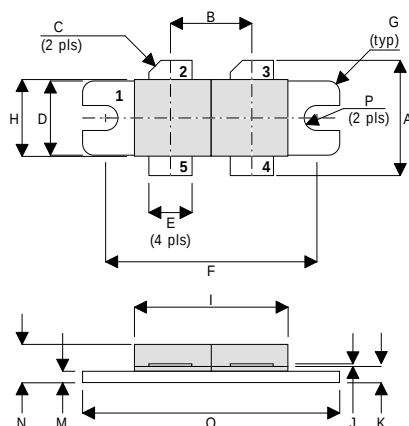


MECHANICAL DATA



DR

PIN 1	SOURCE (COMMON)	PIN 2	DRAIN 1
PIN 3	DRAIN 2	PIN 4	GATE 2
PIN 5	GATE 1		

DIM	Millimetres	Tol.	Inches	Tol.
A	19.05	0.50	0.75	0.020
B	10.77	0.13	0.424	0.005
C	45°	5°	45°	5°
D	9.78	0.13	0.385	0.005
E	5.71	0.13	0.225	0.005
F	27.94	0.13	1.100	0.005
G	1.52R	0.13	0.060R	0.005
H	10.16	0.13	0.400	0.005
I	22.22	MAX	0.875	MAX
J	0.13	0.02	0.005	0.001
K	2.72	0.13	0.107	0.005
M	1.70	0.13	0.067	0.005
N	5.08	0.50	0.200	0.020
O	34.03	0.13	1.340	0.005
P	1.61R	0.08	0.064R	0.003

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 400W – 28V – 175MHz PUSH-PULL

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 1 MHz to 200 MHz

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

P_D	Power Dissipation	500W
BV_{DSS}	Drain – Source Breakdown Voltage	70V
BV_{GSS}	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	40A
T_{stg}	Storage Temperature	-65 to $150^{\circ}C$
T_j	Maximum Operating Junction Temperature	$200^{\circ}C$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
PER SIDE					
B _V DSS	Drain–Source Breakdown Voltage V _{GS} = 0 I _D = 100mA	70			V
I _D DSS	Zero Gate Voltage Drain Current V _{DS} = 28V V _{GS} = 0			8	mA
I _G DSS	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 = 8A	6.4			mhos
V _{GS} (th)match	Gate Threshold Voltage Matching Between Sides I _D = 10mA V _{DS} = V _{GS}			0.1	V
TOTAL DEVICE					
G _{PS}	Common Source Power Gain P _O = 400W	13			dB
η	Drain Efficiency V _{DS} = 28V I _{DQ} = 2A	50			%
VSWR	Load Mismatch Tolerance f = 175MHz	20:1			—
PER SIDE					
C _{iss}	Input Capacitance V _{DS} = 28V V _{GS} = –5V f = 1MHz			480	pF
C _{oss}	Output Capacitance V _{DS} = 28V V _{GS} = 0 f = 1MHz			240	pF
C _{rss}	Reverse Transfer Capacitance V _{DS} = 28V V _{GS} = 0 f = 1MHz			20	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. 0.35°C / W
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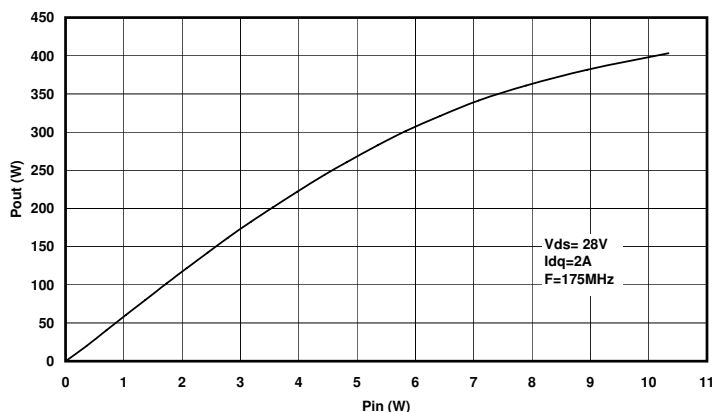


Figure 1. Output Power Vs Input Power

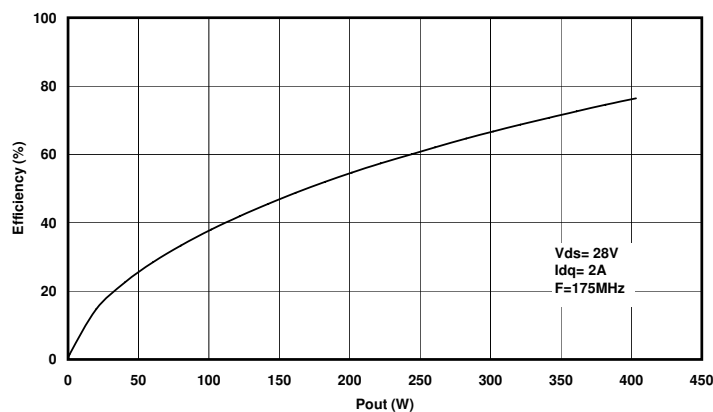


Figure 2. Efficiency Vs. Output Power

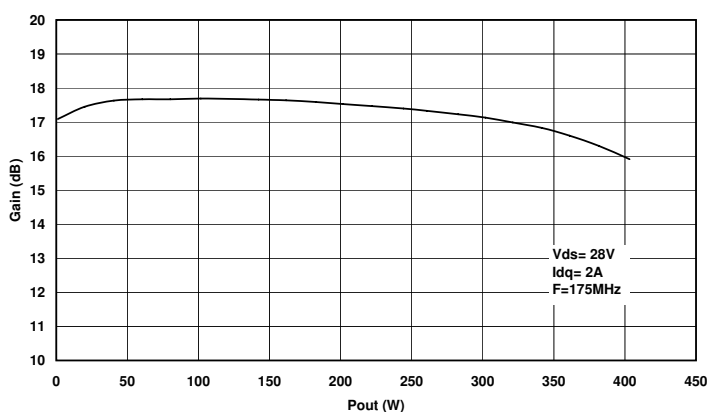


Figure 3. Gain Vs Output Power

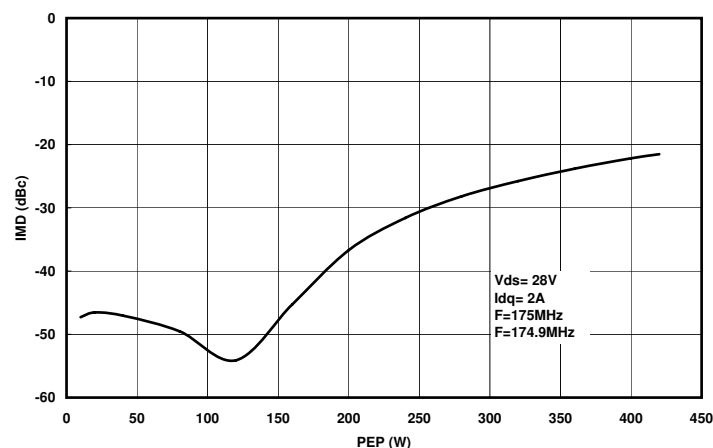


Figure 3. IMD 3 Vs PEP

Typical S Parameters

!D1030UK.s2p !Vds=28V,Idq=2A
MHz S MA R 50!Vds=28V,Idq=2A
MHz S MA R 50

!Freq !MHz	S11 mag ang	S21 mag ang	S12 mag ang	S22 mag ang
100	0.934 -173.64	3.319 31.63	0.003 73.63	0.949 -175.09
200	0.981 -178.98	0.858 14.57	0.009 88.83	0.985 -179.24
300	0.990 178.16	0.428 9.41	0.014 87.58	0.992 178.52
400	0.994 175.42	0.236 7.52	0.020 85.54	0.995 176.37
500	0.995 173.39	0.162 8.51	0.025 83.86	0.997 174.78
600	0.996 171.08	0.114 12.37	0.031 81.88	0.997 172.98
700	0.997 169.22	0.093 17.49	0.036 80.25	0.998 171.52
800	0.997 167.00	0.078 25.09	0.043 78.30	0.998 169.79
900	0.997 165.14	0.073 31.70	0.049 76.66	0.998 168.35
1000	0.997 163.27	0.071 37.73	0.055 75.01	0.997 166.90

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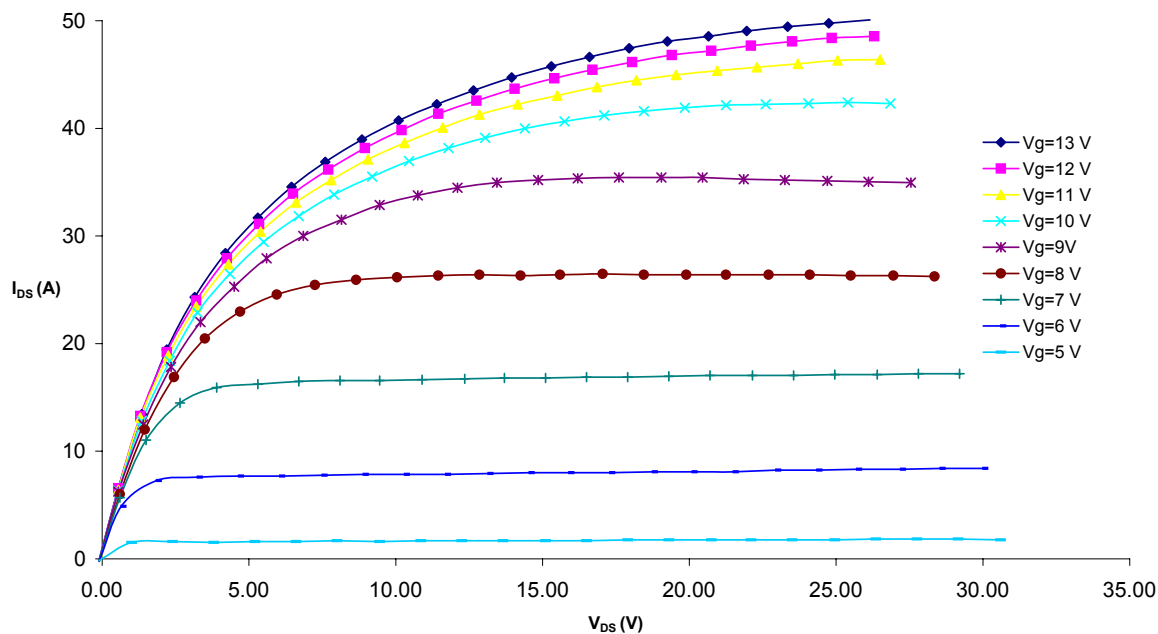


Figure 4 – Typical IV Characteristics.

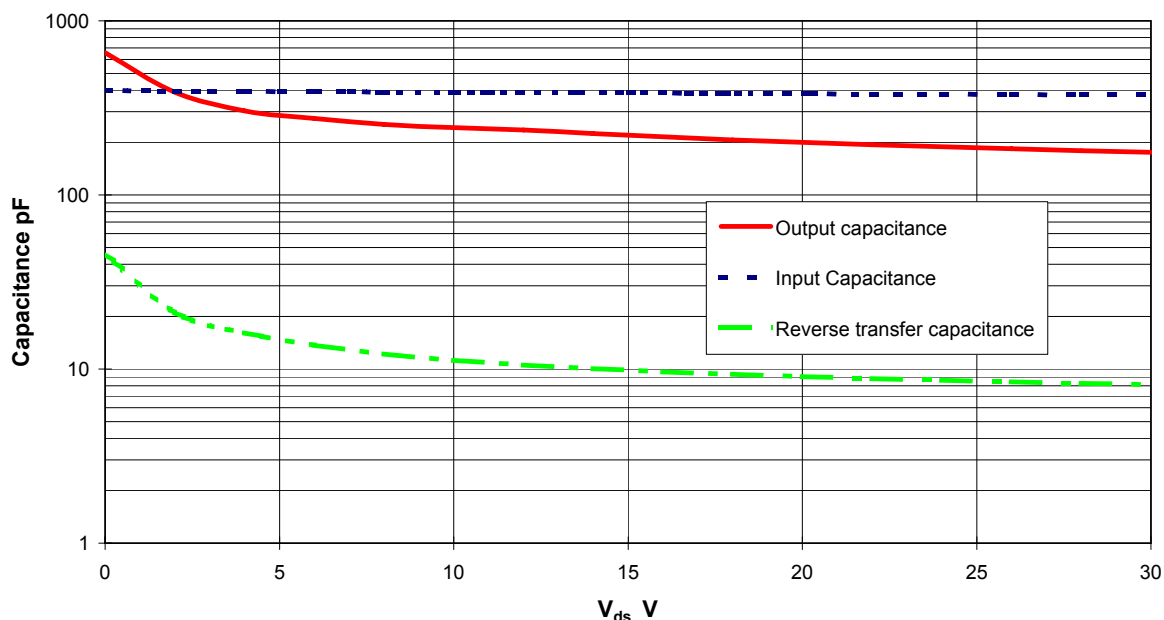
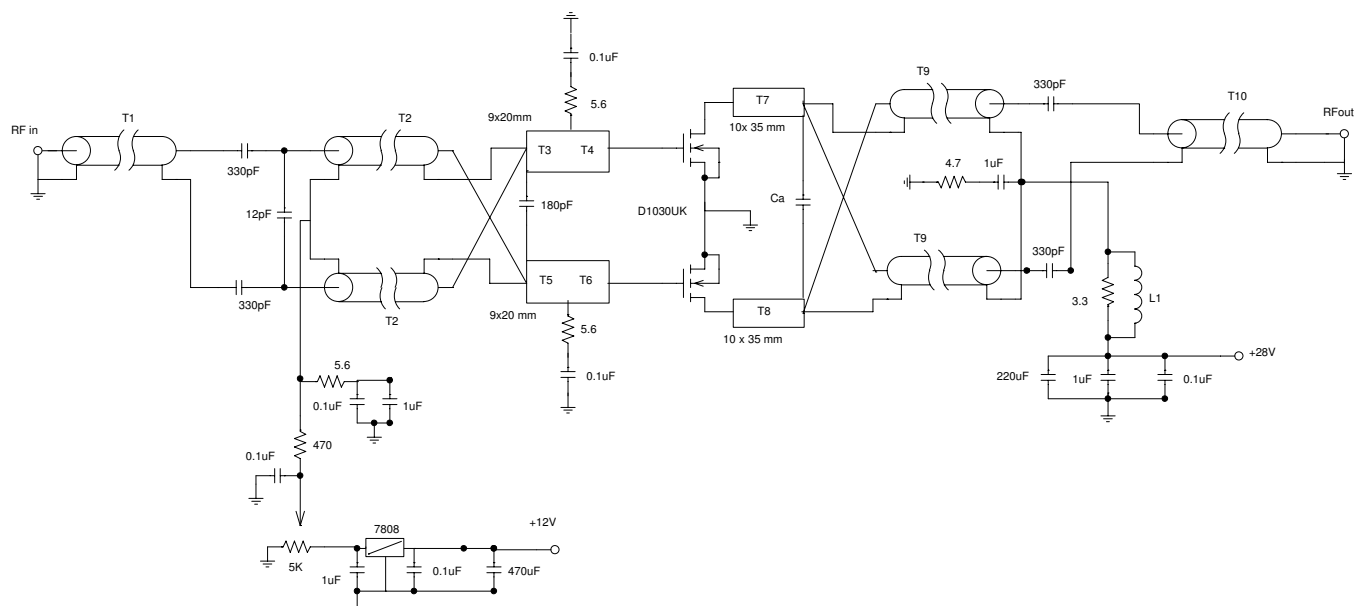


Figure 5 – Typical CV Characteristics.

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D1030UK TEST FIXTURE

substrate $\epsilon_r=3.3$

substrate thickness= 0.78mm

T1 50 Ohm coaxial cable UT 47, length=100mm

T2 25 Ohm coaxial cable UT-034-25, length=70mm

T3 10mm T5 10mm T7 35mm

T4 10mm T6 10mm T8 35mm

T9 25 Ohm semi rigid coaxial cable, length=120mm

T10 50 Ohm coaxial cable UT-085, length=120mm

L1 5 turns 1mm diameter enamelled copper wire on a ferrite core

Ca 3x39pF