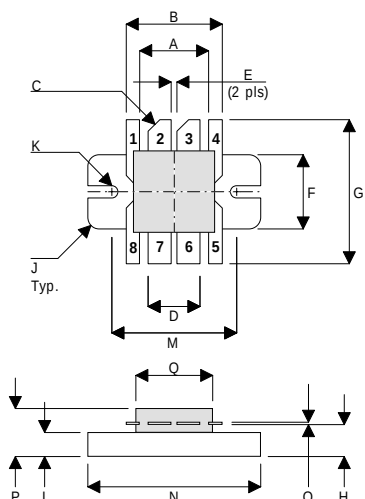


MECHANICAL DATA



DD

PIN 1	SOURCE (COMMON)	PIN 2	DRAIN 1
PIN 3	DRAIN 2	PIN 4	SOURCE (COMMON)
PIN 5	SOURCE (COMMON)	PIN 6	GATE 2
PIN 7	GATE 1	PIN 8	SOURCE (COMMON)

DIM	mm	Tol.	Inches	Tol.
A	9.14	0.13	0.360	0.005
B	12.70	0.13	0.500	0.005
C	45°	5°	45°	5°
D	6.86	0.13	0.270	0.005
E	0.76	0.13	0.030	0.005
F	9.78	0.13	0.385	0.005
G	19.05	0.25	0.750	0.010
H	4.19	0.13	0.165	0.005
I	3.17	0.13	0.125	0.005
J	1.52R	0.13	0.060R	0.005
K	1.65R	0.13	0.065R	0.005
M	16.51	0.13	0.650	0.005
N	22.86	0.13	0.900	0.005
O	0.13	0.02	0.005	0.001
P	6.35	0.64	0.250	0.025
Q	10.77	0.13	0.424	0.005

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 40W – 12.5V – 500MHz PUSH-PULL

FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW C_{rss}
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN – 10 dB MINIMUM

APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS
from 1 MHz to 500 MHz

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

P_D	Power Dissipation	175W
BV_{DSS}	Drain – Source Breakdown Voltage*	40V
BV_{GSS}	Gate – Source Breakdown Voltage*	$\pm 20V$
$I_{D(sat)}$	Drain Current*	20A
T_{stg}	Storage Temperature	-65 to $150^{\circ}C$
T_j	Maximum Operating Junction Temperature	$200^{\circ}C$

* Per side

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Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

E-mail: sales@semelab.co.uk

Website: <http://www.semelab.co.uk>

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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	40			V
I _{DSS} Zero Gate Voltage Drain Current	V _{DS} = 12.5V V _{GS} = 0			2	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 = 2A	1.6			S
TOTAL DEVICE					
G _{PS} Common Source Power Gain	P _O = 40W	10			dB
η Drain Efficiency	V _{DS} = 12.5V I _{DQ} = 1.6A	50			%
VSWR Load Mismatch Tolerance	f = 400MHz	20:1			—
PER SIDE					
C _{iss} Input Capacitance	V _{DS} = 0V V _{GS} = –5V f = 1MHz			120	pF
C _{oss} Output Capacitance	V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			80	pF
C _{rss} Reverse Transfer Capacitance	V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			8	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. 1.0°C / W
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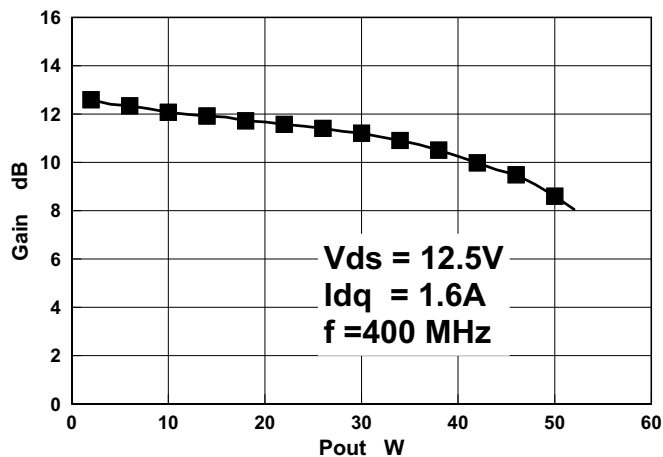


Figure 1- Gain vs. Power Output

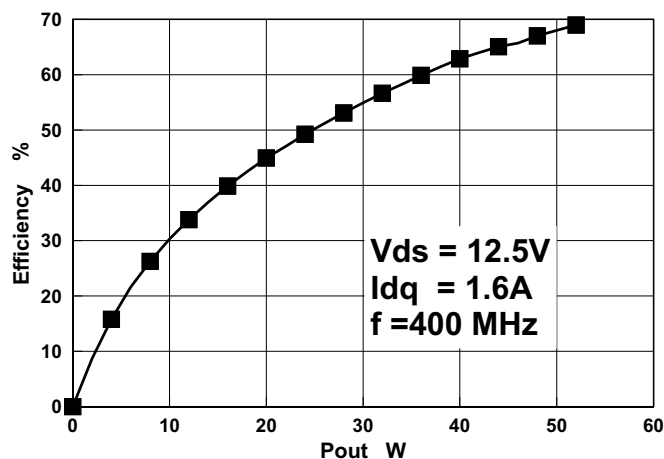


Figure 2 - Efficiency vs Power Output

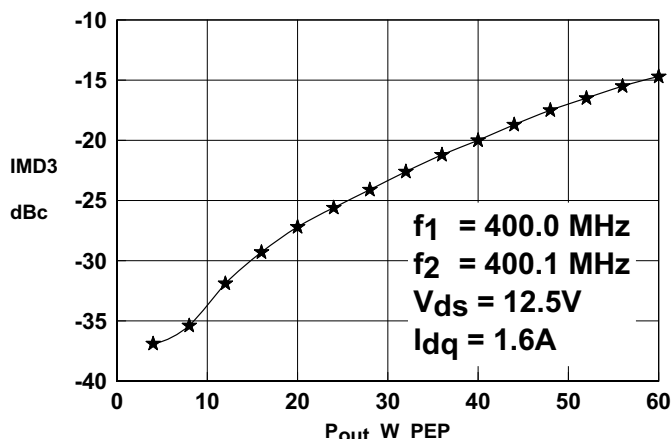


Figure 3 - IMD vs Power Output

OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z_S Ω	Z_L Ω
400	$1.5 + j1.2$	$1.9 - j1.1$

Typical S Parameters

! $V_{DS} = 12.5V$, $I_{DQ} = 0.4A$
MHz S MA R 50

!Freq !MHz	S11 mag	ang	S21 mag	ang	S12 mag	ang	S22 mag	ang
70	0.71	-151.2	9.5	73.1	0.019	-9.1	0.77	-163.9
100	0.75	-156.2	6.1	62.2	0.016	-13.2	0.79	-166.0
150	0.81	-162.7	3.7	50.4	0.012	-12.8	0.83	-169.7
200	0.85	-167.4	2.4	44.0	0.009	0.4	0.86	-172.8
250	0.88	-171.0	1.7	36.6	0.008	20.8	0.88	-175.3
300	0.90	-173.9	1.3	34.5	0.009	49.0	0.89	-176.6
350	0.91	-175.1	1.0	26.0	0.010	60.6	0.90	-178.7
400	0.92	-177.9	0.8	23.4	0.014	70.2	0.91	-180.0
450	0.93	-179.7	0.7	17.6	0.017	75.0	0.92	-178.6
500	0.93	-178.1	0.6	13.3	0.021	77.9	0.93	-176.8
550	0.94	-175.9	0.5	8.2	0.023	78.5	0.93	-175.4
600	0.95	-174.2	0.4	2.5	0.028	77.1	0.94	-174.4
650	0.95	-172.2	0.3	8.9	0.029	80.6	0.95	-172.9
700	0.96	-170.9	0.2	19.2	0.034	76.8	0.95	-171.8

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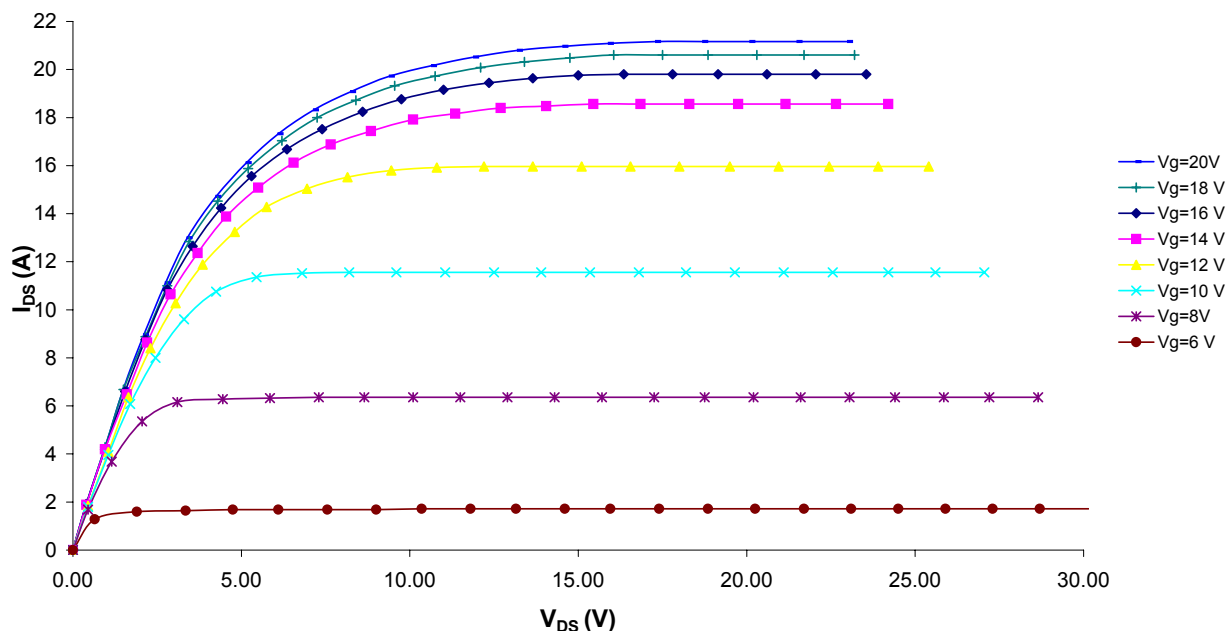


Figure 4 – Typical IV Characteristics.

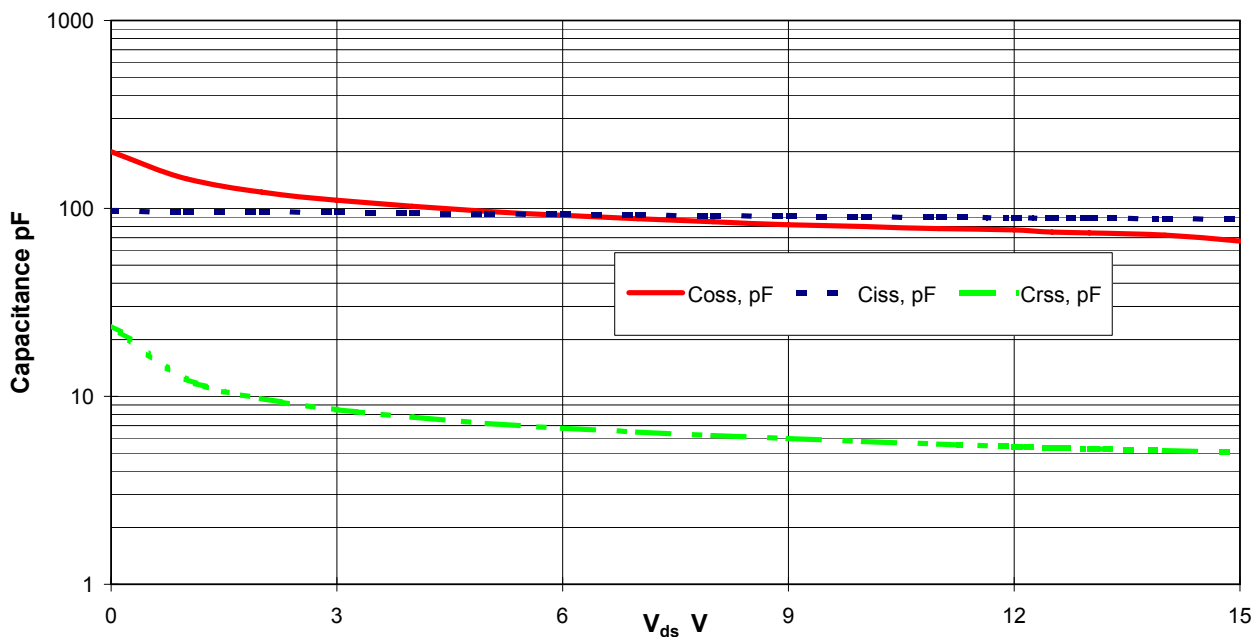
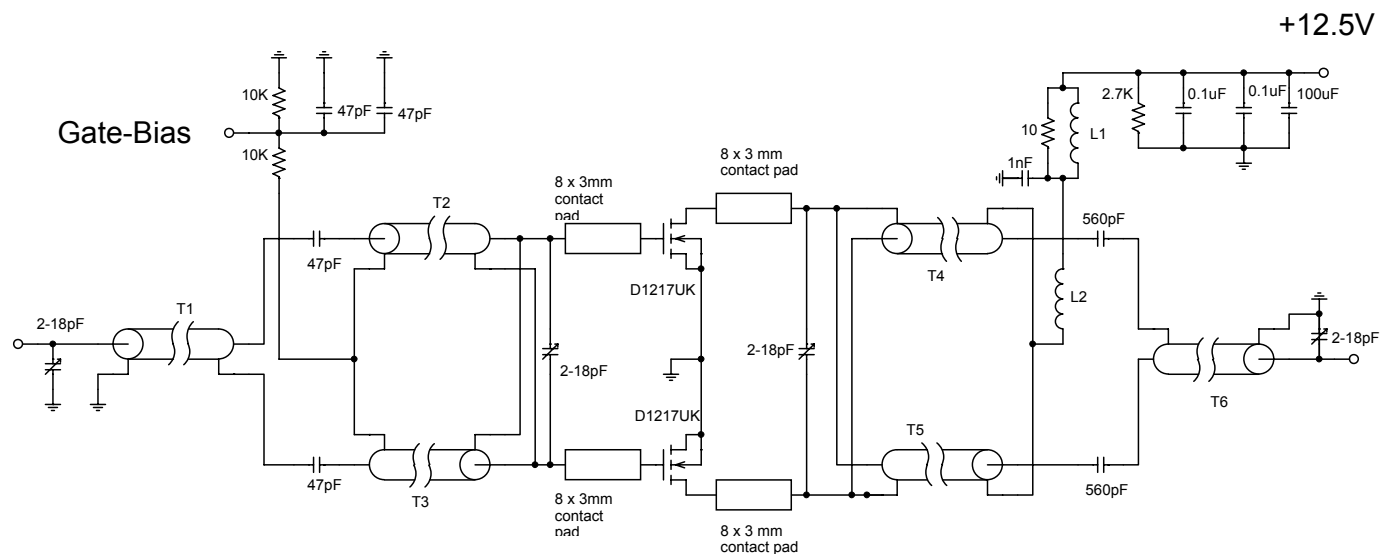


Figure 5 – Typical CV Characteristics.



D1217UK TEST FIXTURE

- T1 50 Ohm semi-rigid coax 0.034" dia, 7cm long
- T2,3 25 Ohm semi-rigid coax 0.070" dia, 10cm long on Siemens B62152A1X1 ferrite core
- T4,5 25 Ohm semi-rigid coax 0.070" dia, 10cm long
- T6 50 Ohm semi-rigid coax 0.034" dia, 7cm long
- L1 2.5 turns 1mm dia enamelled copper wire on Siemens B62152A1X1 ferrite core
- L2 6 turns 2 mm dia enamelled copper wire, 3.5mm internal diameter