

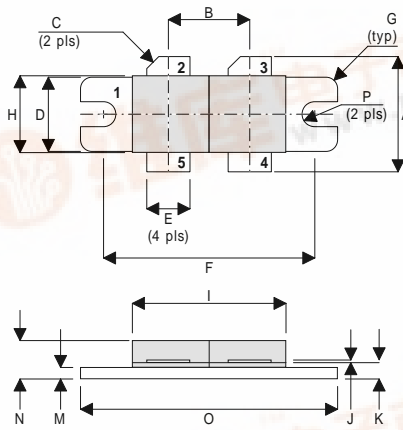
TetraFET

D1029UK

METAL GATE RF SILICON FET

MECHANICAL DATA

**GOLD METALLISED
MULTI-PURPOSE SILICON
DMOS RF FET
350W – 28V – 175MHz
PUSH-PULL**



DR

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 – 13 dB MINIMUM

APPLICATIONS

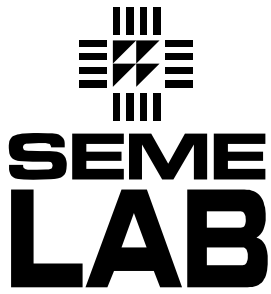
- VHF/UHF COMMUNICATIONS
from 1 MHz to 200 MHz

DIM	Millimetres	Tol.	Inches	Tol.
A	19.05	0.50	0.75	0.020
B	10.77	0.13	0.424	0.005
C	45°	5°	45°	5°
D	9.78	0.13	0.385	0.005
E	5.71	0.13	0.225	0.005
F	27.94	0.13	1.100	0.005
G	1.52R	0.13	0.060R	0.005
H	10.16	0.13	0.400	0.005
I	22.22	MAX	0.875	MAX
J	0.13	0.02	0.005	0.001
K	2.72	0.13	0.107	0.005
M	1.70	0.13	0.067	0.005
N	5.08	0.50	0.200	0.020
O	34.03	0.13	1.340	0.005
P	1.57R	0.08	0.062R	0.003

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

P_D	Power Dissipation	438W
BV_{DSS}	Drain – Source Breakdown Voltage *	70V
BV_{GSS}	Gate – Source Breakdown Voltage *	±20V
$I_{D(sat)}$	Drain Current *	35A
T_{stg}	Storage Temperature	-65 to 150°C
	Maximum Operating Junction Temperature	200°C





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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
PER SIDE						
BV_{DSS}	Drain–Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 100mA$	70		V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 28V$	$V_{GS} = 0$		7	mA
I_{GSS}	Gate Leakage Current	$V_{GS} = 20V$	$V_{DS} = 0$		7	μA
$V_{GS(th)}$	Gate Threshold Voltage*	$I_D = 10mA$	$V_{DS} = V_{GS}$	1	7	V
g_{fs}	Forward Transconductance*	$V_{DS} = 10V$	$I_D = 7A$	5.6		S
TOTAL DEVICE						
G_{PS}	Common Source Power Gain	$P_O = 350W$		13		dB
η	Drain Efficiency	$V_{DS} = 28V$	$I_{DQ} = 2A$	65		%
VSWR	Load Mismatch Tolerance	$f = 175MHz$		20:1		—
PER SIDE						
C_{iss}	Input Capacitance	$V_{DS} = 28V$	$V_{GS} = -5V$	$f = 1MHz$		420 pF
C_{oss}	Output Capacitance	$V_{DS} = 28V$	$V_{GS} = 0$	$f = 1MHz$		210 pF
C_{rss}	Reverse Transfer Capacitance	$V_{DS} = 28V$	$V_{GS} = 0$	$f = 1MHz$		17.5 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. 0.4°C / W
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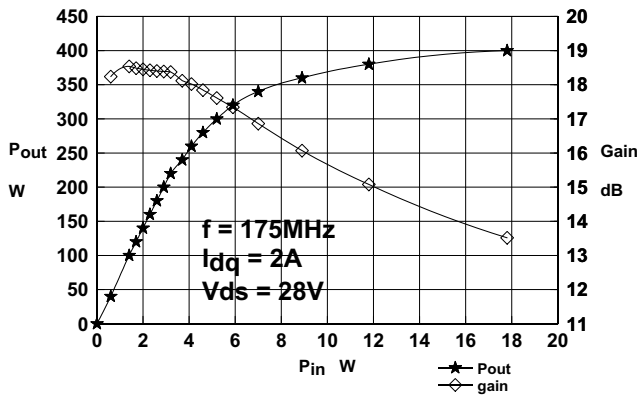


Figure 1
Output Power and Gain vs. Input Power

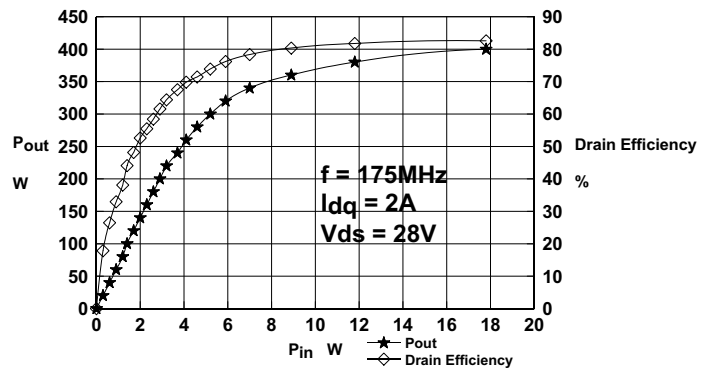


Figure 2
Output Power and Efficiency vs. Input Power

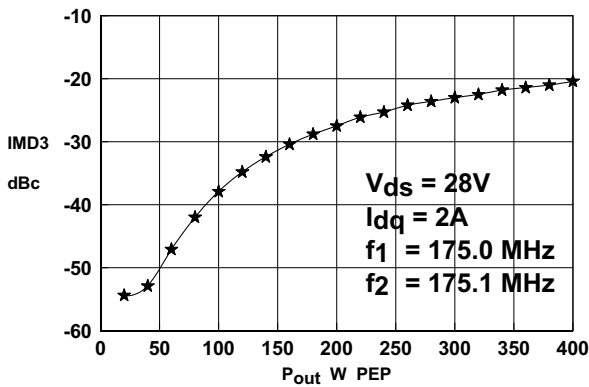
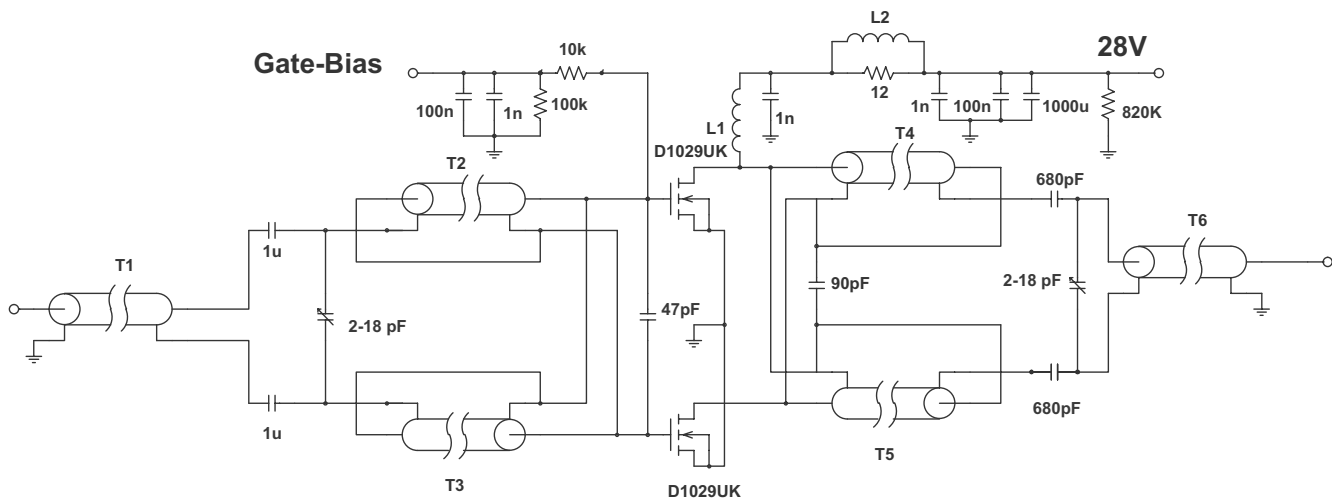


Figure 3
IMD3 vs. Output Power

OPTIMUM SOURCE AND LOAD IMPEDANCE

Frequency MHz	Z _S Ω	Z _L Ω
175	2.1 + j1.9	2.8 + j2.4
225	1.8 - j0.5	2.9 + j0.7



175MHz Test Fixture

- T1, 2, 3, 7cm Storm Products EXE18 19/30 S1TW coaxial cable on Siemens A1 x 1 2 hole core
- T4,5 14cm Storm Products EXE18 19/30 S1TW coaxial cable
- T6 11cm Storm Products EXE18 19/30 S1TW coaxial cable
- L1 6 turns 1.2mm dia wire, 5mm internal diameter
- L2 1.5 turns 0.9mm dia wire on Siemens A1 x 1 2 hole core