

3SK238

Silicon N-Channel Dual Gate MOSFET

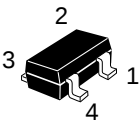
Application

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)

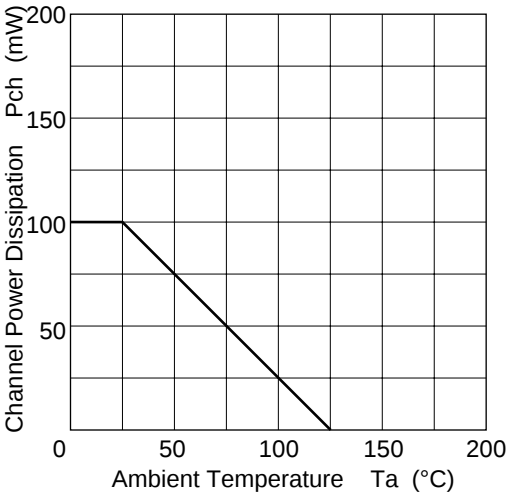
Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DS}	12	V
Gate1 to source voltage	V _{G1S}	±10	V
Gate2 to source voltage	V _{G2S}	±10	V
Drain current	I _D	35	mA
Channel power dissipation	P _{ch}	100	mW
Channel temperature	T _{ch}	125	°C
Storage temperature	T _{stg}	−55 to +125	°C

Marking is “XW−”.

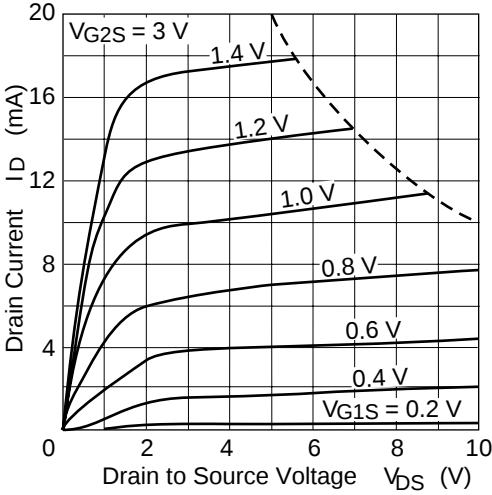
3SK238**Table 2 Electrical Characteristics** (Ta = 25°C)

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	$V_{(BR)G1SS}$	± 10	—	—	V	$I_{G1} = \pm 10\ \mu A$, $V_{G2S} = V_{DS} = 0$
Gate2 to source breakdown voltage	$V_{(BR)G2SS}$	± 10	—	—	V	$I_{G2} = \pm 10\ \mu A$, $V_{G1S} = V_{DS} = 0$
Gate1 leakage current	I_{G1SS}	—	—	± 100	nA	$V_{G1S} = \pm 8\ V$, $V_{G2S} = V_{DS} = 0$
Gate2 leakage current	I_{G2SS}	—	—	± 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	

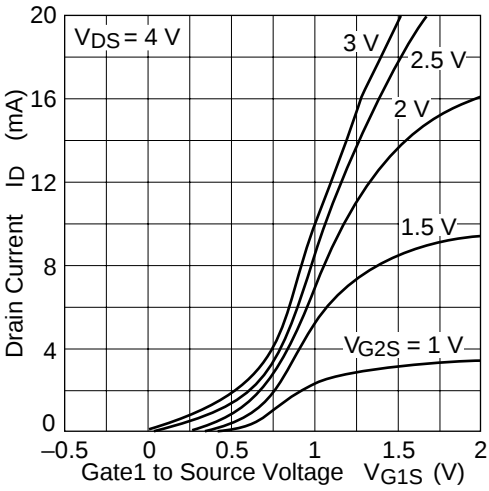
Maximum channel power dissipation curve



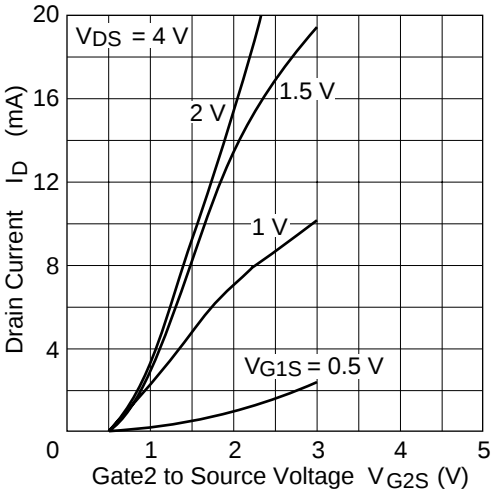
Typical output characteristics



Drain current vs. Gate1 to source voltage

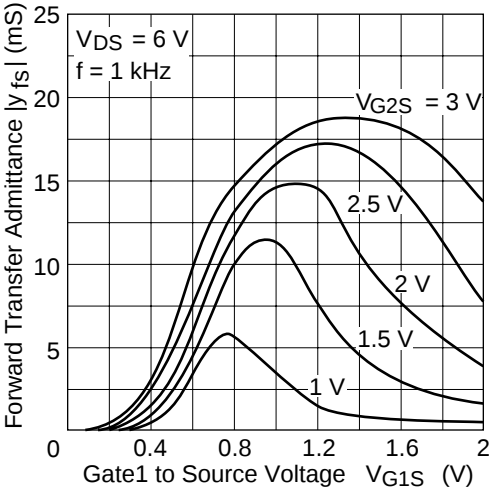


Drain current vs. gate2 to source voltage

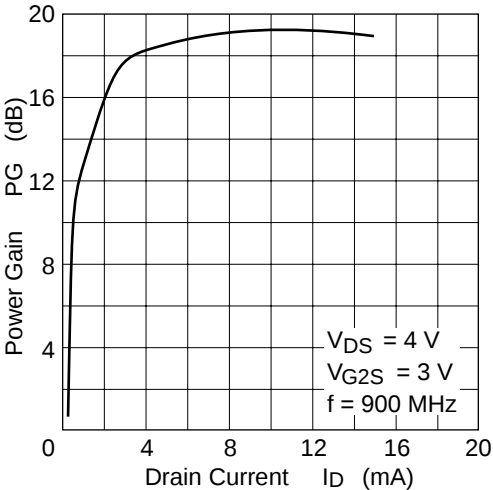


3SK238

Forward transfer admittance
vs. gate1 to source voltage



Power gain vs. drain current



Noise figure vs. drain current

