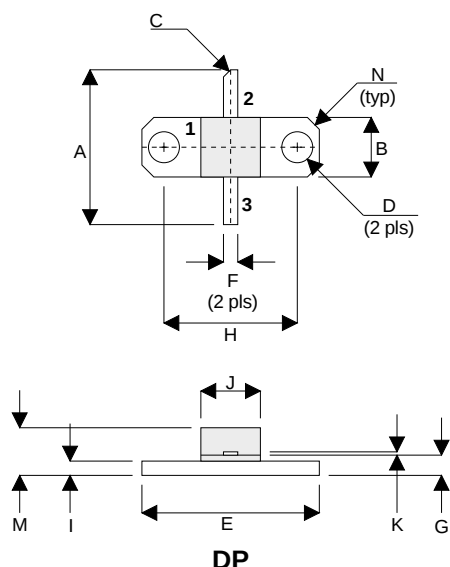


## MECHANICAL DATA



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** ( $T_{case} = 25^{\circ}\text{C}$  unless otherwise stated)

| Parameter                                 | Test Conditions                                      | Min. | Typ. | Max. | Unit          |
|-------------------------------------------|------------------------------------------------------|------|------|------|---------------|
| $BV_{DSS}$ Drain–Source Breakdown Voltage | $V_{GS} = 0$ $I_D = 10\text{mA}$                     | 65   |      |      | V             |
| $I_{DSS}$ Zero Gate Voltage Drain Current | $V_{DS} = 28\text{V}$ $V_{GS} = 0$                   |      |      | 0.8  | mA            |
| $I_{GSS}$ Gate Leakage Current            | $V_{GS} = 20\text{V}$ $V_{DS} = 0$                   |      |      | 1    | $\mu\text{A}$ |
| $V_{GS(th)}$ Gate Threshold Voltage*      | $I_D = 10\text{mA}$ $V_{DS} = V_{GS}$                | 1    |      | 7    | V             |
| $g_{fs}$ Forward Transconductance*        | $V_{DS} = 10\text{V}$ $I_D = 0.8\text{A}$            | 0.72 |      |      | S             |
| $G_{PS}$ Common Source Power Gain         | $P_O = 10\text{W}$                                   | 10   |      |      | dB            |
| $\eta$ Drain Efficiency                   | $V_{DS} = 28\text{V}$ $I_{DQ} = 0.4\text{A}$         | 40   |      |      | %             |
| VSWR Load Mismatch Tolerance              | $f = 1\text{GHz}$                                    | 20:1 |      |      | —             |
| $C_{iss}$ Input Capacitance               | $V_{DS} = 0$ $V_{GS} = -5\text{V}$ $f = 1\text{MHz}$ |      |      | 48   | pF            |
| $C_{oss}$ Output Capacitance              | $V_{DS} = 28\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$ |      |      | 24   | pF            |
| $C_{rss}$ Reverse Transfer Capacitance    | $V_{DS} = 28\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$ |      |      | 2    | pF            |

\* Pulse Test: Pulse Duration = 300  $\mu\text{s}$  , Duty Cycle  $\leq 2\%$

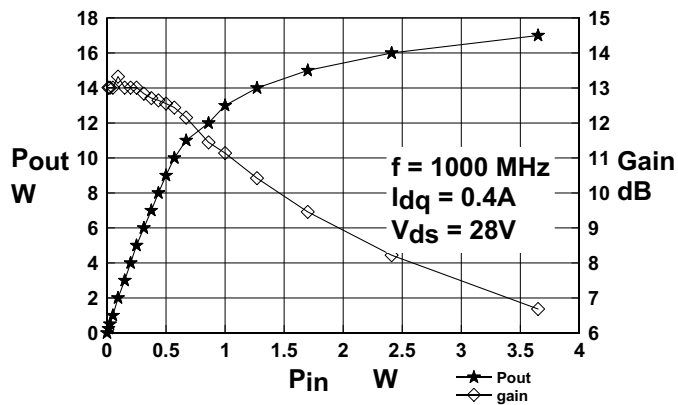
**HAZARDOUS MATERIAL WARNING**

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.

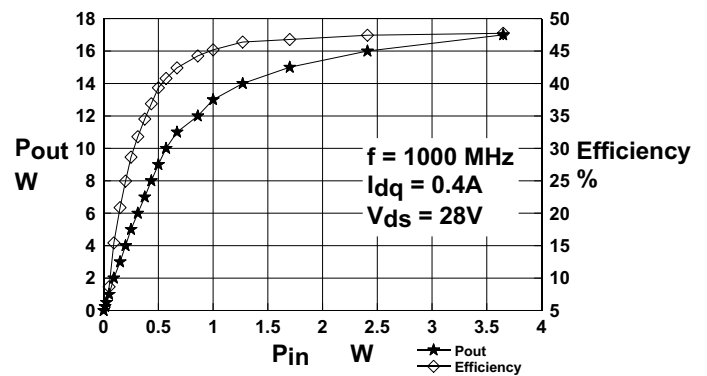
**THESE DEVICES MUST NEVER BE THROWN AWAY WITH GENERAL INDUSTRIAL OR DOMESTIC WASTE.**

**THERMAL DATA**

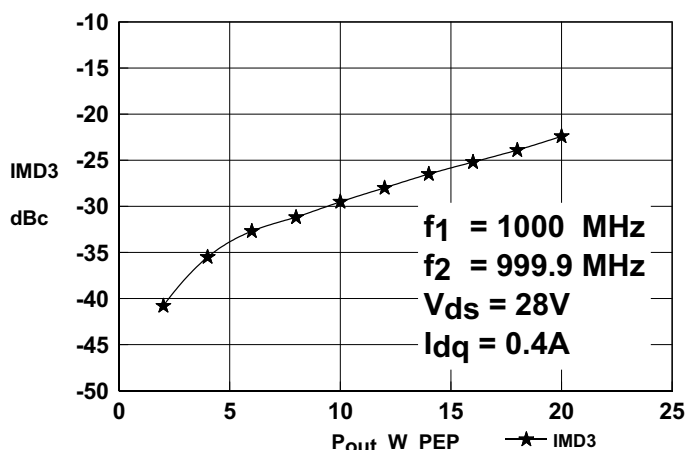
|                |                                    |                |
|----------------|------------------------------------|----------------|
| $R_{THj-case}$ | Thermal Resistance Junction – Case | Max. 4.2°C / W |
|----------------|------------------------------------|----------------|



**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<br>MHz | $Z_S$<br>$\Omega$ | $Z_L$<br>$\Omega$ |
|------------------|-------------------|-------------------|
| 1000             | 5.0 - j7.2        | 2.4 - j7.1        |

### Typical S Parameters

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

| !Freq<br>!MHz | S11<br>mag | ang  | S21<br>mag | ang | S12<br>mag | ang | S22<br>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 |



L2 1.5 turns 24swg enamelled copper wire on ferrite core

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