm 3 T
- L3: RFC 2.2 μ H

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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: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.