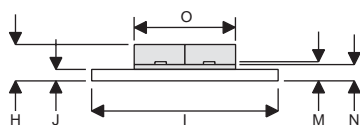
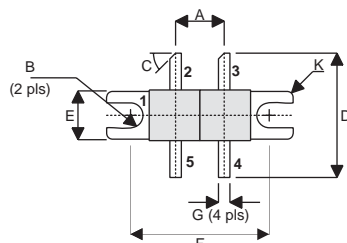


MECHANICAL DATA



DK

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

DIM	mm	Tol.	Inches	Tol.
A	6.45	0.13	0.254	0.005
B	1.65R	0.13	0.065R	0.005
C	45°	5°	45°	5°
D	16.51	0.76	0.650	0.03
E	6.47	0.13	0.255	0.005
F	18.41	0.13	0.725	0.005
G	1.52	0.13	0.060	0.005
H	5.08	max	0.200	max
I	24.76	0.13	0.975	0.005
J	1.52	0.13	0.060	0.005
K	0.81R	0.13	0.032R	0.005
M	0.10	0.02	0.004	0.001
N	2.16	0.13	0.085	0.005
O	12.80	max	0.504	max

**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°C
$T_j$	Maximum Operating Junction Temperature	200°C

\* Per side

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## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>PER SIDE</b>					
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage V <sub>GS</sub> = 0 I <sub>D</sub> = 100mA	40			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current V <sub>DS</sub> = 12.5V V <sub>GS</sub> = 0			2	mA
I <sub>GSS</sub>	Gate Leakage Current V <sub>GS</sub> = 20V V <sub>DS</sub> = 0			1	μA
V <sub>GS(th)</sub>	Gate Threshold Voltage* I <sub>D</sub> = 10mA V <sub>DS</sub> = V <sub>GS</sub>	1		7	V
g <sub>fs</sub>	Forward Transconductance* V <sub>DS</sub> = 10V I <sub>D</sub> = 2A	1.6			S
<b>TOTAL DEVICE</b>					
G <sub>PS</sub>	Common Source Power Gain P <sub>O</sub> = 40W	10			dB
η	Drain Efficiency V <sub>DS</sub> = 12.5V I <sub>DQ</sub> = 1.6A	50			%
VSWR	Load Mismatch Tolerance f = 400MHz	20:1			—
<b>PER SIDE</b>					
C <sub>iss</sub>	Input Capacitance V <sub>DS</sub> = 0V V <sub>GS</sub> = -5V f = 1MHz			120	pF
C <sub>oss</sub>	Output Capacitance V <sub>DS</sub> = 12.5V V <sub>GS</sub> = 0 f = 1MHz			80	pF
C <sub>rss</sub>	Reverse Transfer Capacitance V <sub>DS</sub> = 12.5V V <sub>GS</sub> = 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 <sub>THj-case</sub>	Thermal Resistance Junction – Case	Max. 1.0°C / W
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Document Number 3204

Issue 3

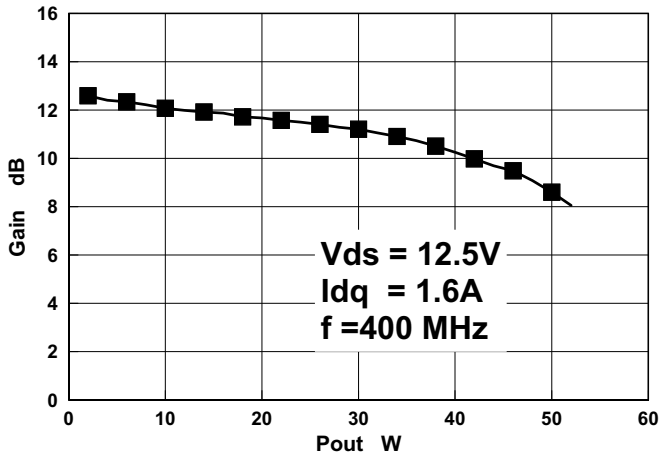


Figure 1- Gain vs. Power Output

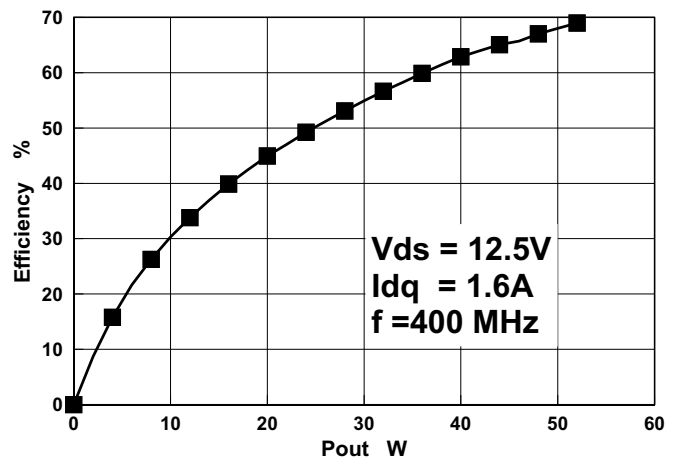


Figure 2 - Efficiency vs. Power Output

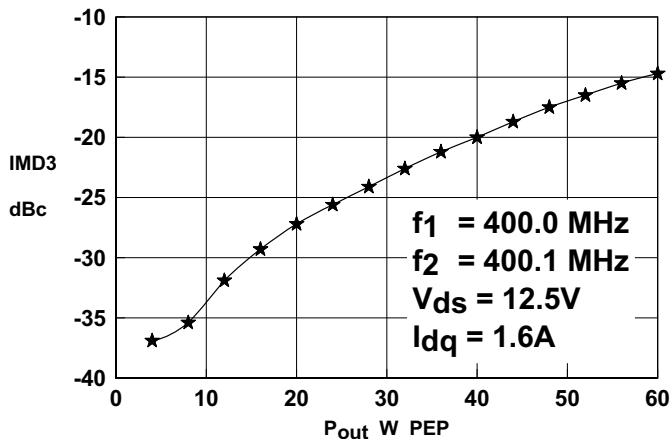


Figure 3 - IMD vs. Power Output

OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z <sub>S</sub> Ω	Z <sub>L</sub> Ω
400	1.5 + j1.2	1.9 - j1.1

Typical S Parameters

! V<sub>DS</sub> = 12.5V, I<sub>DQ</sub> = 0.4A  
# MHz S MA R 50

Freq MHz	S11		S21		S12		S22	
	mag	ang	mag	ang	mag	ang	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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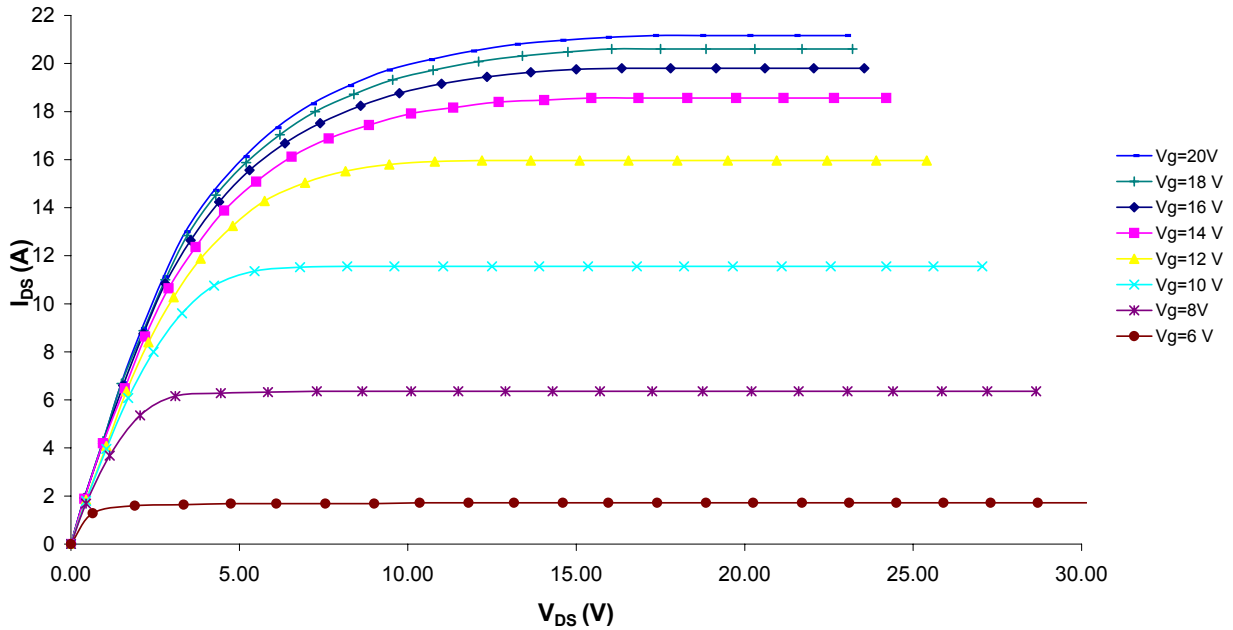


Figure 4 – Typical IV Characteristics.

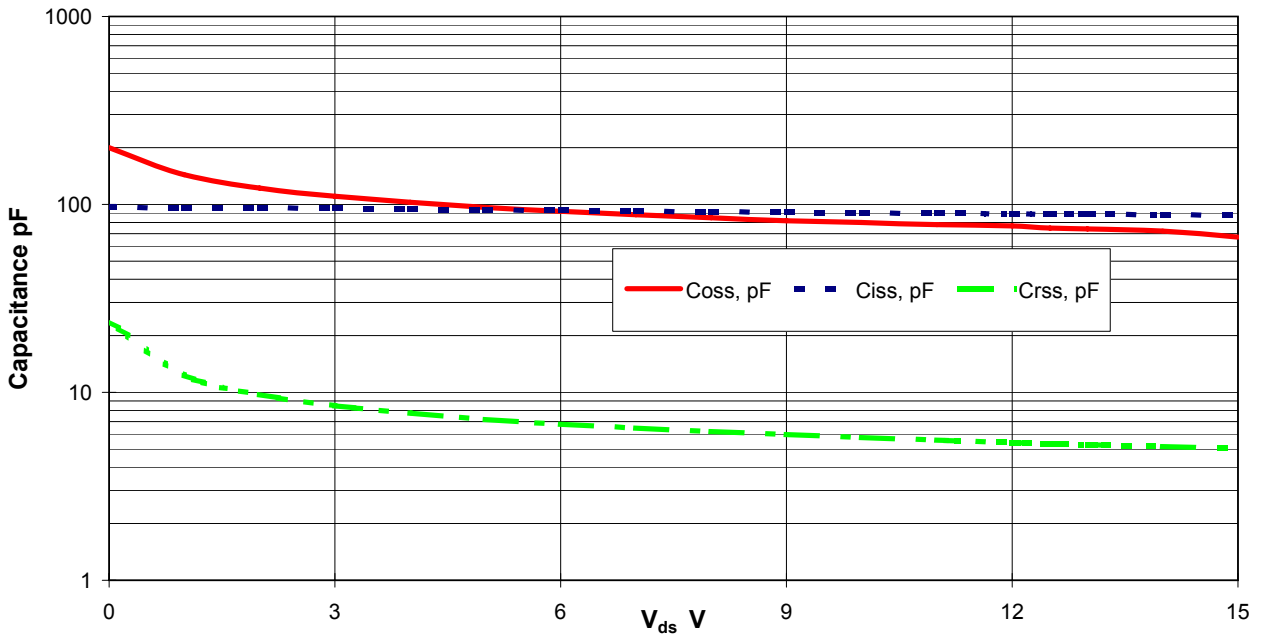
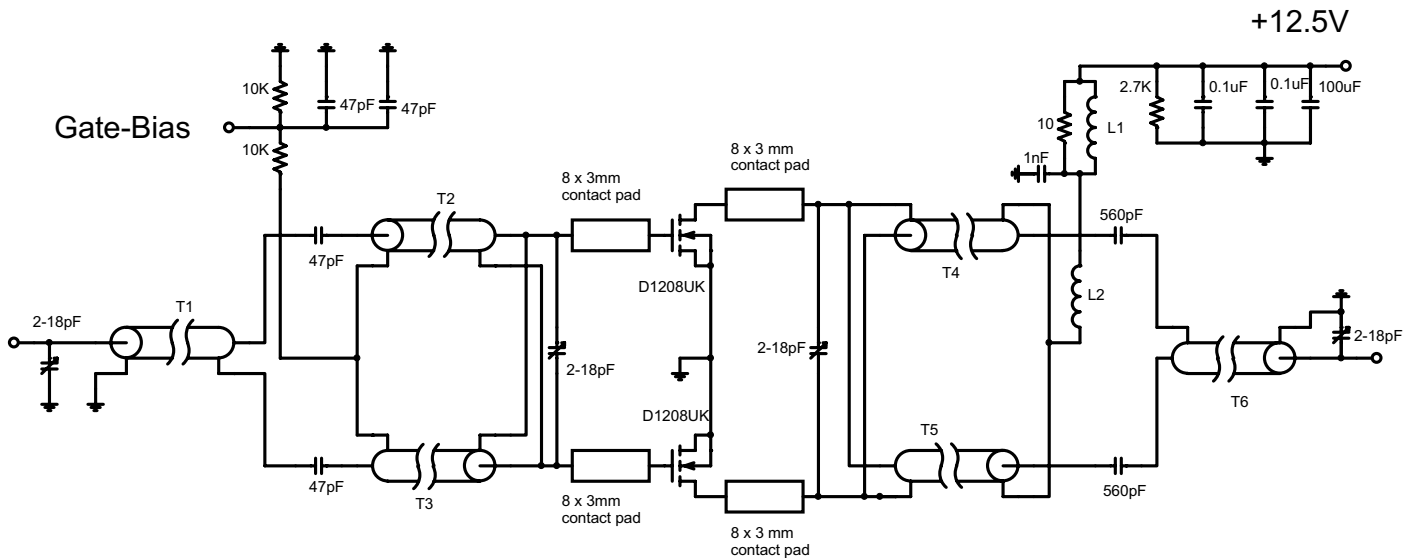


Figure 5 – Typical CV Characteristics.

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- 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

## D1208UK 400MHz Test Fixture