

PRELIMINARY INFORMATION

VRF151

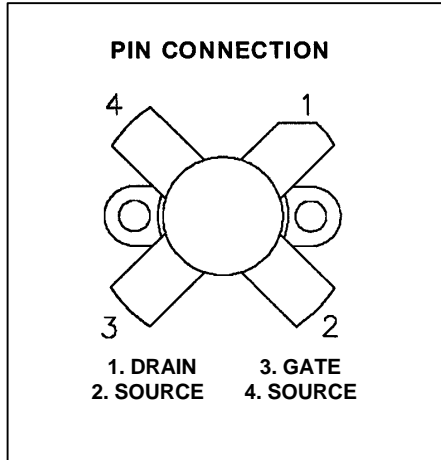
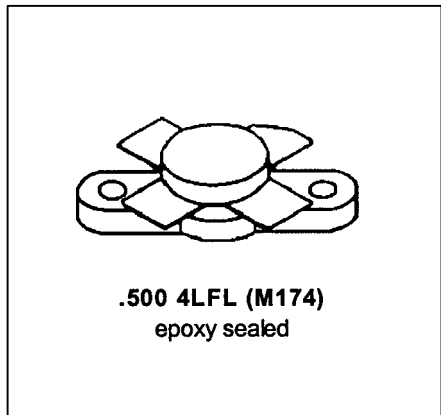
**BROADBAND HF/VHF VERTICAL D-MOS
ISM & MILITARY/COMMERCIAL COMMUNICATIONS APPLICATIONS**

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

| | | | |
|-------------------|----------------------------------|-----|------|
| $R_{\theta(J-C)}$ | Thermal Resistance Junction-Case | 0.6 | °C/W |
|-------------------|----------------------------------|-----|------|

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

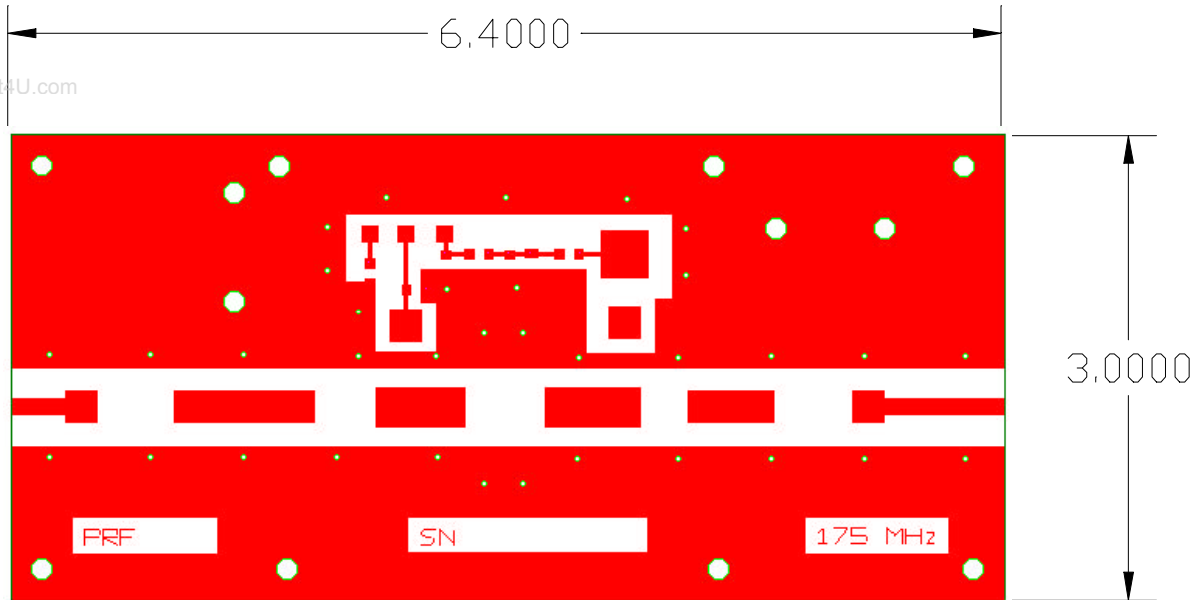
STATIC

| 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

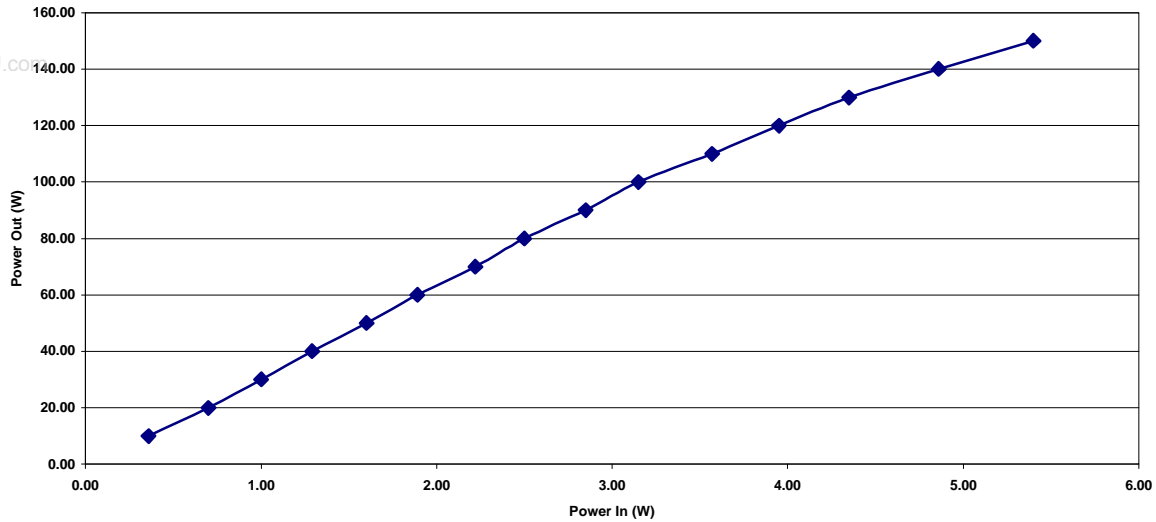
| Symbol | Test Conditions | | | Value | | | Unit |
|---------------------|-----------------|-----------------------|--|--------------------------------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| P _{OUT} | f = 175MHz | V _{DD} = 50V | I _{DQ} = 250mA | 150 | | --- | W |
| G _{PS} | f =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

TEST CIRCUIT INFORMATION



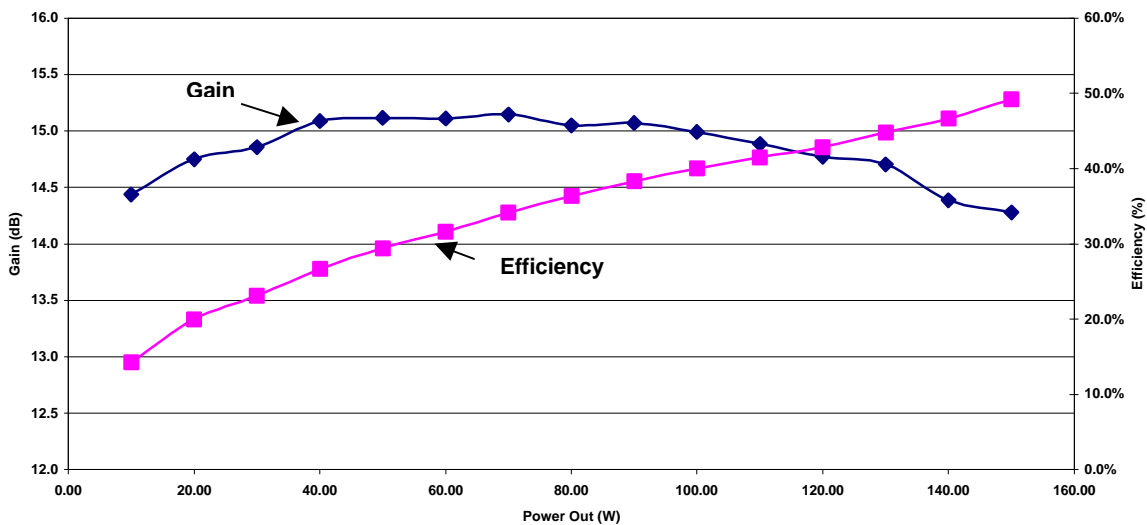
Power Out vs. Power In

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



Gain & Efficiency vs. Power Out

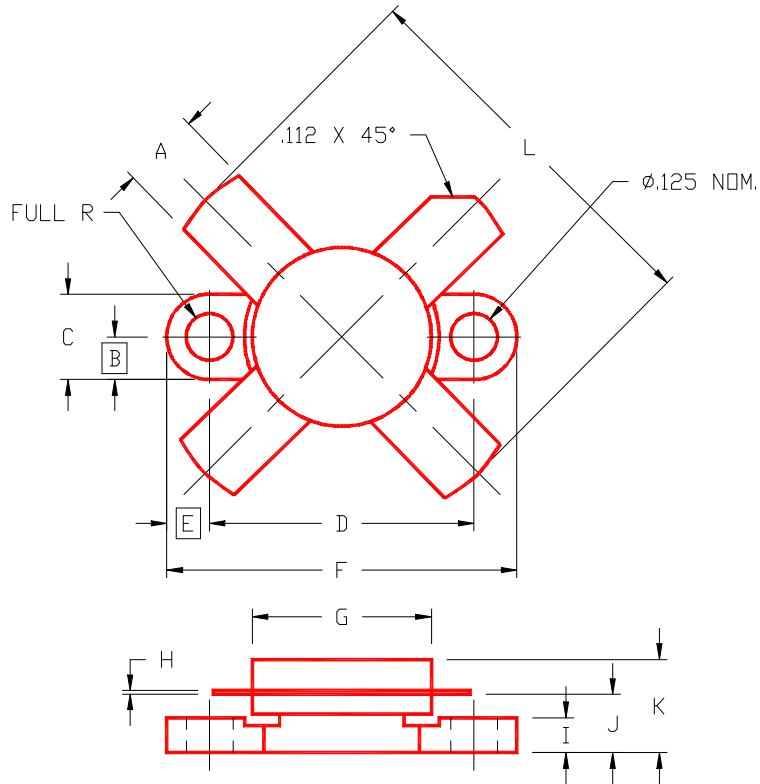
Freq = 175 MHz, Vdd = 50V, IDQ = 250mA



PACKAGE MECHANICAL DATA

PACKAGE STYLE M174

www.DataSheet4U.com



| | 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 | | | |