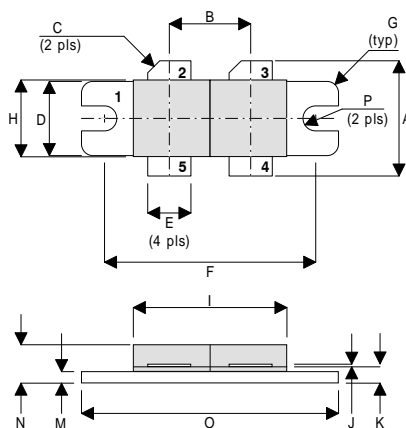


MECHANICAL DATA

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 400W – 28V – 108MHz 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 – 16 dB MINIMUM

APPLICATIONS

- VHF FM COMMUNICATIONS

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

P_D	Power Dissipation	438W
BV_{DSS}	Drain – Source Breakdown Voltage *	70V
BV_{GSS}	Gate – Source Breakdown Voltage *	$\pm 20V$
$I_{D(sat)}$	Drain Current *	35A
T_{stg}	Storage Temperature	-65 to 150°C
T_j	Maximum Operating Junction Temperature	200°C

* Per Side

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
PER SIDE							
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			7	mA
I _{GSS}	Gate Leakage Current	V _{GS} = 20V	V _{DS} = 0			7	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 = 7A	5.6			S
TOTAL DEVICE							
G _{PS}	Common Source Power Gain	P _O = 400W		16			dB
η	Drain Efficiency	V _{DS} = 28V I _{DQ} = 2A		65			%
VSWR	Load Mismatch Tolerance	f = 108MHz		20:1			—
PER SIDE							
C _{iSS}	Input Capacitance	V _{DS} = 28V	V _{GS} = −5V f = 1MHz			380	pF
C _{oSS}	Output Capacitance	V _{DS} = 28V	V _{GS} = 0 f = 1MHz			180	pF
C _{rSS}	Reverse Transfer Capacitance	V _{DS} = 28V	V _{GS} = 0 f = 1MHz			10	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. 0.4°C / W
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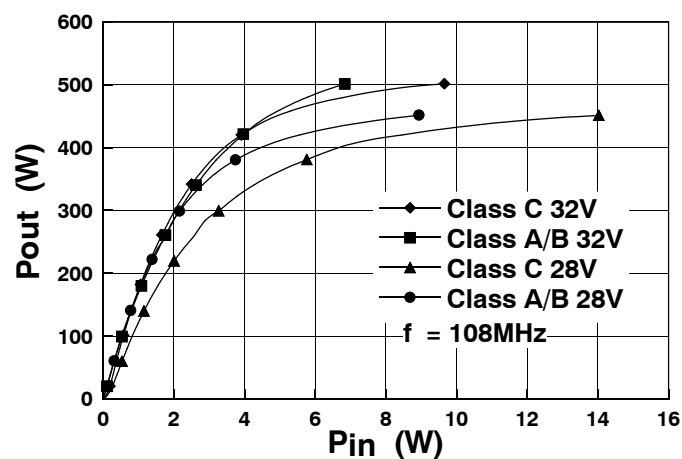


Figure 1
Output Power vs. Input Power

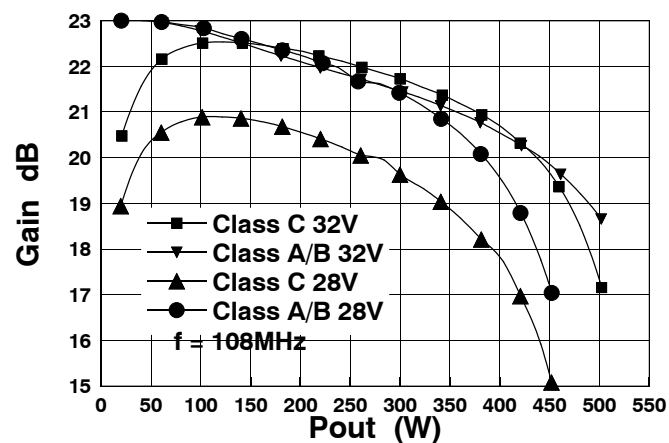


Figure 2
Gain vs. Output Power

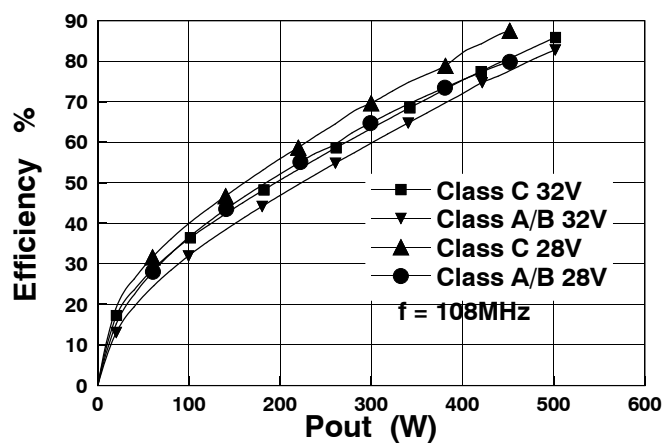


Figure 3
Efficiency vs. Output Power

OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z_S Ω	Z_L Ω
108	$1.5 + j3.5$	$1.5 - j0.4$

APPLICATION NOTE

In applications where a constant output power is required irrespective of variations in temperature or supply voltage etc. then a feedback loop must be incorporated whereby the drain voltage is adjusted to maintain constant output power.

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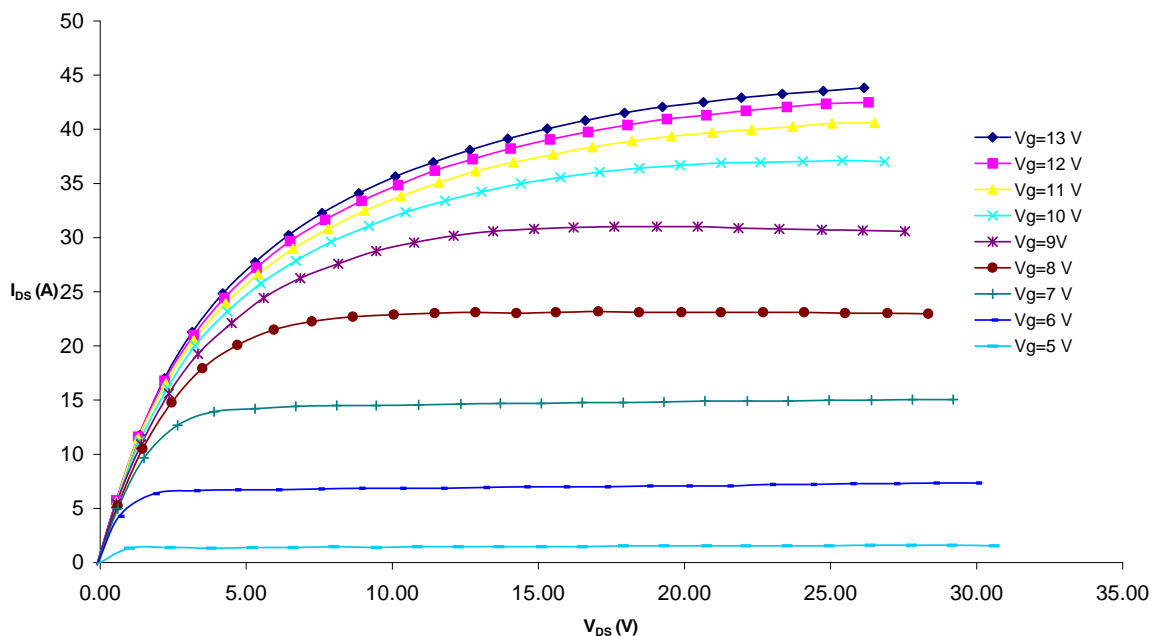


Figure 4 – Typical IV Characteristics.

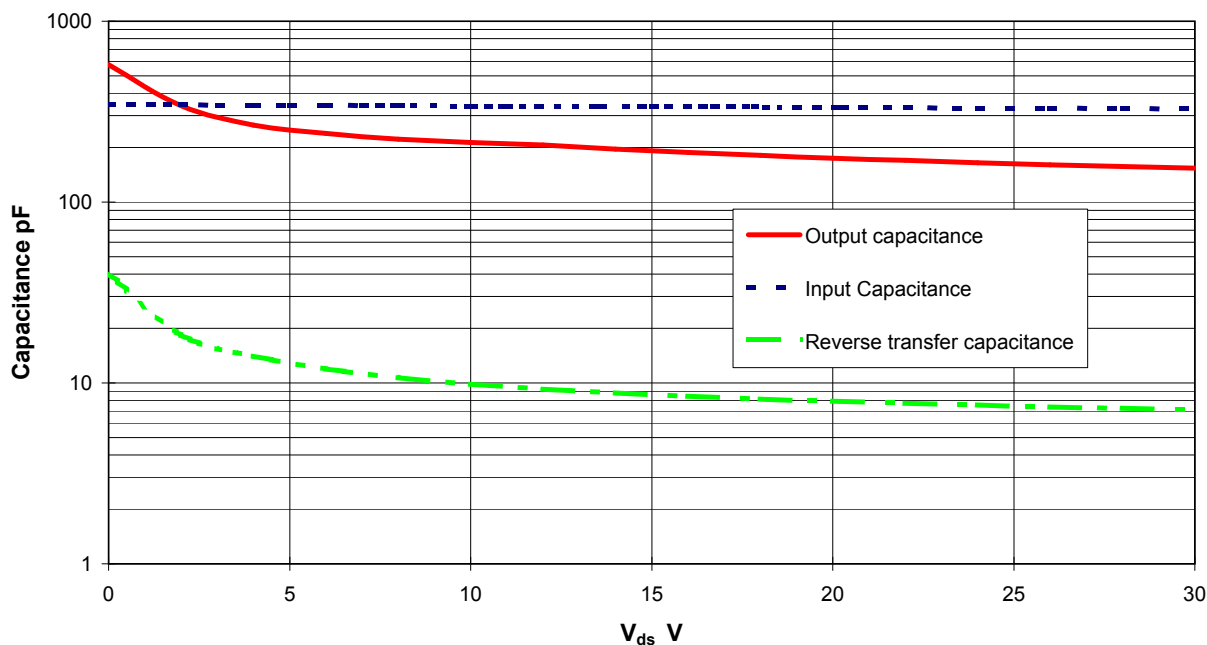
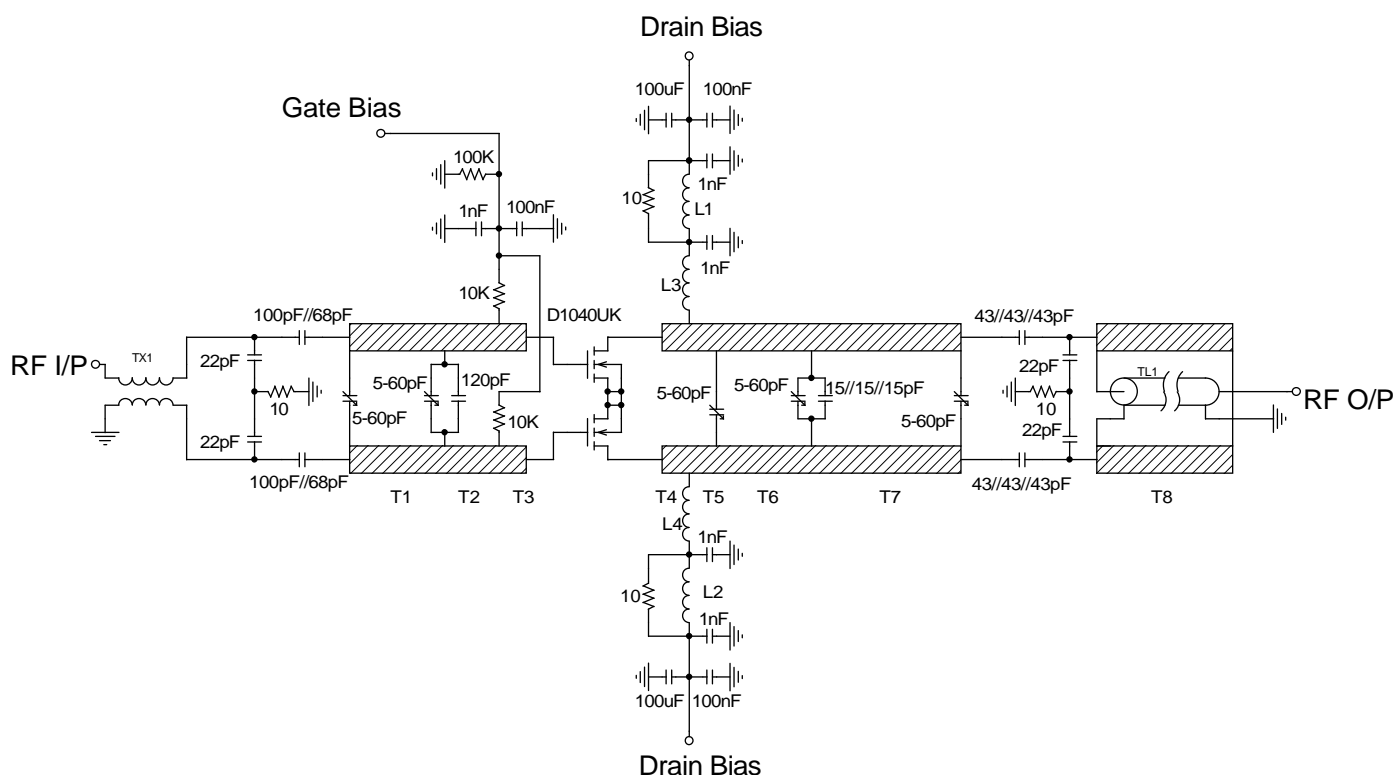


Figure 5 – Typical CV Characteristics.

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D1040UK 108MHz Test Fixture

Substrate 1.6mm PTFE/glass $\epsilon_r=2.2$

TX1 4 turns 50 Ω coaxial cable wound around toroid

TL1 160mm UT85 semi-rigid coax

L1, L2 1 turn 1.2mm dia wire on Siemens B62152A1X1 2 hole core

L3, L4 4 turns 1.2mm dia wire, 10mm internal dia

T8 4.8mm wide, all other lines 6mm wide

T1 50mm

T2 40mm

T3 10mm

T4 14mm

T5 8mm

T6 40mm

T7 66mm

T8 160mm

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