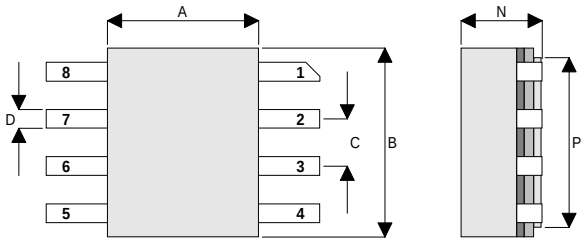
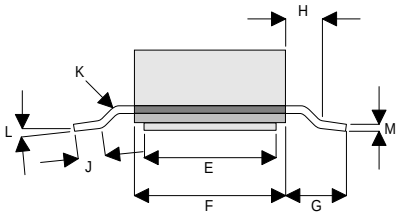
TetraFET

D2219UK

ROHS COMPLIANT METAL GATE RF SILICON FET

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	0.030	+0.010
		-0.00		-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°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

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Document Number 6946
Issue 1

D2219UK

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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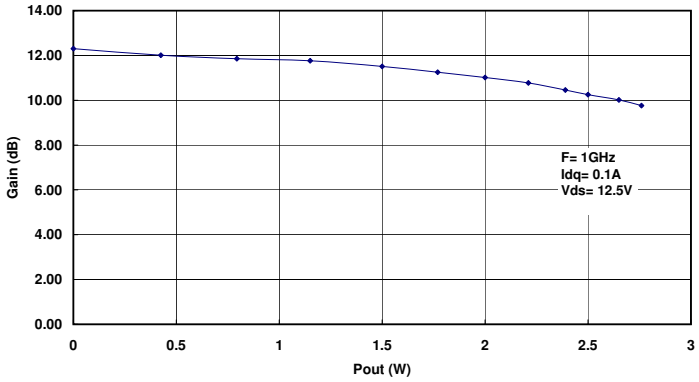

Figure 1

Gain vs. Output Power

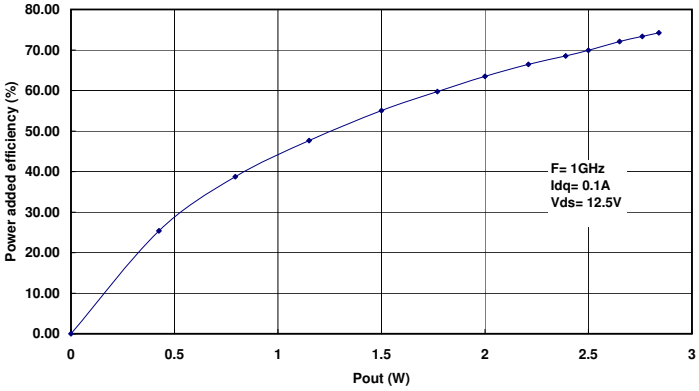

Figure 2

Power added efficiency vs.Output Power.

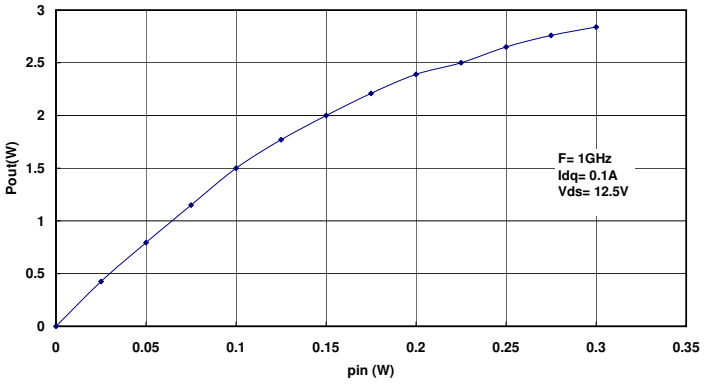

Figure 3

Output Power vs. Input Power.

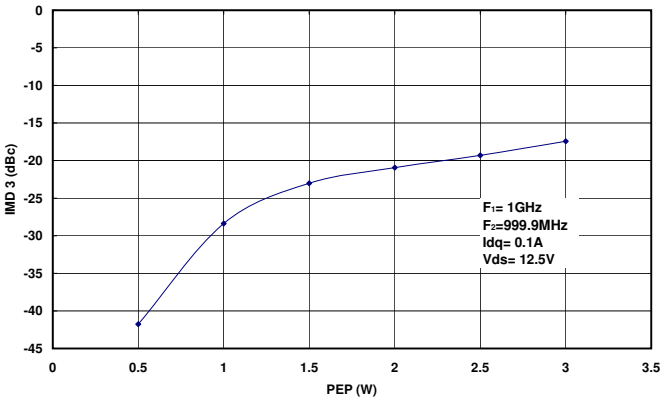

Figure 4

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

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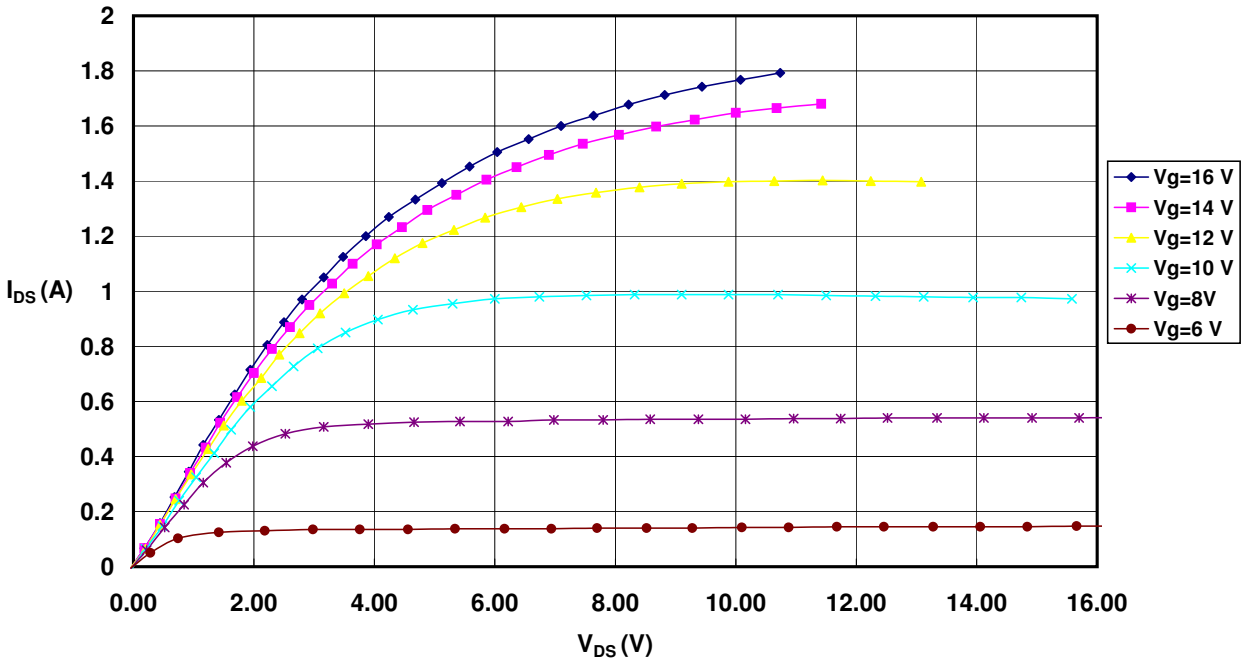

Figure 5 – Typical IV Characteristics.

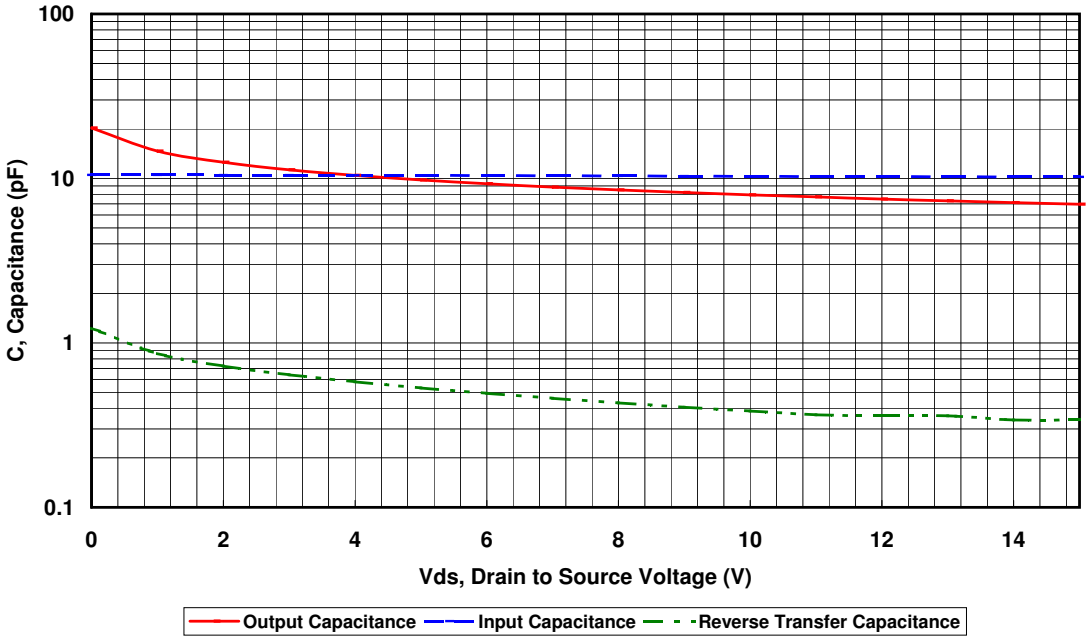

Figure 6 – Typical CV Characteristics.

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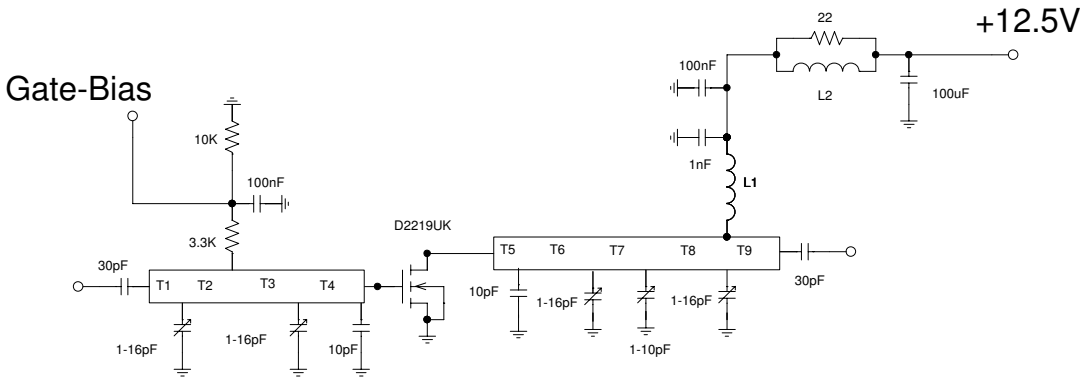

D2219UK 1GHz TEST FIXTURE

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

T1 3mm
T2 30mm
T3 12mm
T4 9mm
T5 5mm
T6 5 mm
T7 15mm
T8 10mm
T9 9mm

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

L2 1.5 turns 24swg enamelled copper wire on ferrite core

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