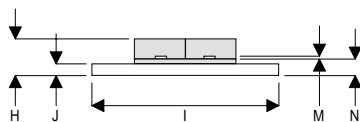
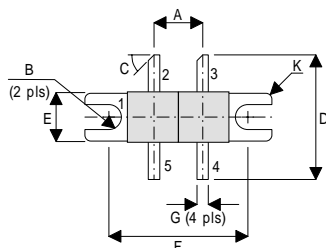


MECHANICAL DATA

**GOLD METALLISED
MULTI-PURPOSE SILICON
DMOS RF FET
100W – 28V – 500MHz
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 | 0.65R | 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 | | 0.190 | |
| 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
- LOW C_{rss}
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN – 10 dB MINIMUM

APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS
from 1 MHz to 500 MHz

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

| | | |
|--------------|--|-------------------------|
| P_D | Power Dissipation | 292W |
| BV_{DSS} | Drain – Source Breakdown Voltage | 70V |
| BV_{GSS} | Gate – Source Breakdown Voltage | $\pm 20V$ |
| $I_{D(sat)}$ | Drain Current | 15A |
| 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 |
|--------------------------|---|-----------------------|-----------------------------------|------|--------|
| PER SIDE | | | | | |
| B _V DSS | Drain–Source Breakdown Voltage | V _{GS} = 0 | I _D = 100mA | 70 | V |
| I _D DSS | Zero Gate Voltage Drain Current | V _{DS} = 28V | V _{GS} = 0 | | 3 mA |
| I _G DSS | 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 = 3A | 2.4 | mhos |
| V _{GS(th)match} | Gate Threshold Voltage Matching Between Sides | I _D = 10mA | V _{DS} = V _{GS} | | 0.1 V |
| TOTAL DEVICE | | | | | |
| G _{PS} | Common Source Power Gain | P _O = 100W | | 10 | dB |
| η | Drain Efficiency | V _{DS} = 28V | I _{DQ} = 1.2A | 50 | % |
| VSWR | Load Mismatch Tolerance | f = 500MHz | | 20:1 | — |
| PER SIDE | | | | | |
| C _{iss} | Input Capacitance | V _{DS} = 28V | V _{GS} = -5V f = 1MHz | | 180 pF |
| C _{oss} | Output Capacitance | V _{DS} = 28V | V _{GS} = 0 f = 1MHz | | 90 pF |
| C _{rss} | Reverse Transfer Capacitance | V _{DS} = 28V | V _{GS} = 0 f = 1MHz | | 7.5 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. 0.6°C / W |
|-----------------------|------------------------------------|----------------|

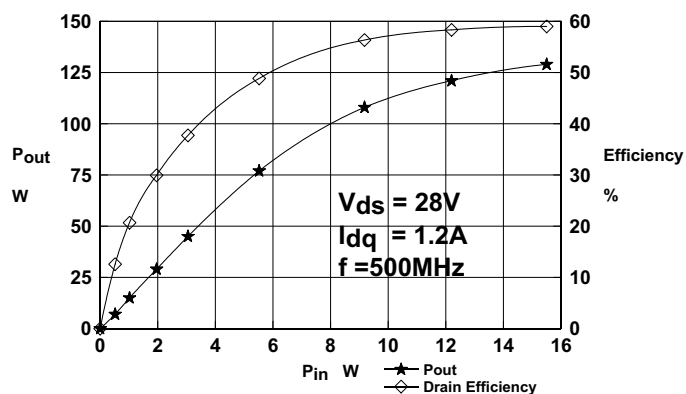


Figure 1
Power Output and Efficiency vs. Input

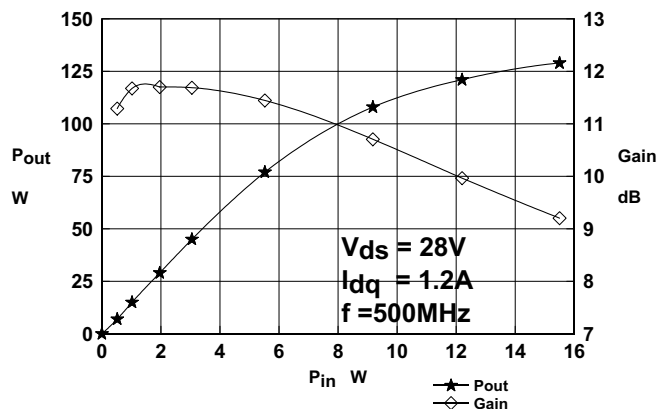
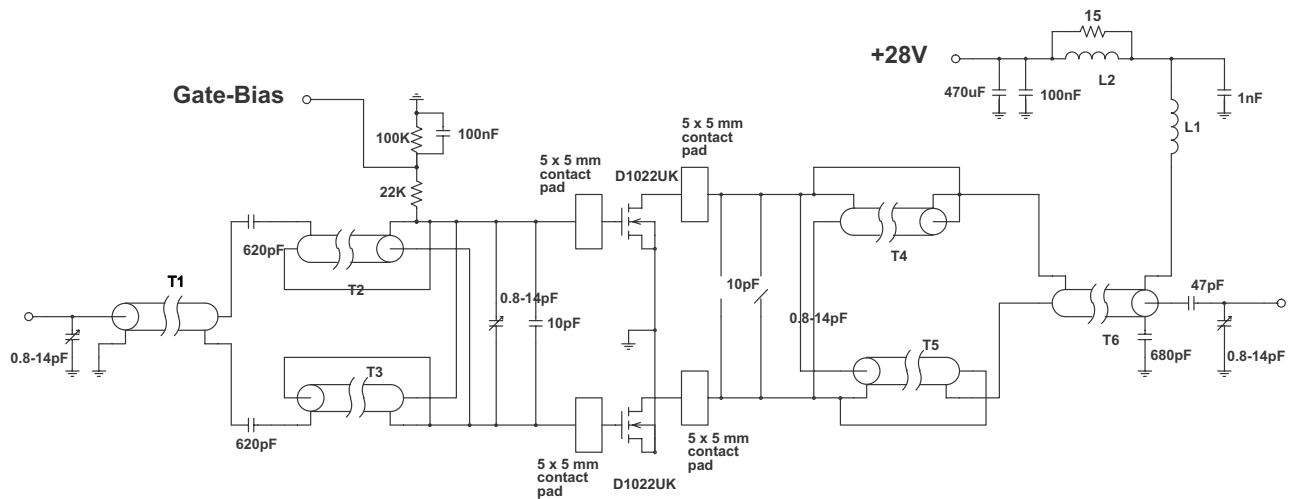


Figure 2
Power Output and Gain vs. Input Power

OPTIMUM SOURCE AND LOAD IMPEDANCE

| Frequency MHz | Z_S Ω | Z_L Ω |
|------------------|-------------------|-------------------|
| 500 | $2.0 - j2.2$ | $2.6 - j0.6$ |

N.B. Impedances measured terminal to terminal



D1022UK 500MHz TEST FIXTURE

- T1, 6 7cm UT85 50 Ohm semi-rigid coax on Siemens B62152A1x1 2 hole ferrite core
- T2, 3,4, 5 7.7 cm UT85-15 15 ohm semi-rigid coax
- L1 6 turns 19swg enamelled copper wire, 3.5mm internal diameter
- L2 8.5 turns 19swg enamelled copper wire on Fair-rite FT82 ferrite core