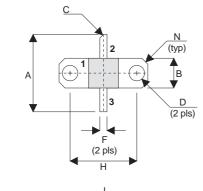
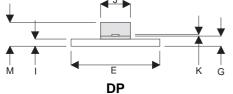


D2201UK

ROHS COMPLIANT METAL GATE RF SILICON FET

MECHANICAL DATA





PIN 2 PIN 1 SOURCE

PIN₃ **GATE**

DIM	mm	Tol.	Inches	Tol.
Α	16.51	0.25	0.650	0.010
В	6.35	0.13	0.250	0.005
С	45°	5°	45°	5°
D	3.30	0.13	0.130	0.005
Е	18.92	0.08	0.745	0.003
F	1.52	0.13	0.060	0.005
G	2.16	0.13	0.085	0.005
Н	14.22	0.08	0.560	0.003
I	1.52	0.13	0.060	0.005
J	6.35	0.13	0.250	0.005
K	0.13	0.03	0.005	0.001
М	5.08	0.51	0.200	0.020
N	1.27 x 45°	0.13	0.050 x 45°	0.005

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 2.5W - 12.5V - 1GHz SINGLE ENDED

FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW C_{rss}
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN 10 dB MINIMUM

APPLICATIONS

 VHF/UHF COMMUNICATIONS from 1 MHz to 1 GHz

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

DRAIN

$\overline{P_D}$	Power Dissipation	17.5W
BV _{DSS}	Drain – Source Breakdown Voltage	40V
BV_{GSS}	Gate – Source Breakdown Voltage	±20V
I _{D(sat)}	Drain Current	2A
T _{stg}	Storage Temperature	−65 to 150°C
Tj	Maximum Operating Junction Temperature	200°C

Semelab PIc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise stated)

Parameter		Test Co	Min.	Тур.	Max.	Unit	
B\/	Drain-Source	V _{GS} = 0	I _D = 10mA	40			V
BV _{DSS}	Breakdown Voltage	VGS - 0	ID = IOIIIV	40			V
I	Zero Gate Voltage	\/ 12.5\/	\/ - 0			1	mA
I _{DSS}	Drain Current	$V_{DS} = 12.5V$	$V_{GS} = 0$			I	IIIA
I _{GSS}	Gate Leakage Current	V _{GS} = 20V	$V_{DS} = 0$			1	μΑ
V _{GS(th)}	Gate Threshold Voltage*	I _D = 10mA	$V_{DS} = V_{GS}$	1		7	V
9 _{fs}	Forward Transconductance*	V _{DS} = 10V	I _D = 0.2A	0.18			S
G _{PS}	Common Source Power Gain	$P_0 = 2.5W$		10			dB
η	Drain Efficiency	V _{DS} = 12.5V	$I_{DQ} = 0.1A$	40			%
VSWR	Load Mismatch Tolerance	f = 1GHz		20:1			_
C _{iss}	Input Capacitance	$V_{DS} = 0$ V_{GS}	_S = -5V f = 1MHz			12	pF
C _{oss}	Output Capacitance	$V_{DS} = 12.5V V_{GS}$	S = 0 $f = 1MHz$			10	pF
C _{rss}	Reverse Transfer Capacitance	$V_{DS} = 12.5V V_{GS}$	S = 0 $f = 1MHz$			1	pF

^{*} Pulse Test: Pulse Duration = 300 μs , Duty Cycle ≤ 2%

HAZARDOUS MATERIAL WARNING

The ceramic portion of the device between leads and metal flange is beryllium oxide. Beryllium oxide dust is highly toxic and care must be taken during handling and mounting to avoid damage to this area.

THESE DEVICES MUST NEVER BE THROWN AWAY WITH GENERAL INDUSTRIAL OR DOMESTIC WASTE.

THERMAL DATA

R _{THj-case}	Thermal Resistance Junction – Case	Max. 10°C / W
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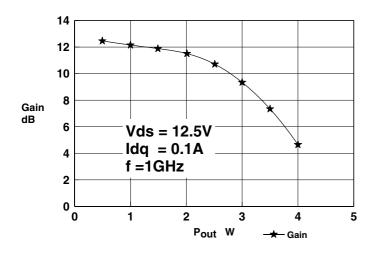
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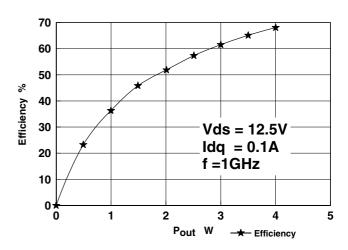
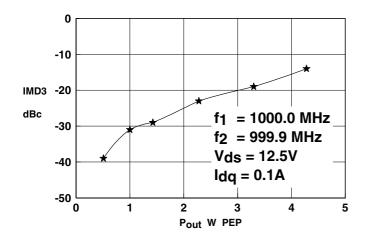


Figure 1- Gain vs. Power Output

Figure 2 - Efficiency vs Power Output



OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency	Z _S	Z_{L}		
MHz	Ω	Ω		
1000MHz	2.8 + j3.0	8.0 – j2.0		

Figure 3 - IMD vs Power Output

Typical S Parameters

 $V_{DS} = 12.5V, I_{DO} = 0.2A$

	20	24
#	MHZ	S MA R 50

Freq	S11		S21		S12		S22	
MHz	mag	ang	mag	ang	mag	ang	mag	ang
50	0.95	-38.2	16.3	160.6	0.015	67.2	0.90	-34.4
100	0.89	-55.9	14.0	139.3	0.026	49.3	0.86	-55.4
150	0.84	-75.2	11.8	122.1	0.032	33.6	0.80	-74.8
200	0.80	-90.6	9.5	107.5	0.034	23.1	0.77	-89.6
250	0.78	-99.5	8.2	97.1	0.035	13.1	0.76	-97.9
300	0.76	-109.8	6.9	92.1	0.035	11.0	0.75	-106.7
350	0.76	-115.0	6.2	80.9	0.035	2.4	0.76	-113.0
400	0.76	-121.6	5.2	74.0	0.031	-2.8	0.76	-119.5
450	0.76	-126.4	4.7	74.9	0.030	0.1	0.77	-123.3
500	0.76	-131.1	4.1	67.7	0.028	-4.6	0.78	-127.5
550	0.77	-135.4	3.8	65.3	0.026	-3.1	0.79	-131.5
600	0.77	-139.6	3.6	60.1	0.024	-4.1	0.79	-135.0
650	0.77	-142.8	3.2	53.9	0.021	-4.9	0.80	-137.9
700	0.74	-148.1	2.6	52.5	0.017	0.4	0.75	-140.6
750	0.76	-148.4	3.0	52.2	0.018	8.5	0.81	-141.2
800	0.77	-153.1	2.8	46.2	0.017	14.5	0.81	-144.1
850	0.77	-155.8	2.6	40.0	0.016	22.0	0.82	-146.2
900	0.77	-159.4	2.4	35.4	0.016	31.0	0.82	-148.5
950	0.77	-163.8	2.3	32.3	0.017	40.7	0.83	-150.7
1000	0.76	-167.7	2.2	29.7	0.017	51.3	0.82	-153.1
1050	0.76	-170.9	2.2	24.6	0.020	58.8	0.83	-155.6

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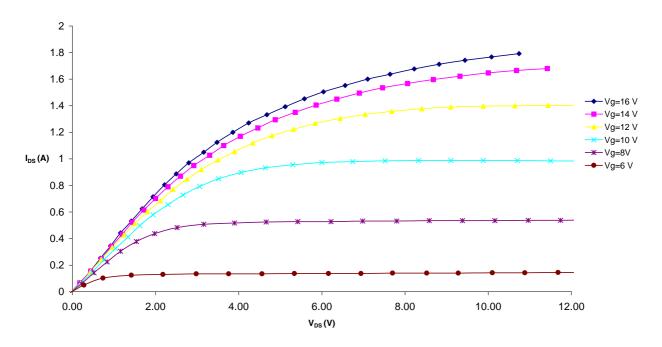


Figure 4 – Typical IV Characteristics.

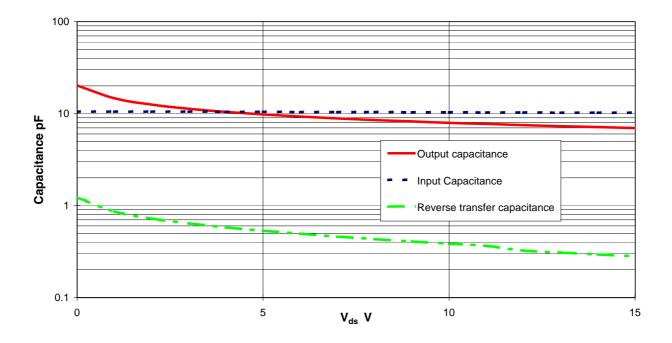


Figure 5 - Typical CV Characteristics.

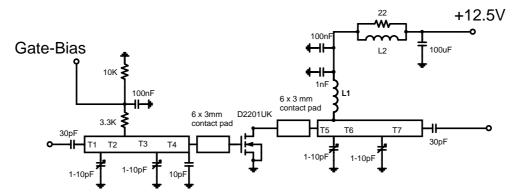
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D2201UK



Substrate 0.8mm PTFE/glass, Er=2.5 All microstrip lines W=2.2mm

T1 3mm

T2 28mm

T3 12mm

T4 9mm

T5 5mm

T6 23 mm

T7 17mm

L1 7.5 turns 24swg enamelled copper wire, 3mm i.d.

L2 1.5 turns 24swg enamelled copper wire on ferrite core

D2201UK 1000MHz Test Fixture

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