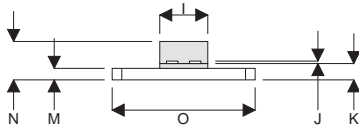
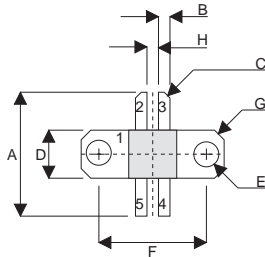


MECHANICAL DATA

**GOLD METALLISED
MULTI-PURPOSE SILICON
DMOS RF FET
5W – 12.5V – 1GHz
PUSH-PULL**



DQ

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 | 16.38 | 0.26 | 0.645 | 0.010 |
| B | 1.52 | 0.13 | 0.060 | 0.005 |
| C | 45° | 5° | 45° | 5° |
| D | 6.35 | 0.13 | 0.250 | 0.005 |
| E | 3.30 | 0.13 | 0.130 | 0.005 |
| F | 14.22 | 0.13 | 0.560 | 0.005 |
| G | 1.27 x 45° | 0.13 | 0.05 x 45° | 0.005 |
| H | 1.52 | 0.13 | 0.060 | 0.005 |
| I | 6.35 | 0.13 | 0.250 | 0.005 |
| J | 0.13 | 0.02 | 0.005 | 0.001 |
| K | 2.16 | 0.13 | 0.085 | 0.005 |
| M | 1.52 | 0.13 | 0.060 | 0.005 |
| N | 5.08 | MAX | 0.200 | MAX |
| O | 18.90 | 0.13 | 0.744 | 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

- VHF/UHF COMMUNICATIONS
from 1MHz to 1 GHz

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

| | | |
|--------------|--|--------------|
| P_D | Power Dissipation | 35W |
| BV_{DSS} | Drain – Source Breakdown Voltage * | 40V |
| BV_{GSS} | Gate – Source Breakdown Voltage * | $\pm 20V$ |
| $I_{D(sat)}$ | Drain Current * | 2A |
| 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 | | | | | |
| B _V DSS | Drain–Source Breakdown Voltage | V _{GS} = 0 I _D = 10mA | 40 | | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} = 12.5V V _{GS} = 0 | | 1 | 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 = 0.2A | 0.18 | | S |
| TOTAL DEVICE | | | | | |
| G _{PS} | Common Source Power Gain | P _O = 5W | 10 | | dB |
| η | Drain Efficiency | V _{DS} = 12.5V I _{DQ} = 0.2A | 40 | | % |
| V _{SWR} | Load Mismatch Tolerance | f = 1GHz | 20:1 | | — |
| PER SIDE | | | | | |
| C _{iss} | Input Capacitance | V _{DS} = 12.5V V _{GS} = -5V f = 1MHz | | 12 | pF |
| C _{oss} | Output Capacitance | V _{DS} = 12.5V V _{GS} = 0 f = 1MHz | | 10 | pF |
| C _{rss} | Reverse Transfer Capacitance | V _{DS} = 12.5V V _{GS} = 0 f = 1MHz | | 1 | 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. 5.0°C / W |
|-----------------------|------------------------------------|----------------|

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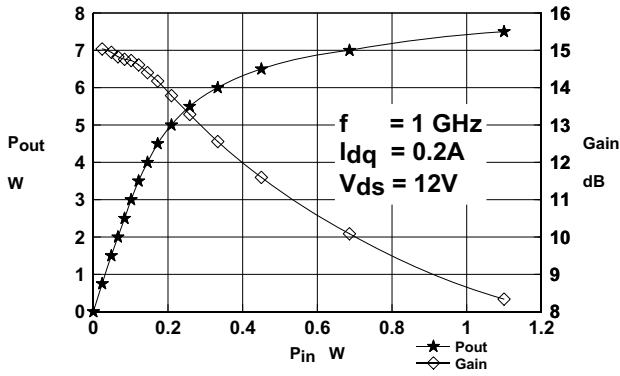


Figure 1 Output Power and Gain vs. Input power

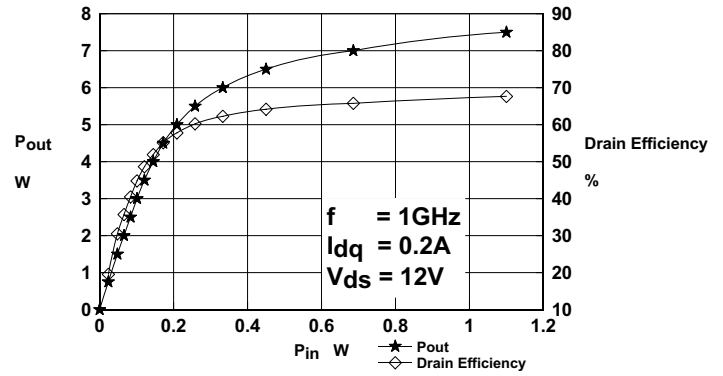


Figure 2 Output Power and Efficiency vs. Input Power

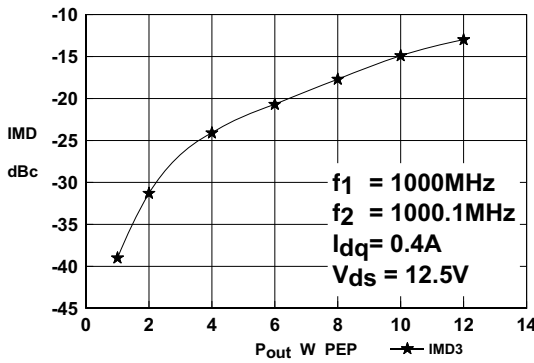


Figure 3 IMD vs. Output Power.

OPTIMUM SOURCE AND LOAD IMPEDANCE

| Frequency MHz | Z _S Ω | Z _L Ω |
|------------------|---------------------|---------------------|
| 1000MHz | 6.0 + j8.3 | 7.0 + j9.3 |

Typical S Parameters

! Vds=12.5V, Idq=0.2A
MHZ S MA R 50

| IFreq MHz | S11 mag | ang | S21 mag | ang | S12 mag | ang | S22 mag | ang |
|--------------|------------|------|------------|-----|------------|-----|------------|------|
| 100 | 0.88 | -59 | 13.48 | 137 | 0.039 | 48 | 0.82 | -51 |
| 150 | 0.79 | -77 | 11.02 | 119 | 0.047 | 34 | 0.75 | -65 |
| 200 | 0.74 | -88 | 8.78 | 105 | 0.049 | 24 | 0.71 | -76 |
| 250 | 0.71 | -98 | 7.33 | 97 | 0.049 | 17 | 0.69 | -84 |
| 300 | 0.7 | -105 | 6.36 | 91 | 0.048 | 16 | 0.68 | -91 |
| 350 | 0.69 | -111 | 5.56 | 81 | 0.047 | 9 | 0.67 | -97 |
| 400 | 0.69 | -118 | 4.87 | 78 | 0.044 | 10 | 0.67 | -103 |
| 450 | 0.7 | -125 | 4.3 | 71 | 0.04 | 7 | 0.67 | -110 |
| 500 | 0.71 | -131 | 3.94 | 68 | 0.038 | 10 | 0.68 | -116 |
| 550 | 0.72 | -138 | 3.62 | 62 | 0.034 | 11 | 0.69 | -124 |
| 600 | 0.73 | -145 | 3.43 | 58 | 0.033 | 16 | 0.7 | -130 |
| 650 | 0.75 | -151 | 3.05 | 51 | 0.029 | 21 | 0.72 | -137 |
| 700 | 0.75 | -156 | 2.91 | 47 | 0.028 | 28 | 0.72 | -142 |
| 750 | 0.76 | -160 | 2.59 | 41 | 0.027 | 40 | 0.72 | -147 |
| 800 | 0.76 | -162 | 2.26 | 36 | 0.028 | 49 | 0.72 | -150 |
| 850 | 0.76 | -164 | 2.03 | 36 | 0.03 | 63 | 0.72 | -153 |
| 900 | 0.77 | -166 | 1.93 | 35 | 0.034 | 71 | 0.72 | -156 |
| 950 | 0.77 | -168 | 1.88 | 34 | 0.042 | 79 | 0.72 | -159 |
| 1000 | 0.78 | -170 | 1.81 | 30 | 0.05 | 81 | 0.72 | -162 |

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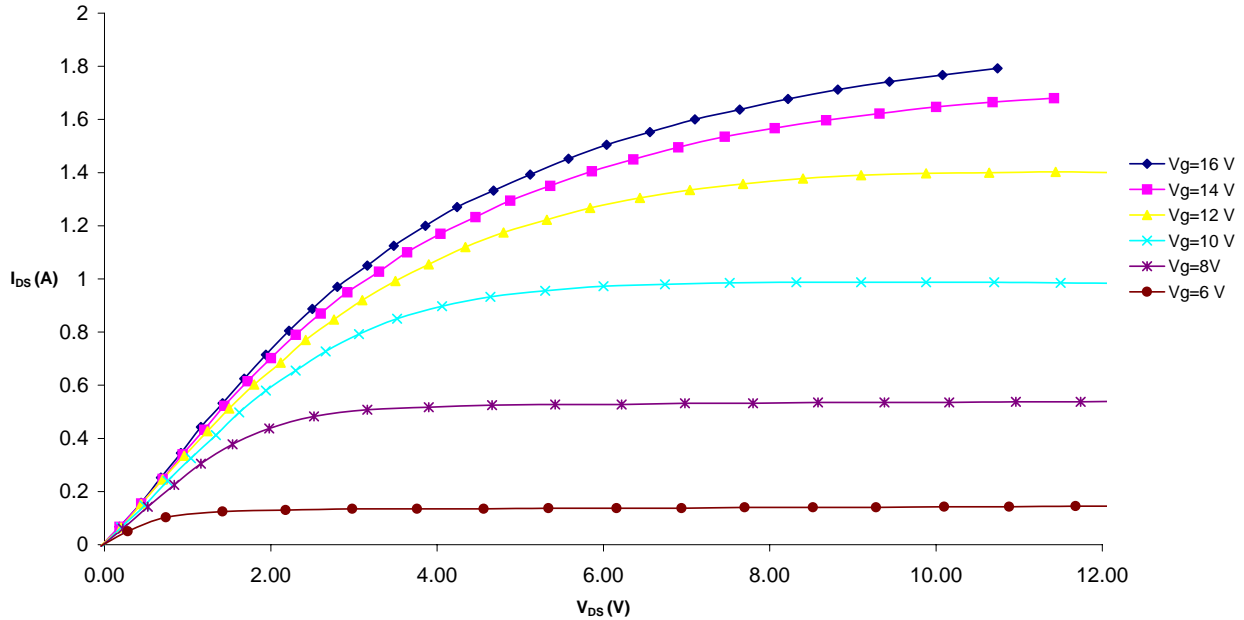


Figure 4 – Typical IV Characteristics.

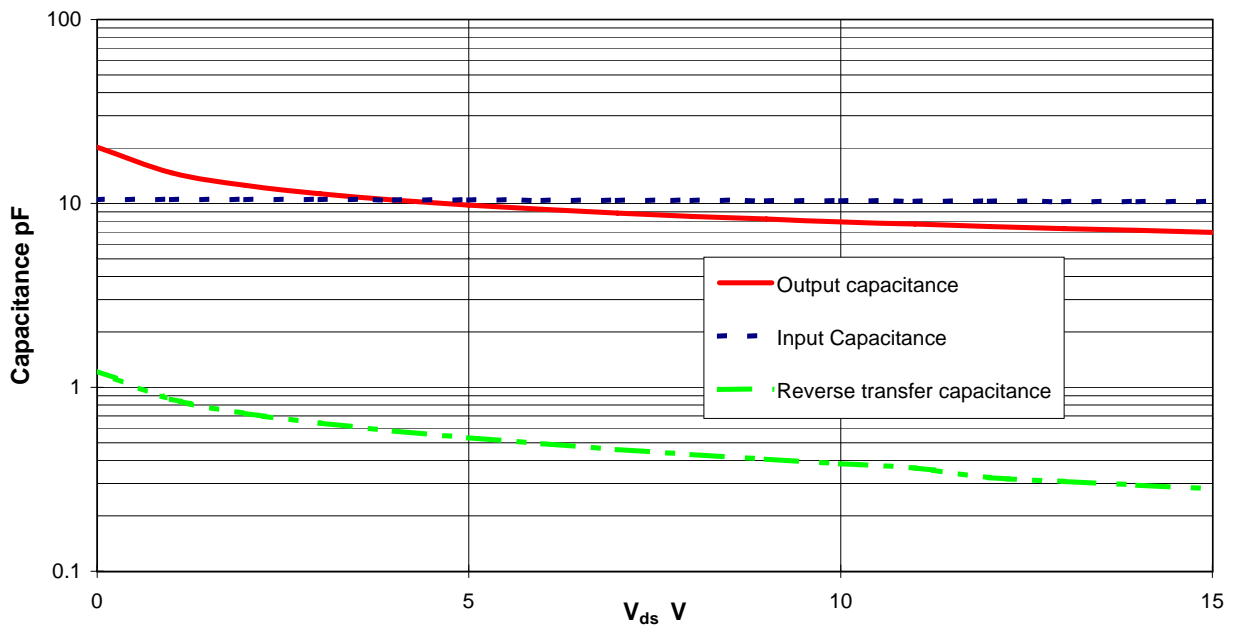
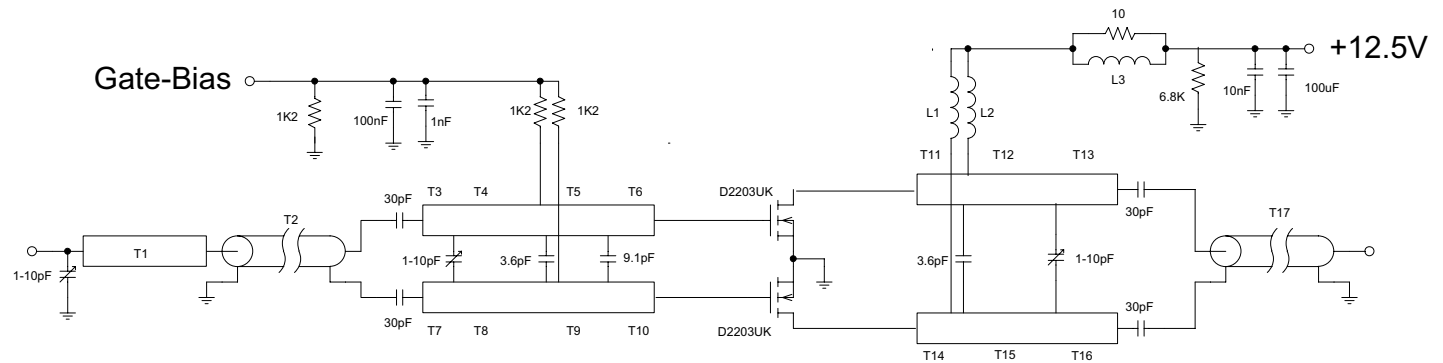


Figure 5 – Typical CV Characteristics.

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D2203UK 1000MHz TEST FIXTURE

Substrate 0.8mm thick PTFE/glass

All microstrip lines W=2.7mm

- T1 15.7mm
- T2, T17 45mm 50 Ohm UT34 semi-rigid coax
- T3, T7 7mm
- T4, T8 15mm
- T5, T9 7.6mm
- T6, T10 8mm
- T11, T14 8mm
- T12, T15 11.2mm
- T13, T16 7mm

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

L3 1.5 turn 24swg enamelled copper wire on Siemens B62152-A7X 2 hole core

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