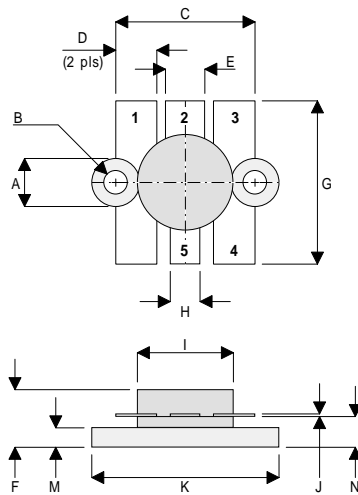


MECHANICAL DATA



DT

PIN 1 SOURCE (COMMON) PIN 2 GATE
 PIN 3 SOURCE (COMMON) PIN 4 SOURCE (COMMON)
 PIN 5 DRAIN

DIM	mm	Tol.	Inches	Tol.
A	6.35 DIA	0.13	0.250 DIA	0.005
B	3.17 DIA	0.13	0.125 DIA	0.005
C	18.41	0.25	0.725	0.010
D	5.46	0.13	0.215	0.005
E	5.21	0.13	0.205	0.005
F	7.62	MAX	0.300	MAX
G	21.59	0.38	0.850	0.015
H	3.94	0.13	0.155	0.005
I	12.70	0.13	0.500	0.005
J	0.13	0.03	0.005	0.001
K	24.76	0.13	0.975	0.005
M	2.59	0.13	0.102	0.005
N	4.06	0.25	0.160	0.010

**GOLD METALLISED
 MULTI-PURPOSE SILICON
 DMOS RF FET
 80W – 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 COMMUNICATIONS
 from 1 MHz to 175 MHz

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

P_D	Power Dissipation	175W
BV_{DSS}	Drain – Source Breakdown Voltage	70V
BV_{GSS}	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	20A
T_{stg}	Storage Temperature	-65 to $150^{\circ}C$
T_j	Maximum Operating Junction Temperature	$200^{\circ}C$

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS} Drain-Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 100mA$	70			V
I_{DSS} Zero Gate Voltage Drain Current	$V_{DS} = 28V$ $V_{GS} = 0$			4	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 *	$V_{DS} = 10V$ $I_D = 4A$	3.2			S
G_{PS} Common Source Power Gain	$P_O = 80W$	16			dB
η Drain Efficiency	$V_{DS} = 28V$ $I_{DQ} = 0.4A$	50			%
VSWR Load Mismatch Tolerance	$f = 175MHz$	20:1			—
C_{iss} Input Capacitance	$V_{DS} = 28V$ $V_{GS} = -5V$ $f = 1MHz$			240	pF
C_{oss} Output Capacitance	$V_{DS} = 28V$ $V_{GS} = 0$ $f = 1MHz$			120	pF
C_{rss} Reverse Transfer Capacitance	$V_{DS} = 28V$ $V_{GS} = 0$ $f = 1MHz$			10	pF

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

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. 1.0°C / W
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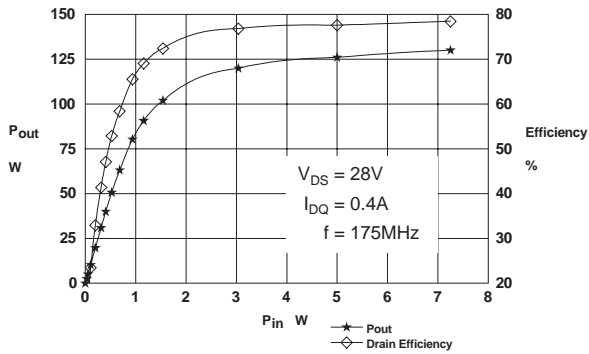


Figure 1 – Power Output and Efficiency vs. Power Input.

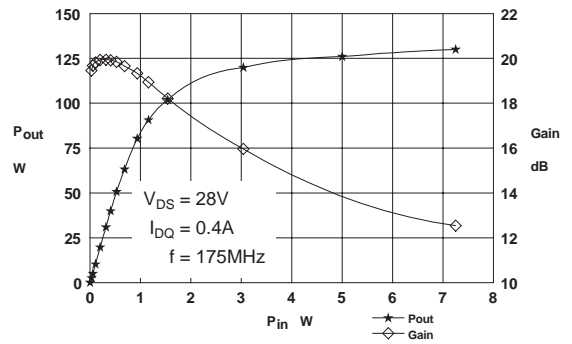


Figure 2 – Power Output & Gain vs. Power Input.

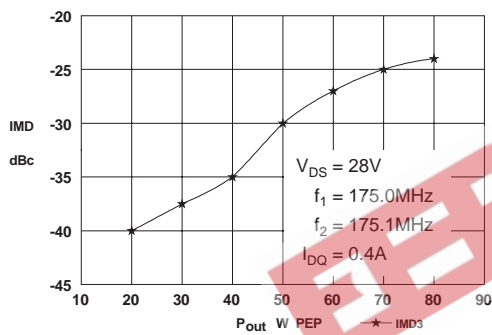
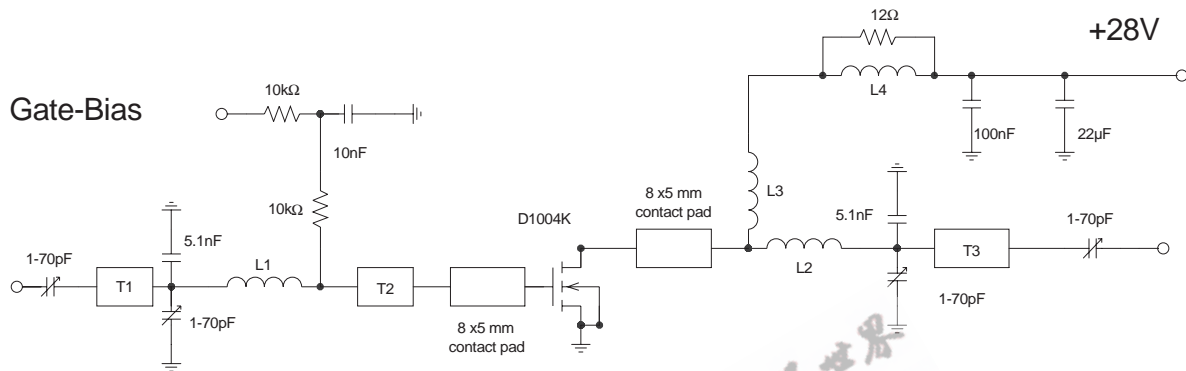


Figure 3 – IMD vs. Output Power.

D1004UK OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z_S Ω	Z_L Ω
175MHz	$2.2 + j1.9$	$3.2 - j0.5$



D1004UK 175MHz TEST FIXTURE

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

T1 7.5mm
T2 6mm
T3 8mm

L1 Hairpin loop 16swg 13mm dia
L2 Hairpin loop 16swg 11mm dia
L3 10 turns 18swg enamelled copper wire, 4mm i.d.
L4 12 turns 18swg enamelled copper wire on 22.7mm o.d. ferrite core