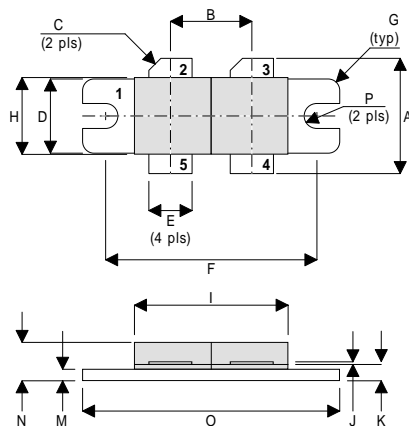


MECHANICAL DATA

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



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

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°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
PER SIDE					
B _V 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		8 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 = 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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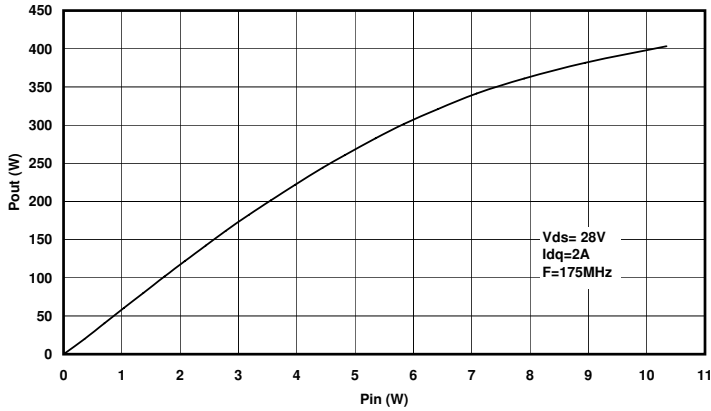


Figure 1. Output Power Vs Input Power

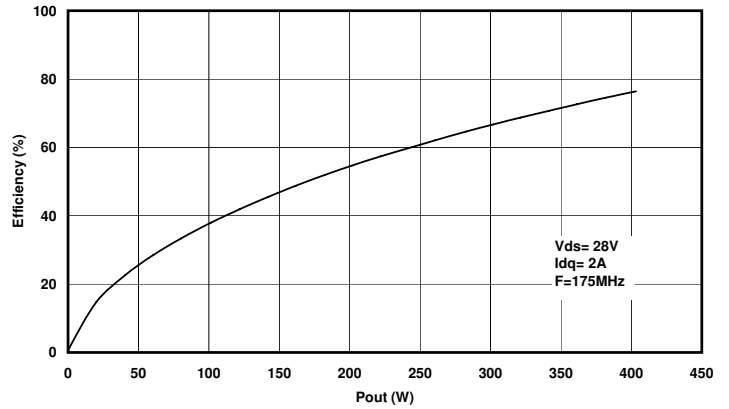


Figure 2. Efficiency Vs. Output Power

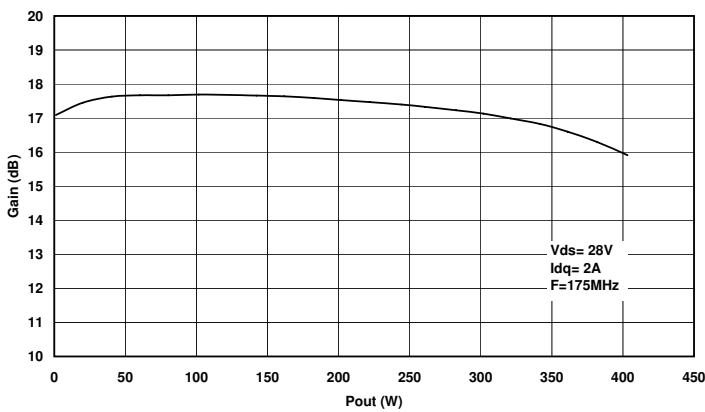


Figure 3. Gain Vs Output Power

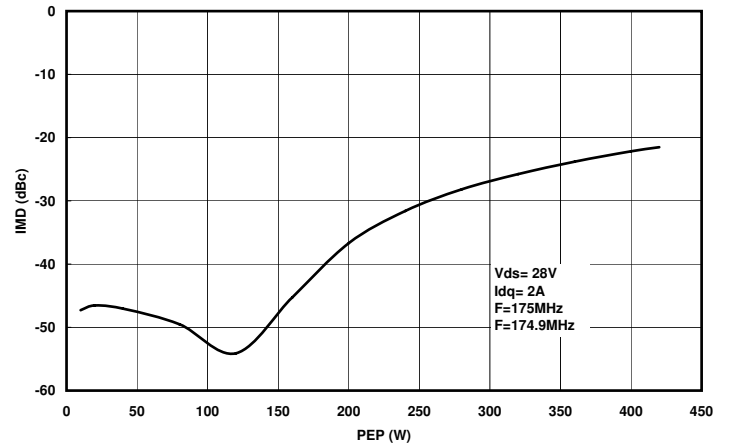


Figure 3. IMD 3 Vs PEP

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		S21		S12		S22	
	mag	ang	mag	ang	mag	ang	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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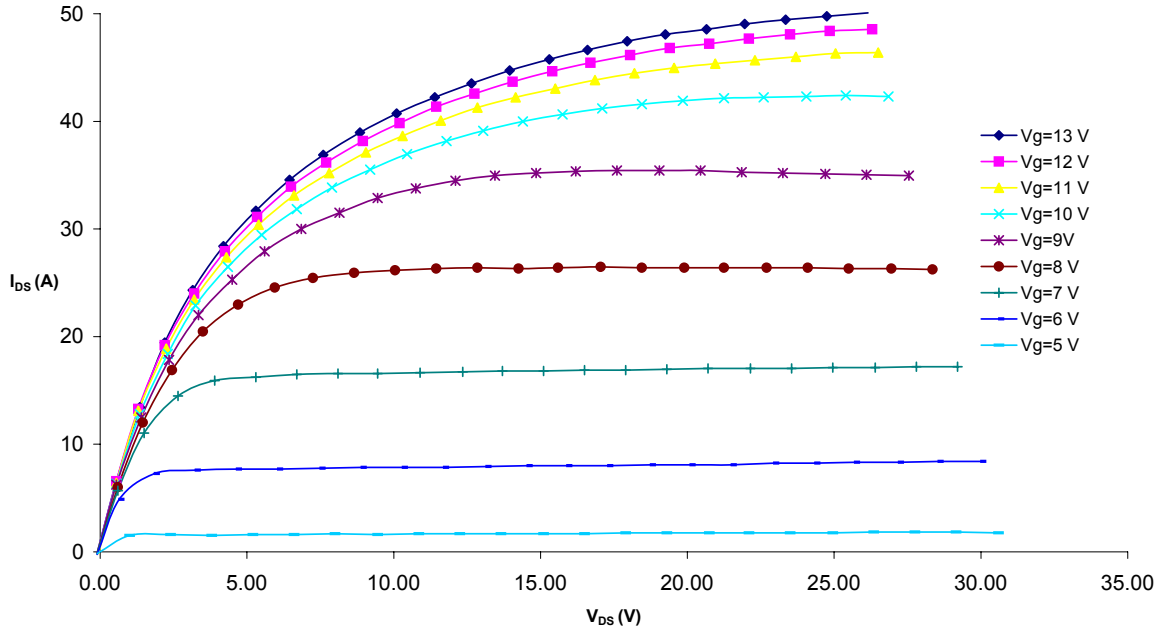


Figure 4 – Typical IV Characteristics.

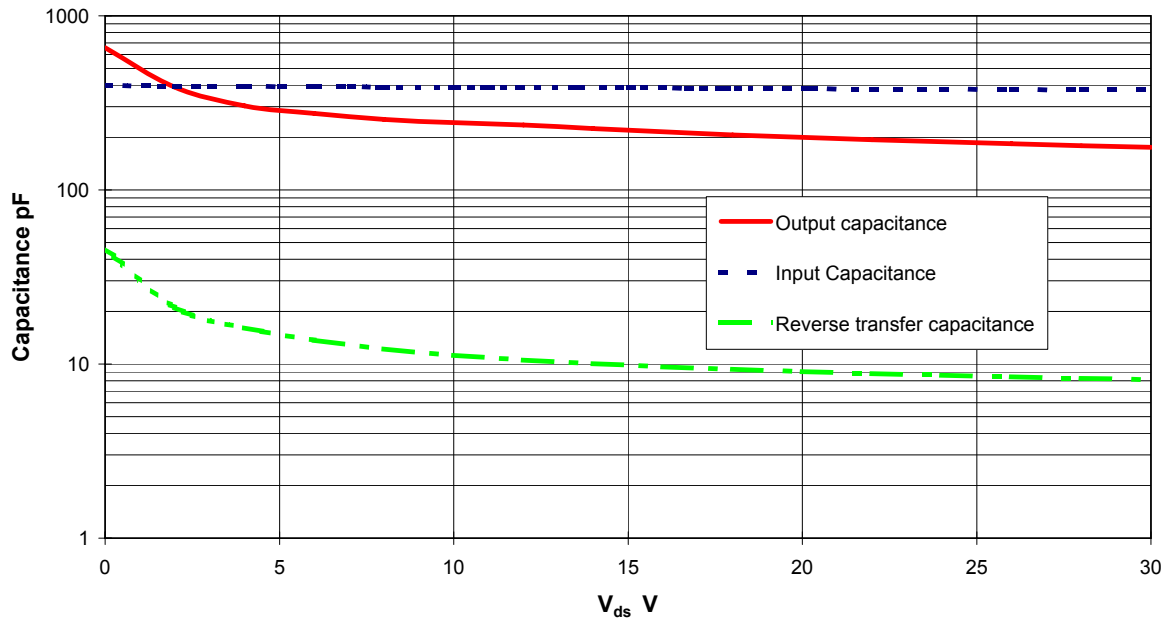
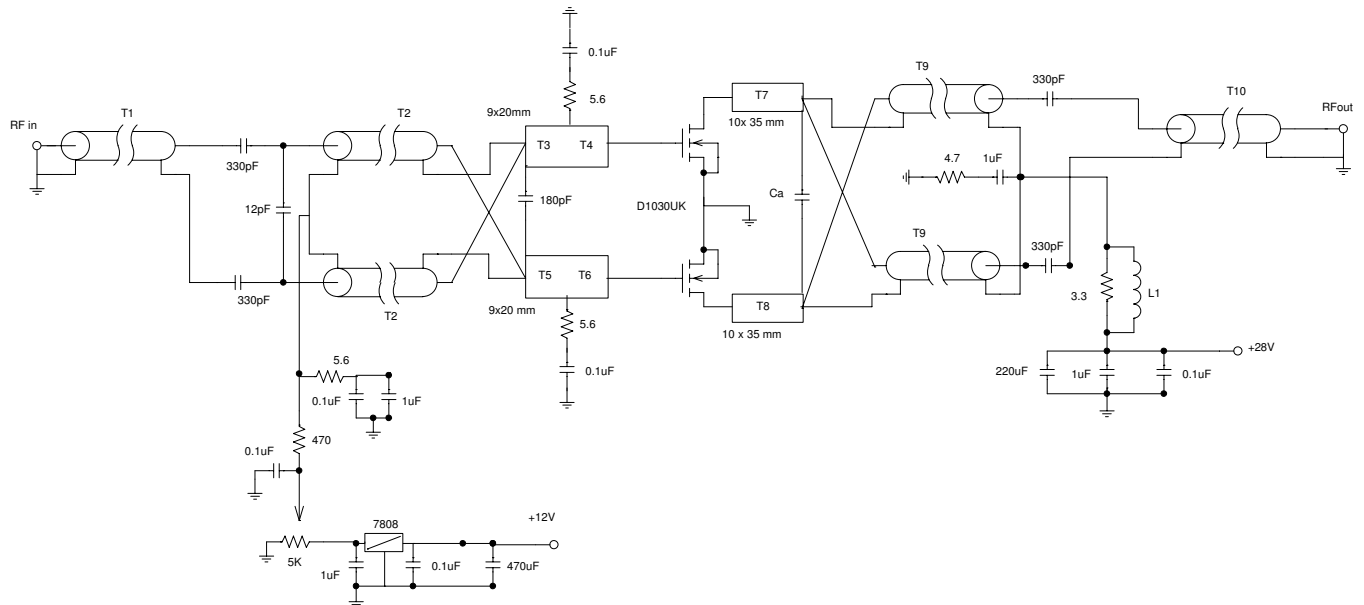


Figure 5 – Typical CV Characteristics.

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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