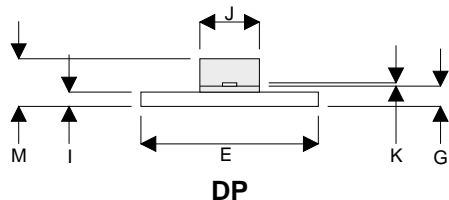
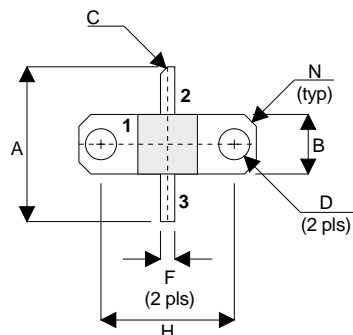


MECHANICAL DATA



PIN 1 SOURCE PIN 2 DRAIN
PIN 3 GATE

| DIM | mm | Tol. | Inches | Tol. |
|-----|------------|------|-------------|-------|
| A | 16.51 | 0.25 | 0.650 | 0.010 |
| B | 6.35 | 0.13 | 0.250 | 0.005 |
| C | 45° | 5° | 45° | 5° |
| D | 3.30 | 0.13 | 0.130 | 0.005 |
| E | 18.92 | 0.08 | 0.745 | 0.003 |
| F | 1.52 | 0.13 | 0.060 | 0.005 |
| G | 2.16 | 0.13 | 0.085 | 0.005 |
| H | 14.22 | 0.08 | 0.560 | 0.003 |
| I | 1.52 | 0.13 | 0.060 | 0.005 |
| J | 6.35 | 0.13 | 0.250 | 0.005 |
| K | 0.13 | 0.03 | 0.005 | 0.001 |
| M | 5.08 | 0.51 | 0.200 | 0.020 |
| N | 1.27 x 45° | 0.13 | 0.050 x 45° | 0.005 |

**GOLD METALLISED
MULTI-PURPOSE SILICON
DMOS RF FET
10W – 28V – 1GHz
SINGLE ENDED**

FEATURES

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

APPLICATIONS

- VHF/UHF COMMUNICATIONS
from 50 MHz to 2 GHz

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

| | | |
|--------------|--|-------------------------|
| P_D | Power Dissipation | 42W |
| 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 | $200^{\circ}C$ |

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

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--|---|------|------|------|------|
| BV _{DSS} Drain–Source Breakdown Voltage | V _{GS} = 0 I _D = 10mA | 65 | | | V |
| I _{DSS} Zero Gate Voltage Drain Current | V _{DS} = 28V V _{GS} = 0 | | | 0.8 | 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 = 0.8A | 0.72 | | | S |
| G _{PS} Common Source Power Gain | P _O = 10W | 10 | | | dB |
| η Drain Efficiency | V _{DS} = 28V I _{DQ} = 0.4A | 40 | | | % |
| VSWR Load Mismatch Tolerance | f = 1GHz | 20:1 | | | — |
| 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} = 0f = 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. 4.2°C / W |
|-----------------------|------------------------------------|----------------|

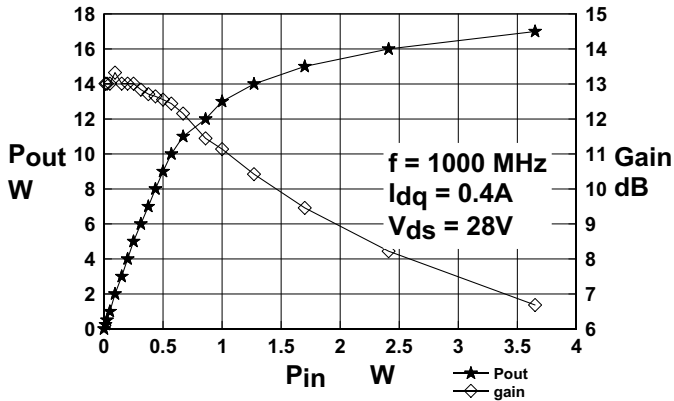


Figure 1
Output Power and Gain vs. Input Power

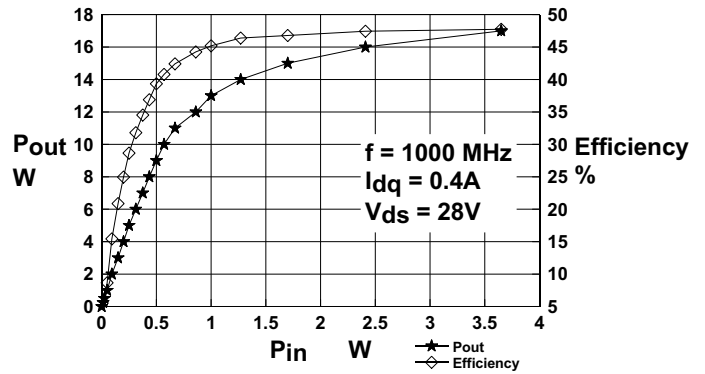


Figure 2
Output Power and Efficiency vs. Input Power

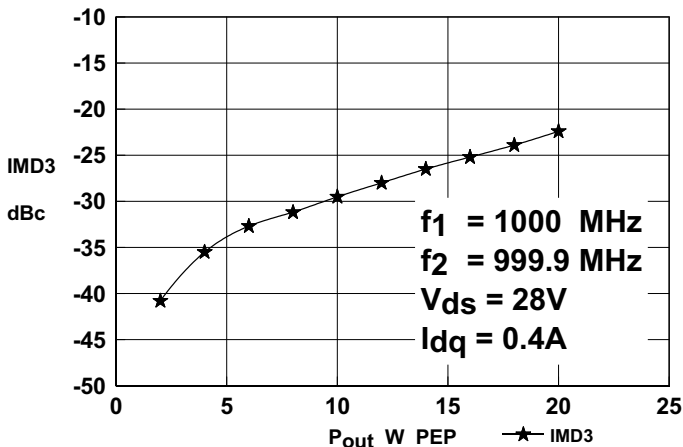


Figure 3
Output Power and Efficiency vs. Input Power

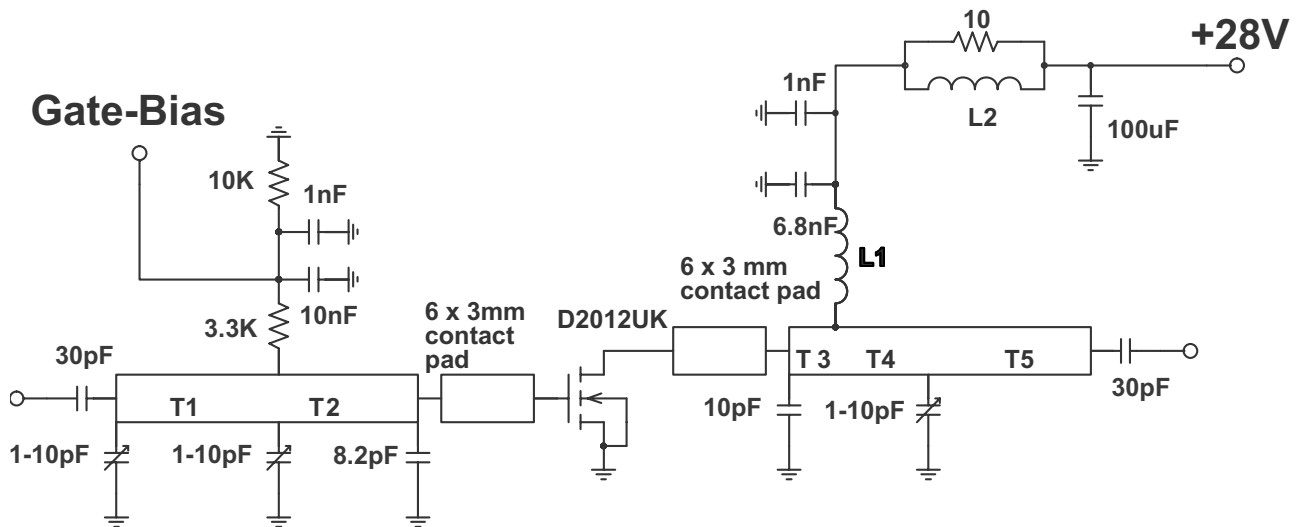
OPTIMUM SOURCE AND LOAD IMPEDANCE

| Frequency MHz | Z _S Ω | Z _L Ω |
|------------------|---------------------|---------------------|
| 1000 | 5.0 - j7.2 | 2.4 - j7.1 |

Typical S Parameters

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

| !Freq !MHz | S11 | | S21 | | S12 | | S22 | |
|---------------|-------|------|--------|-----|---------|-----|-------|------|
| | mag | ang | mag | ang | mag | ang | 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 |



1GHz Test Fixture

Substrate 0.8mm PTFE/glass, $\epsilon_r = 2.5$

All microstrip lines $W = 2.2\text{mm}$

T1 35mm

T2 15mm

T3 4mm

T4 14mm

T5 32mm

L1 7.5 turns 24swg enamelled copper wire, 3mm i.d.

L2 1.5 turns 24swg enamelled copper wire on ferrite core

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[MRF151G](#) [MRF157](#) [MRF158](#) [MRF160](#) [MRF171A](#) [MRF177](#) [UF2840G](#) [TGF3021-SM](#) [ARF1510](#) [ARF448BG](#) [ARF449AG](#) [ARF466BG](#)