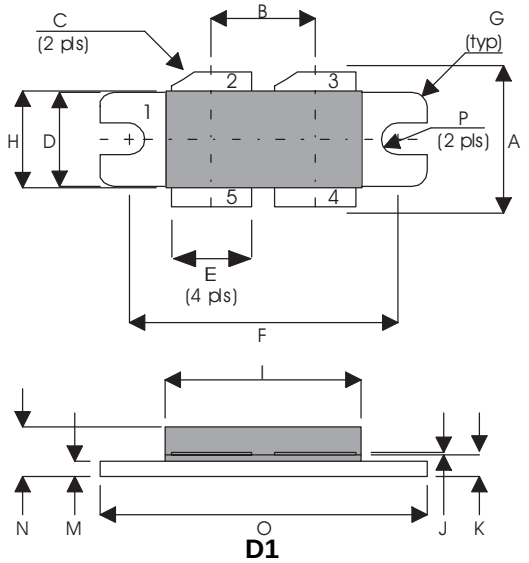
TetraFET

DMD5012
DMD5012-A

ROHS COMPLIANT METAL GATE RF SILICON FET

MECHANICAL DATA



D1

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

IMPROVED PERFORMANCE GOLD METALLISED SILICON DMOS RF FET 100W – 50V – 500MHz PUSH–PULL

FEATURES

- **SUITABLE FOR BROAD BAND APPLICATIONS**
- **SIMPLE BIAS CIRCUITS**
- **ULTRA-LOW THERMAL RESISTANCE**
- **BeO FREE**
- **LOW Crss**
- **HIGH GAIN – 15 dB MINIMUM**

APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS from 1 MHz to 500 MHz

P_D	Power Dissipation	500W (290W -A Version)
BV_{DSS}	Drain – Source Breakdown Voltage *	125V
BV_{GSS}	Gate – Source Breakdown Voltage *	±20V
$I_{D(sat)}$	Drain Current *	9A
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°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	125			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 50V	V_{GS} = 0			3	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 = 3A	2.4			S
TOTAL DEVICE							
G_{PS}	Common Source Power Gain	P_O = 100W		15			dB
η	Drain Efficiency	V_{DS} = 50V	I_{DQ} = 1.2A	65			%
VSWR	Load Mismatch Tolerance	f = 500MHz		20:1			—
PER SIDE							
C_{iss}	Input Capacitance	V_{DS} = 50V	V_{GS} = –5V f = 1MHz		100		pF
C_{oss}	Output Capacitance	V_{DS} = 50V	V_{GS} = 0 f = 1MHz		45		pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = 50V	V_{GS} = 0 f = 1MHz		1.5		pF

* Pulse Test: Pulse Duration = 300 µs , Duty Cycle ≤ 2%

THERMAL DATA

$R_{THj–case}$	Thermal Resistance Junction – Case	Max. 0.35°C / W 0.6°C / W -A Version

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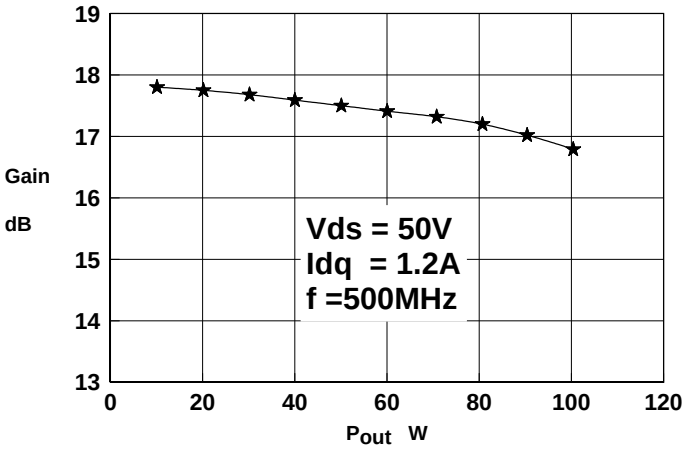

Figure 1 - Gain vs. Power Output.

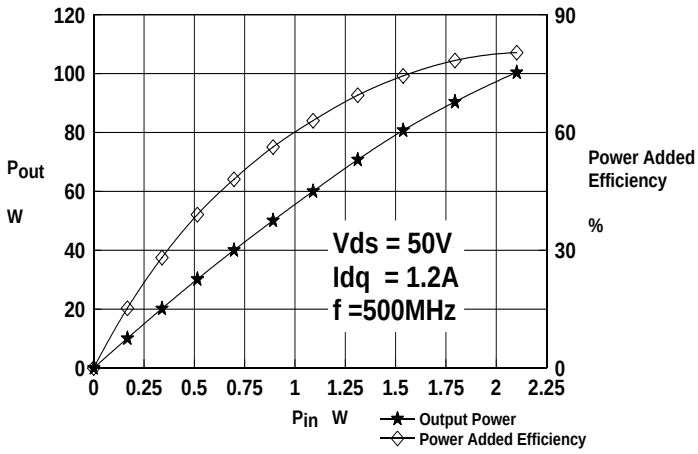

Figure 2 - Power Output & Efficiency vs. Power Input.

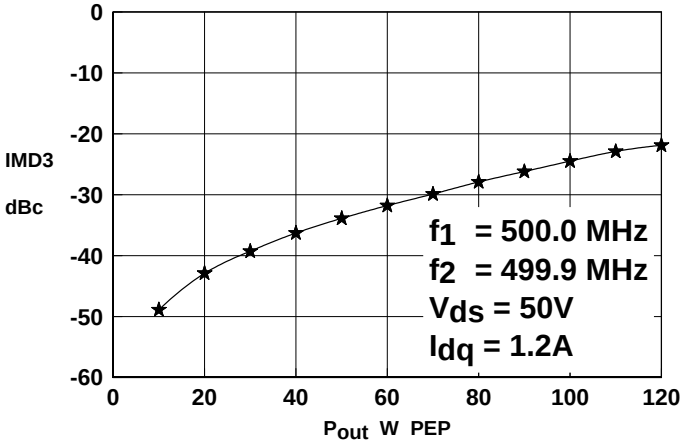

Figure 3 - IMD vs. Output Power.

DMD5012
OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z_S Ω	Z_L Ω
500	1.6 + j2.3	3.5 + j2.1

N.B. Impedances measured terminal to terminal

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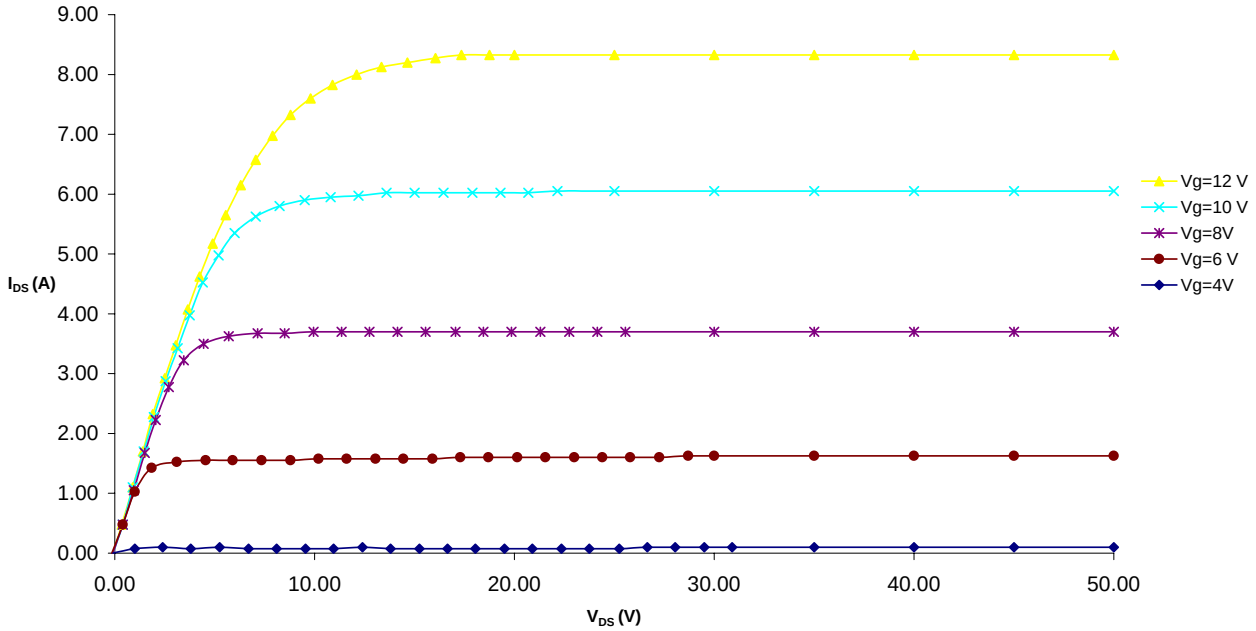

Figure 4 – Typical IV Characteristics.

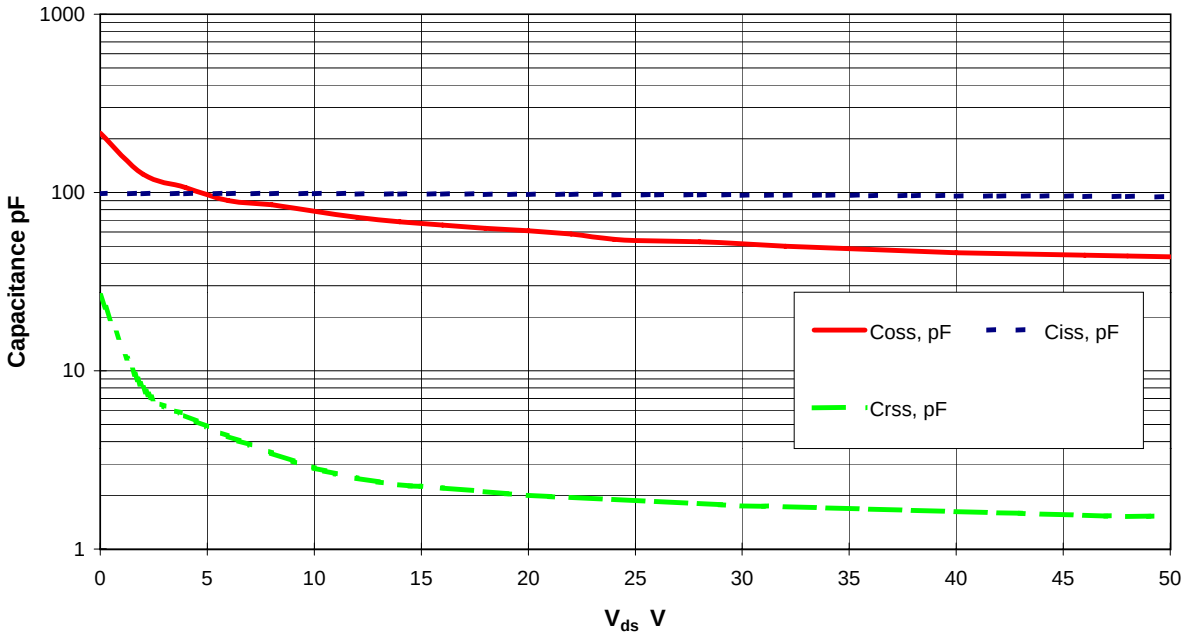

Figure 5 – Typical CV Characteristics.

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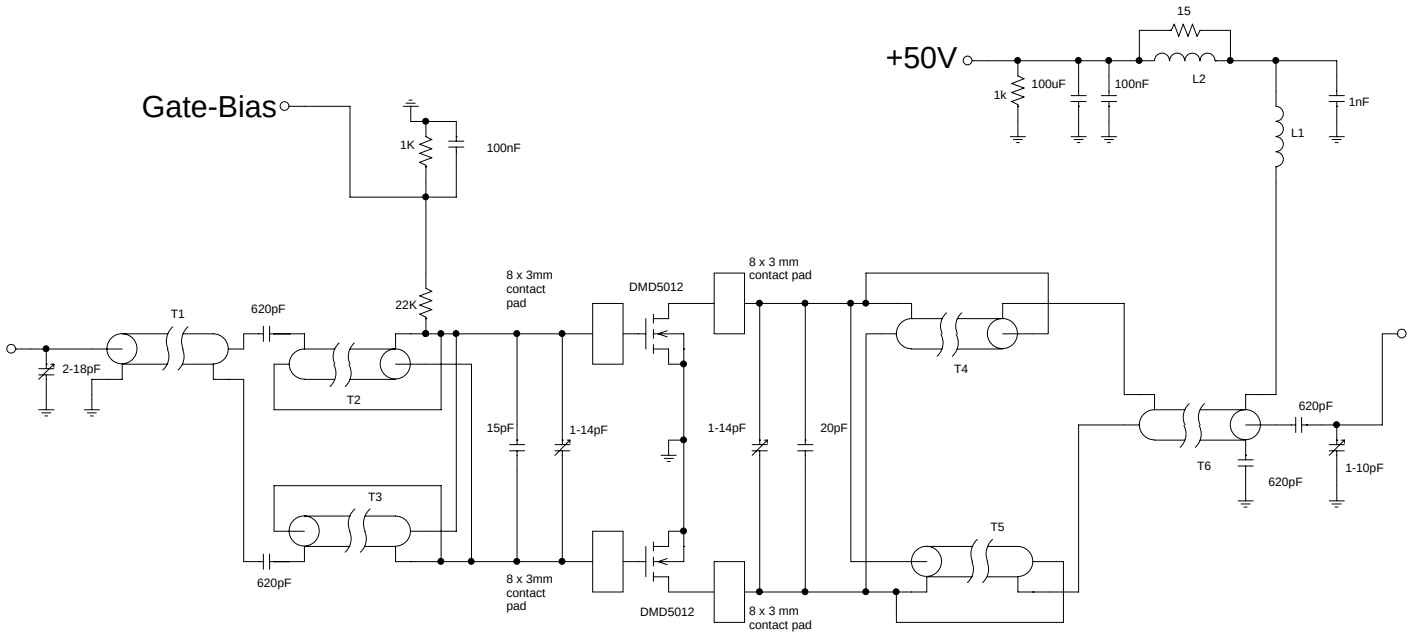

DMD5012 500MHz TEST FIXTURE

T1,6	65mm	50 Ohm UT85 semi-rigid coax
T2,3,4,5	75mm	15 Ohm UT85-15 semi-rigid coax
L1	6 turns	21 swg enamelled copper wire, 3mm i.d.
L2	8.5 turns	19 swg enamelled copper wire on Fair-Rite FT82-43 core

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