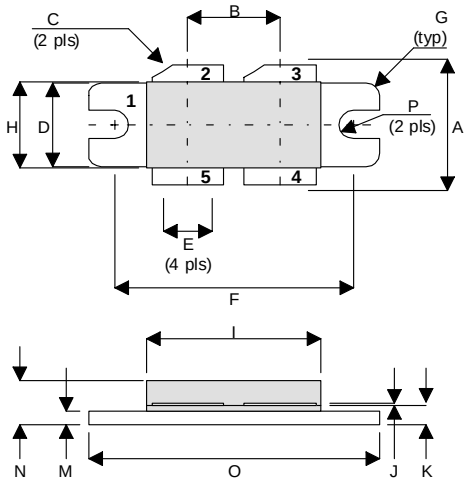
TetraFET

DMD1010
DMD1010-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

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 125W – 28V – 500MHz 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	648W (389W -A Version)
BV_{DSS}	Drain – Source Breakdown Voltage *	70V
BV_{GSS}	Gate – Source Breakdown Voltage*	±20V
$I_{D(sat)}$	Drain Current*	20A
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	70			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 28V	V_{GS} = 0			4	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 = 4A	3.2			mhos
$V_{GS(th)match}$	Gate Threshold Voltage Matching Between Sides	I_D = 1A	V_{DS} = V_{GS}			0.1	V
TOTAL DEVICE							
G_{PS}	Common Source Power Gain	P_O = 125W		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			240	pF
C_{oss}	Output Capacitance	V_{DS} = 28V	V_{GS} = 0 f = 1MHz			100	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = 28V	V_{GS} = 0 f = 1MHz			10	pF

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

THERMAL DATA

$R_{THj–case}$	Thermal Resistance Junction – Case	Max. 0.27°C / W 0.45 °C / W -A Version

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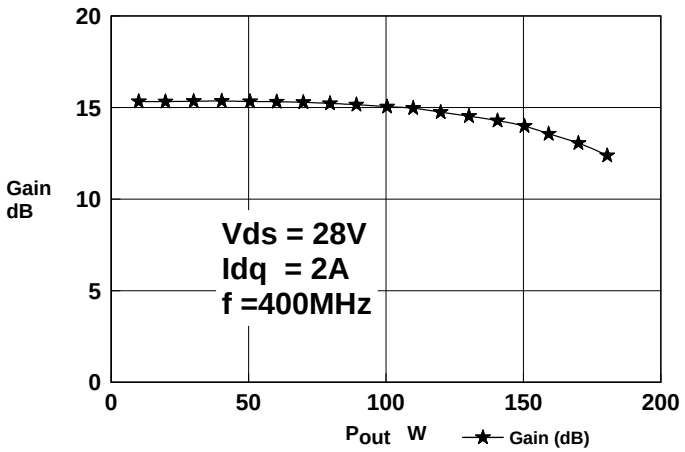

Figure 1 – Gain vs. Power Output.

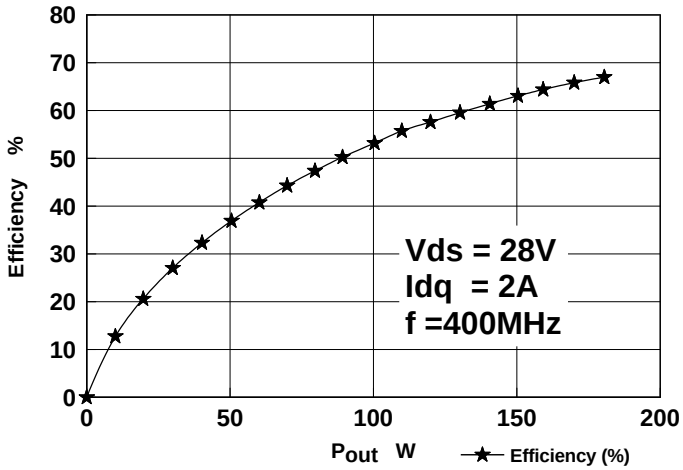

Figure 2 – Efficiency vs. Power Output.

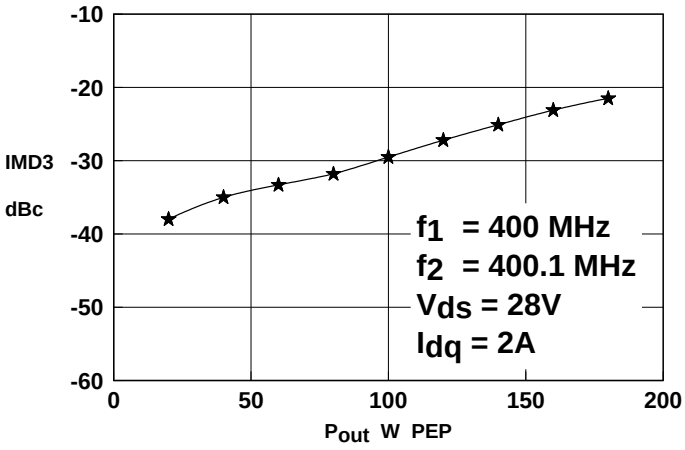

Figure 3 – IMD vs. Power Output

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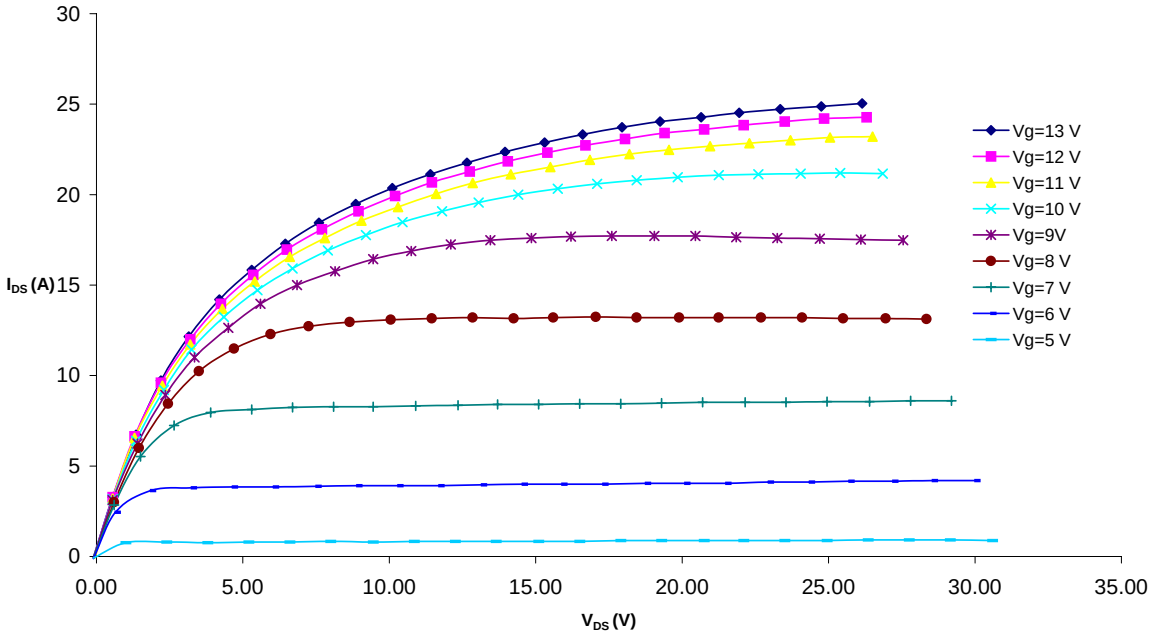

Figure 4 – Typical IV Characteristics.

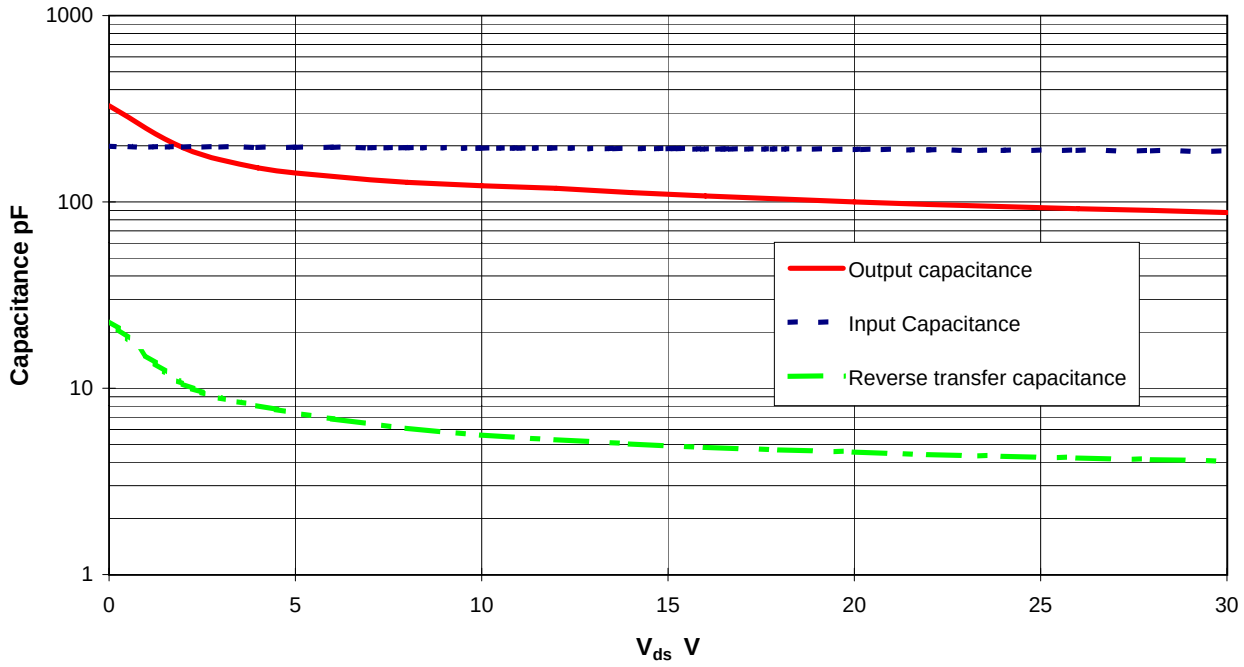

Figure 5 – Typical CV Characteristics.

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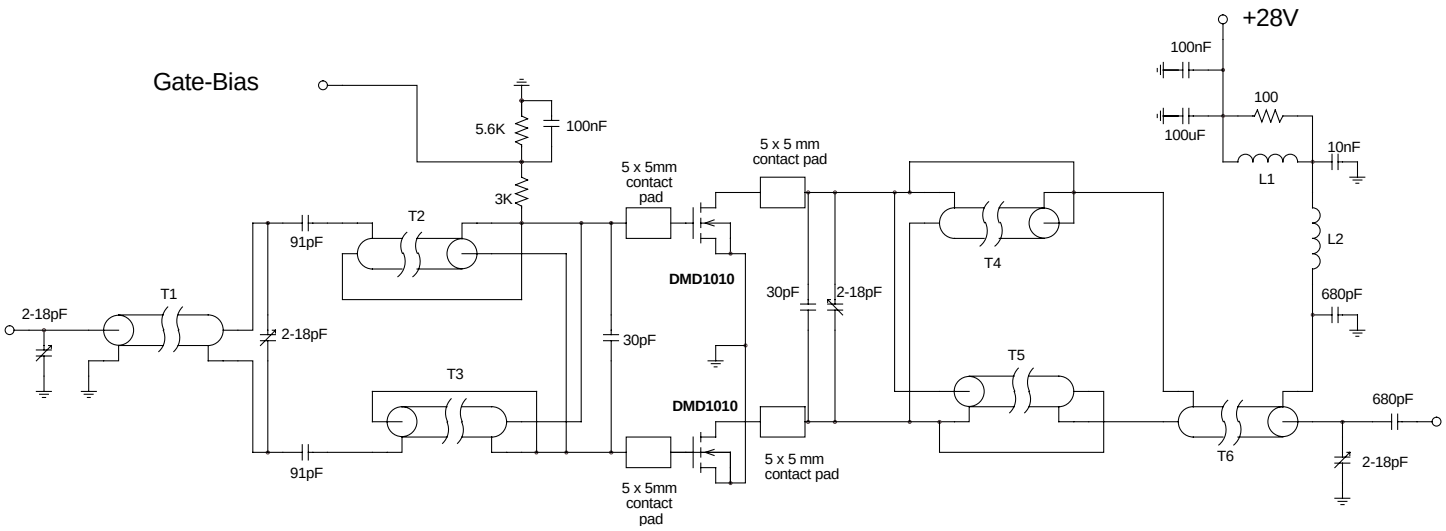

DMD1010 TEST FIXTURE

Substrate 1.6mm PTFE/ glass, Er= 2.5
All microstrip lines W= 4.4mm

T1	12cm	50Ω UT85 semi-rigid coax on ferrite core
T2,3	7.5cm	15Ω UT85-15 semi-rigid coax
T4,5	7cm	15Ω UT85-15 semi-rigid coax
T6	11cm	50Ω UT85 semi-rigid coax on ferrite core
L1	6.5 turns 25swg enamelled copper wire on Fair-Rite FT50B-43 core	
L2	6.5 turns 25swg enamelled copper wire, 4mm internal diameter	

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