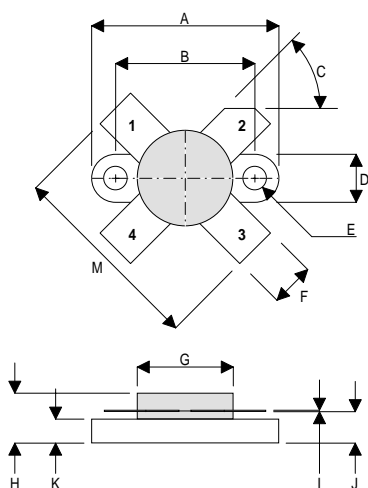


## MECHANICAL DATA

# GOLD METALLISED MULTI-PURPOSE SILICON DMOS RF FET 150W – 28V – 175MHz SINGLE ENDED



DM

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 Dia.	0.13	0.125 Dia.	0.005
F	5.71	0.13	0.225	0.005
G	12.7 Dia.	0.13	0.500 Dia.	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	3.17	0.13	0.125	0.005
M	26.16	0.25	1.03	0.010

## FEATURES

- SIMPLIFIED AMPLIFIER DESIGN
- SUITABLE FOR BROAD BAND APPLICATIONS
- LOW  $C_{rss}$
- SIMPLE BIAS CIRCUITS
- LOW NOISE
- HIGH GAIN – 13 dB MINIMUM

## APPLICATIONS

- HF/VHF/UHF COMMUNICATIONS  
from 1 MHz to 200 MHz

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

$P_D$	Power Dissipation	220W
$BV_{DSS}$	Drain – Source Breakdown Voltage	70V
$BV_{GSS}$	Gate – Source Breakdown Voltage	$\pm 20V$
$I_{D(sat)}$	Drain Current	30A
$T_{stg}$	Storage Temperature	$-65$ to $150^{\circ}C$
$T_j$	Maximum Operating Junction Temperature	$200^{\circ}C$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub> 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			6	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> = 6A	4.8			S
G <sub>PS</sub> Common Source Power Gain	P <sub>O</sub> = 150W	13			dB
η Drain Efficiency	V <sub>DS</sub> = 28V I <sub>DQ</sub> = 0.6A	50			%
VSWR Load Mismatch Tolerance	f = 175MHz	20:1			—
C <sub>iss</sub> Input Capacitance	V <sub>DS</sub> = 0V V <sub>GS</sub> = –5V f = 1MHz			360	pF
C <sub>oss</sub> Output Capacitance	V <sub>DS</sub> = 28V V <sub>GS</sub> = 0 f = 1MHz			180	pF
C <sub>rss</sub> Reverse Transfer Capacitance	V <sub>DS</sub> = 28V V <sub>GS</sub> = 0 f = 1MHz			15	pF

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

## HAZARDOUS MATERIAL WARNING

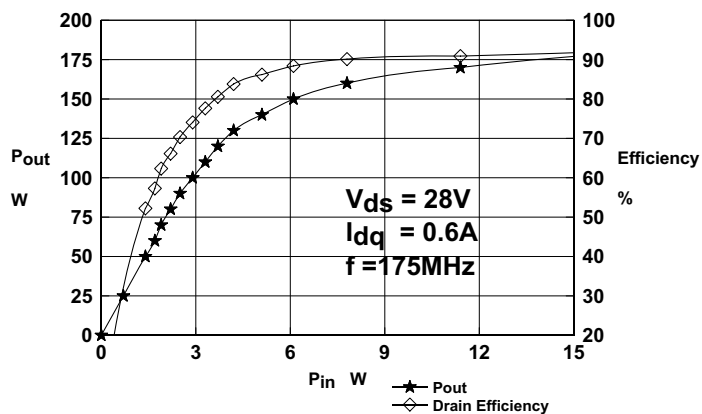
The ceramic portion of the device between leads and metal flange is beryllium oxide. Beryllium oxide dust is highly toxic and care must be taken during handling and mounting to avoid damage to this area.

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

## THERMAL DATA

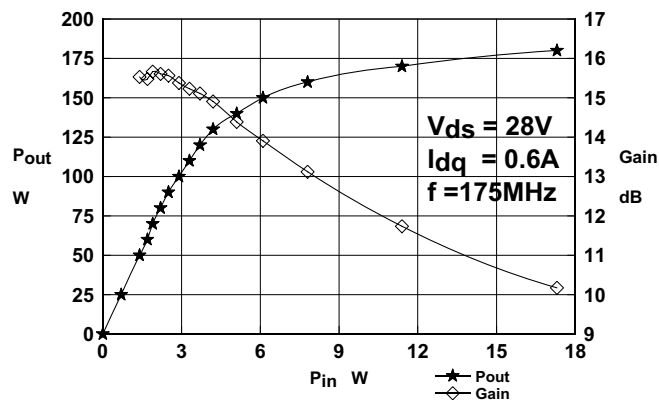
R <sub>THj-case</sub>	Thermal Resistance Junction – Case	Max. 0.8°C / W
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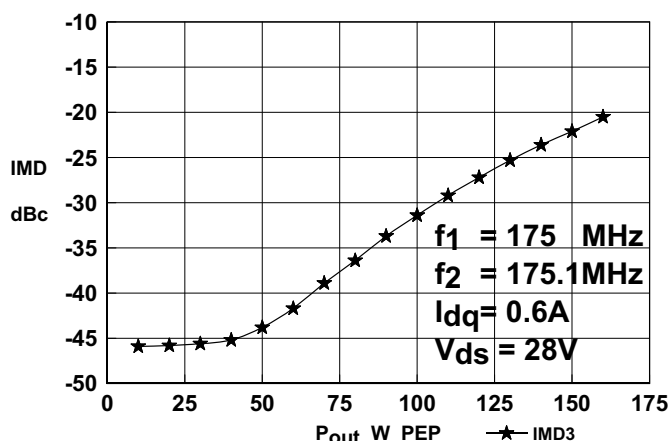
**Figure 1**

Power Out & Efficiency vs Power Input



**Figure 2**

Power Out & Gain vs. Power Input



**Figure 3**

IMD Versus Power Output

## Typical S Parameters

! Vds=28V Idq=0.6A  
# MHZ S MA R 50

!Freq !MHz	S11 mag ang	S21 mag ang	S12 mag ang	S22 mag ang
50	0.83 -167.4	7.42 93.3	0.009 26.5	0.79 -167
100	0.89 -169.4	3.56 64.1	0.008 44.1	0.82 -163.7
150	0.93 -169.3	2.05 45.2	0.01 75.4	0.87 -164.7
200	0.95 -170.1	1.23 34.2	0.016 88.2	0.91 -166.3
250	0.96 -170.2	0.85 26	0.023 89.1	0.94 -167.7
300	0.97 -169.7	0.62 22.6	0.03 90.1	0.96 -169
350	0.97 -170.4	0.44 15.2	0.035 86.1	0.96 -169.8
400	0.98 -169.3	0.35 17.8	0.043 85.2	0.97 -170.5
450	0.98 -169	0.27 15.9	0.046 84	0.98 -171.7
500	0.99 -168.5	0.23 19.6	0.053 83.1	0.99 -171.4

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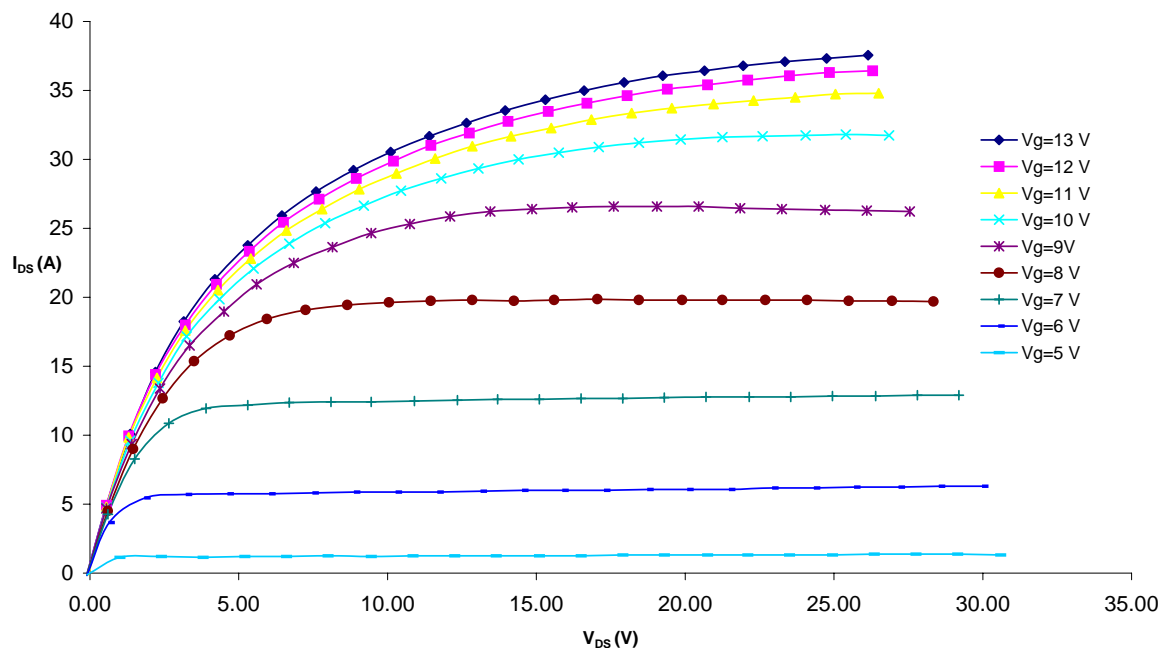


Figure 4 – Typical IV Characteristics.

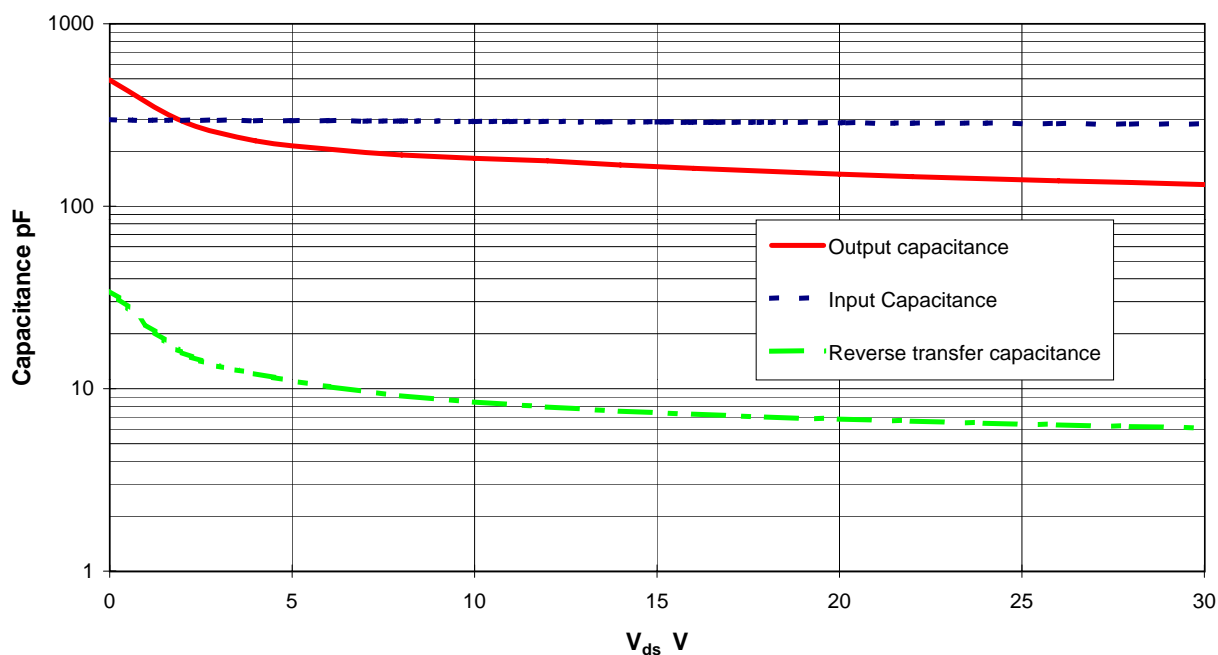
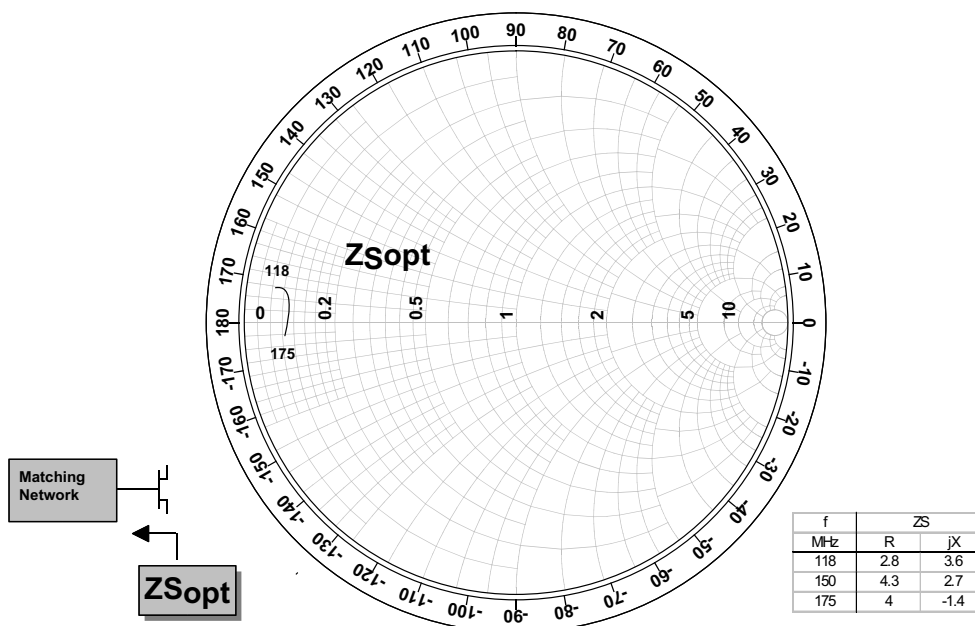
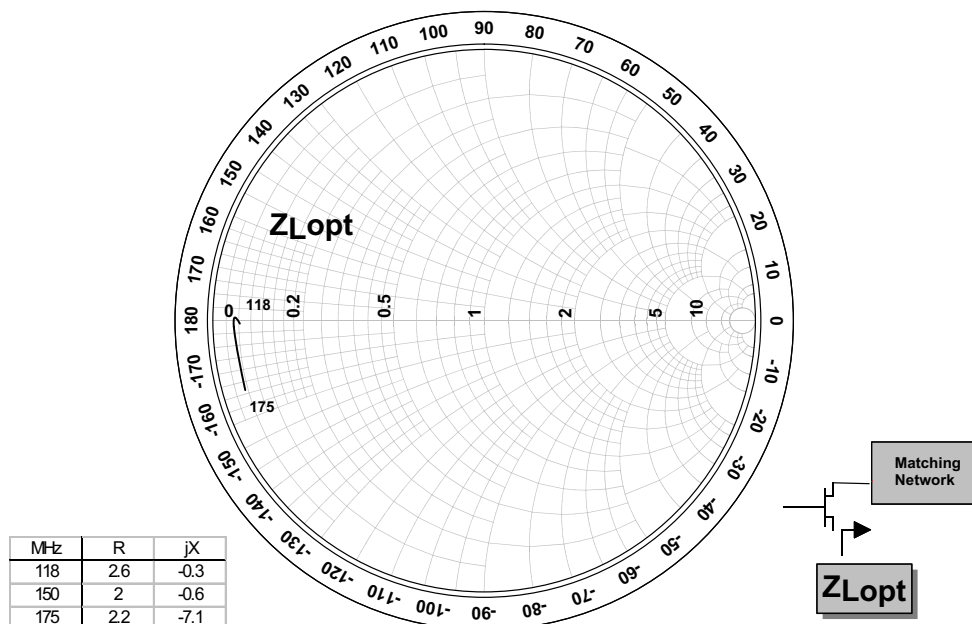


Figure 5 – Typical CV Characteristics.



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**L4** 12 turns 19swg enamelled copper wire on Fair-Rite FT82 ferrite core

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