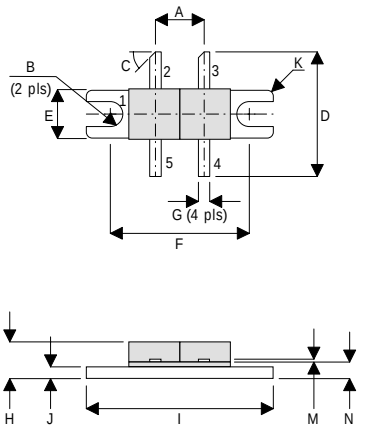
D1021UK

METAL GATE RF SILICON FET

MECHANICAL DATA



DK

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

DIM	mm	Tol.	Inches	Tol.
A	6.45	0.13	0.254	0.005
B	1.65R	0.13	0.065R	0.005
C	45°	5°	45°	5°
D	16.51	0.76	0.650	0.03
E	6.47	0.13	0.255	0.005
F	18.41	0.13	0.725	0.005
G	1.52	0.13	0.060	0.005
H	4.82	0.25	0.190	0.010
I	24.76	0.13	0.975	0.005
J	1.52	0.13	0.060	0.005
K	0.81R	0.13	0.032R	0.005
M	0.13	0.02	0.005	0.001
N	2.16	0.13	0.085	0.005

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 125W – 28V – 400MHz PUSH–PULL

FEATURES

- **SIMPLIFIED AMPLIFIER DESIGN**
- **SUITABLE FOR BROAD BAND APPLICATIONS**
- **LOW C_{rss}**
- **SIMPLE BIAS CIRCUITS**
- **LOW NOISE**
- **HIGH GAIN – 13 dB MINIMUM**

APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS from 1 MHz to 400 MHz

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

P_D	Power Dissipation	350W
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			S
TOTAL DEVICE							
G_{PS}	Common Source Power Gain	P_O = 125W		13			dB
η	Drain Efficiency	V_{DS} = 28V	I_{DQ} = 1.6A	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			120	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%

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. 0.5°C / W

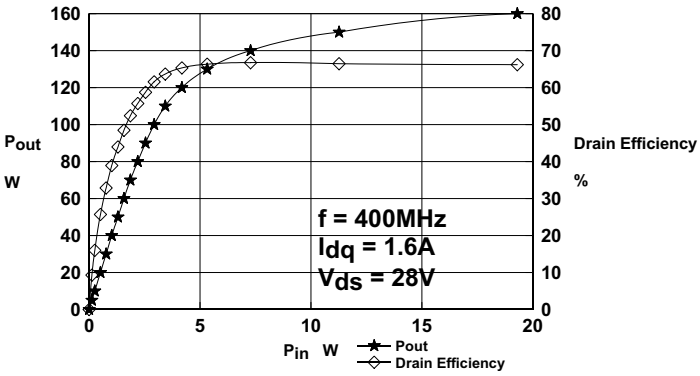

Figure 1.
Power Output and Efficiency vs. Input Power

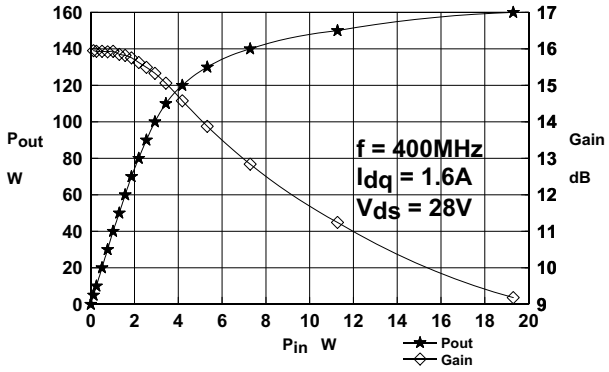

Figure 2.
Power Output and Gain vs. Input Power

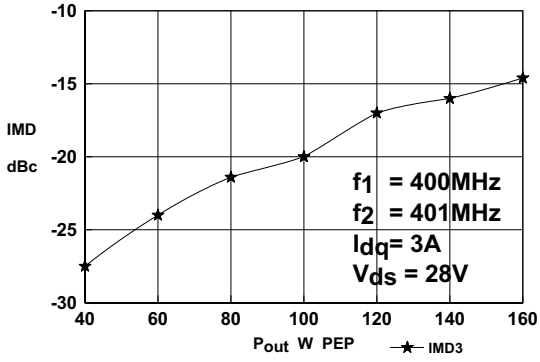

Figure 3
IMD vs.Power Output

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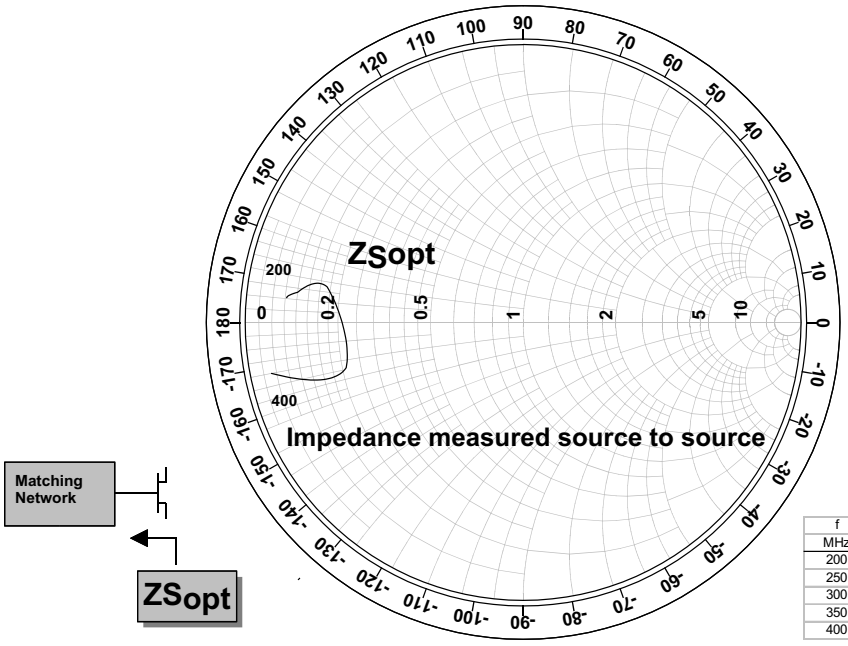
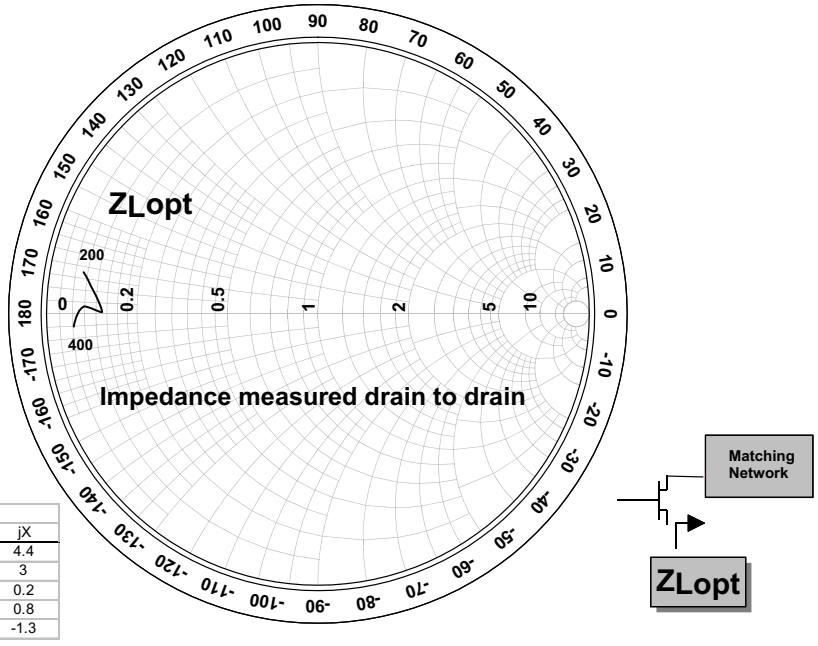


f	ZS	
MHz	R	jX
200	3.9	2.6
250	5	3.3
300	8.3	4.4
350	10.5	-6
400	2	-5



f	ZL	
MHz	R	jX
200	3.3	4.4
250	4.3	3
300	5.7	0.2
350	3.7	0.8
400	2.6	-1.3

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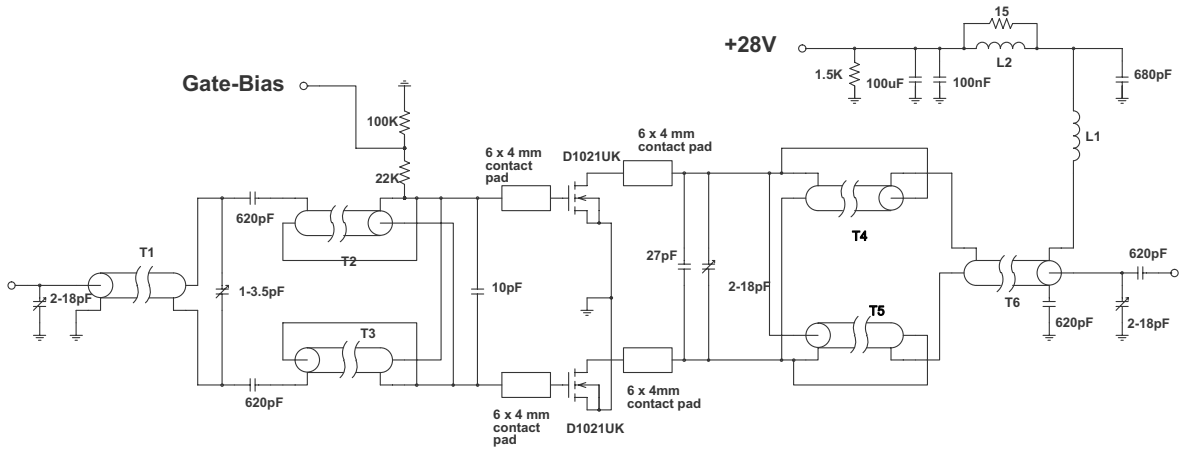

400MHz Test Fixture

T1	11cm	50 Ohm UT47 semi-rigid coax on Siemens B62152A1X1 2 hole ferrite core
T2,3,4,5	9cm	15 Ohm UT85-15 semi-rigid coax
T6	9.7cm	50 Ohm UT85 semi-rigid coax

L1	7	Turns 19swg enamelled copper wire 3.5mm internal diameter
L2	5.5	Turns 19swg enamelled copper wire on Fair-rite FT50 ferrite core

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