

## 3SK238

Silicon N-Channel Dual Gate MOSFET

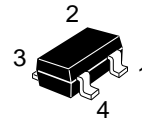
### Application

UHF RF amplifier

### Features

- Excellent cross modulation characteristics
- Capable of low voltage operation

CMPAK-4



1. Source
2. Gate1
3. Gate2
4. Drain

**Table 1 Absolute Maximum Ratings** (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DS}$	12	V
Gate1 to source voltage	$V_{G1S}$	$\pm 10$	V
Gate2 to source voltage	$V_{G2S}$	$\pm 10$	V
Drain current	$I_D$	35	mA
Channel power dissipation	$P_{ch}$	100	mW
Channel temperature	$T_{ch}$	125	°C
Storage temperature	$T_{stg}$	-55 to +125	°C

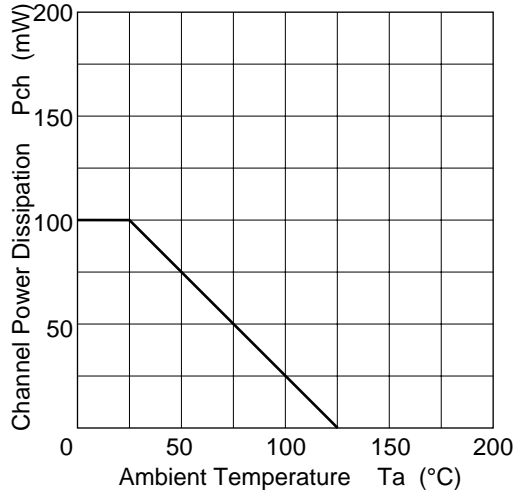
Marking is "XW-".

## 3SK238

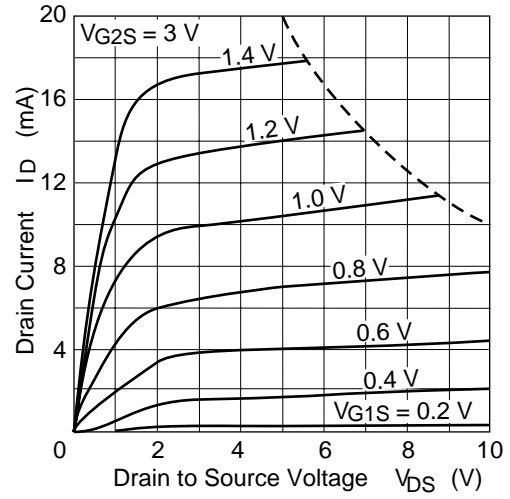
**Table 2 Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSX}$	12	—	—	V	$I_D = 200 \mu A, V_{G1S} = -5 V, V_{G2S} = -5 V$
Gate1 to source breakdown voltage	$V_{(BR)G1SS}$	$\pm 10$	—	—	V	$I_{G1} = \pm 10 \mu A, V_{G2S} = V_{DS} = 0$
Gate2 to source breakdown voltage	$V_{(BR)G2SS}$	$\pm 10$	—	—	V	$I_{G2} = \pm 10 \mu A, V_{G1S} = V_{DS} = 0$
Gate1 leakage current	$I_{G1SS}$	—	—	$\pm 100$	nA	$V_{G1S} = \pm 8 V, V_{G2S} = V_{DS} = 0$
Gate2 leakage current	$I_{G2SS}$	—	—	$\pm 100$	nA	$V_{G2S} = \pm 8 V, V_{G1S} = V_{DS} = 0$
Drain current	$I_{DSS}$	0	—	2	mA	$V_{DS} = 6 V, V_{G1S} = 0, V_{G2S} = 3 V$
Gate1 to source cutoff voltage	$V_{G1S(off)}$	-0.7	—	+0.7	V	$V_{DS} = 10 V, V_{G2S} = 3 V, I_D = 100 \mu A$
Gate2 to source cutoff voltage	$V_{G2S(off)}$	-0.1	—	+0.8	V	$V_{DS} = 10 V, V_{G1S} = 3 V, I_D = 100 \mu A$
Forward transfer admittance	$ y_{fs} $	14	—	—	mS	$V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 1 kHz$
Input capacitance	$C_{iss}$	0.9	1.25	1.8	pF	$V_{DS} = 6 V, V_{G2S} = 3 V, I_D = 10 mA, f = 1 MHz$
Output capacitance	$C_{oss}$	0.4	0.7	1.2	pF	
Reverse transfer capacitance	$C_{rss}$	—	0.015	0.03	pF	
Power gain	PG	16	19.4	—	dB	$V_{DS} = 4 V, V_{G2S} = 3 V, I_D = 10 mA, f = 900 MHz$
Noise figure	NF	—	2.8	4	dB	

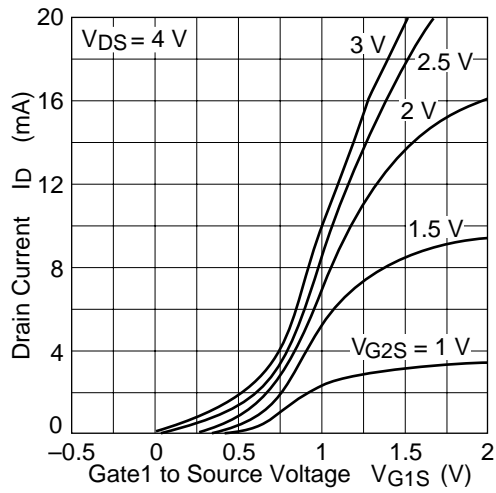
Maximum channel power dissipation curve



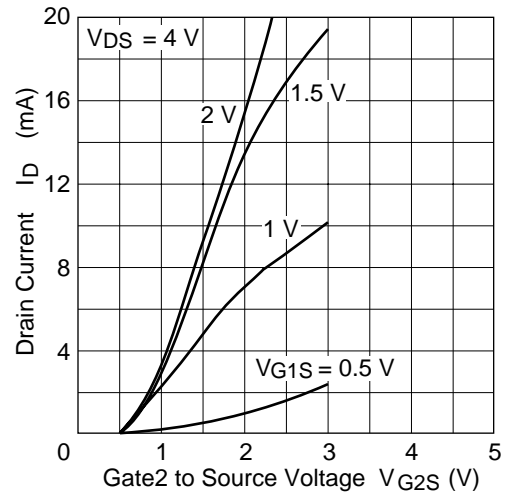
Typical output characteristics



Drain current vs. Gate1 to source voltage

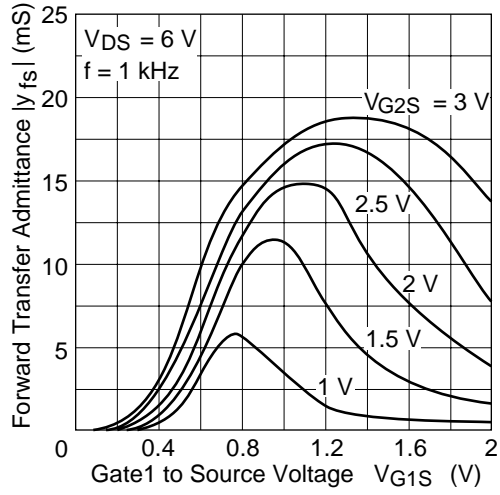


Drain current vs. gate2 to source voltage

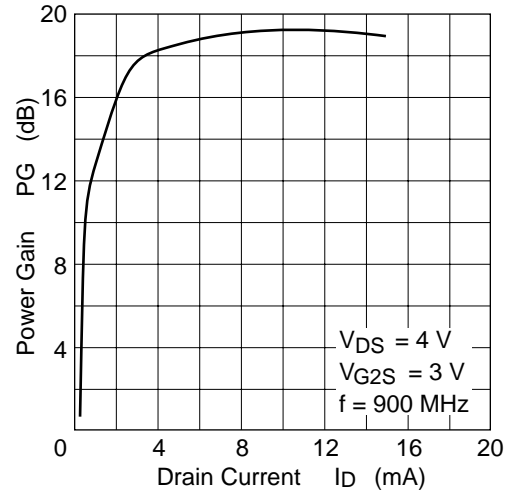


## 3SK238

Forward transfer admittance  
vs. gate1 to source voltage



Power gain vs. drain current



Noise figure vs. drain current

