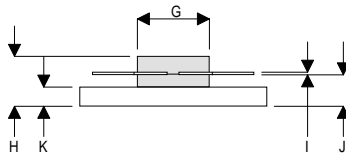
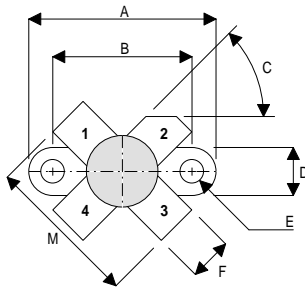


MECHANICAL DATA



DA

PIN 1 SOURCE                      PIN 2 DRAIN  
 PIN 3 SOURCE                      PIN 4 GATE

DIM	mm	Tol.	Inches	Tol.
A	24.76	0.13	0.975	0.005
B	18.42	0.13	0.725	0.005
C	45°	5°	45°	5°
D	6.35	0.13	0.25	0.005
E	3.17	0.13	0.125 DIA	0.005
F	5.71	0.13	0.225	0.005
G	9.52	0.13	0.375	0.005
H	6.60	REF	0.260	REF
I	0.13	0.02	0.005	0.001
J	4.32	0.13	0.170	0.005
K	2.54	0.13	0.100	0.005
M	20.32	0.25	0.800	0.010

**GOLD METALLISED  
 MULTI-PURPOSE SILICON  
 DMOS RF FET  
 20W – 28V – 175MHz  
 SINGLE ENDED**

**FEATURES**

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW  $C_{rss}$
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN – 16 dB MINIMUM

**APPLICATIONS**

- HF/VHF/UHF COMMUNICATIONS  
 from 1 MHz to 175 MHz

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

$P_D$	Power Dissipation	50W
$BV_{DSS}$	Drain – Source Breakdown Voltage	70V
$BV_{GSS}$	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	5A
$T_{stg}$	Storage Temperature	-65 to 150°C
$T_j$	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 <sub>V</sub> DSS Drain–Source Breakdown Voltage	V <sub>GS</sub> = 0      I <sub>D</sub> = 100mA	70			V
I <sub>D</sub> DSS Zero Gate Voltage Drain Current	V <sub>DS</sub> = 28V      V <sub>GS</sub> = 0			1	mA
I <sub>G</sub> DSS 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> = 1A	0.8			S
G <sub>PS</sub> Common Source Power Gain	P <sub>O</sub> = 20W	16			dB
η Drain Efficiency	V <sub>DS</sub> = 28V      I <sub>DQ</sub> = 0.1A	50			%
VSWR Load Mismatch Tolerance	f = 175MHz	20:1			—
C <sub>iss</sub> Input Capacitance	V <sub>DS</sub> = 28V      V <sub>GS</sub> = -5V      f = 1MHz			60	pF
C <sub>oss</sub> Output Capacitance	V <sub>DS</sub> = 28V      V <sub>GS</sub> = 0      f = 1MHz			30	pF
C <sub>rss</sub> Reverse Transfer Capacitance	V <sub>DS</sub> = 28V      V <sub>GS</sub> = 0      f = 1MHz			2.5	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. 3.5°C / W
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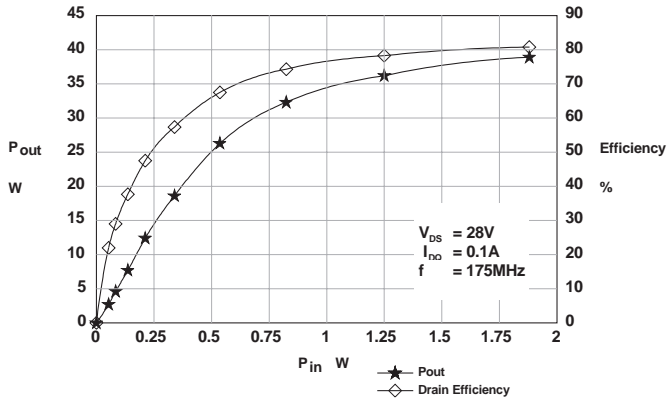


Figure 1 – Power Output and Efficiency vs. Power Input.

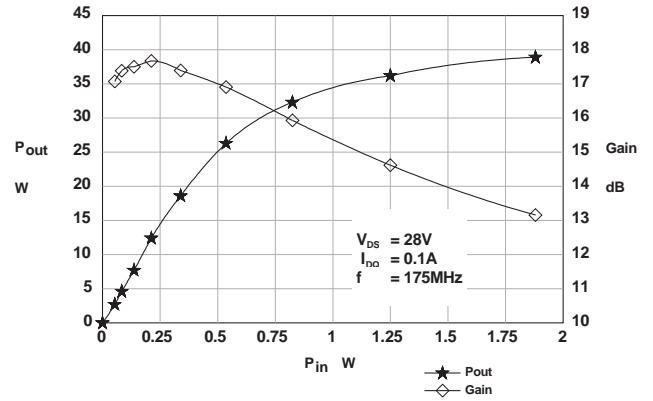


Figure 2 – Power Output & Gain vs. Power Input.

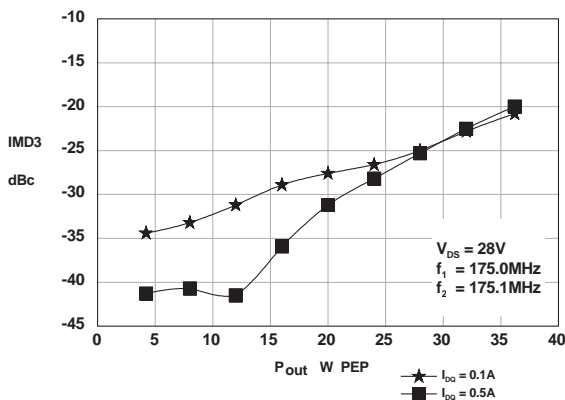


Figure 3 – IMD vs. Output Power.

**D1001UK**  
**OPTIMUM SOURCE AND LOAD IMPEDANCE**

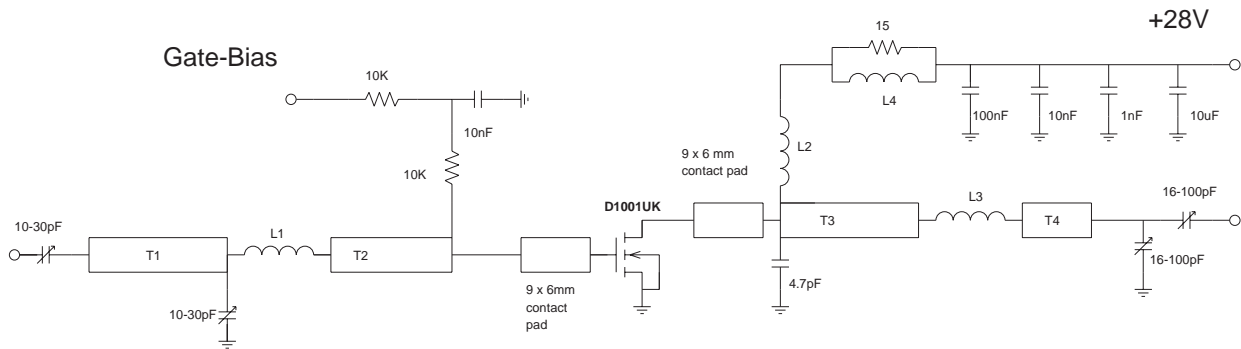
Frequency MHz	$Z_S$ $\Omega$	$Z_L$ $\Omega$
175MHz	$5 + j14$	$12 - j14$

**Typical S Parameters**

!  $V_{DS} = 28V, I_{DQ} = 0.1A$

# MHz S MA R 50

!Freq MHz	S11		S21		S12		S22	
	mag	ang	mag	ang	mag	ang	mag	ang
50	0.780	-116	18	112	0.034	25	0.642	-85
100	0.775	-135	9.312	85	0.030	11	0.577	-103
150	0.795	-149	6.077	68	0.022	14	0.613	-116
200	0.826	-159	4.193	53	0.017	44	0.669	-128
250	0.853	-169	3.216	43	0.023	74	0.715	-139
300	0.878	-179	2.566	35	0.039	89	0.759	-150
350	0.903	171	1.991	23	0.052	86	0.801	-161
400	0.923	161	1.655	18	0.070	84	0.839	-173
450	0.944	151	1.322	9	0.080	80	0.878	177
500	0.963	142	1.121	4	0.098	76	0.914	167
550	0.978	136	0.899	-2	0.108	72	0.945	159
600	0.985	131	0.762	-7	0.119	66	0.966	153



## D1001UK 175MHz TEST FIXTURE

Substrate 1.6mm PTFE/glass, Er=2.5  
All microstrip lines W=4.4mm

T1 10mm  
T2 13mm  
T3 12mm  
T4 4mm

L1 1.5 turns 22swg enamelled copper wire, 6mm i.d.  
L2 10 turns 19swg enamelled copper wire, 6mm i.d.  
L3 1.5 turns 22swg enamelled copper wire, 6mm i.d.  
L4 13.5 turns 19swg enamelled copper wire on Siemens B64920A618X830 ferrite core