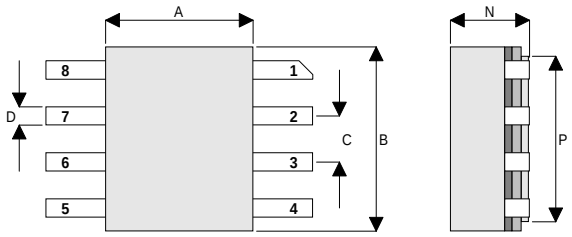
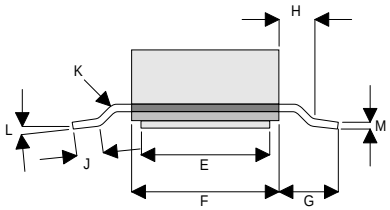
D2021UK

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 7.5W – 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 DC to 1 GHz

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

P_D	Power Dissipation	35W
BV_{DSS}	Drain – Source Breakdown Voltage	65V
BV_{GSS}	Gate – Source Breakdown Voltage	±20V
$I_{D(sat)}$	Drain Current	3A
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				3	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 = 0.6A		0.54			S
G_{PS}	Common Source Power Gain	P_O = 7.5W			13			dB
η	Drain Efficiency	V_{DS} = 28V	I_{DQ} = 0.3A		40			%
VSWR	Load Mismatch Tolerance	f = 1GHz			20:1			—
C_{iss}	Input Capacitance	V_{DS} = 0	V_{GS} = –5V	f = 1MHz			36	pF
C_{oss}	Output Capacitance	V_{DS} = 28V	V_{GS} = 0	f = 1MHz			18	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = 28V	V_{GS} = 0	f = 1MHz			1.5	pF

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

THERMAL DATA

$R_{THj–case}$	Thermal Resistance Junction – Case	Max. 5°C / W

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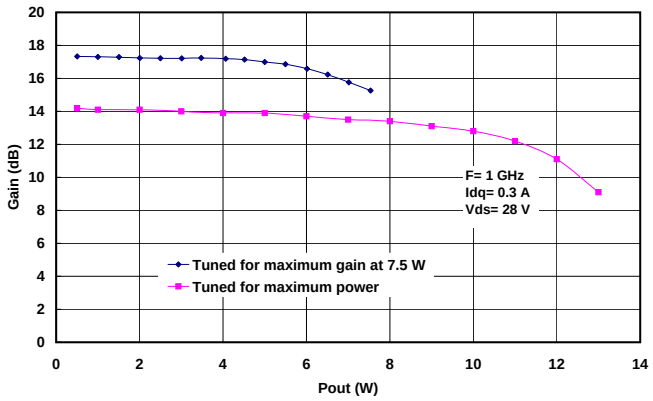

Figure 1

Gain vs. Output Power.

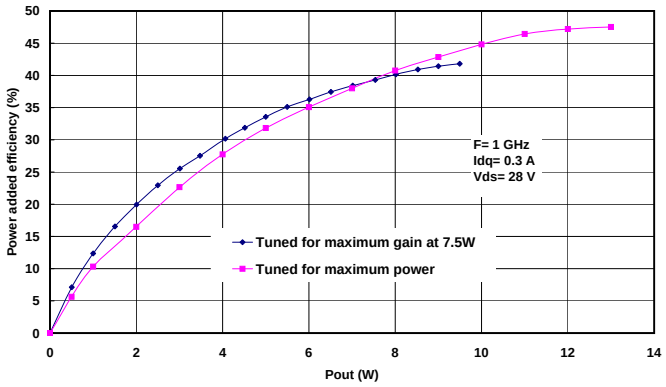

Figure 2

Power added efficiency vs. Output Power.

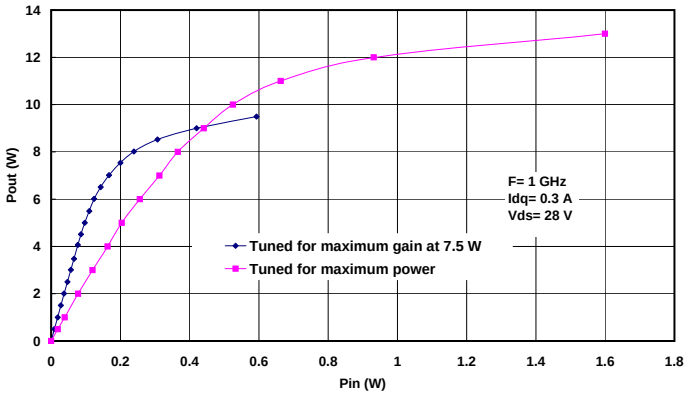

Figure 3

Output Power vs. Input Power.

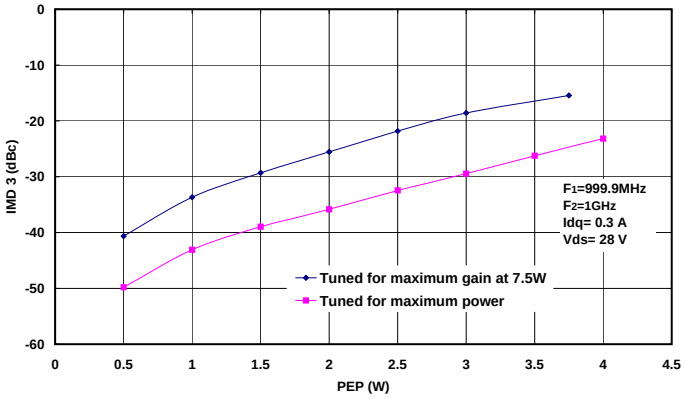

Figure 4

IMD 3 vs. PEP

Typical S Parameters

! Vds=28V Idq=0.3A
MHz S MA R 50

!Freq	S11		S21		S12		S22	
!MHz	mag	ang	mag	ang	mag	ang	mag	ang
100	0.79	-113	16	108	0.027	21	0.6	-73
200	0.76	-141	8.1	77	0.022	8	0.59	-102
300	0.78	-153	5.3	62	0.016	19	0.66	-118
400	0.8	-162	3.6	49	0.014	56	0.71	-130
500	0.84	-169	2.8	38	0.023	84	0.75	-139
600	0.87	-175	2.1	24	0.036	87	0.79	-147
700	0.89	-180	1.6	16	0.047	86	0.82	-154
800	0.9	176	1.2	17	0.058	91	0.83	-164
900	0.9	172	1.1	16	0.083	93	0.84	-168
1000	0.89	165	1	8	0.111	86	0.86	-172

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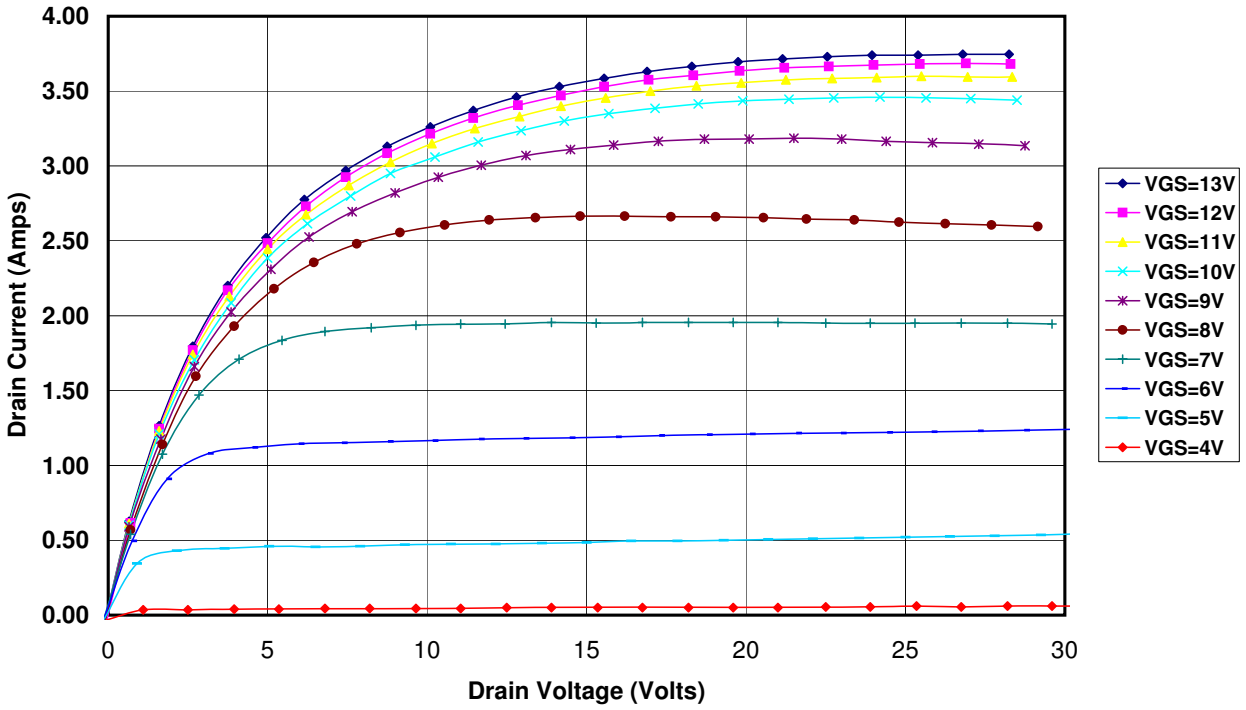

Figure 5 – Typical IV Characteristics.

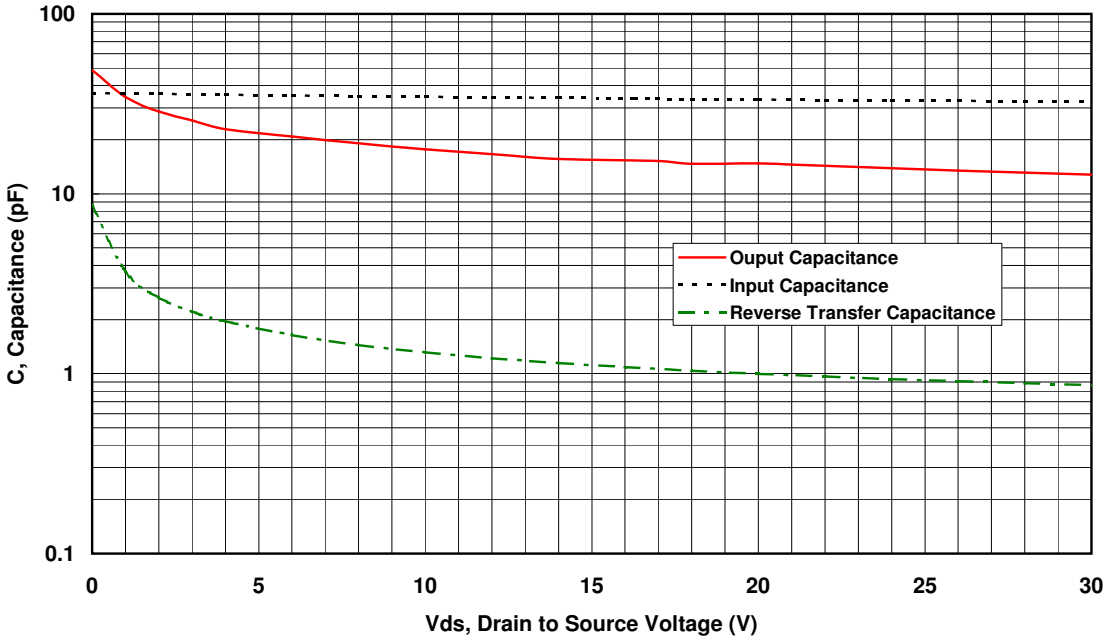

Figure 6 – Typical CV Characteristics.

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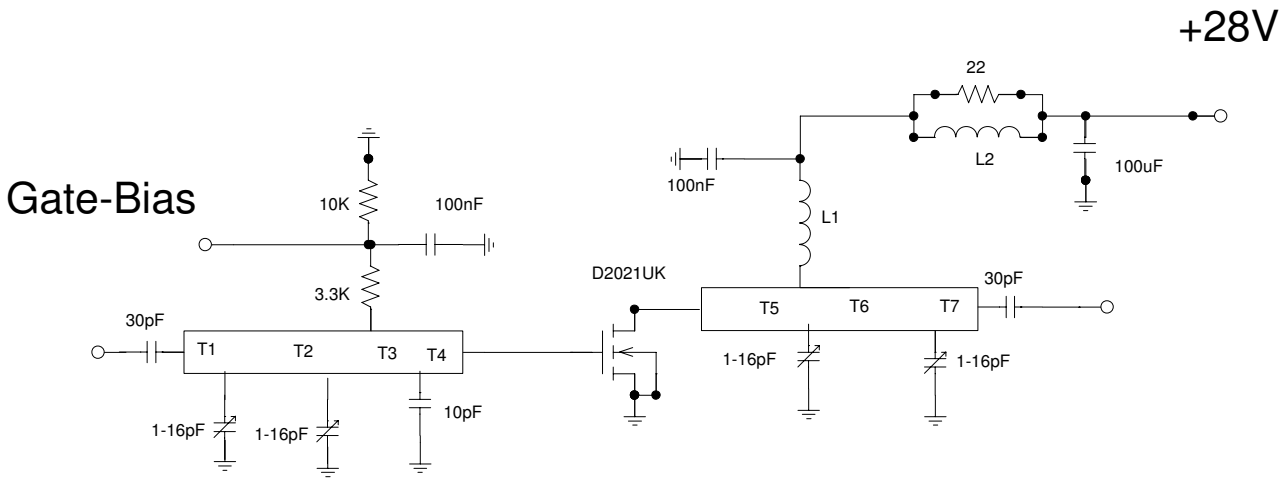

D2021UK 1GHz TEST FIXTURE

Substrate 0.8mm PTFE/glass, Er=2.5

All microstrip lines W=2.2mm

T1 3mm
T2 28mm
T3 18mm
T4 6mm
T5 10mm
T6 14mm
T7 35mm

L1 8 turns 0.5mm dia enamelled copper wire, 3mm i.d.

L2 1.5 turns 0.5mm enamelled copper wire on Siemens B62152A7 2 hole ferrite core

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