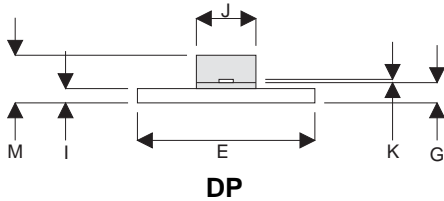
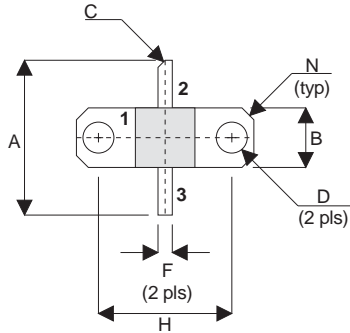


### MECHANICAL DATA



PIN 1 SOURCE PIN 2 DRAIN  
PIN 3 GATE

DIM	Millimetres	Tol.	Inches	Tol.
A	16.51	0.25	0.650	0.010
B	6.35	0.13	0.250	0.005
C	45°	5°	45°	5°
D	3.30	0.13	0.130	0.005
E	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
H	14.22	0.05	0.560	0.002
I	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
M	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<sub>case</sub> = 25°C unless otherwise stated)

P <sub>D</sub>	Power Dissipation	29W
BV <sub>DSS</sub>	Drain – Source Breakdown Voltage	40V
BV <sub>GSS</sub>	Gate – Source Breakdown Voltage	±20V
I <sub>D(sat)</sub>	Drain Current	4A
T <sub>stg</sub>	Storage Temperature	–65 to 150°C
T <sub>j</sub>	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.

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub> Drain–Source Breakdown Voltage	V <sub>GS</sub> = 0 I <sub>D</sub> = 10mA	40			V
I <sub>DSS</sub> Zero Gate Voltage Drain Current	V <sub>DS</sub> = 12.5V V <sub>GS</sub> = 0			2	mA
I <sub>GSS</sub> Gate Leakage Current	V <sub>GS</sub> = 20V V <sub>DS</sub> = 0			1	μA
V <sub>GS(th)</sub> Gate Threshold Voltage*	I <sub>D</sub> = 10mA V <sub>DS</sub> = V <sub>GS</sub>	1		7	V
g <sub>fs</sub> Forward Transconductance*	V <sub>DS</sub> = 10V I <sub>D</sub> = 0.4A	0.36			mhos
G <sub>PS</sub> Common Source Power Gain	P <sub>O</sub> = 5W	10			dB
η Drain Efficiency	V <sub>DS</sub> = 12.5V I <sub>DQ</sub> = 0.2A	40			%
VSWR Load Mismatch Tolerance	f = 1GHz	20:1			—
C <sub>iss</sub> Input Capacitance	V <sub>DS</sub> = 0V V <sub>GS</sub> = -5V f = 1MHz			24	pF
C <sub>oss</sub> Output Capacitance	V <sub>DS</sub> = 12.5V V <sub>GS</sub> = 0 f = 1MHz			20	pF
C <sub>rss</sub> Reverse Transfer Capacitance	V <sub>DS</sub> = 12.5V V <sub>GS</sub> = 0 f = 1MHz			2	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 <sub>THj-case</sub>	Thermal Resistance Junction – Case	Max. 6.0°C / W
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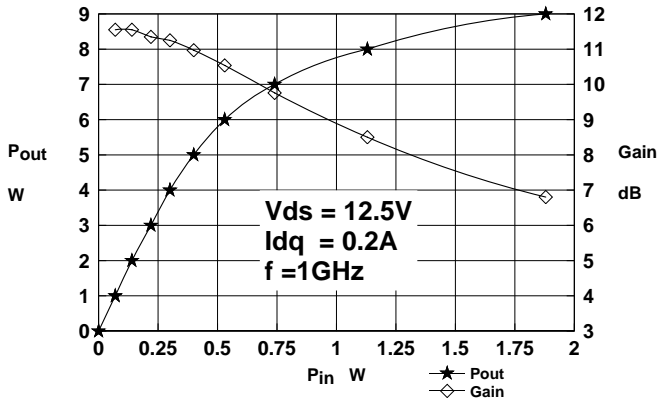


Figure 1

Output Power and Gain vs. Input Power

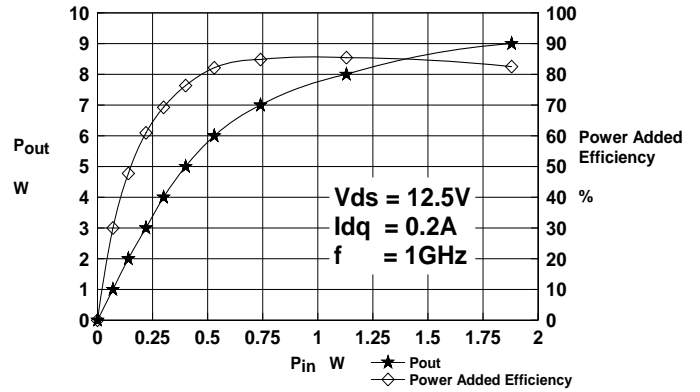


Figure 2

Efficiency vs. Output Power

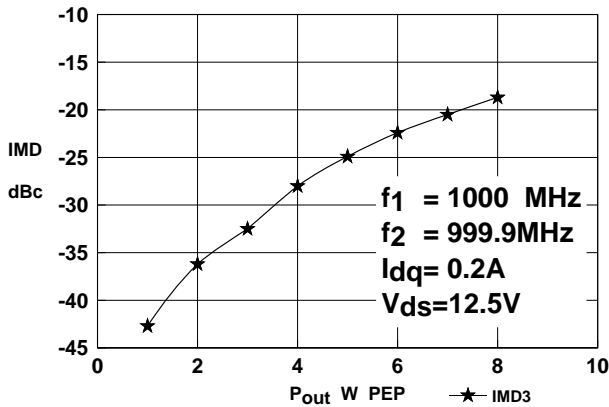


Figure 3

IMD3 vs. Output Power

OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z <sub>S</sub> Ω	Z <sub>L</sub> Ω
1000	4.0 - j27.0	4.7 - j28.7

Typical S Parameters

! V<sub>DS</sub> = 28V, I<sub>DQ</sub> = 0.4A  
# MHZ S M A R 50

IFreq !MHz	S11		S21		S12		S22	
	mag	ang	mag	ang	mag	ang	mag	ang
100	0.79	-93.3	16.4	116.9	0.032	24.7	0.66	-90.5
200	0.73	-126.4	8.8	85.7	0.031	2.6	0.67	-123.5
300	0.74	-140.7	5.8	71.7	0.027	-4.7	0.72	-137.7
400	0.77	-151.9	4.1	59.9	0.022	-7.4	0.75	-146.7
500	0.79	-160.0	3.2	52.1	0.017	-2.0	0.79	-153.1
600	0.83	-168.4	2.6	40.3	0.013	13.6	0.82	-158.3
700	0.85	-175.2	2.1	29.8	0.012	38.2	0.84	-163.9
800	0.87	177.8	1.5	22.6	0.015	61.7	0.85	-170.1
900	0.88	172.9	1.2	24.0	0.021	77.9	0.87	-175.2
1000	0.89	167.4	1.2	19.9	0.030	81.0	0.87	-179.7

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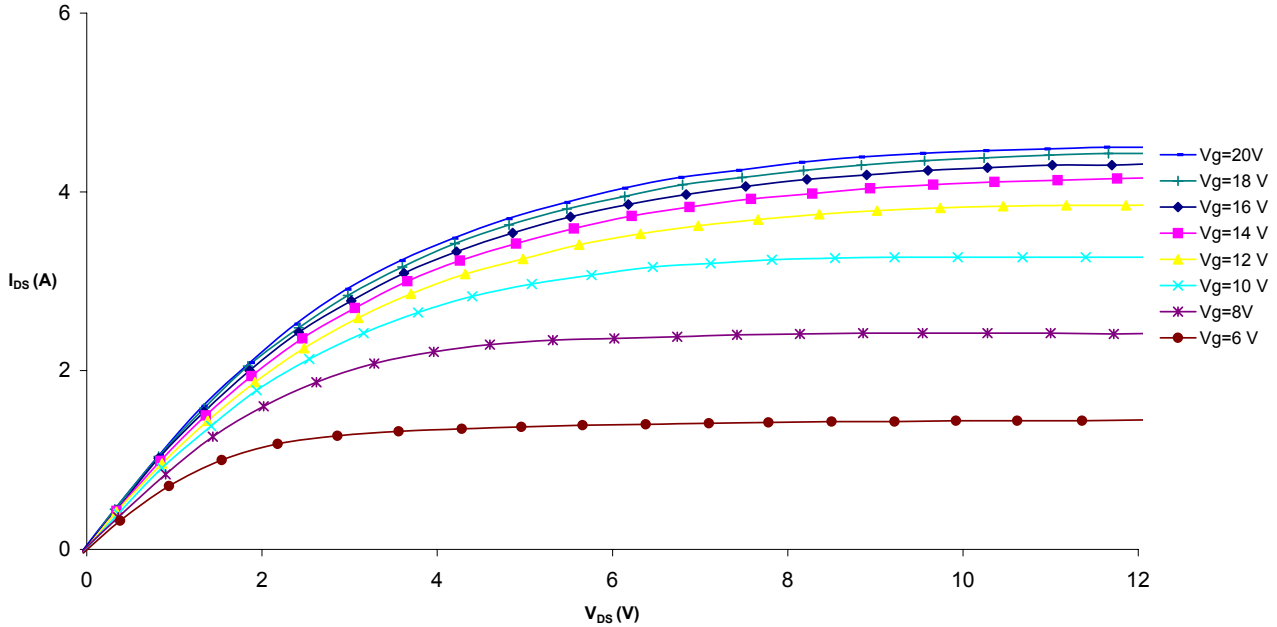


Figure 4 – Typical IV Characteristics.

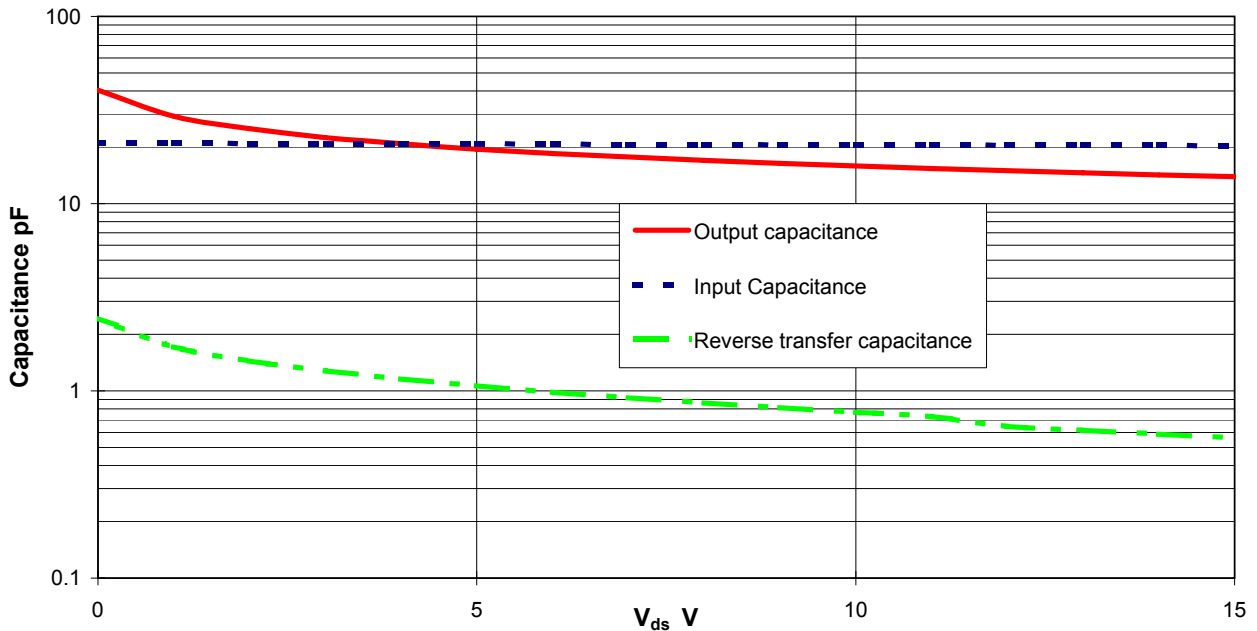
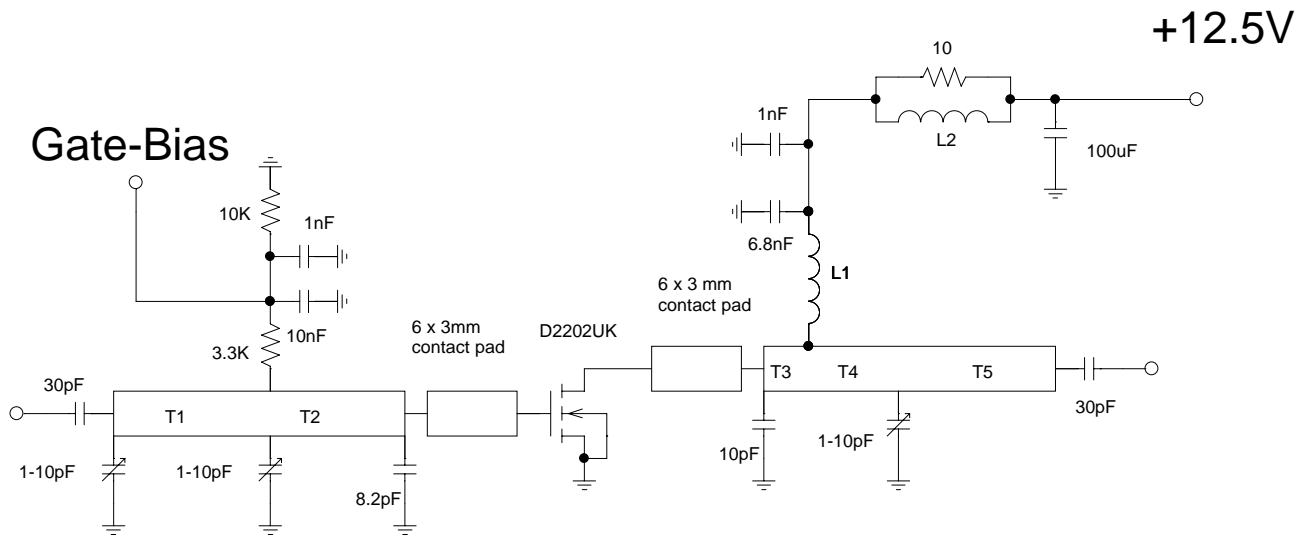


Figure 5 – Typical CV Characteristics.

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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

# Mouser Electronics

Authorized Distributor

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- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.