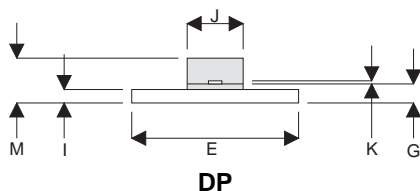
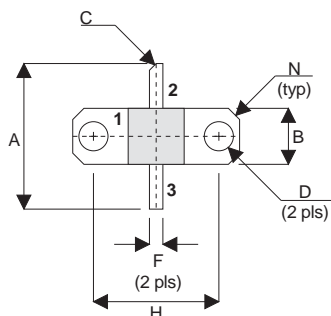


## MECHANICAL DATA



PIN 1 SOURCE PIN 2 DRAIN  
PIN 3 GATE

DIM	mm	Tol.	Inches	Tol.
A	16.51	0.25	0.650	0.010
B	6.35	0.13	0.250	0.005
C	45°	5°	45°	5°
D	3.30	0.13	0.130	0.005
E	18.92	0.08	0.745	0.003
F	1.52	0.13	0.060	0.005
G	2.16	0.13	0.085	0.005
H	14.22	0.08	0.560	0.003
I	1.52	0.13	0.060	0.005
J	6.35	0.13	0.250	0.005
K	0.13	0.03	0.005	0.001
M	5.08	0.51	0.200	0.020
N	1.27 x 45°	0.13	0.050 x 45°	0.005

## GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 5W – 28V – 1GHz SINGLE ENDED

## 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 DC to 1 GHz

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

$P_D$	Power Dissipation	29W
$BV_{DSS}$	Drain – Source Breakdown Voltage	65V
$BV_{GSS}$	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	2A
$T_{stg}$	Storage Temperature	-65 to 150°C
$T_j$	Maximum Operating Junction Temperature	200°C

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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$ Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 10mA$	65			V
$I_{DSS}$ Zero Gate Voltage Drain Current	$V_{DS} = 28V$ $V_{GS} = 0$			2	mA
$I_{GSS}$ Gate Leakage Current	$V_{GS} = 20V$ $V_{DS} = 0$			1	$\mu A$
$V_{GS(th)}$ Gate Threshold Voltage*	$I_D = 10mA$ $V_{DS} = V_{GS}$	1		7	V
$g_{fs}$ Forward Transconductance*	$V_{DS} = 10V$ $I_D = 0.4A$	0.36			S
$G_{PS}$ Common Source Power Gain	$P_O = 5W$	13			dB
$\eta$ Drain Efficiency	$V_{DS} = 28V$ $I_{DQ} = 0.2A$	40			%
VSWR Load Mismatch Tolerance	$f = 1GHz$	20:1			—
$C_{iss}$ Input Capacitance	$V_{DS} = 0$ $V_{GS} = -5V$ $f = 1MHz$			24	pF
$C_{oss}$ Output Capacitance	$V_{DS} = 28V$ $V_{GS} = 0$ $f = 1MHz$			12	pF
$C_{rss}$ Reverse Transfer Capacitance	$V_{DS} = 28V$ $V_{GS} = 0$ $f = 1MHz$			1	pF

\* Pulse Test: Pulse Duration = 300  $\mu s$  , Duty Cycle  $\leq 2\%$

**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. 6.0°C / W
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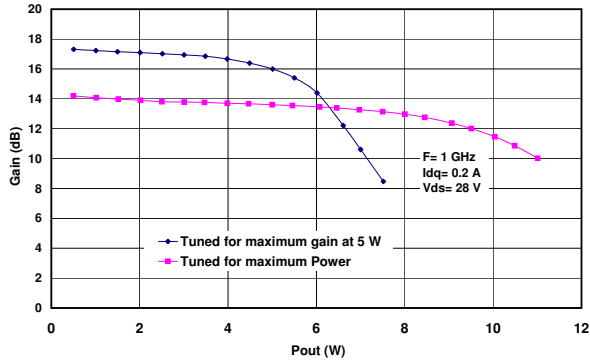
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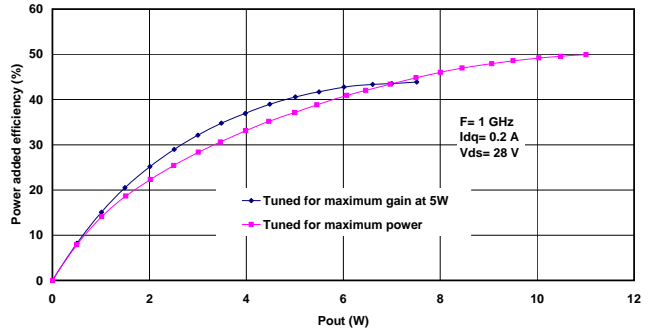
E-mail: [sales@semelab.co.uk](mailto:sales@semelab.co.uk) Website: <http://www.semelab.co.uk>

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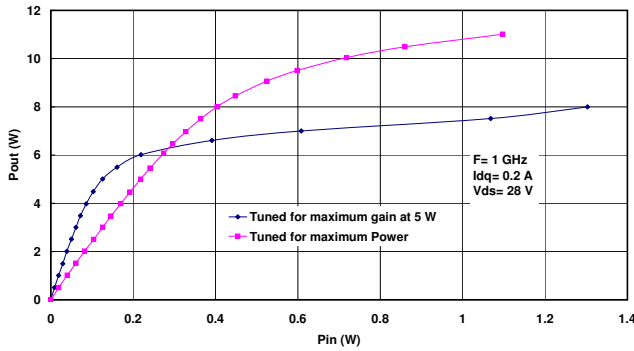
Issue 2



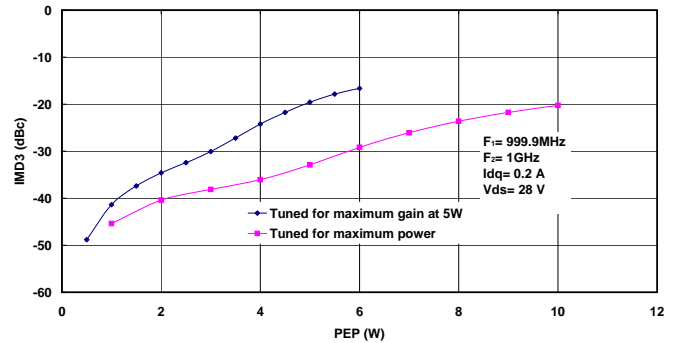
**Figure 1**  
Gain vs. Output Power.



**Figure 2**  
Power added efficiency vs. Output Power



**Figure 3**  
Output Power vs. Input Power.



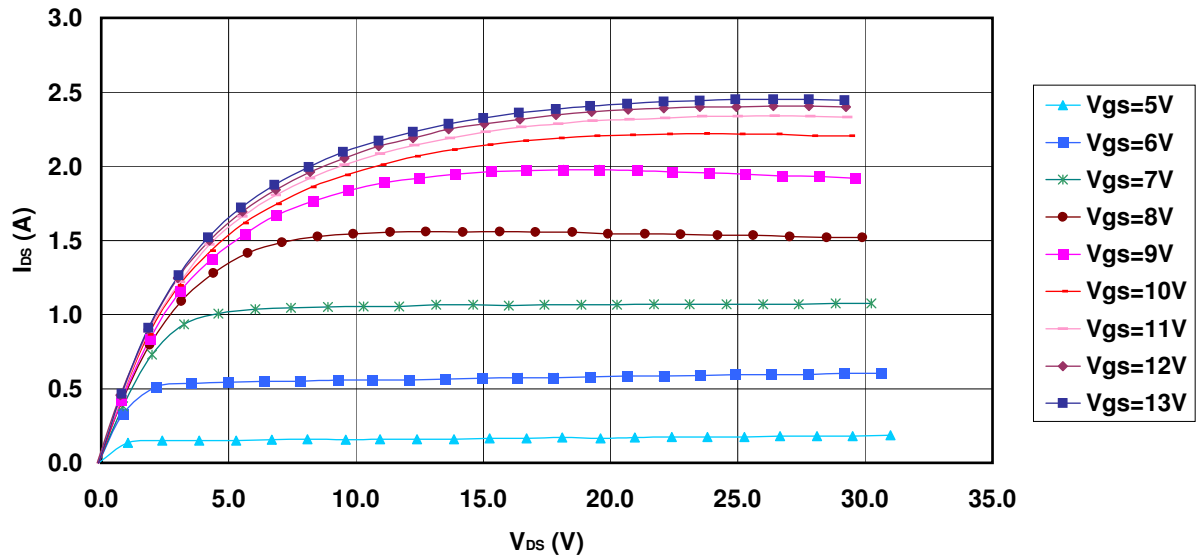
**Figure 4**  
IMD 3 vs. PEP

**Typical S Parameters**

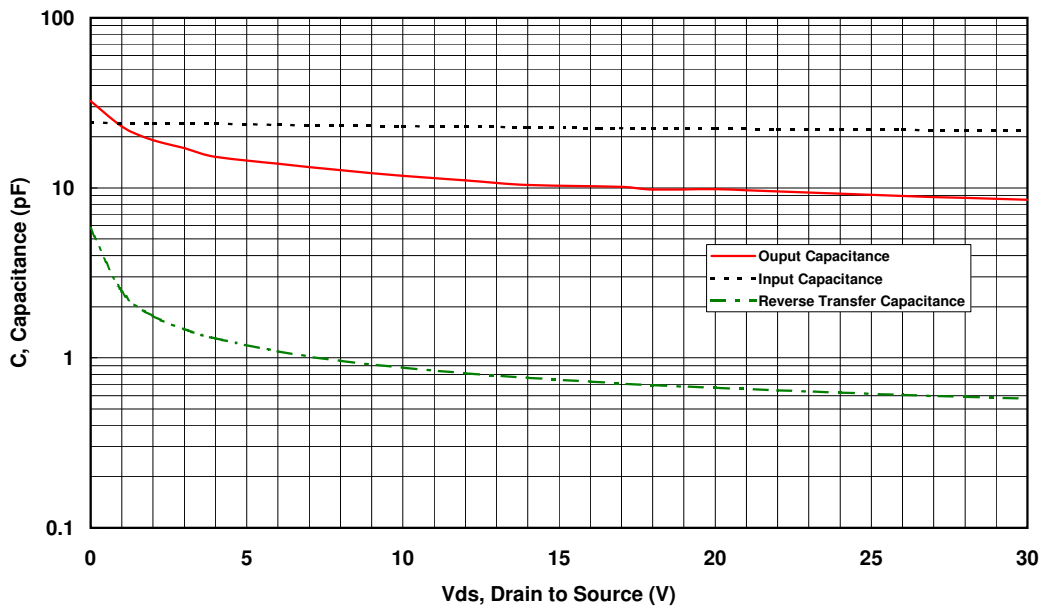
!  $V_{DS} = 12.5V, I_{DQ} = 0.4A$   
# MHZ S M A R 50

!Freq !MHz	S11 mag	ang	S21 mag	ang	S12 mag	ang	S22 mag	ang
100	0.845	-91	22.155	117	0.02225	32	0.755	-57
200	0.791	-126	12.621	89	0.02216	10	0.664	-83
300	0.798	-142	8.217	72	0.01672	4	0.684	-100
400	0.820	-151	5.795	60	0.01048	17	0.728	-112
500	0.843	-158	4.300	50	0.00919	65	0.772	-123
600	0.864	-164	3.310	42	0.01567	93	0.809	-131
700	0.880	-169	2.623	35	0.02463	99	0.840	-138
800	0.893	-173	2.128	30	0.03420	100	0.864	-144
900	0.904	-177	1.761	25	0.04399	98	0.883	-149
1000	0.912	179	1.483	21	0.05390	96	0.898	-153

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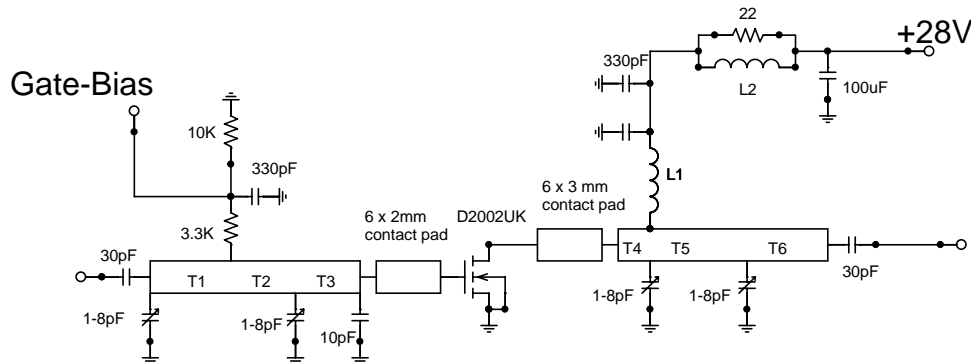


**Figure 5 – Typical IV Characteristics.**



**Figure 6 – Typical CV Characteristics.**

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# D2002UK 1GHz TEST FIXTURE

Substrate 0.8mm PTFE/glass,  $\epsilon_r=2.5$

All microstrip lines  $W=2.2\text{mm}$

T1 28mm

T2 12mm

T3 9mm

T4 5mm

T5 23 mm

T6 17mm

L1 7.5 turns 0.5mm dia enamelled copper wire, 3mm i.d.

L2 1.5 turns 0.5mm enamelled copper wire on ferrite core

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