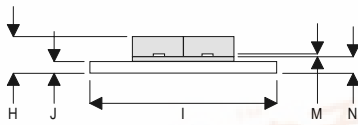
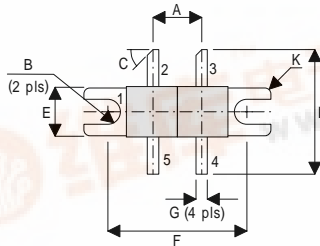


# D1022UK

METAL GATE RF SILICON FET

## 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

## FEATURES

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

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

## 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	±20V
$I_{D(sat)}$	Drain Current	15A
$T_{stg}$	Storage Temperature	-65 to 150°C
	Maximum Operating Junction Temperature	200°C



## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
<b>PER SIDE</b>							
B <sub>V</sub> DSS	Drain–Source Breakdown Voltage	V <sub>GS</sub> = 0	I <sub>D</sub> = 100mA	70			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 28V	V <sub>GS</sub> = 0			3	mA
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> = 20V	V <sub>DS</sub> = 0			1	μA
V <sub>GS(th)</sub>	Gate Threshold Voltage*	I <sub>D</sub> = 10mA	V <sub>DS</sub> = V <sub>GS</sub>	1		7	V
g <sub>fs</sub>	Forward Transconductance*	V <sub>DS</sub> = 10V	I <sub>D</sub> = 3A	2.4			mhos
V <sub>GS(th)match</sub>	Gate Threshold Voltage Matching Between Sides	I <sub>D</sub> = 10mA	V <sub>DS</sub> = V <sub>GS</sub>			0.1	V
<b>TOTAL DEVICE</b>							
G <sub>PS</sub>	Common Source Power Gain	P <sub>O</sub> = 100W		10			dB
η	Drain Efficiency	V <sub>DS</sub> = 28V	I <sub>DQ</sub> = 1.2A	50			%
VSWR	Load Mismatch Tolerance	f = 500MHz		20:1			—
<b>PER SIDE</b>							
C <sub>iSS</sub>	Input Capacitance	V <sub>DS</sub> = 28V	V <sub>GS</sub> = -5V f = 1MHz			180	pF
C <sub>oSS</sub>	Output Capacitance	V <sub>DS</sub> = 28V	V <sub>GS</sub> = 0 f = 1MHz			90	pF
C <sub>rSS</sub>	Reverse Transfer Capacitance	V <sub>DS</sub> = 28V	V <sub>GS</sub> = 0 f = 1MHz			7.5	pF

\* Pulse Test: Pulse Duration = 300 μs , Duty Cycle ≤ 2%

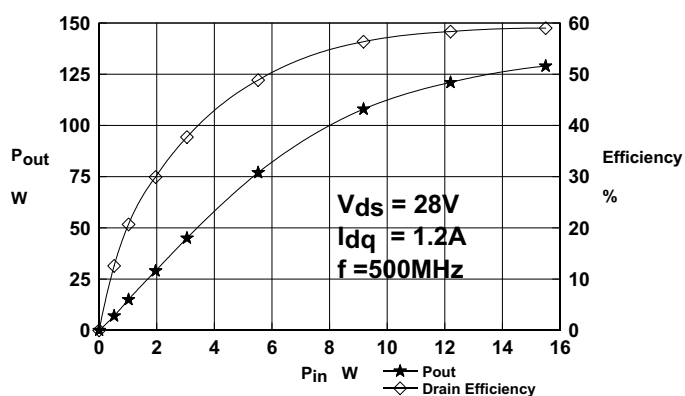
## HAZARDOUS MATERIAL WARNING

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.

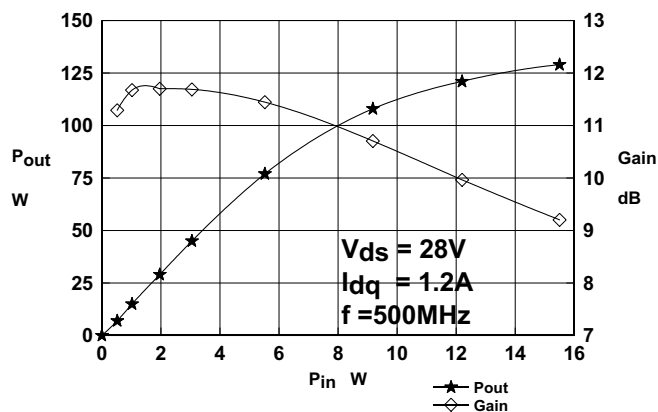
**THESE DEVICES MUST NEVER BE THROWN AWAY WITH GENERAL INDUSTRIAL OR DOMESTIC WASTE.**

## THERMAL DATA

R <sub>THj-case</sub>	Thermal Resistance Junction – Case	Max. 0.6°C / W
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**Figure 1**  
Power Output and Efficiency vs. Input

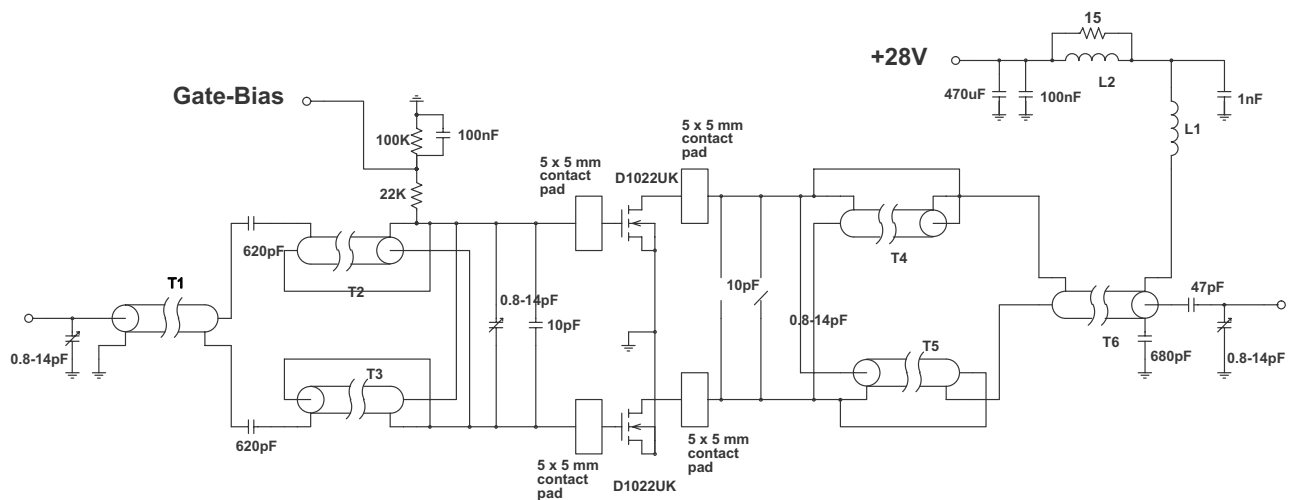


**Figure 2**  
Power Output and Gain vs. Input Power

### OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	$Z_S$ $\Omega$	$Z_L$ $\Omega$
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