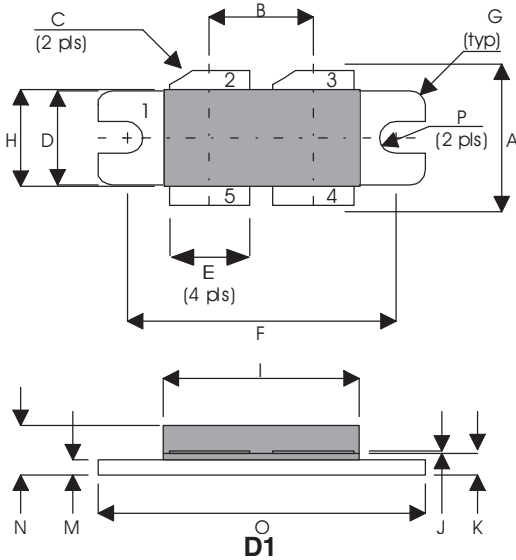


MECHANICAL DATA



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

DIM	Millimetres	Tol.	Inches	Tol.
A	15.24	0.50	0.600	0.020
B	10.80	0.13	0.425	0.005
C	45°	5°	45°	5°
D	9.78	0.13	0.385	0.005
E	8.38	0.13	0.330	0.005
F	27.94	0.13	1.100	0.005
G	1.52R	0.13	0.060R	0.005
H	10.16	0.15	0.400	0.006
I	21.84	0.23	0.860	0.009
J	0.10	0.02	0.004	0.001
K	1.96	0.13	0.077	0.005
M	1.02	0.13	0.040	0.005
N	4.45	0.38	0.175	0.015
O	34.04	0.13	1.340	0.005
P	1.63R	0.13	0.064R	0.005

GOLD METALLISED
MULTI-PURPOSE SILICON
DMOS RF FET
150W – 28V – 400MHz
PUSH-PULL

FEATURES

- SUITABLE FOR BROAD BAND APPLICATIONS
- SIMPLE BIAS CIRCUITS
- ULTRA-LOW THERMAL RESISTANCE
- BeO FREE
- LOW Crss
- HIGH GAIN – 13 dB MINIMUM

APPLICATIONS

- VHF/UHF COMMUNICATIONS
from 1 MHz to 500 MHz

P_D	Power Dissipation	760W (389W -A Version)
BV_{DSS}	Drain – Source Breakdown Voltage *	70V
BV_{GSS}	Gate – Source Breakdown Voltage*	±20V
$I_{D(sat)}$	Drain Current*	25A
T_{stg}	Storage Temperature	-65 to 150°C
T_j	Maximum Operating Junction Temperature	200°C

* Per Side

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
PER SIDE					
BV_{DSS} Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 100mA$	70			V
I_{DSS} Zero Gate Voltage Drain Current	$V_{DS} = 28V$ $V_{GS} = 0$			5	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*	$V_{DS} = 10V$ $I_D = 5A$	4			mhos
$V_{GS(th)match}$ Gate Threshold Voltage Matching Between Sides	$I_D = 10mA$ $V_{DS} = V_{GS}$			0.1	V
TOTAL DEVICE					
G_{PS} Common Source Power Gain	$P_O = 150W$	13			dB
η Drain Efficiency	$V_{DS} = 28V$ $I_{DQ} = 2A$	50			%
VSWR Load Mismatch Tolerance	$f = 400MHz$	20:1			—
PER SIDE					
C_{iss} Input Capacitance	$V_{DS} = 28V$ $V_{GS} = -5V$ $f = 1MHz$			300	pF
C_{oss} Output Capacitance	$V_{DS} = 28V$ $V_{GS} = 0$ $f = 1MHz$			150	pF
C_{rss} Reverse Transfer Capacitance	$V_{DS} = 28V$ $V_{GS} = 0$ $f = 1MHz$			10	pF

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

THERMAL DATA

$R_{THj-case}$	Thermal Resistance Junction – Case	Max. 0.23 $^{\circ}C / W$ 0.45 $^{\circ}C / W$ -A Version
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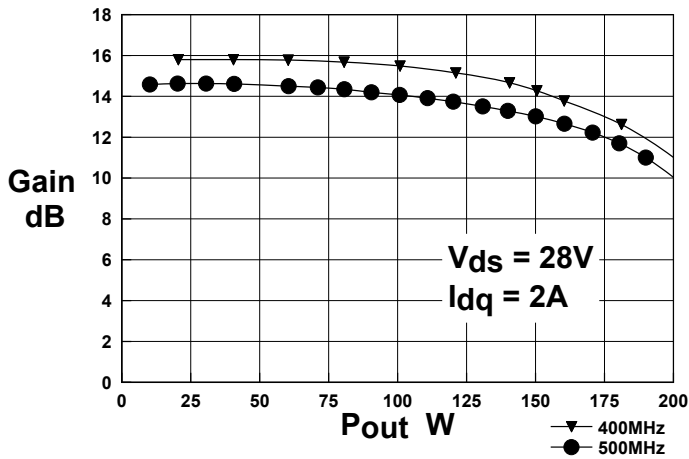


Figure 1- Gain vs. Power Output

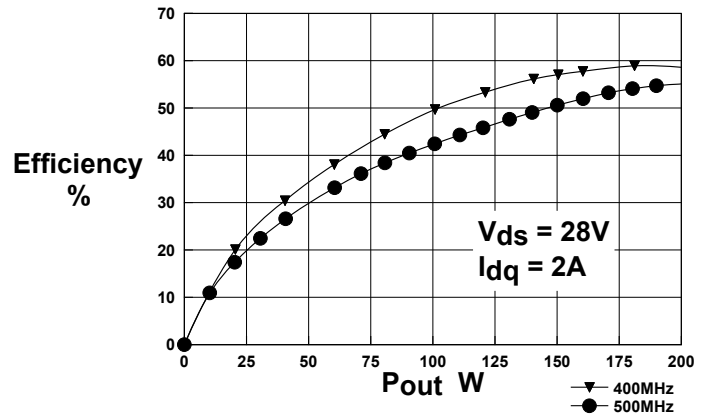


Figure 2 - Efficiency vs. Power Output

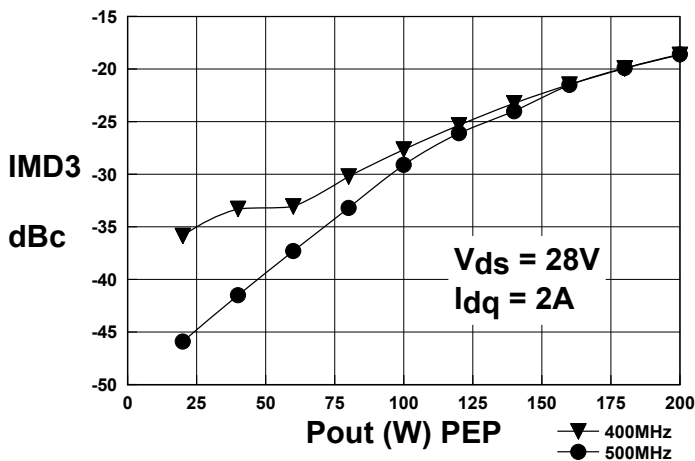


Figure 3 - IMD vs. Power Output

Typical S Parameters

!DMD1020UK.s2p
 !Vds=28V,Idq=2A
 # MHZ S MA R 50

Freq	S11		S21		S12		S22	
MHz	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
100	0.926	-167.4	3.56	26.4	0.002	81.3	0.963	-173.6
200	0.981	-176.2	0.88	11.9	0.009	91.7	0.990	-177.8
300	0.990	180.0	0.43	7.9	0.014	89.8	0.995	-179.5
400	0.995	176.7	0.24	7.0	0.020	87.6	0.997	179.0
500	0.996	174.4	0.16	8.6	0.025	86.1	0.998	178.0
600	0.997	171.9	0.11	13.1	0.031	84.3	0.998	177.0
700	0.997	169.9	0.09	18.8	0.035	83.0	0.998	176.2
800	0.998	168.0	0.08	25.7	0.040	81.6	0.998	175.4
900	0.998	165.8	0.07	34.3	0.046	80.1	0.998	174.5
1000	0.998	164.0	0.07	40.9	0.051	78.8	0.998	173.7

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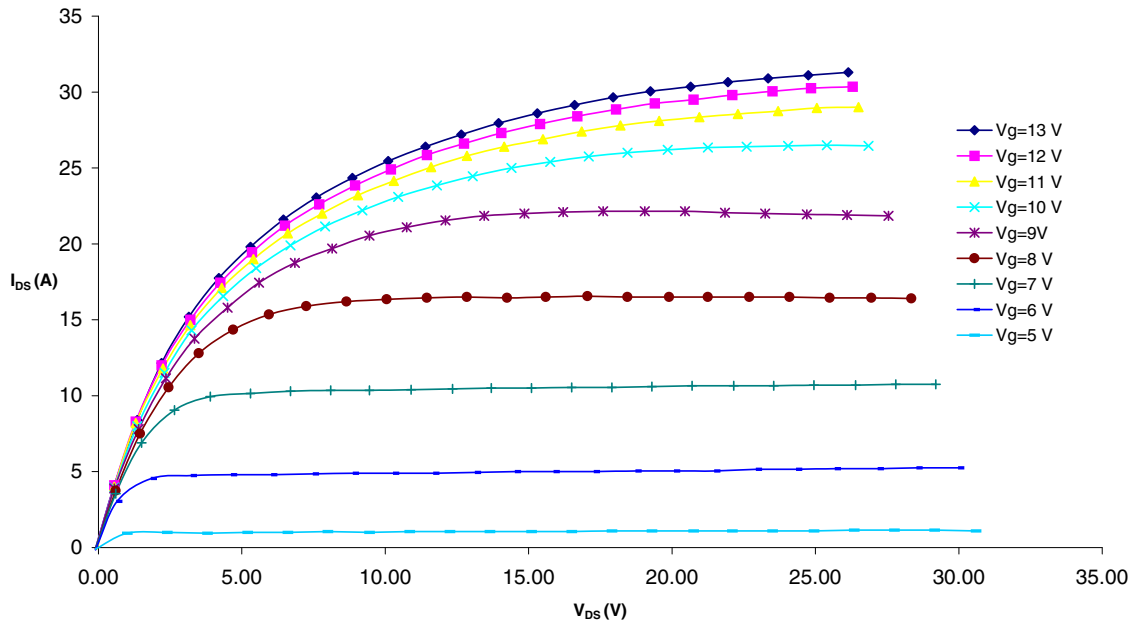


Figure 4 – Typical IV Characteristics.

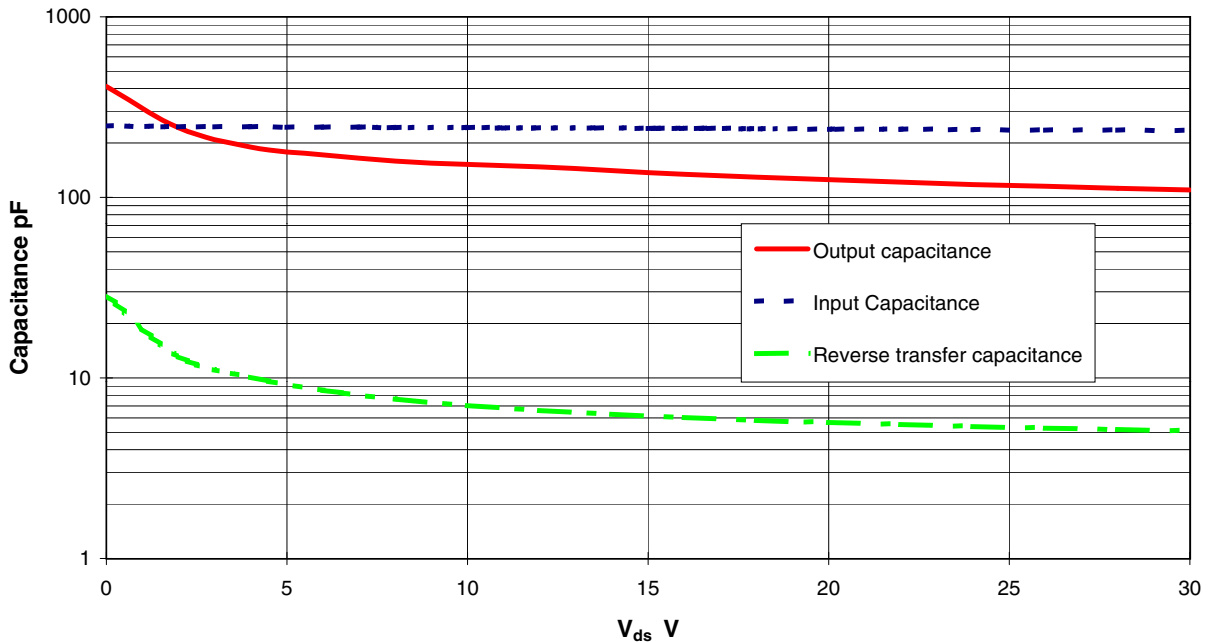
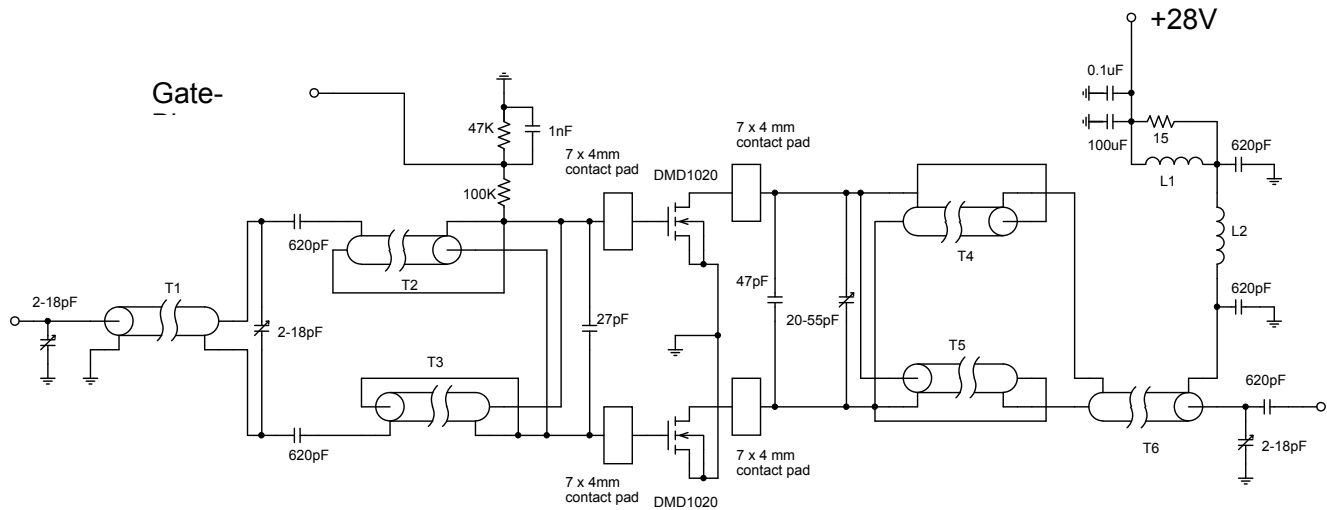


Figure 5 – Typical CV Characteristics.

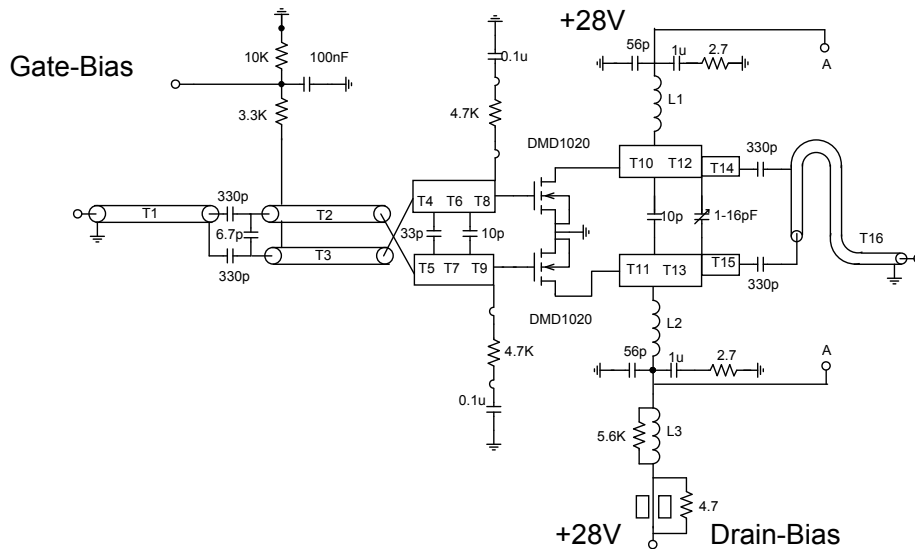
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400MHz TEST FIXTURE

T1	11cm 50 Ohm UT47 semi-rigid coax
T2,3,4,5	8.9cm 18 Ohm UT62-18 semi-rigid coax
T6	9.4cm 50 Ohm UT85 semi-rigid coax
L1	5.5 turns 18swg enamelled copper wire on Fair-Rite FT50B-43 ferrite core
L2	6 turns 18swg enamelled copper wire, 3.5mm internal diameter

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500MHz TEST FIXTURE

Substrate 0.78mm, $\epsilon_r=3.3$

All microstrip lines $W=10\text{mm}$ unless otherwise stated

- | | |
|--|-------------------------------|
| T1 70mm 50 Ohm Coaxial cable | T14 7mm wide 6mm long |
| T2, T3 50mm 25 Ohm Coaxial cable | T15 7mm wide 6mm long |
| T4, T5 $L=3.8\text{mm}$ | T16 80mm 50 Ohm Coaxial Cable |
| T6, T7 $L=10.6\text{mm}$ | |
| T8, T9 $L=5.6\text{mm}$ | |
| T10, T11, T12, T13 $L=14\text{mm}$ | |
| L1 = L2 3 turns 1mm diameter enamelled copper wire, 5mm i.d. | |