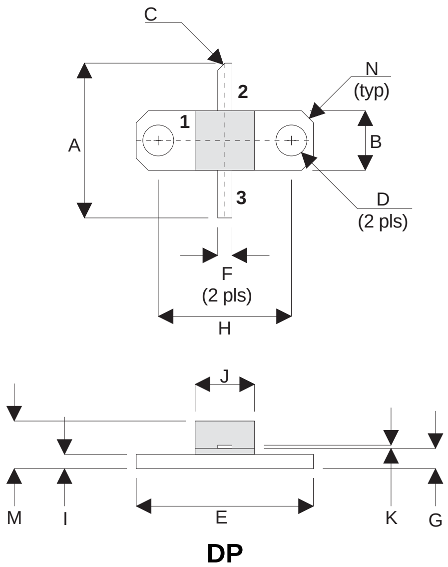
TetraFET

D2001UK

ROHS COMPLIANT METAL GATE RF SILICON FET

MECHANICAL DATA



PIN 1 SOURCE PIN 2 DRAIN

PIN 3 GATE

DIM	mm	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	0.08	0.745	0.003
F	1.52	0.13	0.060	0.005
G	2.16	0.13	0.085	0.005
H	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
M	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 – 28V – 1GHz SINGLE ENDED

FEATURES

- **SIMPLIFIED AMPLIFIER DESIGN**
- **SUITABLE FOR BROAD BAND APPLICATIONS**
- **LOW C_{rss}**
- **SIMPLE BIAS CIRCUITS**
- **LOW NOISE**
- **HIGH GAIN – 13 dB MINIMUM**

APPLICATIONS

- VHF/UHF COMMUNICATIONS from 50 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	65V
BV_{GSS}	Gate – Source Breakdown Voltage	±20V
$I_{D(sat)}$	Drain Current	1A
T_{stg}	Storage Temperature	–65 to 150°C
T_j	Maximum Operating Junction Temperature	200°C

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

	Parameter	Test Conditions			Min.	Typ.	Max.	Unit
BV_{DSS}	Drain–Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 10mA$		65			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 28V$	$V_{GS} = 0$				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		7	V
g_{fs}	Forward Transconductance*	$V_{DS} = 10V$	$I_D = 0.2A$		0.18			S
G_{PS}	Common Source Power Gain	$P_O = 2.5W$			13			dB
η	Drain Efficiency	$V_{DS} = 28V$	$I_{DQ} = 0.1A$		40			%
VSWR	Load Mismatch Tolerance	f = 1GHz			20:1			—
C_{iss}	Input Capacitance	$V_{DS} = 28V$	$V_{GS} = –5V$	f = 1MHz			12	pF
C_{oss}	Output Capacitance	$V_{DS} = 28V$	$V_{GS} = 0$	f = 1MHz			6	pF
C_{rss}	Reverse Transfer Capacitance	$V_{DS} = 28V$	$V_{GS} = 0$	f = 1MHz			0.5	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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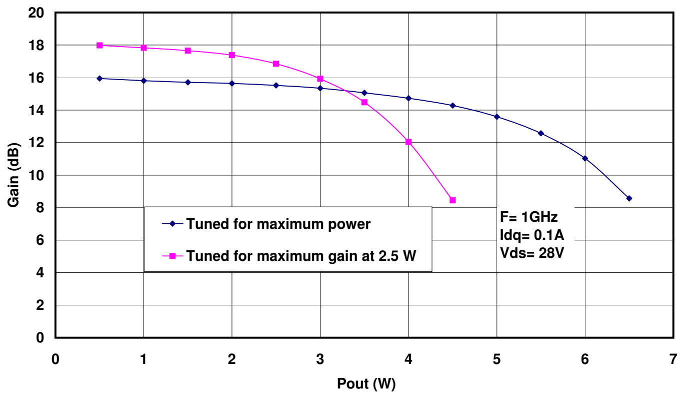

Figure 1

Gain vs. Output Power.

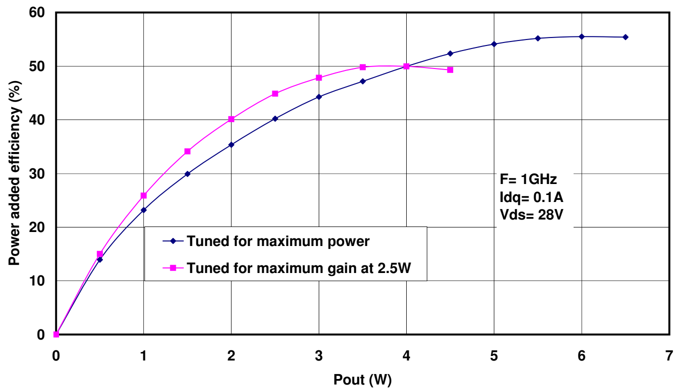

Figure 2

Power added efficiency vs. Output Power.

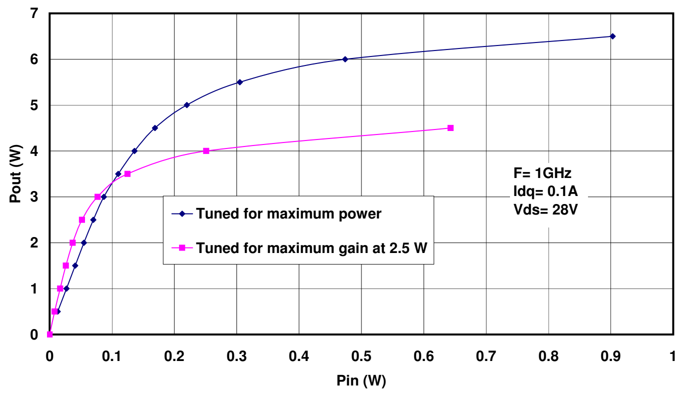

Figure 3

Output Power vs. Input Power.

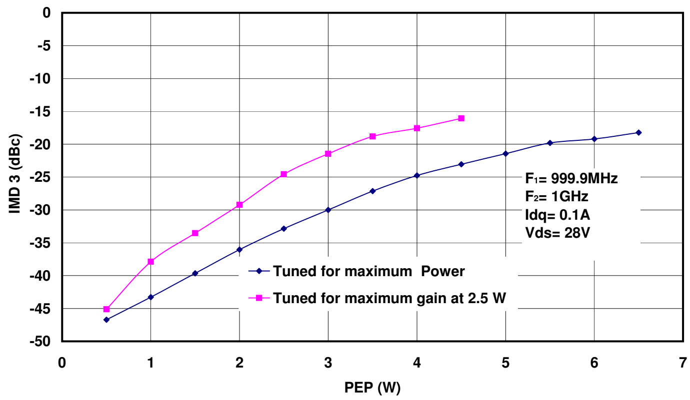

Figure 4

IMD 3 vs. PEP

Typical S Parameters

! Vds=28V, Idq=0.1A

\# MHz S MA R 50

!Freq	S11		S21		S12		S22	
!MHz	mag	ang	mag	ang	mag	ang	mag	ang
100	0.966	-47	16.778	144	0.01479	56	0.923	-28
200	0.891	-81	12.882	118	0.02114	34	0.841	-48
300	0.841	-103	9.772	99	0.02213	20	0.794	-62
400	0.804	-120	7.674	84	0.01995	11	0.759	-73
500	0.804	-134	6.237	69	0.01641	6	0.75	-86
600	0.804	-143	4.955	59	0.01175	9	0.767	-97
700	0.822	-147	4.121	54	0.00906	41	0.776	-101
800	0.822	-154	3.631	45	0.01109	73	0.813	-107
900	0.841	-162	3.162	36	0.01718	88	0.813	-116
1000	0.832	-168	2.6	30	0.02344	94	0.804	-122

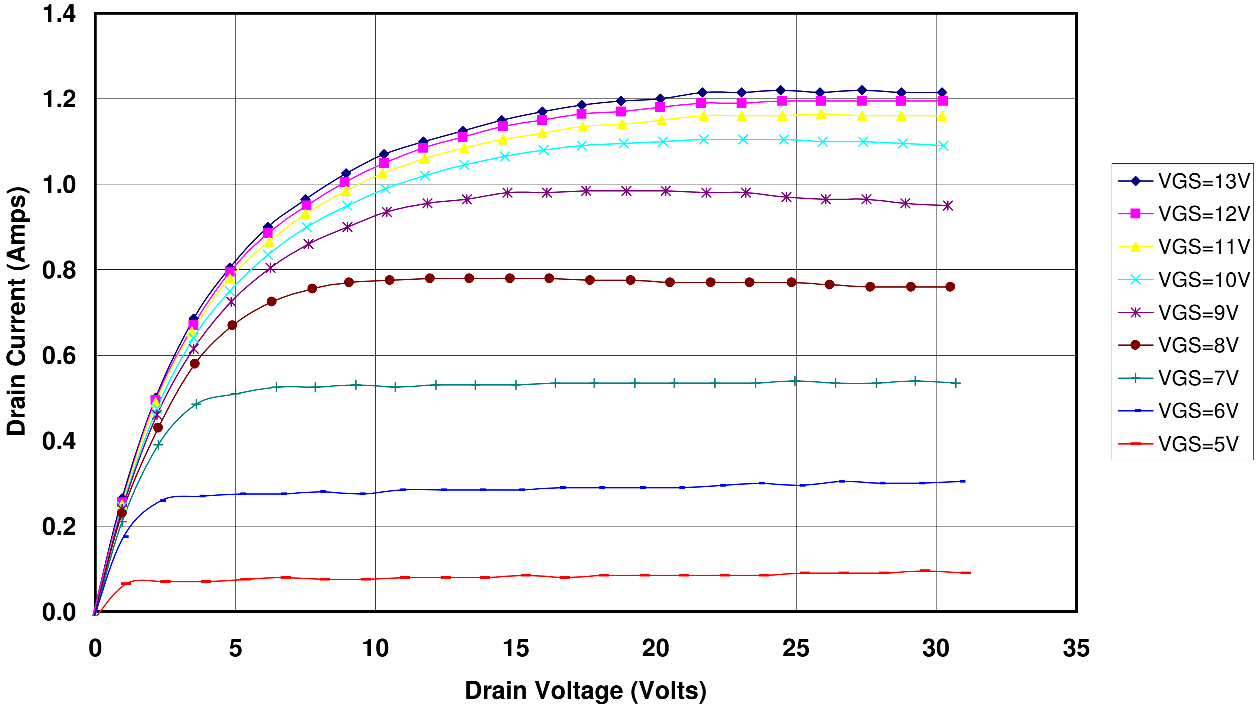

Figure 5 – Typical IV Characteristics.

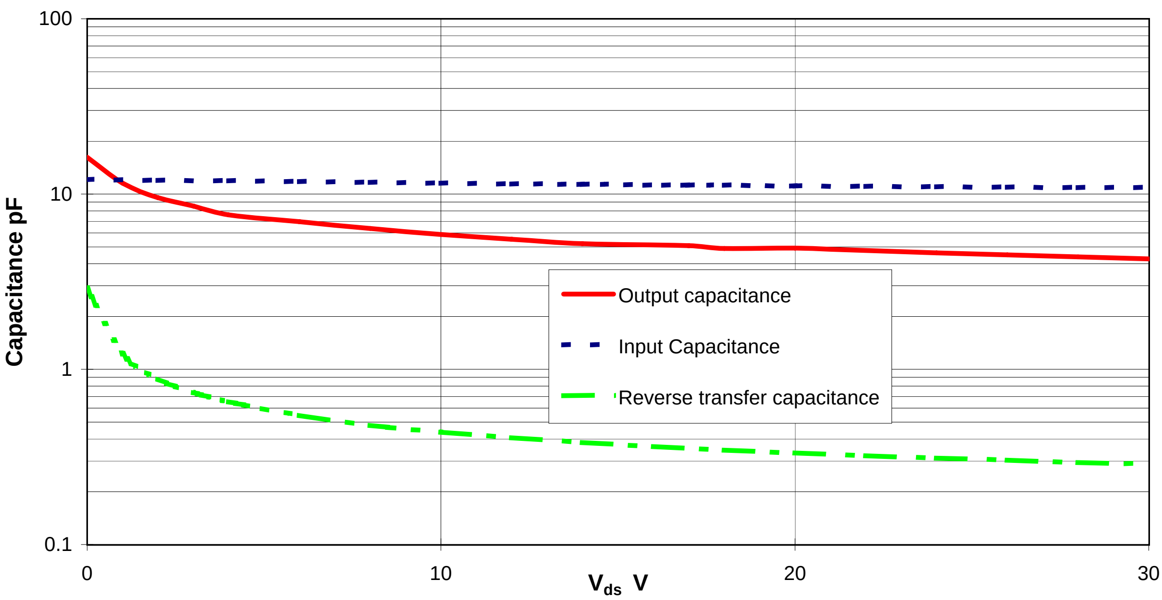

Figure 6 – Typical CV Characteristics.

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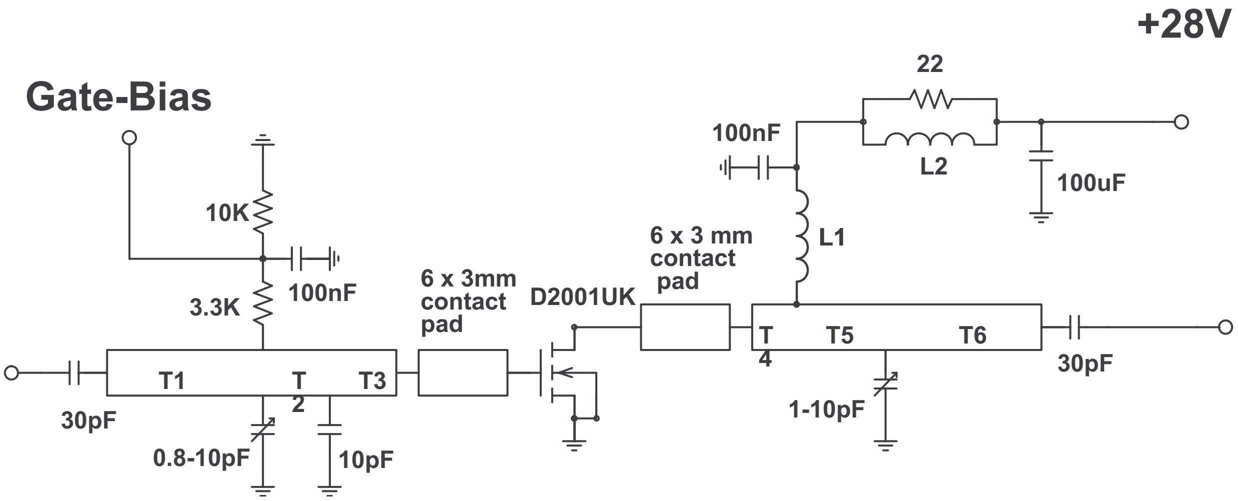

D2001UK 1GHz TEST FIXTURE

Substrate 0.8mm PTFE/glass, Er = 2.5
All microstrip lines W = 2.4mm

T1	35 mm
T2, T5	15 mm
T3	3 mm
T4	4 mm
T6	32 mm

L1	7 turns 24swg enamelled copper wire, 3mm i.d.
L2	1.5 turns 24swg enamelled copper wire on ferrite core

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