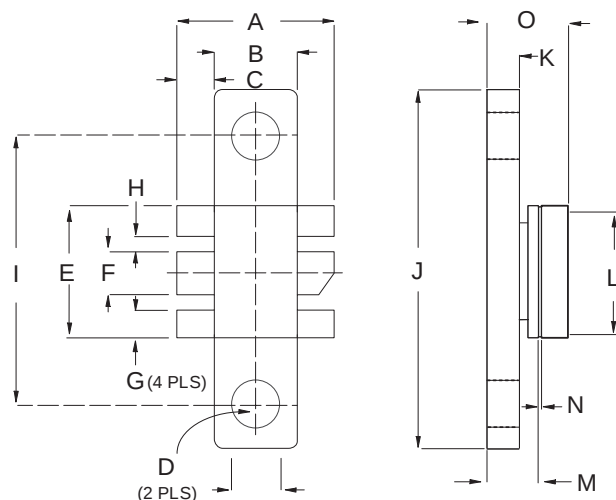


MECHANICAL DATA



SOT 171

PIN 1	SOURCE	PIN 2	SOURCE
PIN 3	GATE	PIN 4	DRAIN
PIN 5	SOURCE	PIN 6	SOURCE

DIM	mm	Tol.	Inches	Tol.
A	10.92	0.25	0.430	0.001
B	5.84	0.08	0.230	0.003
C	2.54	0.08	0.100	0.003
D	3.30 dia	0.13	0.130 dia	0.05
E	9.14	0.08	0.360	0.003
F	3.05	0.08	0.120	0.003
G	2.01	0.08	0.079	0.003
H	1.04	0.08	0.041	0.003
I	18.42	0.08	0.725	0.003
J	24.77	0.08	0.975	0.003
K	2.74	0.08	0.108	0.003
L	9.14	0.13	0.360	0.005
M	4.19	0.08	0.165	0.003
N	0.13	0.05	0.005	0.002
O	7.11	MAX	0.280	MAX

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 20W – 28V – 500MHz SINGLE ENDED

FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND

APPLICATIONS

- VERY LOW C_{rss}
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN – 11 dB MINIMUM

APPLICATIONS

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

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

P_D	Power Dissipation	50W
BV_{DSS}	Drain – Source Breakdown Voltage	65V
BV_{GSS}	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current *	6A
T_{stg}	Storage Temperature	-65 to $150^{\circ}C$
T_j	Maximum Operating Junction Temperature	$200^{\circ}C$

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
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			6	mA
I _{GSS} Gate Leakage Current	V _{GS} = 20V V _{DS} = 0			6	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 = 1.2A	1.08			S
G _{PS} Common Source Power Gain	P _O = 20W	11			dB
η Drain Efficiency	V _{DS} = 28V I _{DQ} = 0.6A	40			%
VSWR Load Mismatch Tolerance	f = 500MHz	20:1			—
C _{iss} Input Capacitance	V _{DS} = 0 V _{GS} = –5V f = 1MHz			72	pF
C _{oss} Output Capacitance	V _{DS} = 28V V _{GS} = 0 f = 1MHz			36	pF
C _{rss} Reverse Transfer Capacitance	V _{DS} = 28V V _{GS} = 0 f = 1MHz			3	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.3.5°C / W
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Document Number 2618
Issue 5

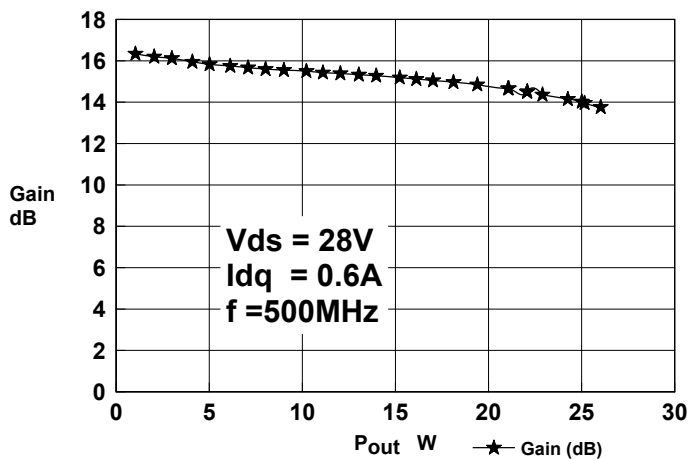


Figure 1- Gain vs. Power Output

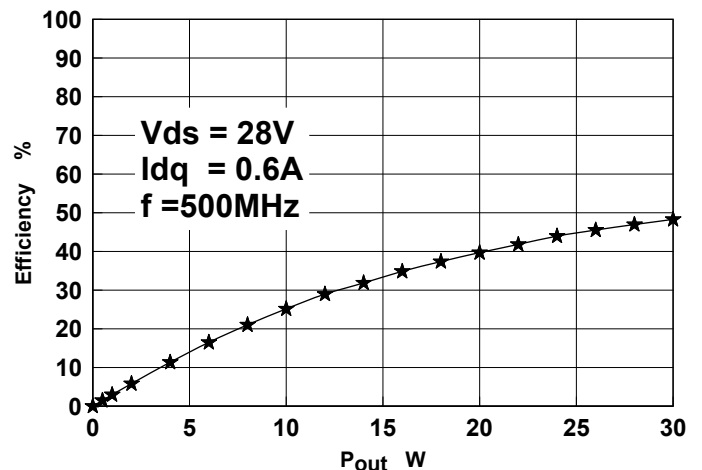


Figure 2 - Efficiency vs Power Output

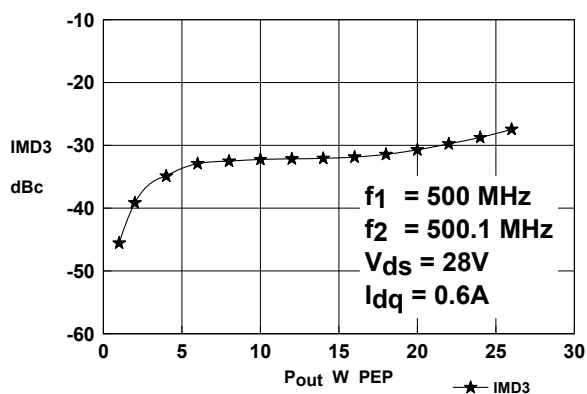


Figure 3 - IMD vs Power Output

Typical S Parameters

! Vds=28V Idq=0.6A
MHz S MA R 50

!Freq !MHz	S11 mag ang	S21 mag ang	S12 mag ang	S22 mag ang
100	0.85 -155.5	15.46 87.8	0.017 -0.7	0.51 -144.5
200	0.86 -167.1	7.325 64.7	0.014 -12.0	0.6 -150.4
300	0.89 -171.2	4.597 50.7	0.012 -15.0	0.69 -155.0
400	0.91 -173.9	2.971 38.2	0.009 -13.0	0.77 -159.0
500	0.93 -177.1	2.155 29.7	0.006 5.7	0.82 -162.8
600	0.94 -179.6	1.634 17.6	0.006 29.4	0.86 -166.8
700	0.95 178.6	1.182 9.4	0.007 52.3	0.9 -169.2
800	0.96 176.6	0.7884 5.3	0.009 65.1	0.92 -172.7
900	0.97 174.7	0.6543 7.2	0.012 71.7	0.93 -175.0
1000	0.97 173.2	0.556 5.7	0.015 75.0	0.94 -176.6

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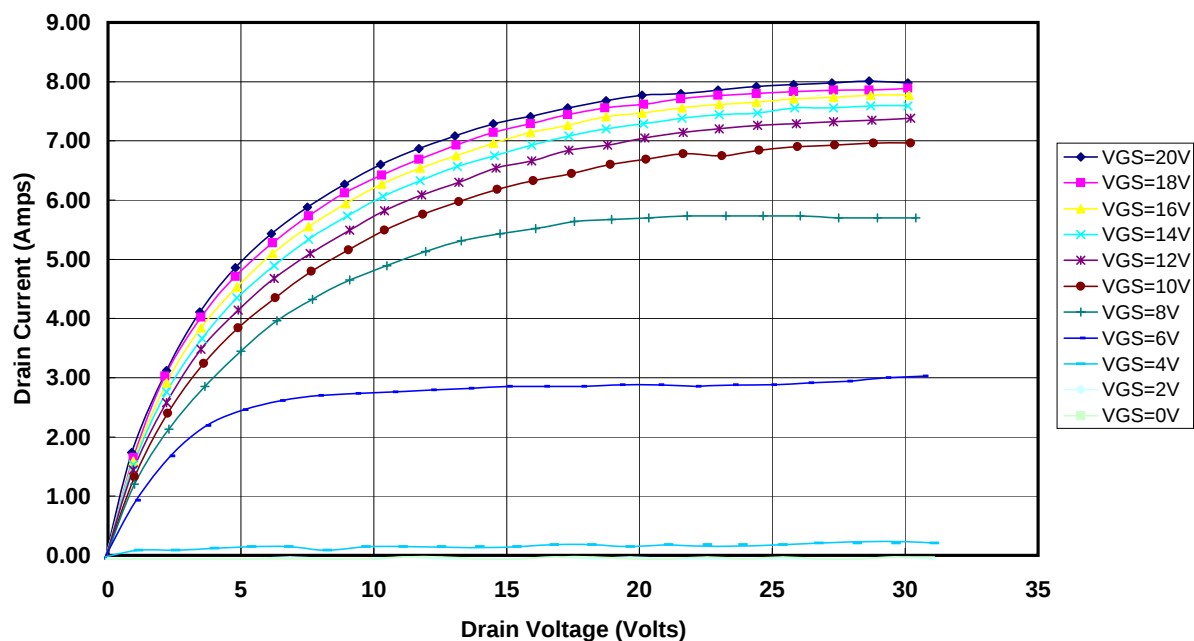


Figure 4 – Typical IV Characteristics.

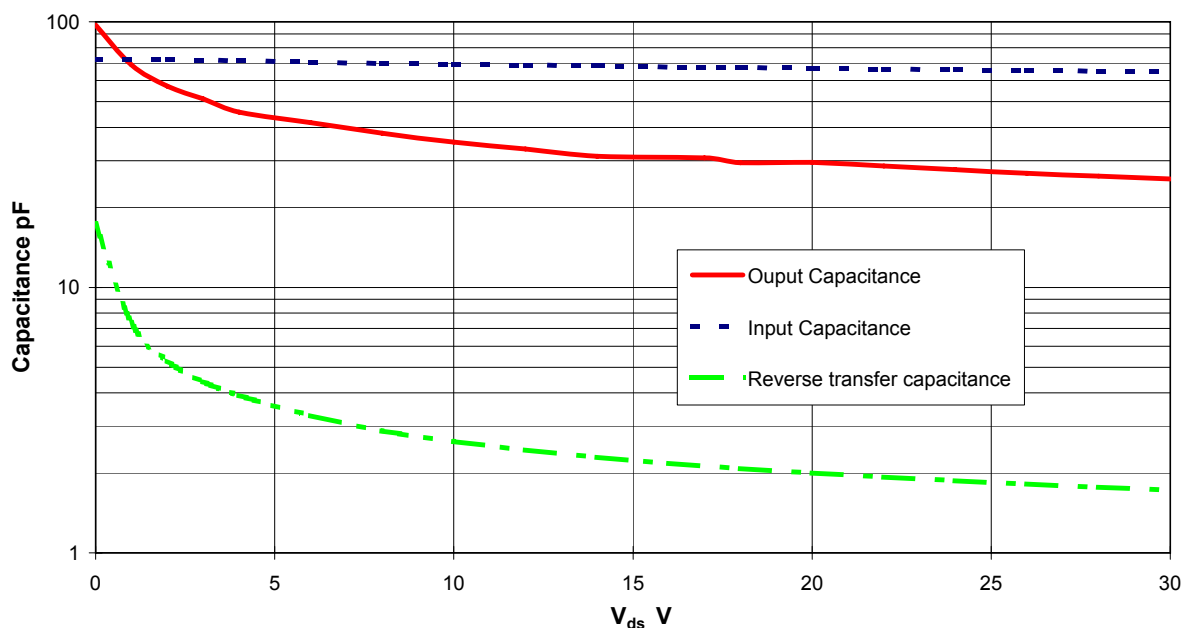
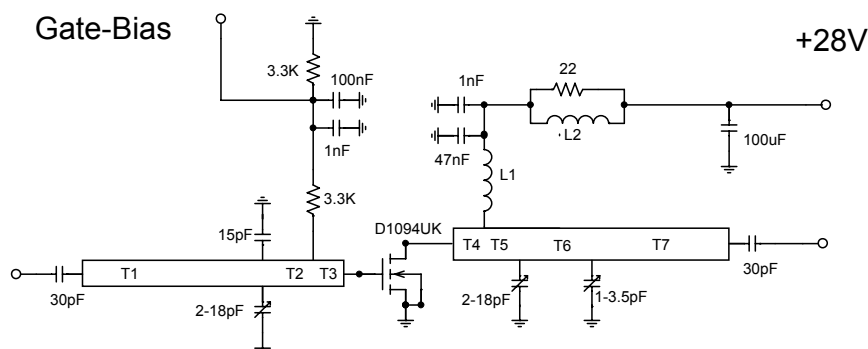


Figure 5 – Typical CV Characteristics.

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D1094UK 500MHz TEST FIXTURE

Substrate 1.6mm thick G200

All microstrip lines $W=2.8\text{mm}$

T1 46.3mm

T2 2.2mm

T3, T4 8mm

T5 4.3mm

T6 11.7mm

T7 32.3mm

L1 7 turns 24swg enamelled copper wire, 3mm i.d.

L2 1.5 turns 24swg enamelled copper wire on ferrite core