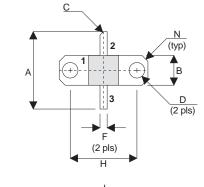
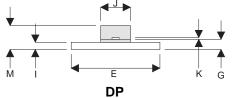


D2202UK

ROHS COMPLIANT METAL GATE RF SILICON FET

MECHANICAL DATA





PIN₂

DRAIN

PIN 1

SOURCE PIN₃ **GATE**

DIM	Millimetres	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	0.05	0.745	0.002
F	1.52	0.13	0.060	0.005
G	2.16	0.13	0.085	0.005
Н	14.22	0.05	0.560	0.002
ı	1.52	0.13	0.060	0.005
J	6.35	0.13	0.250	0.005
K	0.10	0.02	0.004	0.001
М	5.08	0.51	0.200	0.02
N	1.27 x 45°	0.13	0.050 x 45°	0.005

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 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 2 GHz

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

$\overline{P_D}$	Power Dissipation	29W
BV_DSS	Drain – Source Breakdown Voltage	40V
BV_GSS	Gate – Source Breakdown Voltage	±20V
I _{D(sat)}	Drain Current	4A
T _{stg}	Storage Temperature	−65 to 150°C
T _j	Maximum Operating Junction Temperature	200°C

Semelab Plc 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.

E-mail: sales@semelab.co.uk

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

Website: http://www.semelab.co.uk



D2202UK

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

Parameter		Tes	t Conditions	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
	Zero Gate Voltage	\/ 40.5\/	V 0			2	A
IDSS	Drain Current	$V_{DS} = 12.5V$	$V_{GS} = 0$			2	mA
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 = 0.4A	0.36			mhos
G _{PS}	Common Source Power Gain	P _O = 5W		10			dB
η	Drain Efficiency	$V_{DS} = 12.5V$	$I_{DQ} = 0.2A$	40			%
VSWR	Load Mismatch Tolerance	f = 1GHz		20:1			
C _{iss}	Input Capacitance	$V_{DS} = 0V$	$V_{GS} = -5V$ $f = 1MHz$			24	pF
C _{oss}	Output Capacitance	$V_{DS} = 12.5V$	$V_{GS} = 0$ $f = 1MHz$			20	pF
C _{rss}	Reverse Transfer Capacitance	$V_{DS} = 12.5V$	$V_{GS} = 0$ $f = 1MHz$			2	pF

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

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. 6.0°C / W

Semelab Plc 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.

E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.



D2202UK

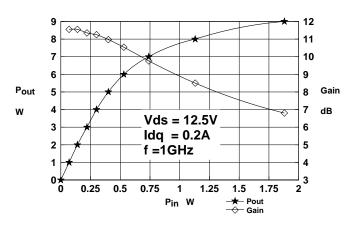


Figure 1 Output Power and Gain vs. Input Power

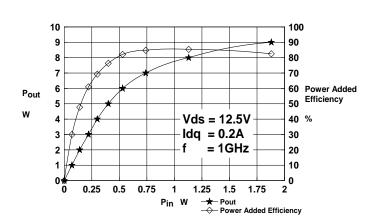


Figure 2 Efficiency vs. Output Power

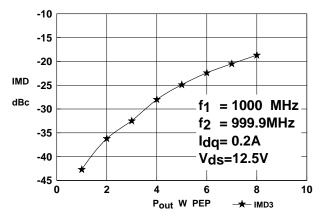


Figure 3 IMD3 vs. Output Power

OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z _S Ω	Z_{L}		
1000	4.0 - j27.0	4.7 - j28.7		

Typical S Parameters

! $V_{DS} = 28V, I_{DQ} = 0.4A$ MHZ S MA R 50

!Freq !MHz	S11 mag	ang	S21 mag	ang	S12 mag	ang	S22 mag	ang
100 200 300 400 500 600 700 800 900 1000	0.79 0.73 0.74 0.77 0.79 0.83 0.85 0.87 0.88	-93.3 -126.4 -140.7 -151.9 -160.0 -168.4 -175.2 177.8 172.9 167.4	16.4 8.8 5.8 4.1 3.2 2.6 2.1 1.5 1.2	116.9 85.7 71.7 59.9 52.1 40.3 29.8 22.6 24.0 19.9	0.032 0.031 0.027 0.022 0.017 0.013 0.012 0.015 0.021 0.030	24.7 2.6 -4.7 -7.4 -2.0 13.6 38.2 61.7 77.9 81.0	0.66 0.67 0.72 0.75 0.79 0.82 0.84 0.85 0.87	-90.5 -123.5 -137.7 -146.7 -153.1 -158.3 -163.9 -170.1 -175.2 -179.7

Semelab Plc 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.

E-mail: sales@semelab.co.uk

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

Website: http://www.semelab.co.uk

Document Number 2686





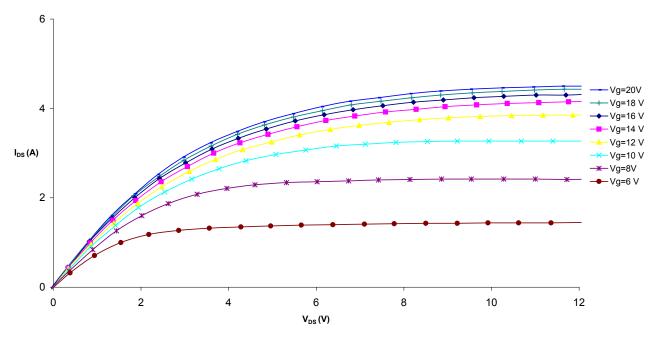


Figure 4 – Typical IV Characteristics.

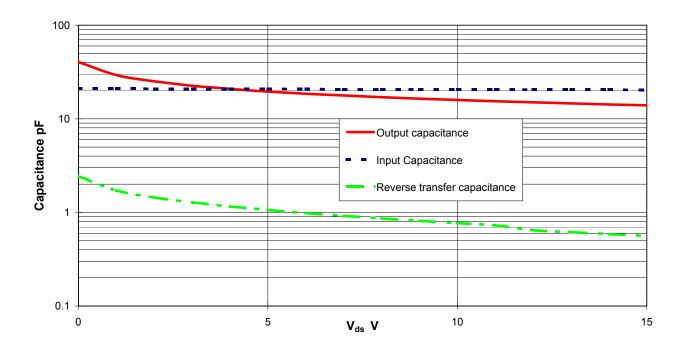


Figure 5 – Typical CV Characteristics.

Semelab Plc 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.

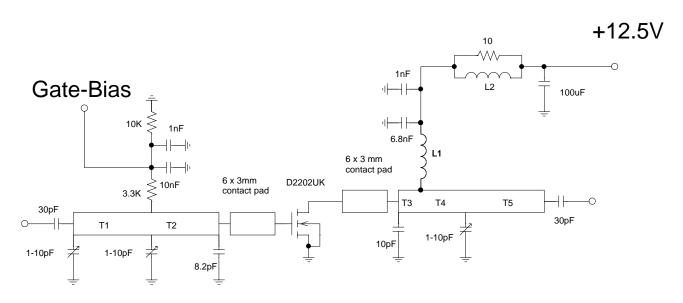
Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612. E-mail: sales@semelab.co.uk

Website: http://www.semelab.co.uk

Document Number 2686 Issue 3







Substrate 0.8mm PTFE/glass, Er=2.5

All microstrip lines W=2.2mm

T1 35mm

T2 15mm

T3 4mm

T4 14 mm

T5 32mm

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

L2 1.5 turns 24swg enamelled copper wire on ferrite core

D2202UK 1GHz Test Fixture

Semelab Plc 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.

E-mail: sales@semelab.co.uk

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

Website: http://www.semelab.co.uk

Document Number 2686

Issue 3