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

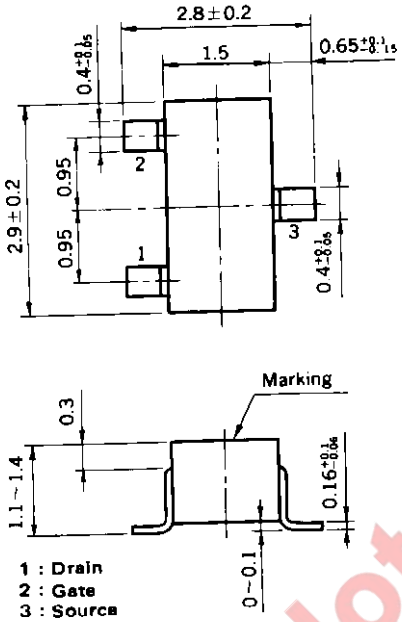
ELECTRON DEVICE

JUNCTION FIELD EFFECT TRANSISTOR

2SK238

FM TUNER
N-CHANNEL SILICON JUNCTION FIELD EFFECT TRANSISTOR
MINI MOLD

PACKAGE DIMENSIONS
in millimeters



1 : Drain
2 : Gate
3 : Source

FEATURES

- Low Feedback Capacitance C_{rss} = 0.07 pF TYP.
- High $|y_{fs}|$ $|y_{fs}|$ = 3.5 ms TYP.

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents (T_a = 25 °C)

Gate to Drain Voltage	V_{GDO}	−20	V
Drain to Source Voltage (V_{GS} = −2.5 V)	V_{DSX}	20	V
Drain Current (DC)	I_D	10	mA
Gate Current (DC)	I_G	10	mA
Maximum Power Dissipation			
Total Power Dissipation at 25 °C Ambient Temperature	P_T	150	mW
Maximum Temperatures			
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55 to +125	°C

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Gate Cutoff Current	I_{GSS}			−100	nA	V_{GS} = −0.5 V, V_{DS} = 0
Zero-Gate Voltage Drain Current	I_{DSS}	0.5	2.5	8.0	mA	V_{DS} = 5.0 V, V_{GS} = 0
Gate to Source Cutoff Voltage	$V_{GS(off)}$			−2.5	V	V_{DS} = 5.0 V, I_D = 10 μA
Forward Transfer Admittance	$\|y_{fs}\|_1$	2.3	3.5		mS	V_{DS} = 5.0 V, I_D = 0.5 mA, f = 1.0 kHz
Forward Transfer Admittance	$\|y_{fs}\|_2$	2.3			mS	V_{DS} = 5.0 V, V_{GS} = 0, f = 1.0 kHz
Input Capacitance	C_{iss}		5.0	6.5	pF	V_{DS} = 5.0 V, V_{GS} = 0, f = 1.0 MHz
Feedback Capacitance	C_{rss}		0.07	0.25	pF	V_{DS} = 5.0 V, V_{GS} = 0, f = 1.0 MHz
Output Capacitance	C_{oss}		4.5	6.0	pF	V_{DS} = 5.0 V, V_{GS} = 0, f = 1.0 MHz
Power Gain	G_{PS}		21		dB	V_{DS} = 5.0 V, V_{GS} = 0, Z_{in}, Z_{out} = 50 Ω f = 100 MHz See Test Circuits
Noise Figure	NF		3.0		dB	

I_{DSS} Classification

MARK	K14	K15	K16	K17
I_{DSS}(mA)	0.5 to 1.5	1.0 to 3.0	2.0 to 6.0	4.0 to 8.0

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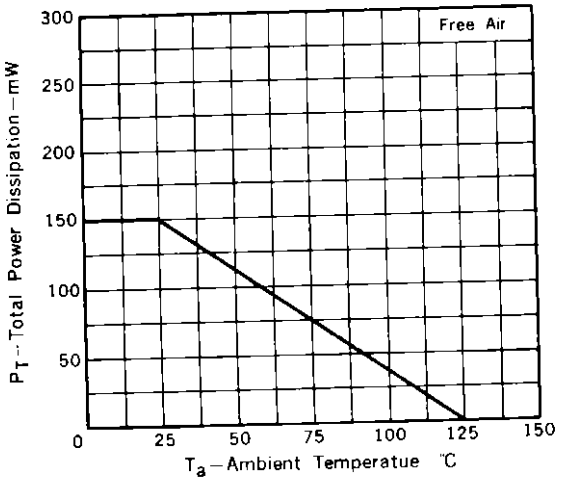
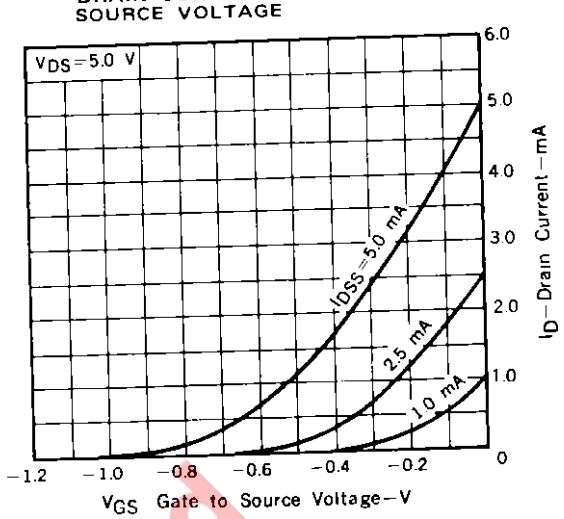
TYPICAL CHARACTERISTICS (T_a = 25 °C)

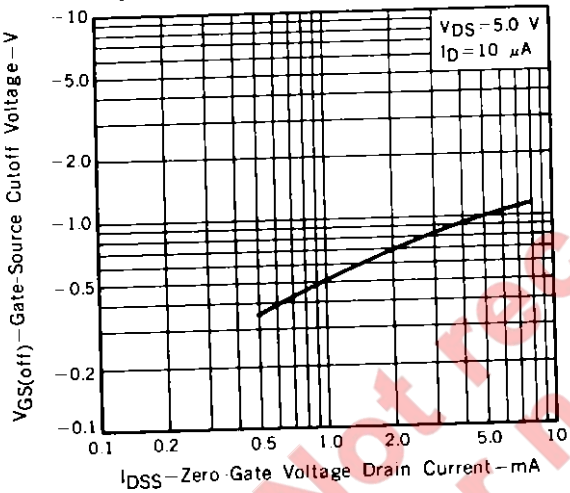
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



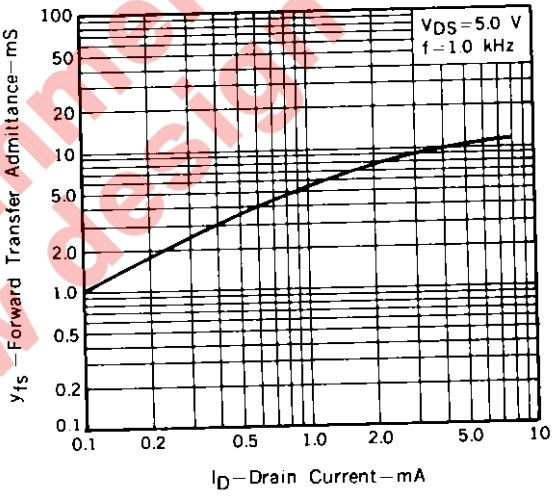
DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE



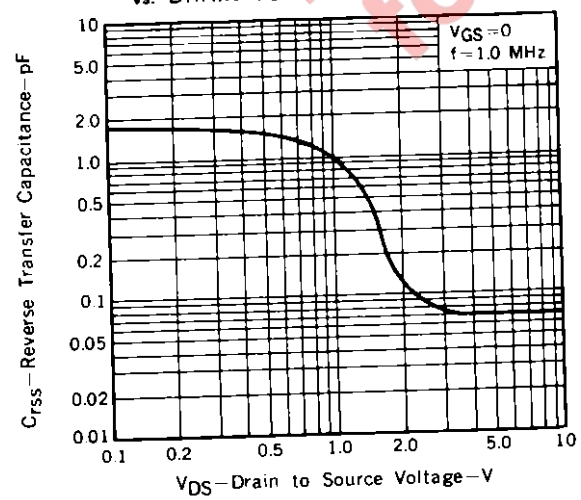
GATE-SOURCE OUTPUT VOLTAGES vs. ZERO-GATE VOLTAGE DRAIN CURRENT CORELATION



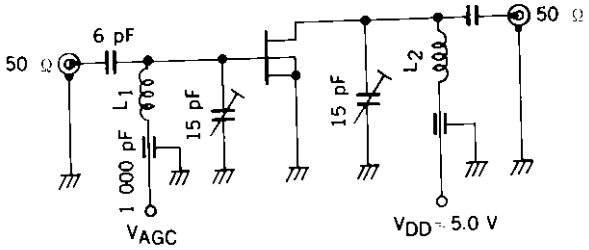
FORWARD TRANSFER ADMITTANCE (y_{fs}) vs. DRAIN CURRENT



REVERSE TRANSFER CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



NOISE FIGURE AND POWER GAIN TEST CIRCUIT (f=100 MHz)



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