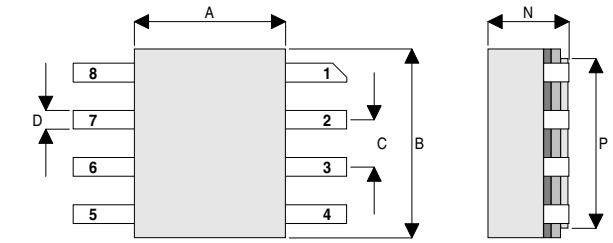
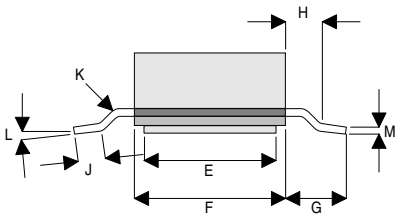
TetraFET

D1011UK

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 -0.00	0.030	+0.010 -0.000
J	0.51 1.02	Min. Max.	0.020 0.040	Min. Max.
K	45°	Max.	45°	Max.
L	0° 7°	Min. Max.	0° 7°	Min. 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 10W – 28V – 500MHz SINGLE ENDED

FEATURES

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

APPLICATIONS

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

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

P_D	Power Dissipation	30W
BV_{DSS}	Drain – Source Breakdown Voltage	70V
BV_{GSS}	Gate – Source Breakdown Voltage	±20V
$I_{D(sat)}$	Drain Current	5A
T_{stg}	Storage Temperature	–65 to 150°C
T_j	Maximum Operating Junction Temperature	200°C

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Document Number 6220
Issue 2

D1011UK

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 = 100mA		70			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 = 1A		0.8			S
G_{PS}	Common Source Power Gain	P_O = 10W			13			dB
η	Drain Efficiency	V_{DS} = 28V	I_{DQ} = 0.1A		50			%
VSWR	Load Mismatch Tolerance	f = 500MHz			20:1			—
C_{iss}	Input Capacitance	V_{DS} = 28V	V_{GS} = –5V	f = 1MHz			60	pF
C_{oss}	Output Capacitance	V_{DS} = 28V	V_{GS} = 0	f = 1MHz			30	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = 28V	V_{GS} = 0	f = 1MHz			2.5	pF
R_{dson}	Saturation Resistance	V_{GS} = 20V	I_{DS} = 2.5A			1		Ω

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

THERMAL DATA

$R_{THj–case}$	Thermal Resistance Junction – Case	Max. 6°C / W

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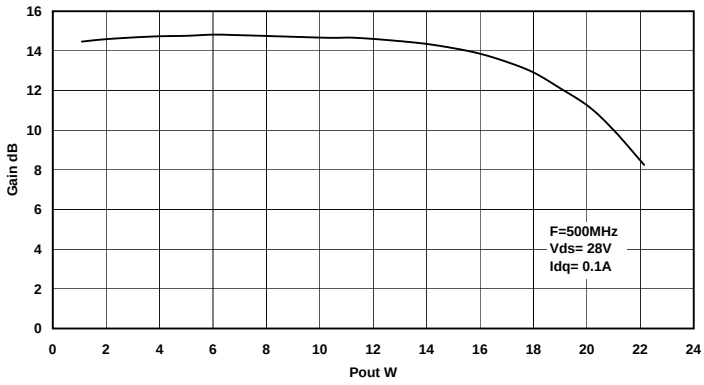

Figure 1
Gain vs. Output Power

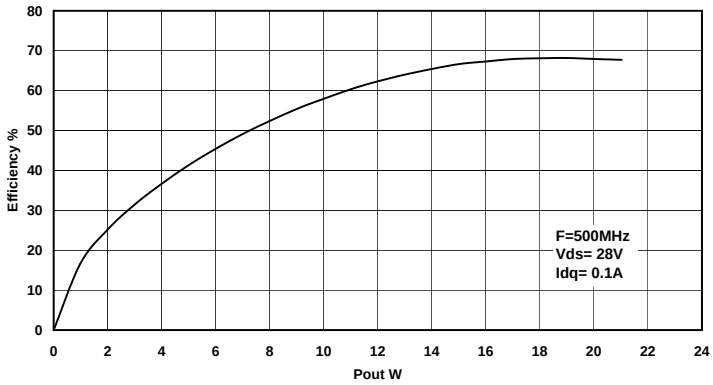

Figure 2
Power added efficiency vs.Output Power.

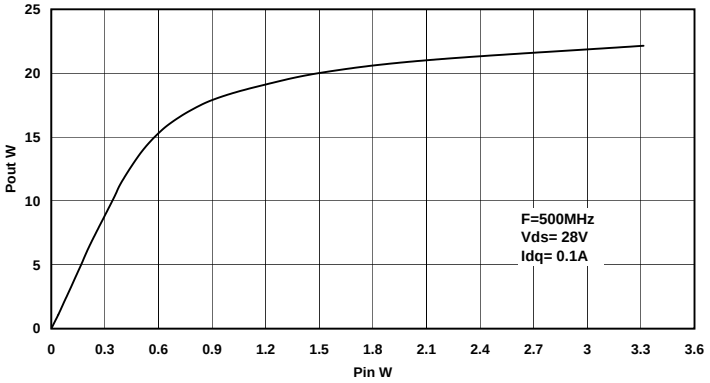

Figure 3
Output Power vs. Input Power.

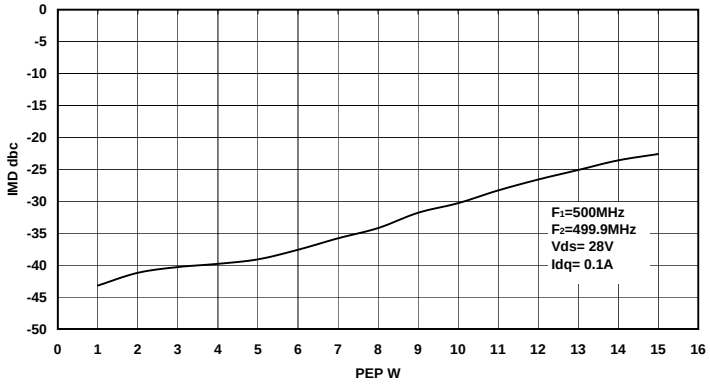

Figure 4
IMD 3 vs. PEP

Typical S Parameters

!D1011UK.s2p
!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	0.75	-114.9	12.22	61.1	0.007	108.3	0.81	-139.4
200	0.89	-147.6	3.94	32.2	0.038	111.4	0.92	-158.7
300	0.93	-161.9	2.08	20.9	0.065	102.5	0.95	-166.8
400	0.95	-173.3	1.17	14.0	0.095	94.7	0.97	-173.1
500	0.96	179.4	0.81	11.8	0.120	89.5	0.98	-177.0
600	0.96	172.0	0.57	12.5	0.150	84.2	0.98	179.2
700	0.96	166.5	0.46	15.4	0.176	80.3	0.98	176.5
800	0.96	161.3	0.39	19.7	0.202	76.6	0.97	174.0
900	0.95	155.4	0.35	25.5	0.233	72.3	0.97	171.2
1000	0.95	150.6	0.34	30.0	0.260	68.9	0.96	168.9

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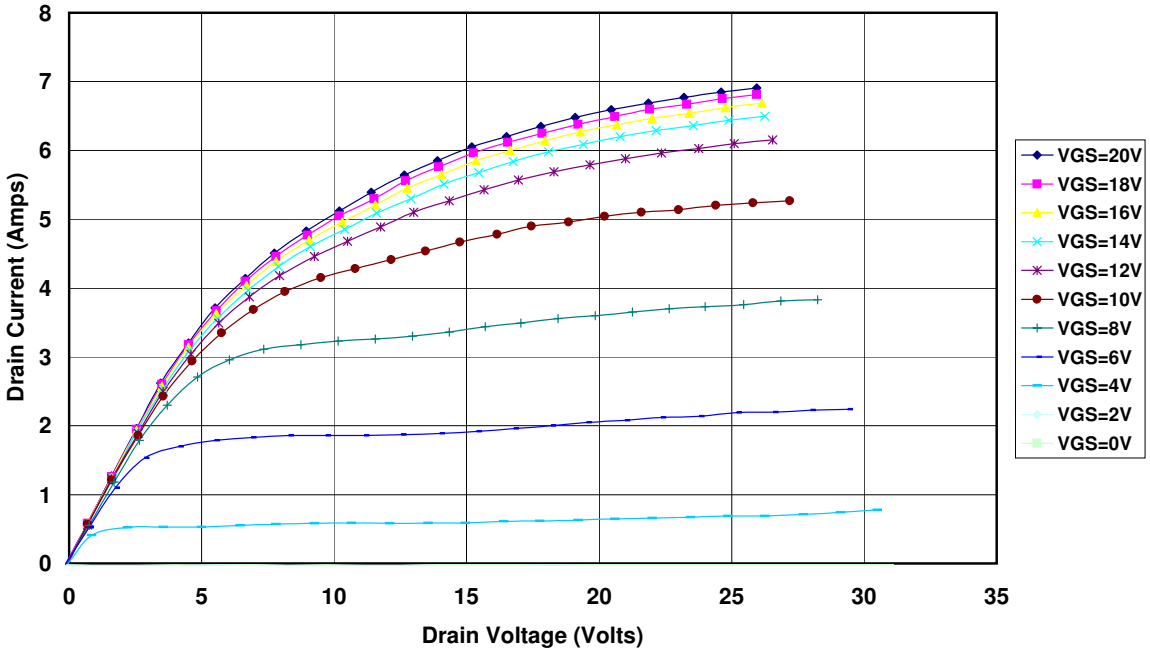

Figure 1 – Typical IV Characteristics.

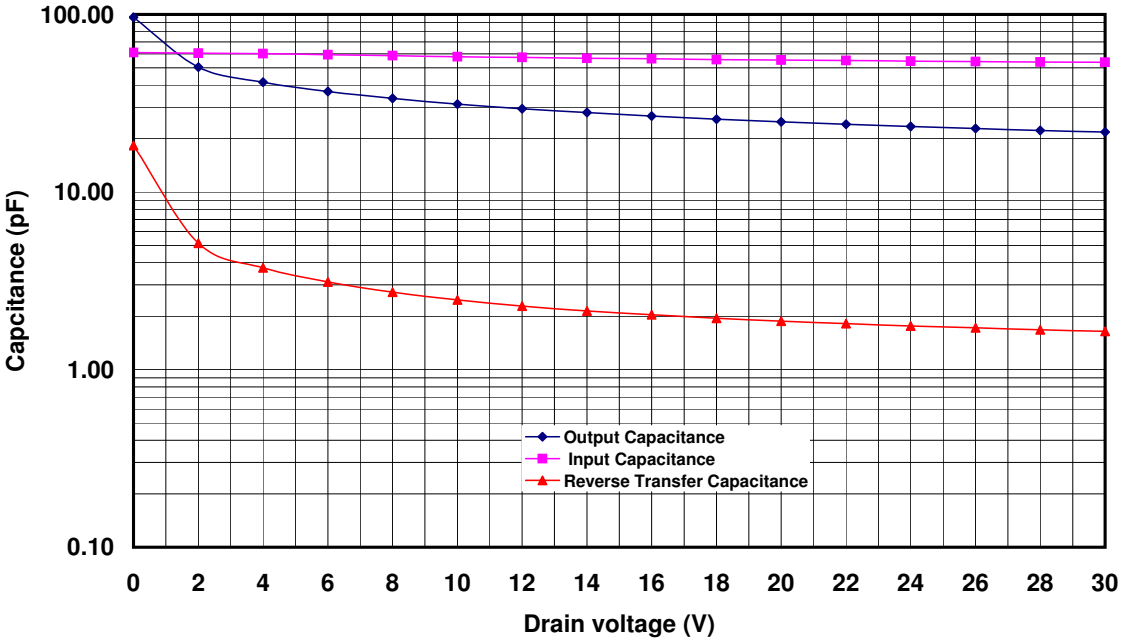

Figure 2 – Typical CV Characteristics.

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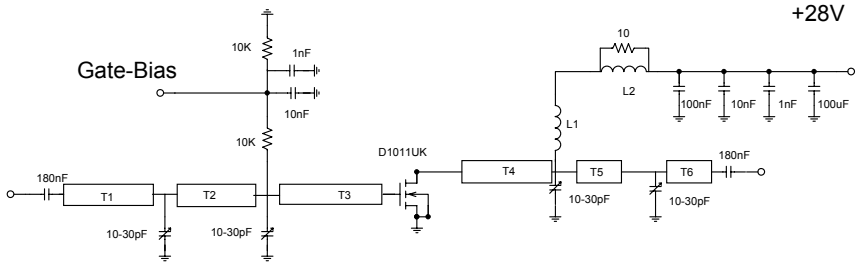

D1011UK 500MHz TEST FIXTURE

Substrate 1.6mm PTFE/glass, Er=2.5

All microstrip lines W=1.5mm

T1 22mm

T2 18mm

T3 18mm

T4 21mm

T5 22mm

T6 13mm

L1 6 turns 24swg enamelled copper wire, 6mm i.d.

L2 1.5 turns 24swg enamelled copper wire on a ferrite

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