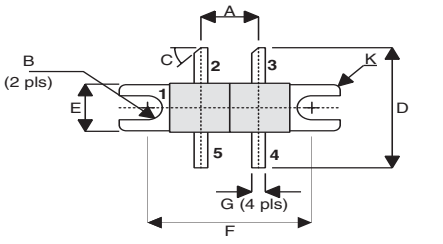
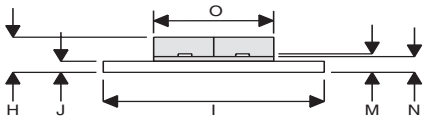
TetraFET

# D2006UK

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 15W – 28V – 1GHz PUSH–PULL

## FEATURES

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

## APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS from DC to 2 GHz

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

| | | |
|---|---|---|
| $P_D$ | Power Dissipation | 70W |
| $BV_{DSS}$ | Drain – Source Breakdown Voltage * | 65V |
| $BV_{GSS}$ | Gate – Source Breakdown Voltage * | ±20V |
| $I_{D(sat)}$ | Drain Current * | 3A |
| $T_{stg}$ | 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 | $I_D$ = 10mA | | 65 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$ = 28V | $V_{GS}$ = 0 | | | | 3 | 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 | $I_D$ = 0.6A | | 0.54 | | | S |
| **TOTAL DEVICE** | | | | | | | | |
| $G_{PS}$ | Common Source Power Gain | $P_O$ = 15W | | | 13 | | | dB |
| η | Drain Efficiency | $V_{DS}$ = 28V | $I_{DQ}$ = 0.6A | | 40 | | | % |
| VSWR | Load Mismatch Tolerance | f = 1GHz | | | 20:1 | | | — |
| **PER SIDE** | | | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$ = 0 | $V_{GS}$ = –5V | f = 1MHz | | | 36 | pF |
| $C_{oss}$ | Output Capacitance | $V_{DS}$ = 28V | $V_{GS}$ = 0 | f = 1MHz | | | 18 | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | $V_{DS}$ = 28V | $V_{GS}$ = 0 | f = 1MHz | | | 1.5 | 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. 2.5°C / W |



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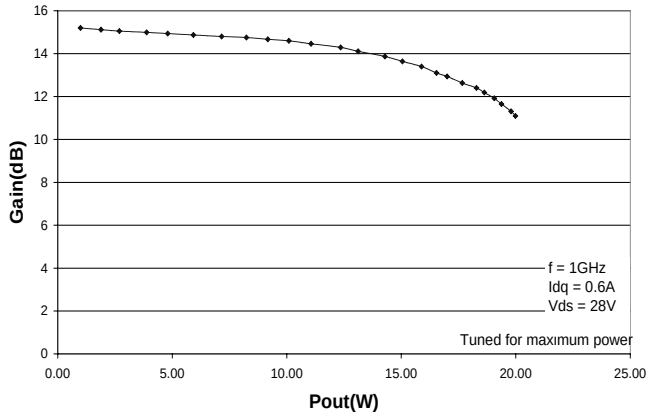


Figure 1
Gain vs. Output Power

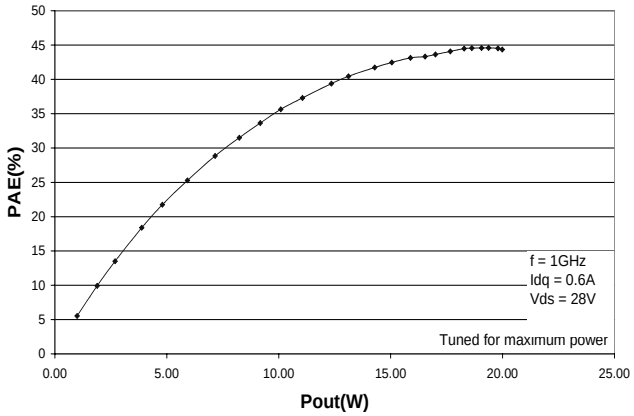


Figure 2
Power Added Efficiency vs. Output Power

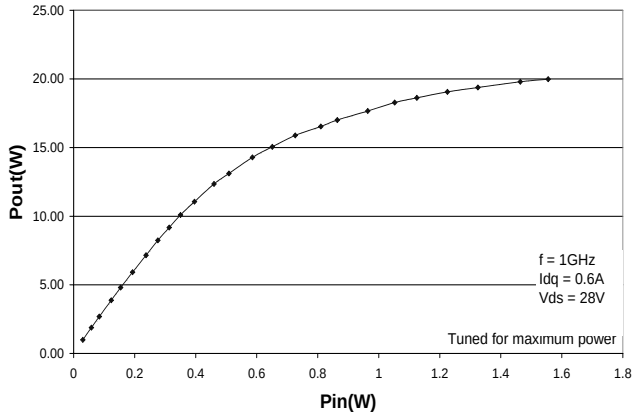


Figure 3
Output Power vs. Input Power

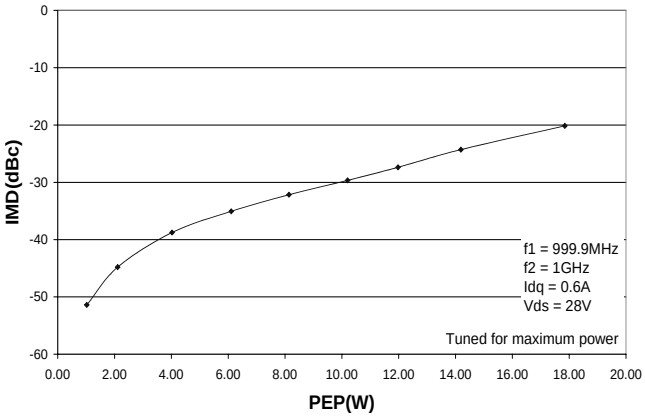


Figure 4
IMD3 vs. PEP



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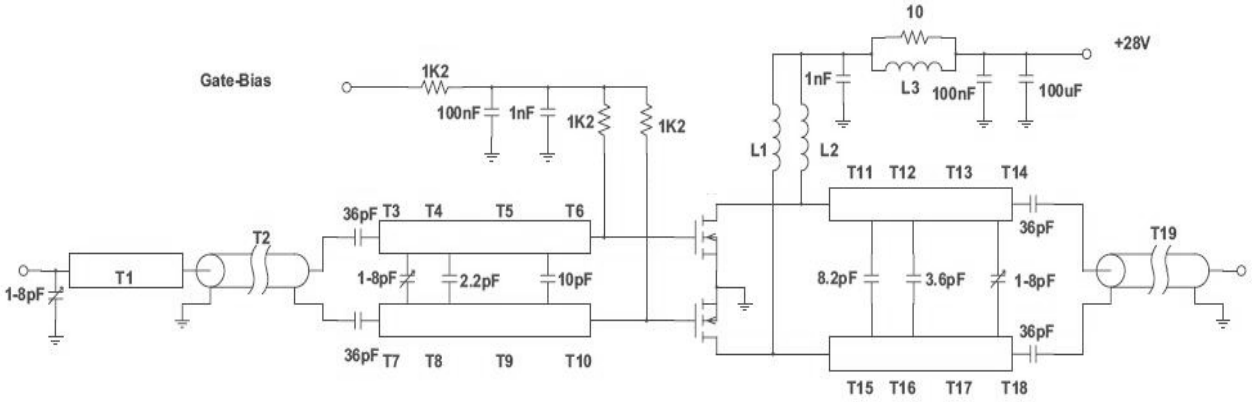


## 1000MHz TEST FIXTURE

Substrate 0.8mm thick PTFE/glass
All microstrip lines W = 2.7mm

| | |
|---|---|
| T1 | 23 mm |
| T2, T19 | 50mm 50 OHM UT 34 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 turns of 24swg enamelled copper wire on Siemens B62152-a7x 2 hole core |



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