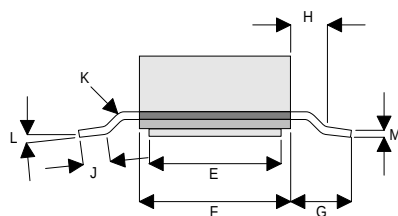
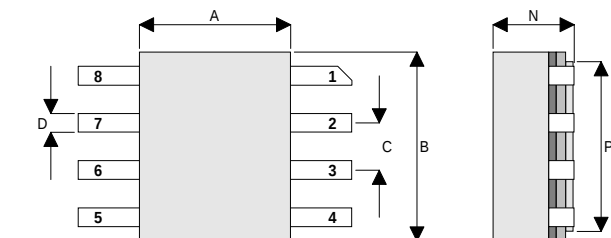


MECHANICAL DATA



SO8 PACKAGE

PIN 1 – SOURCE

PIN 2 – DRAIN

PIN 3 – DRAIN

PIN 4 – SOURCE

PIN 5 – SOURCE

PIN 6 – GATE

PIN 7 – GATE

PIN 8 – SOURCE

Dim.	mm	Tol.	Inches	Tol.
A	4.06	±0.08	0.160	±0.003
B	5.08	±0.08	0.200	±0.003
C	1.27	±0.08	0.050	±0.003
D	0.51	±0.08	0.020	±0.003
E	3.56	±0.08	0.140	±0.003
F	4.06	±0.08	0.160	±0.003
G	1.65	±0.08	0.065	±0.003
H	0.76	+0.25 -0.00	0.030	+0.010 -0.000
J	0.51	Min.	0.020	Min.
	1.02	Max.	0.040	Max.
K	45°	Max.	45°	Max.
L	0°	Min.	0°	Min.
	7°	Max.	7°	Max.
M	0.20	±0.08	0.008	±0.003
N	2.18	Max.	0.086	Max.
P	4.57	±0.08	0.180	±0.003

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

FEATURES

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

APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS
from 1 MHz to 1 GHz

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

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
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.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV _{DSS} Drain–Source Breakdown Voltage	V _{GS} = 0 I _D = 10mA	40			V
I _{DSS} Zero Gate Voltage Drain Current	V _{DS} = 12.5V V _{GS} = 0			1	mA
I _{GSS} Gate Leakage Current	V _{GS} = 20V V _{DS} = 0			1	μA
V _{GS(th)} Gate Threshold Voltage*	I _D = 10mA V _{DS} = V _{GS}	1		5	V
g _{fs} Forward Transconductance*	V _{DS} = 10V I _D = 0.2A	0.18			S
G _{PS} Common Source Power Gain	P _O = 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} = 0V V _{GS} = –5V f = 1MHz			12	pF
C _{oss} Output Capacitance	V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			10	pF
C _{rss} Reverse Transfer Capacitance	V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			1	pF

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

THERMAL DATA

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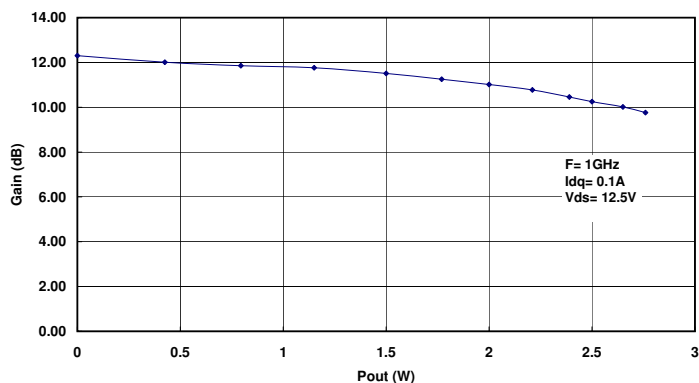


Figure 1
Gain vs. Output Power

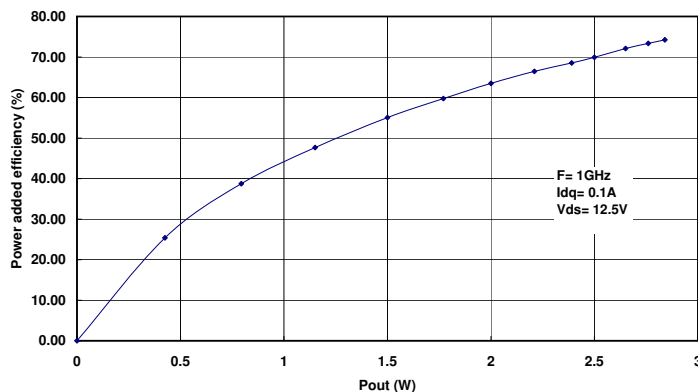


Figure 2
Power added efficiency vs. Output Power.

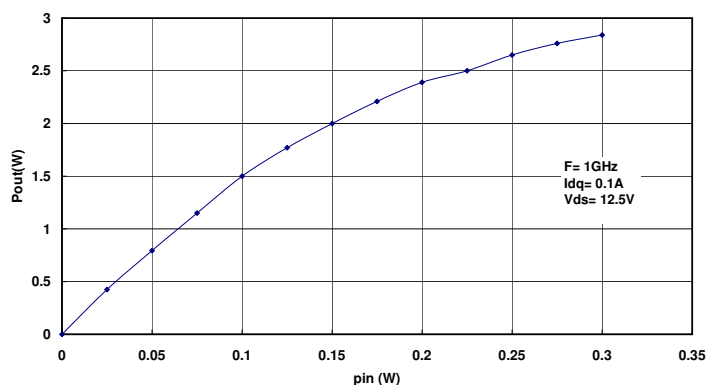


Figure 3
Output Power vs. Input Power.

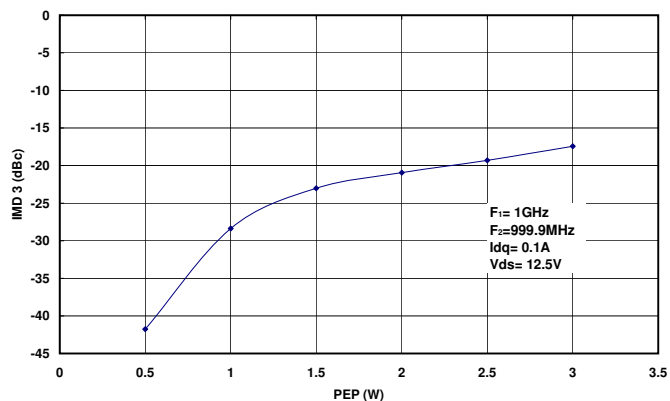


Figure 4
IMD 3 vs. PEP

Typical S Parameters

!D2219UK.s2p
!Vds=12.5, Idq=0.1
MHz S MA R 50

Frequency	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.90	-52.39	14.50	138.14	0.03	51.05	0.83	-50.42
200	0.78	-87.99	10.45	110.84	0.05	26.61	0.73	-84.07
300	0.72	-111.57	7.68	91.95	0.05	10.36	0.69	-105.52
400	0.71	-127.63	5.88	78.13	0.05	1.04	0.69	-120.59
500	0.72	-140.52	4.61	66.59	0.04	-6.14	0.70	-132.26
600	0.73	-150.56	3.72	57.50	0.03	-8.39	0.73	-141.74
700	0.74	-159.64	3.09	48.88	0.03	-8.30	0.75	-150.19
800	0.77	-167.59	2.58	41.38	0.02	-2.44	0.77	-157.77
900	0.78	-175.33	2.18	34.32	0.02	10.50	0.80	-164.68
1000	0.80	-177.68	1.85	28.29	0.02	30.86	0.81	-170.86

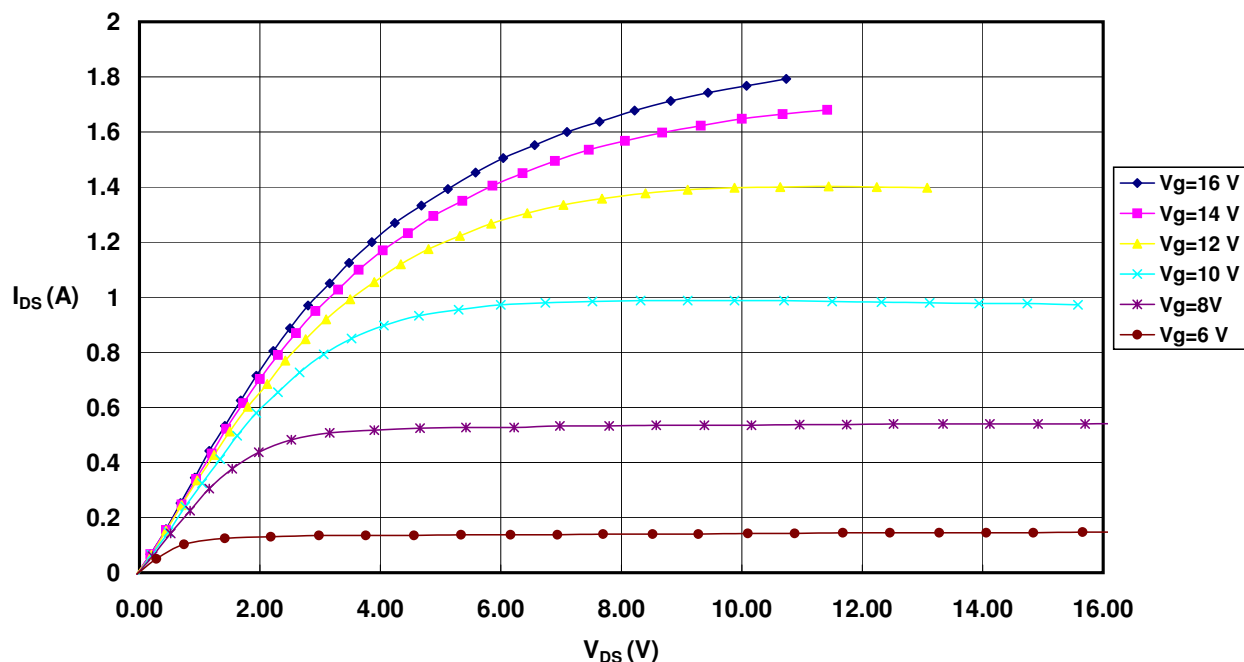


Figure 5 – Typical IV Characteristics.

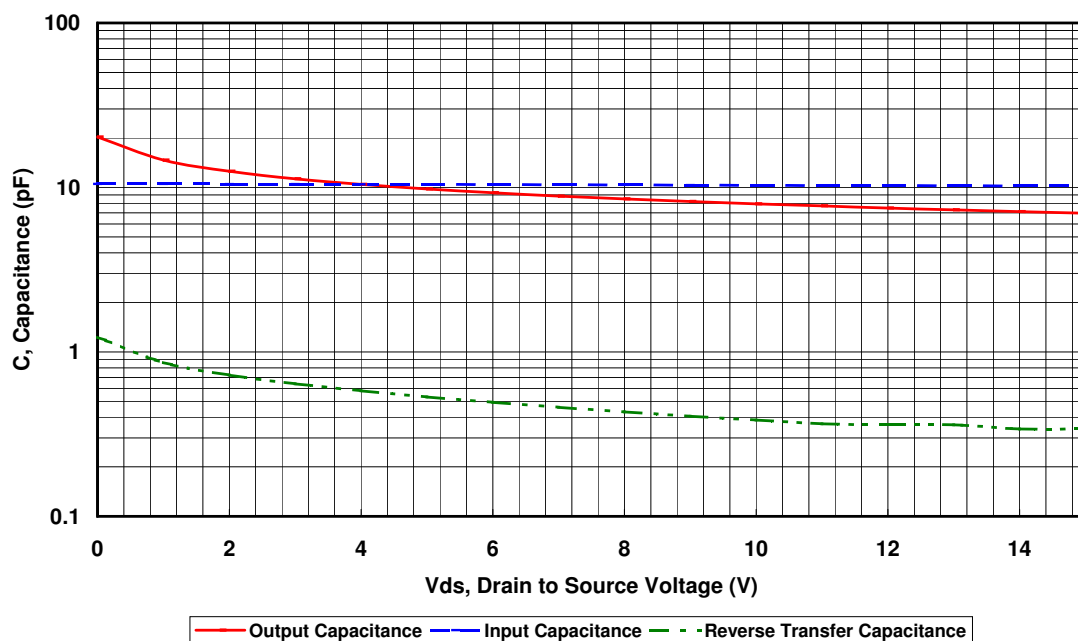
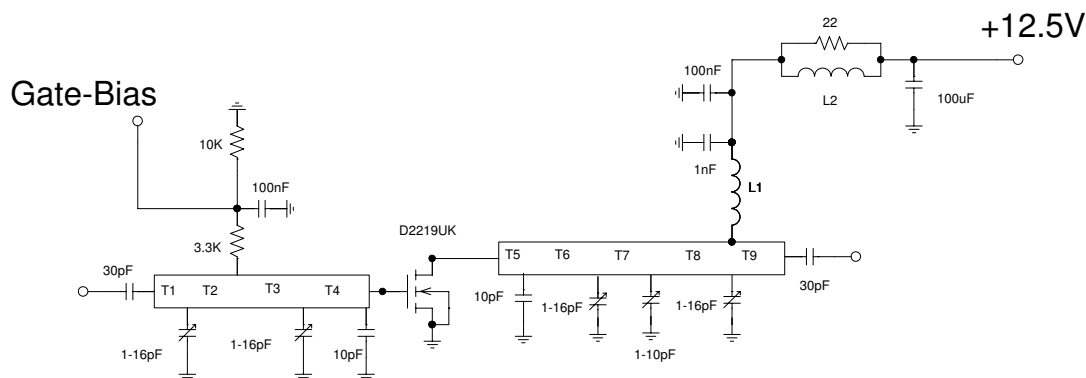


Figure 6 – Typical CV Characteristics.

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D2219UK 1GHz TEST FIXTURE

Substrate 0.8mm PTFE/glass, $\epsilon_r=2.5$

All microstrip lines $W=2.2\text{mm}$

T1 3mm T8 10mm

T2 30mm T9 9mm

T3 12mm

T4 9mm

T5 5mm

T6 5 mm

T7 15mm

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

L2 1.5 turns 24swg enamelled copper wire on ferrite core