

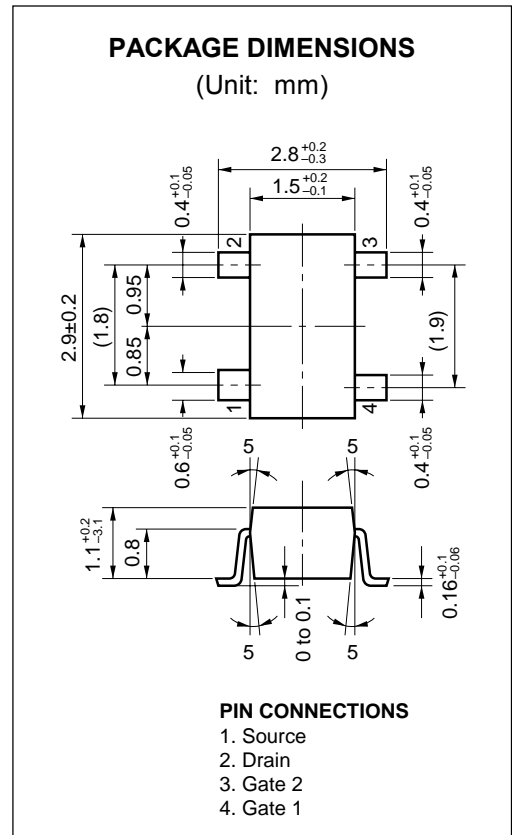
RF AMP. FOR VHF/CATV TUNER  
N-CHANNEL SILICON DUAL-GATE MOS FIELD-EFFECT TRANSISTOR  
4 PINS MINI MOLD

FEATURES

- The Characteristic of Cross-Modulation is good.  
CM = 108 dB $\mu$  (TYP.) @f = 470 MHz, GR = -30 dB
- Low Noise Figure      NF1 = 2.2 dB TYP. (@ = 470 MHz)  
                                    NF2 = 0.9 dB TYP. (@ = 55 MHz)
- High Power Gain      G<sub>PS</sub> = 19.5 dB TYP. (@ = 470 MHz)
- Enhancement Typ.
- Suitable for use as RF amplifier in CATV tuner.
- Automatically Mounting: Embossed Type Taping
- Small Package: 4 Pins Mini Mold Package. (SC-61)

ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C)

Drain to Source Voltage	V <sub>DSX</sub>	18	V
Gate1 to Source Voltage	V <sub>G1S</sub>	±8(±10)* <sup>1</sup>	V
Gate2 to Source Voltage	V <sub>G2S</sub>	±8(±10)* <sup>1</sup>	V
Gate1 to Drain Voltage	V <sub>G1D</sub>	18	V
Gate2 to Drain Voltage	V <sub>G2D</sub>	18	V
Drain Current	I <sub>D</sub>	25	mA
Total Power Dissipation	P <sub>D</sub>	200	mW
Channel Temperature	T <sub>ch</sub>	125	°C
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C
R <sub>L</sub> ≥ 10 k $\Omega$			



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

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

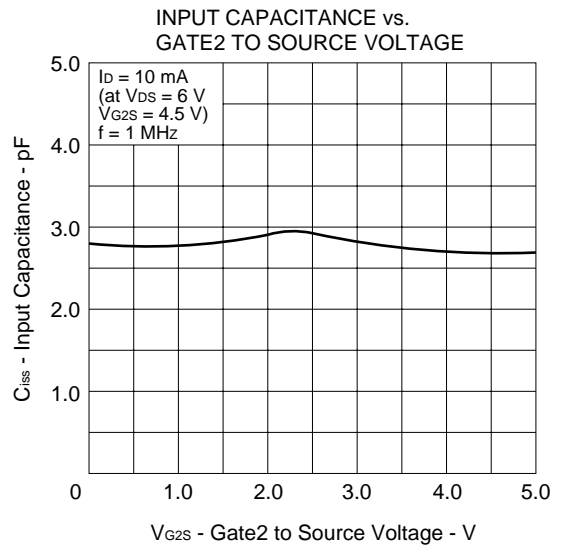
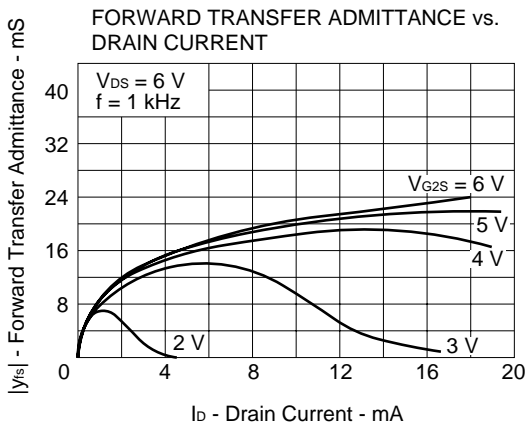
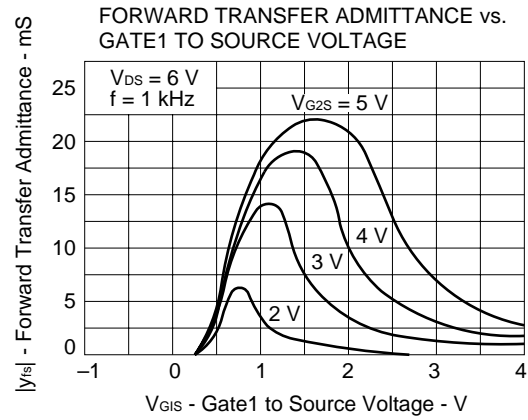
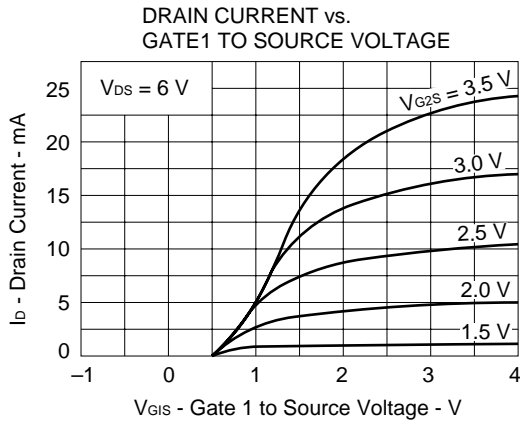
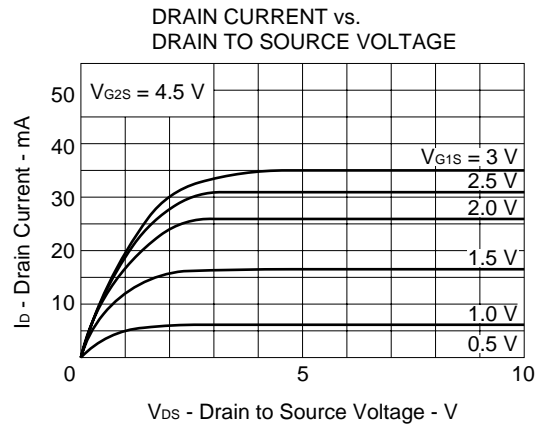
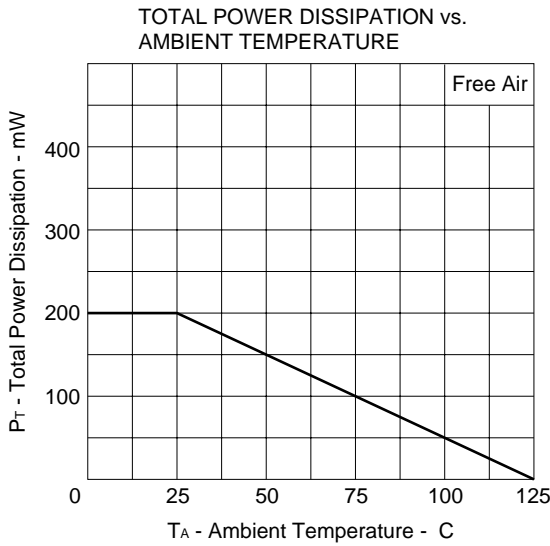
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain to Source Breakdown Voltage	BV <sub>DSX</sub>	18			V	V <sub>G1S</sub> = V <sub>G2S</sub> = -2 V, I <sub>D</sub> = 10 μA
Drain Current	I <sub>DSX</sub>	0.01		8.0	mA	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, V <sub>G1S</sub> = 0.75 V
Gate1 to Source Cutoff Voltage	V <sub>G1S(off)</sub>	0		+1.0	V	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 3 V, I <sub>D</sub> = 10 μA
Gate2 to Source Cutoff Voltage	V <sub>G2S(off)</sub>	+0.6	+1.1	+1.6	V	V <sub>DS</sub> = 6 V, V <sub>G1S</sub> = 3 V, I <sub>D</sub> = 10 μA
Gate1 Reverse Current	I <sub>G1SS</sub>			±20	nA	V <sub>DS</sub> = V <sub>G2S</sub> = 0, V <sub>G1S</sub> = ±8 V
Gate2 Reverse Current	I <sub>G2SS</sub>			±20	nA	V <sub>DS</sub> = V <sub>G1S</sub> = 0, V <sub>G2S</sub> = ±8 V
Forward Transfer Admittance	y <sub>fs</sub>	16	20	24	mS	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 10 mA f = 1 kHz
Input Capacitance	C <sub>iss</sub>	2.3	2.8	3.3	pF	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 10 mA f = 1 MHz
Output Capacitance	C <sub>oss</sub>	0.9	1.2	1.5	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>		0.015	0.03	pF	
Power Gain	G <sub>ps</sub>	16.5	19.5	22.5	dB	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 10 mA f = 470 MHz
Noise Figure 1	NF1		2.2	3.2	dB	V <sub>DS</sub> = 6 V, V <sub>G2S</sub> = 4.5 V, I <sub>D</sub> = 10 mA f = 55 MHz
Noise Figure 2	NF2		0.9	2.4	dB	

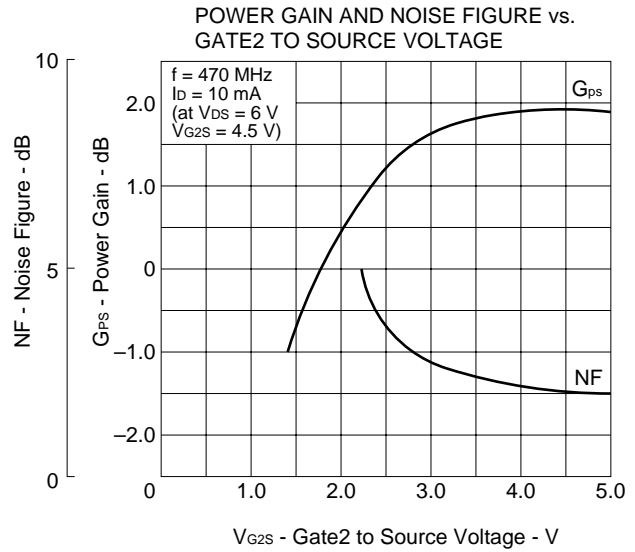
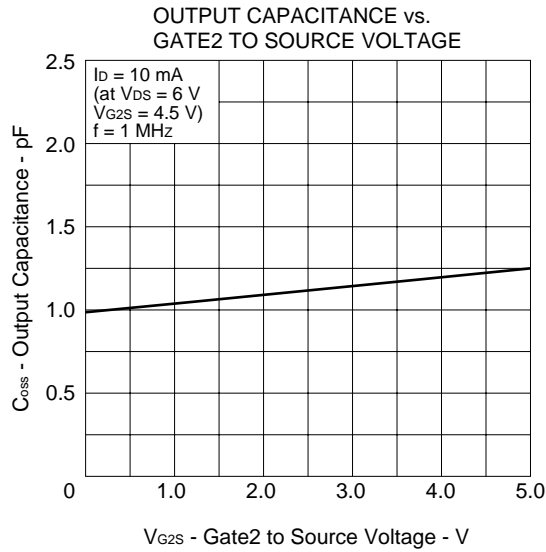
★ I<sub>DSX</sub> Classification

Rank	U1A/UAA *	U1B/UAB *
Marking	U1A	U1B
I <sub>DSX</sub> (mA)	0.01 to 3.0	1.0 to 8.0

\* Old Specification / New Specification

CHARACTERISTIC CURVE ( $T_A = 25^\circ\text{C}$ )



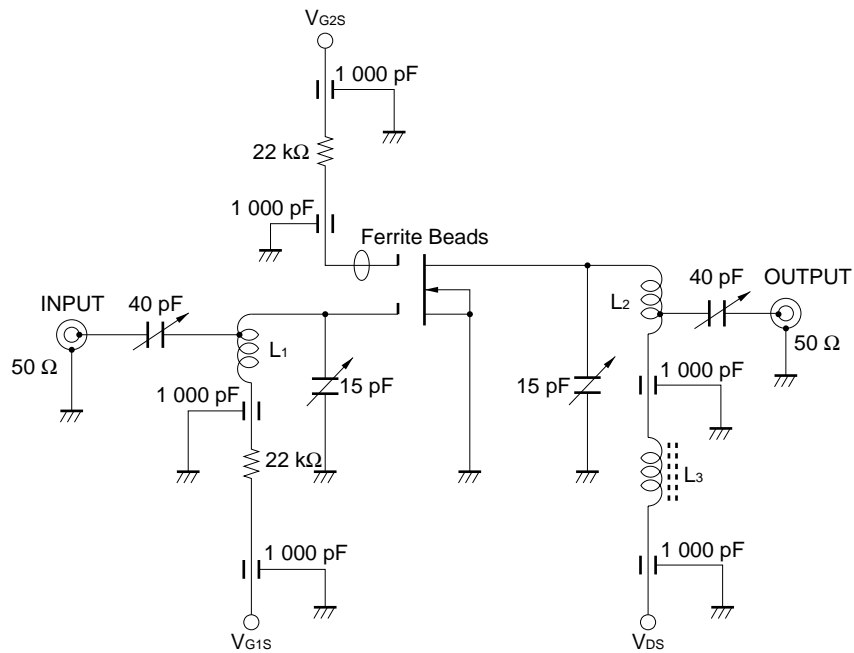


**S-PARAMETER**

$V_{DS} = 6 \text{ V}$ ,  $V_{G2S} = 4.5 \text{ V}$ ,  $I_D = 10 \text{ mA}$ , ( $Z_0 = 50 \Omega$ )

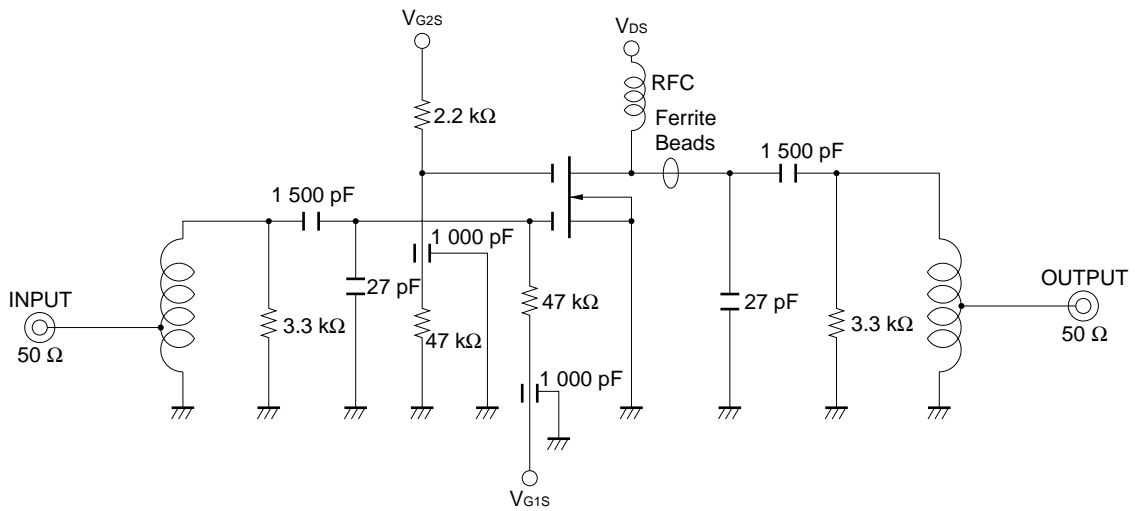
FREQUENC Y MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	1.000	-14.7	2.160	160.5	0.008	12.8	0.942	-8.2
200	0.960	-24.5	1.953	148.3	0.003	81.1	0.947	-9.6
300	0.926	-34.3	1.868	135.8	0.005	-146.8	0.906	-16.4
400	0.876	-45.0	1.760	121.2	0.003	-59.5	0.908	-19.4
500	0.853	-54.4	1.691	109.4	0.003	84.3	0.915	-25.1
600	0.842	-63.1	1.608	97.6	0.004	-87.0	0.889	-29.0

**GPS AND NF TEST CIRCUIT AT f = 470 MHz**



- L1:  $\phi$ 1.2 mm U.E.W  $\phi$ 5 mm IT
- L2:  $\phi$ 1.2 mm U.E.W  $\phi$ 5 mm IT
- L3: REC 2.2  $\mu$ H

**NF TEST CIRCUIT AT f = 55 MHz**



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