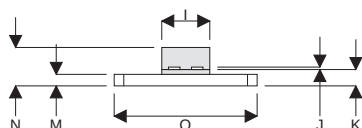
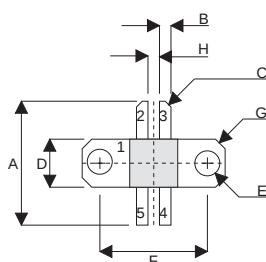


MECHANICAL DATA



DQ

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	16.38	0.26	0.645	0.010
B	1.52	0.13	0.060	0.005
C	45°	5°	45°	5°
D	6.35	0.13	0.250	0.005
E	3.30	0.13	0.130	0.005
F	14.22	0.13	0.560	0.005
G	1.27 x 45°	0.13	0.05 x 45°	0.005
H	1.52	0.13	0.060	0.005
I	6.35	0.13	0.250	0.005
J	0.13	0.02	0.005	0.001
K	2.16	0.13	0.085	0.005
M	1.52	0.13	0.060	0.005
N	5.08	MAX	0.200	MAX
O	18.90	0.13	0.744	0.005

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 5W – 12.5V – 1GHz PUSH-PULL

FEATURES

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

APPLICATIONS

- VHF/UHF COMMUNICATIONS
from 1MHz to 1 GHz

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

P_D	Power Dissipation	35W
BV_{DSS}	Drain – Source Breakdown Voltage *	40V
BV_{GSS}	Gate – Source Breakdown Voltage *	$\pm 20V$
$I_{D(sat)}$	Drain Current *	2A
T_{stg}	Storage Temperature	-65 to $150^{\circ}C$
T_j	Maximum Operating Junction Temperature	$200^{\circ}C$

* Per Side

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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 = 10mA	40			V
I _D DSS	Zero Gate Voltage Drain Current V _{DS} = 12.5V V _{GS} = 0			1	mA
I _G SS	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 = 0.2A	0.18			S
TOTAL DEVICE					
G _{PS}	Common Source Power Gain P _O = 5W	10			dB
η	Drain Efficiency V _{DS} = 12.5V I _{DQ} = 0.2A	40			%
VSWR	Load Mismatch Tolerance f = 1GHz	20:1			—
PER SIDE					
C _{iss}	Input Capacitance V _{DS} = 12.5V V _{GS} = –5V f = 1MHz			12	pF
C _{oss}	Output Capacitance V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			10	pF
C _{rss}	Reverse Transfer Capacitance V _{DS} = 12.5V V _{GS} = 0 f = 1MHz			1	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. 5.0°C / W
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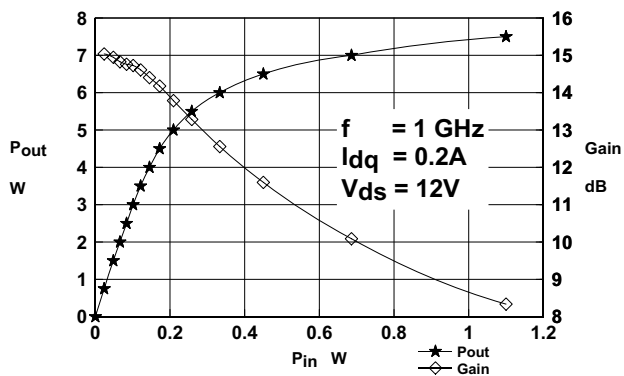


Figure 1 Output Power and Gain vs. Input power

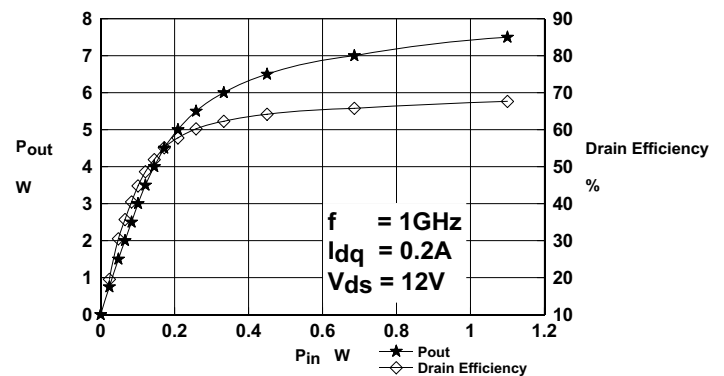


Figure 2 Output Power and Efficiency vs. Input Power

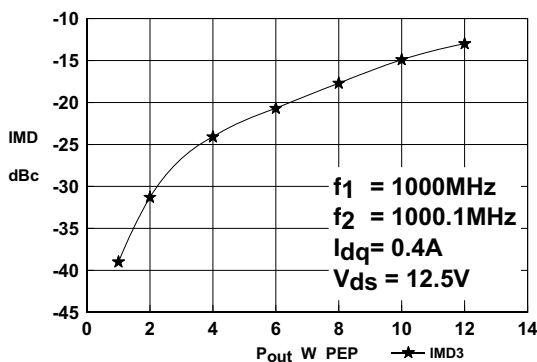


Figure 3 IMD Vs. Output Power.

OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z_S Ω	Z_L Ω
1000MHz	6.0 + j8.3	7.0 + j9.3

Typical S Parameters

! Vds=12.5V, Idq=0.2A
MHz S MA R 50

!Freq !MHz	S11 mag	ang	S21 mag	ang	S12 mag	ang	S22 mag	ang
100	0.88	-59	13.48	137	0.039	48	0.82	-51
150	0.79	-77	11.02	119	0.047	34	0.75	-65
200	0.74	-88	8.78	105	0.049	24	0.71	-76
250	0.71	-98	7.33	97	0.049	17	0.69	-84
300	0.7	-105	6.36	91	0.048	16	0.68	-91
350	0.69	-111	5.56	81	0.047	9	0.67	-97
400	0.69	-118	4.87	78	0.044	10	0.67	-103
450	0.7	-125	4.3	71	0.04	7	0.67	-110
500	0.71	-131	3.94	68	0.038	10	0.68	-116
550	0.72	-138	3.62	62	0.034	11	0.69	-124
600	0.73	-145	3.43	58	0.033	16	0.7	-130
650	0.75	-151	3.05	51	0.029	21	0.72	-137
700	0.75	-156	2.91	47	0.028	28	0.72	-142
750	0.76	-160	2.59	41	0.027	40	0.72	-147
800	0.76	-162	2.26	36	0.028	49	0.72	-150
850	0.76	-164	2.03	36	0.03	63	0.72	-153
900	0.77	-166	1.93	35	0.034	71	0.72	-156
950	0.77	-168	1.88	34	0.042	79	0.72	-159
1000	0.78	-170	1.81	30	0.05	81	0.72	-162

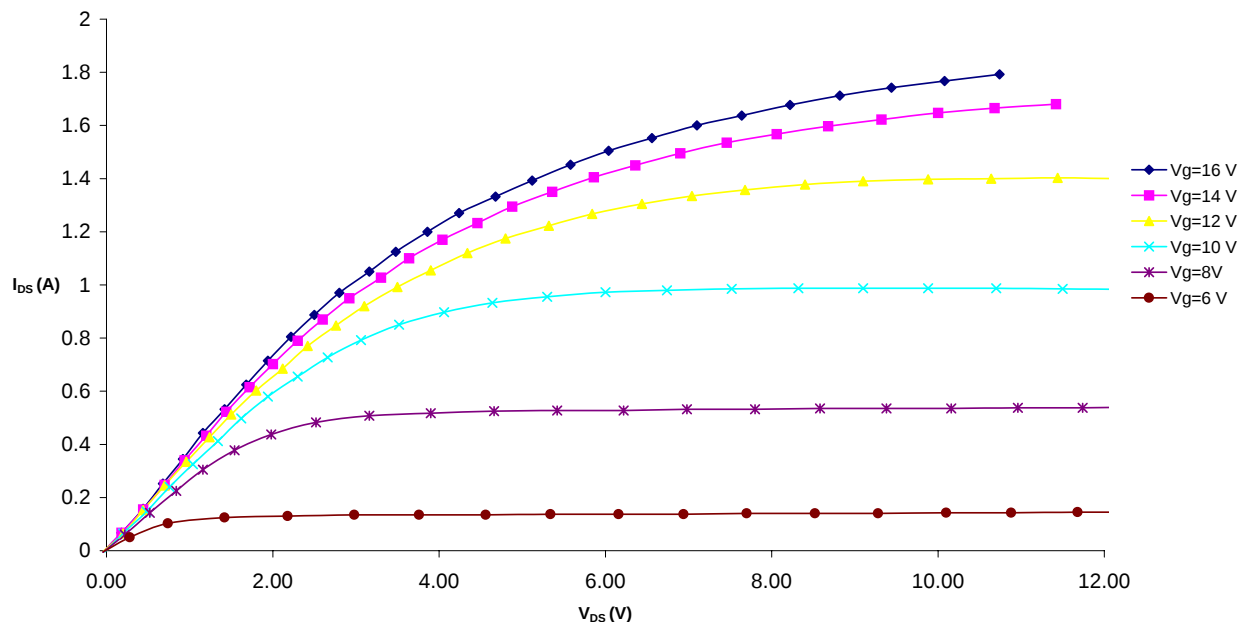


Figure 4 – Typical IV Characteristics.

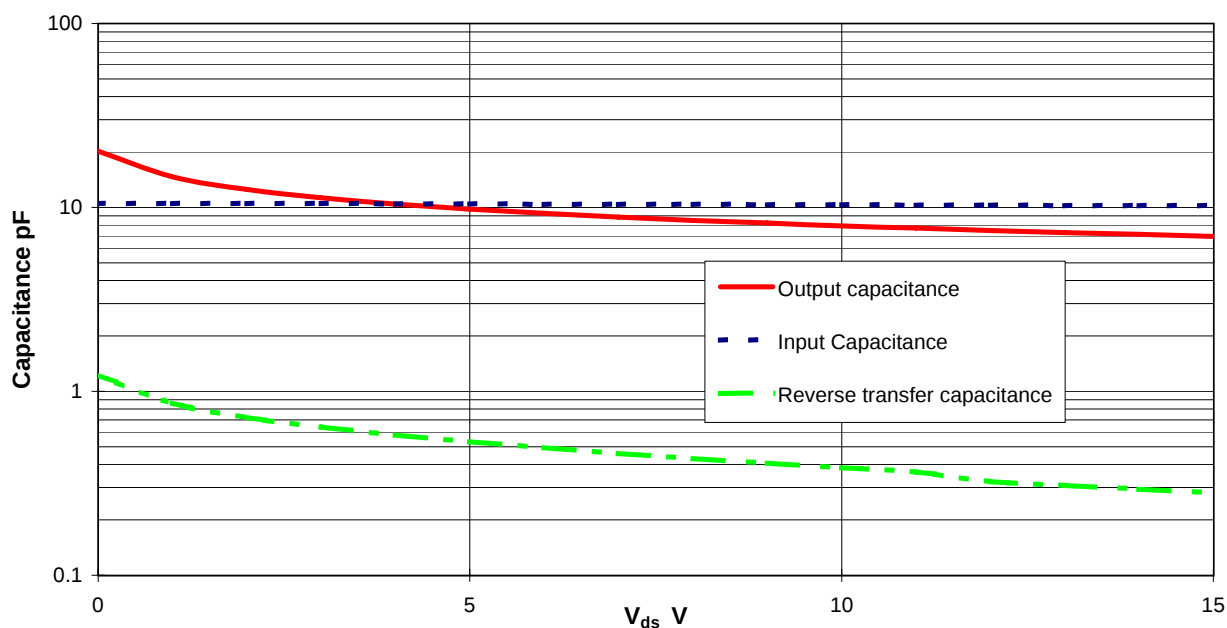
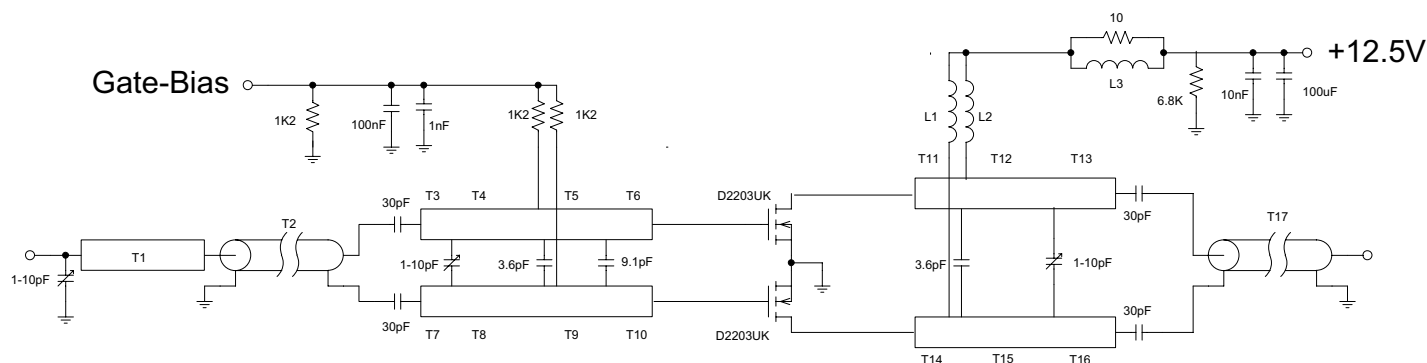


Figure 5 – Typical CV Characteristics.



D2203UK 1000MHz TEST FIXTURE

Substrate 0.8mm thick PTFE/glass

All microstrip lines W=2.7mm

T1 15.7mm
 T2, T17 45mm 50 Ohm UT34 semi-rigid coax
 T3, T7 7mm
 T4, T8 15mm
 T5, T9 7.6mm
 T6, T10 8mm
 T11, T14 8mm
 T12, T15 11.2mm
 T13, T16 7mm

L1, L2 6 turns of 24swg enamelled copper wire, 3mm i.d.

L3 1.5 turn 24swg enamelled copper wire on Siemens B62152-A7X 2 hole core