



**150W, 50V, 175MHz
N-CHANNEL RF POWER VERTICAL MOSFET**

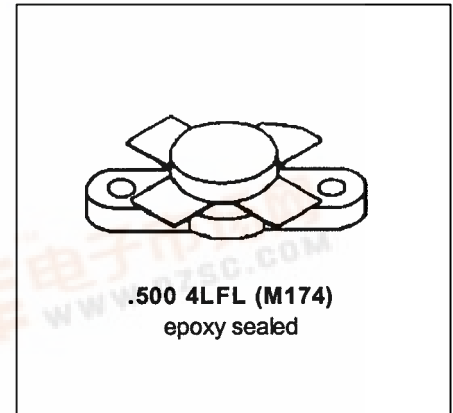
PRELIMINARY INFORMATION

VRF151

**BROADBAND HF/VHF VERTICAL D-MOS
ISM & MILITARY/COMMERCIAL COMMUNICATIONS APPLICATIONS**

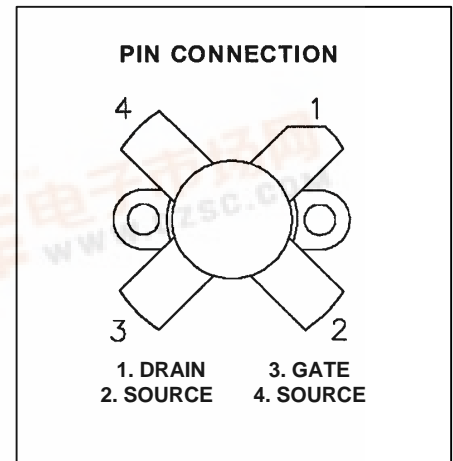
Features

- 150W WITH 14dB TYPICAL GAIN @ 175MHz, 50V
- 150W WITH 22dB TYPICAL GAIN @ 30MHz, 50V
- EXCELLENT STABILITY & LOW IMD
- COMMON SOURCE CONFIGURATION
- 30:1 LOAD VSWR CAPABILITY AT SPECIFIED OPERATING CONDITIONS
- NITRIDE PASSIVATED
- REFRACTORY GOLD METALLIZATION



DESCRIPTION:

The VRF151 is a gold metallized silicon, n-channel RF power transistor designed for broadband commercial and military applications requiring high power and gain without compromising reliability, ruggedness, and intermodulation distortion.



ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V _{(BR)DSS}	Drain-Source Voltage	125	V
V _{DGO}	Drain-Gate Voltage	125	V
V _{GS}	Gate-Source Voltage	±40	V
I _D	Drain Current	16	A
P _{DISS}	Total Device Power Dissipation	300	W
T _J	Max Operating Junction Temperature	+200	°C
T _{STG}	Storage Temperature	-65 to +150	°C

Thermal Data

R _{θ(J-C)}	Thermal Resistance Junction-Case	0.6	°C/W
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ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

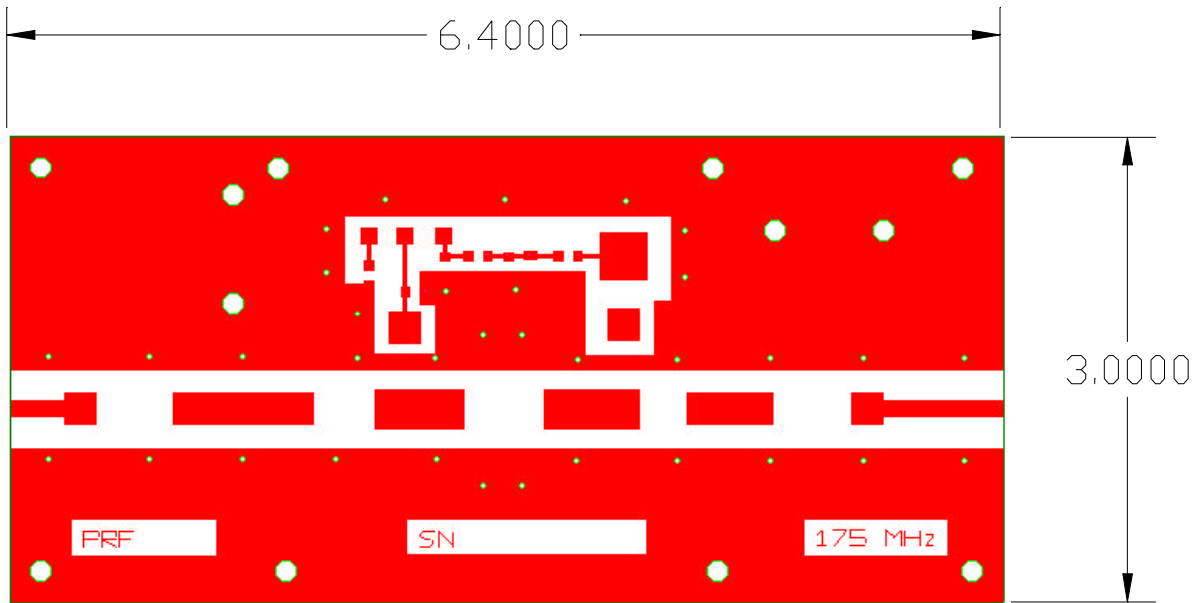
STATIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
Off Characteristics:							
V _{(BR)DSS}	V _{GS} = 0V	I _{DS} = 100mA	125	---	---		V
I _{DSS}	V _{GS} = 0V	V _{DS} = 50V	---	---	5.0		mA
I _{GSS}	V _{GS} = 20V	V _{DS} = 0V	---	---	1.0		μA
On Characteristics:							
V _{GS(Q)}	V _{DS} = 10V	I _D = 250mA	1.0	3.0	5.0		V
V _{DS(ON)}	V _{GS} = 10V	I _D = 10A	1.0	2.0	5.0		V
G _{FS}	V _{DS} = 10V	I _D = 250mA	5.0	---	---		mho
Dynamic Characteristics:							
C _{ISS}	V _{GS} = 0V	V _{DS} = 50V	f = 1 MHz	---	400	---	pF
C _{OSS}	V _{GS} = 0V	V _{DS} = 50V	f = 1 MHz	---	235	---	pF
C _{RSS}	V _{GS} = 0V	V _{DS} = 50V	f = 1 MHz	---	18	---	pF

FUNCTIONAL TESTS

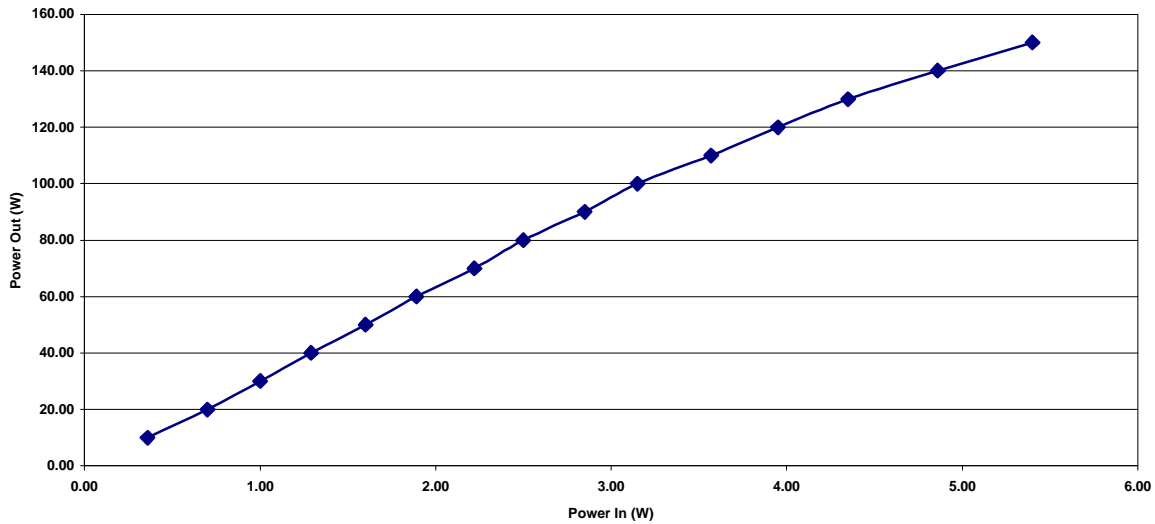
Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P _{OUT}	f = 175MHz	V _{DD} = 50V	I _{DQ} = 250mA	150		---	W
G _{PS}	f = 175MHz	V _{DD} = 50V	P _{OUT} = 150W _{PEP}	---	14	---	dB
G _{PS}	f = 30MHz	V _{DD} = 50V	P _{OUT} = 150W _{PEP}	18	22	---	dB
η _D	f = 175MHz	V _{DD} = 50V	P _{OUT} = 150W _{PEP}	---	55	---	%
IMD _(d3)	f1 = 30MHz	f2=30.001MHz	P _{OUT} = 150W _{PEP}	---	-32	---	dBc
Load Mismatch	f = 30MHz	V _{DD} = 50V	P _{OUT} = 150W _{PEP}	No degradation in Output Power			
			I _{DQ} = 250mA				
			30:1 VSWR - All Phase Angles				

TEST CIRCUIT INFORMATION



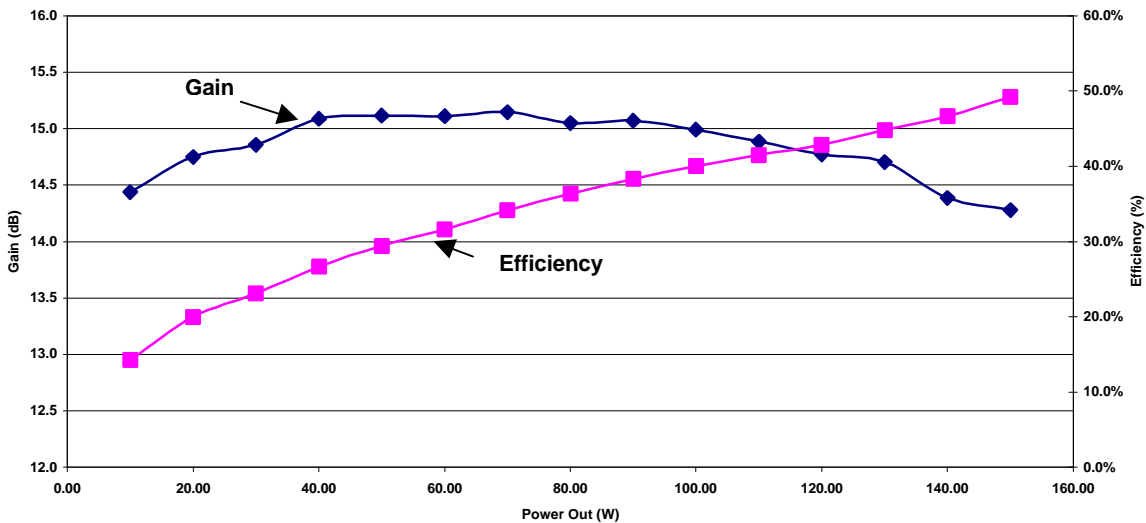
Power Out vs. Power In

Freq = 175 MHz, Vdd = 50V, IDQ = 250mA



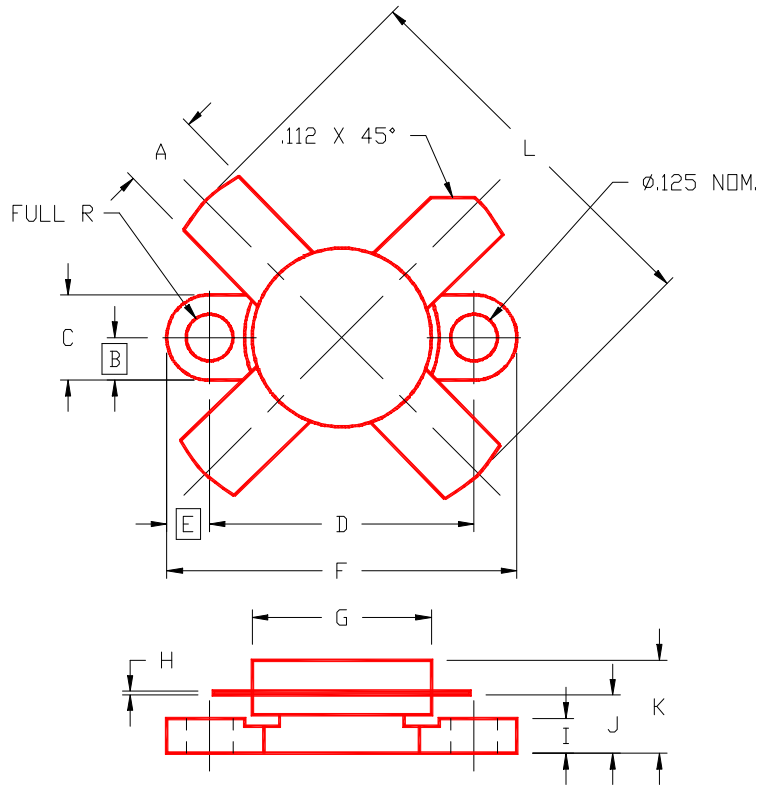
Gain & Efficiency vs. Power Out

Freq = 175 MHz, Vdd = 50V, IDQ = 250mA



PACKAGE MECHANICAL DATA

PACKAGE STYLE M174



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.220/5,59	.230/5,84	I	.090/2,29	.110/2,79
B	.125/3,18		J	.160/4,06	.175/4,45
C	.245/6,22	.255/6,48	K		.280/7,11
D	.720/18,28	.730/18,54	L		1.050/26,67
E	.125/3,18				
F	.970/24,64	.980/24,89			
G	.495/12,57	.505/12,83			
H	.003/0,08	.007/0,18			