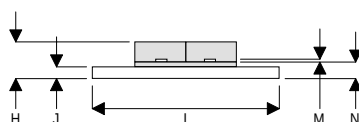
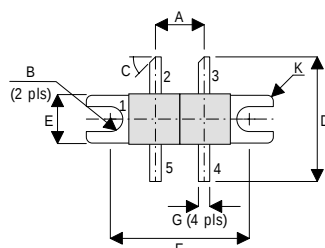


MECHANICAL DATA

GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 20W – 28V – 1GHz PUSH-PULL



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

FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- VERY LOW C_{rss}
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN – 10 dB MINIMUM

APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS
from 1MHz to 2 GHz

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

P_D	Power Dissipation	83W
BV_{DSS}	Drain – Source Breakdown Voltage *	65V
BV_{GSS}	Gate – Source Breakdown Voltage *	$\pm 20V$
$I_{D(sat)}$	Drain Current *	4A
T_{stg}	Storage Temperature	-65 to $150^{\circ}C$
T_j	Maximum Operating Junction Temperature	$200^{\circ}C$

* Per Side

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
PER SIDE					
B _V DSS Drain–Source Breakdown Voltage	V _{GS} = 0 I _D = 10mA	65			V
I _D SS Zero Gate Voltage Drain Current	V _{DS} = 28V V _{GS} = 0			1	mA
I _G SS 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 = 0.8A	0.72			S
TOTAL DEVICE					
G _{PS} Common Source Power Gain	P _O = 20W	10			dB
η Drain Efficiency	V _{DS} = 28V I _{DQ} = 0.8A	40			%
VSWR Load Mismatch Tolerance	f = 1GHz	20:1			—
PER SIDE					
C _{iss} Input Capacitance	V _{DS} = 0 V _{GS} = –5V f = 1MHz			48	pF
C _{oss} Output Capacitance	V _{DS} = 28V V _{GS} = 0 f = 1MHz			24	pF
C _{rss} Reverse Transfer Capacitance	V _{DS} = 28V V _{GS} = 0 f = 1MHz			2	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. 2.1°C / W
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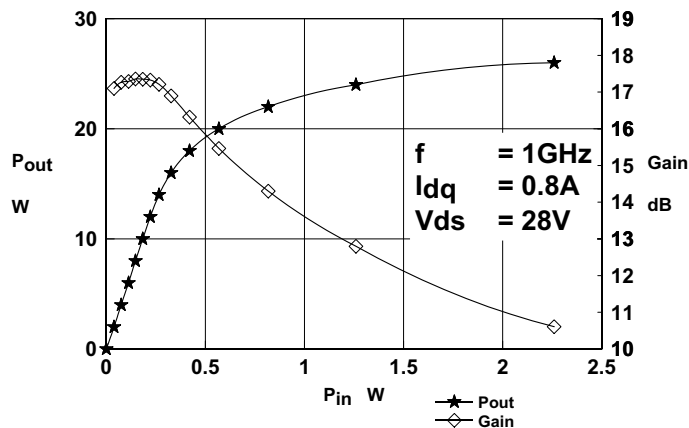


Figure 1

OutputPower and Gain vs. Input Power.

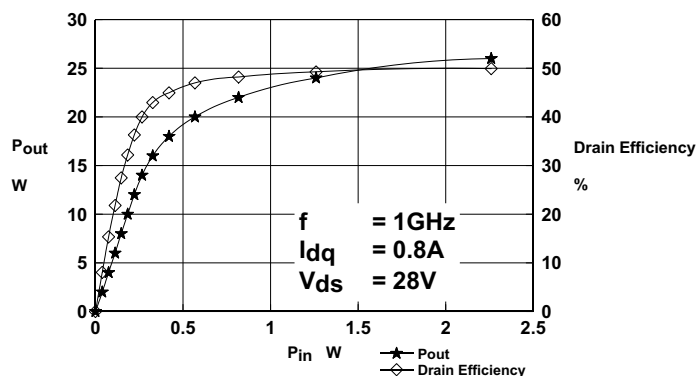


Figure 2

Output Power and efficiency vs. Input Power.

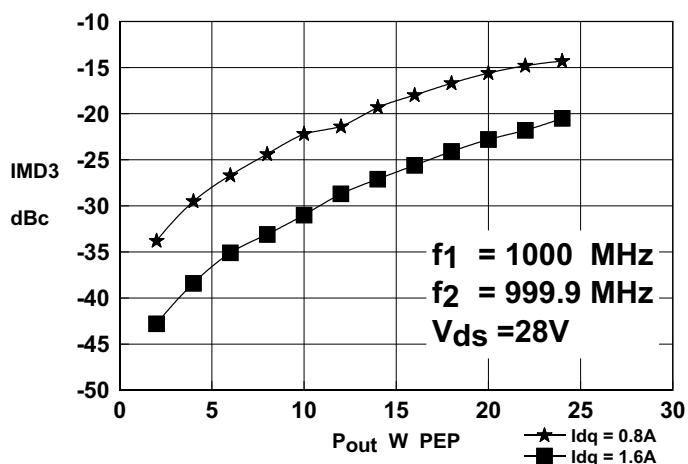


Figure 3

IMD Vs. Output Power.

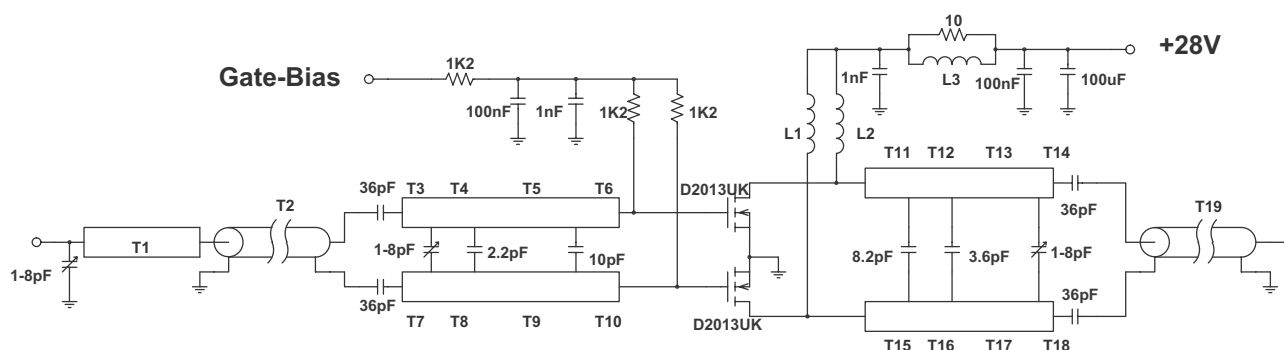
OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z_S Ω	Z_L Ω
1000MHz	1.3 - j4.6	2.5 - j2.6

Typical S Parameters

! Vds=28V, Idq=0.8A
MHz S MA R 50

!Freq !MHz	S11 mag ang	S21 mag ang	S12 mag ang	S22 mag ang
100	0.841 -122	24.547 98	0.01318 13	0.49 -94
200	0.871 -146	11.482 69	0.01 0	0.61 -125
300	0.891 -156	6.683 52	0.00653 10	0.708 -137
400	0.902 -163	4.365 40	0.00596 49	0.767 -146
500	0.923 -170	3.055 27	0.00891 71	0.813 -155
600	0.933 -174	2.113 22	0.01349 79	0.851 -165
700	0.955 -175	1.758 19	0.01862 85	0.881 -166
800	0.955 -177	1.413 12	0.02344 82	0.902 -170
900	0.966 -179	1.161 5	0.02851 80	0.902 -177
1000	0.955 -177	0.944 3	0.03236 80	0.902 -179



1000MHz Test Fixture

Substrate 0.8mm thick PTFE/glass

All microstrip lines $W = 2.7\text{mm}$

T1	23mm
T2, T19	50MM 50 Ohm UT34 semi-rigid coax
T3, T7	6mm
T4, T8	8mm
T5, T9	15mm
T6, T10	9mm
T11, T15	8mm
T12, T16	7mm
T13, T17	11mm
T14, T18	5mm

L1, L2 6 turns of 24swg enamelled copper wire, 3mm i.d.

L3 1.5 turn 24 swg enamelled copper wire on Siemens B62152-A7x 2 hole core

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