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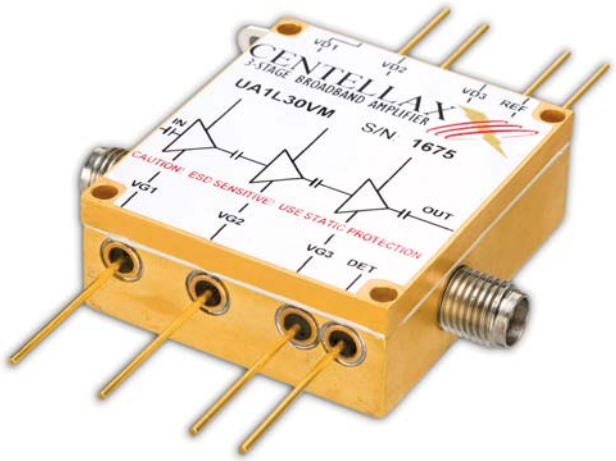
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# UA1L30VM
# Broadband Amplifier Module

## Features

- 23 dBm saturated output power
- 27 dB gain (to 30 GHz)
- 3.4 W power dissipation
- Small size package
- 4.5 dB NF




## Application

- mm-wave systems
- High frequency test instrumentation
- Broadband gain amplifier

## Description

The UA1L30VM Amplifier is a general-purpose broadband amplifier designed for microwave communications, test equipment, and military systems. Its small size and exceptional performance make it a versatile gain block which can improve power and gain in a single package potentially replacing 2 or 3 narrower band amplifiers.

The UA1L30VM provides a complete amplifier module package with a wide frequency range of 1GHz to 30 GHz, low power dissipation, ample output power, low noise figure and gain control.

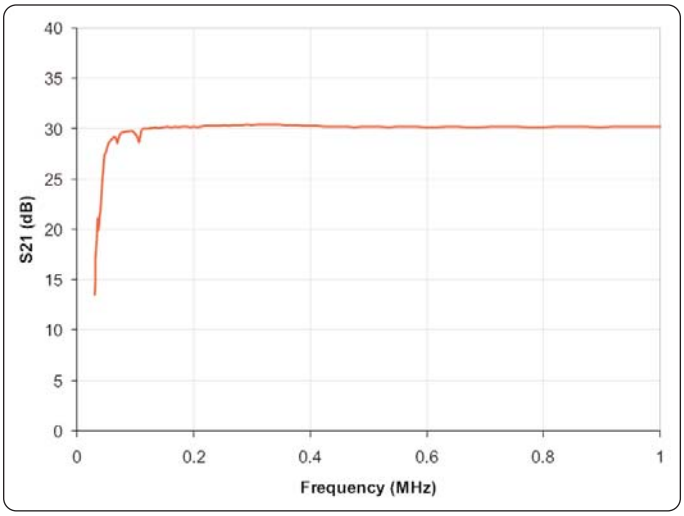
## Key Specifications (Specifications pertain to measurements @ 25°C)

Vd1 = Vd2 = Vd3 = 7V, Vg1 = Vg2 = Vg3 = -0.05 V, $Z_0$ = 50Ω

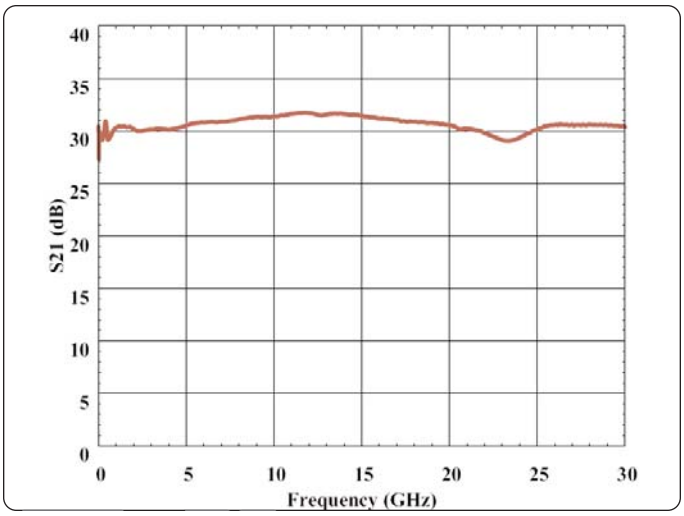
| Parameter | Description | Minimum | Typical | Maximum |
|---|---|---|---|---|
| S21 (dB) | Small Signal Gain<br>0.01 - 30 GHz | 27 | 30 | - |
| S11 (dB) | Input Match<br>0.01 - 30 GHz | - | -12 | -10 |
| S22 (dB) | Output Match<br>0.01 - 30 GHz | - | -12 | -10 |
| $P_{sat}$ (dBm) | Saturated Power Output | - | 22 | - |



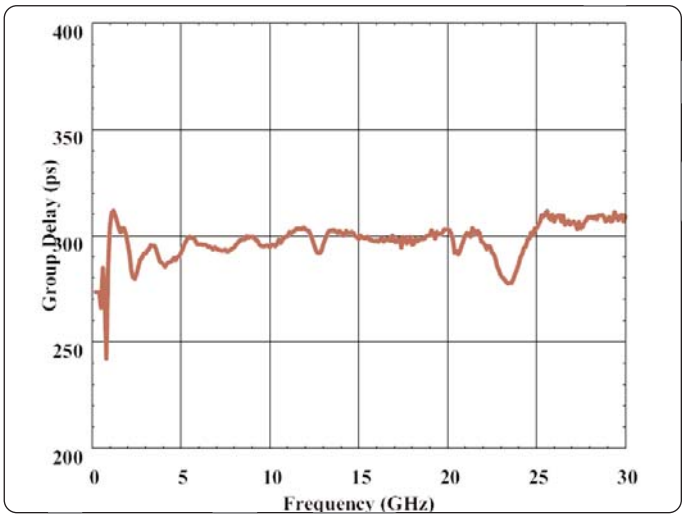
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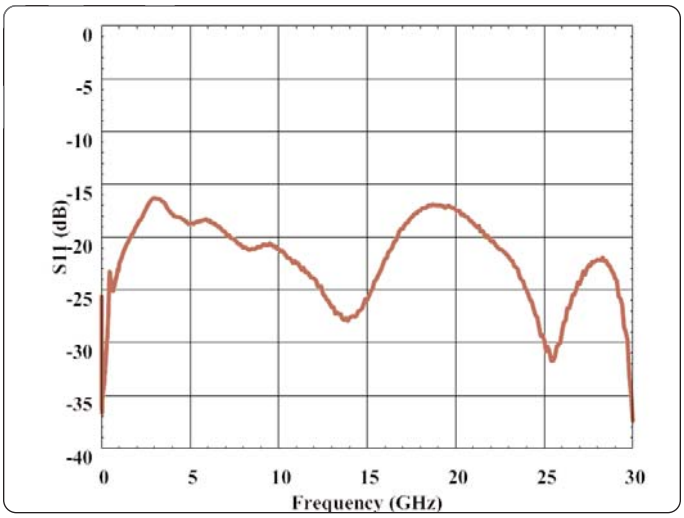

**UA1L30VM typical measured performance**
**Bias: Vd1= Vd2= Vd3 =7V, Vg1=Vg2=Vg3 =–0.05 V**



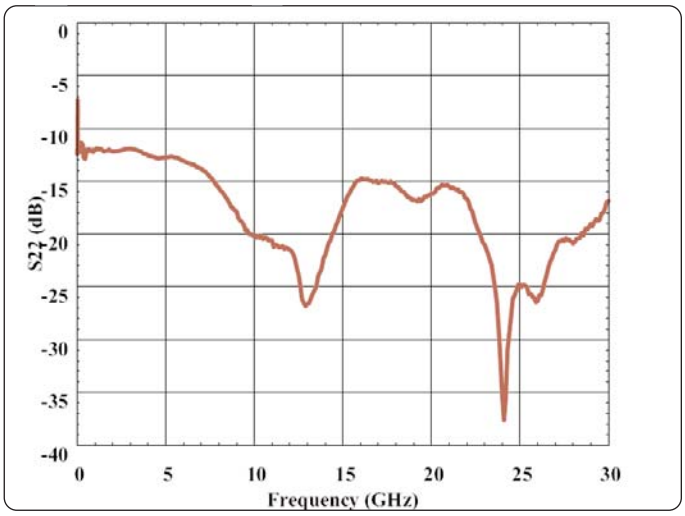

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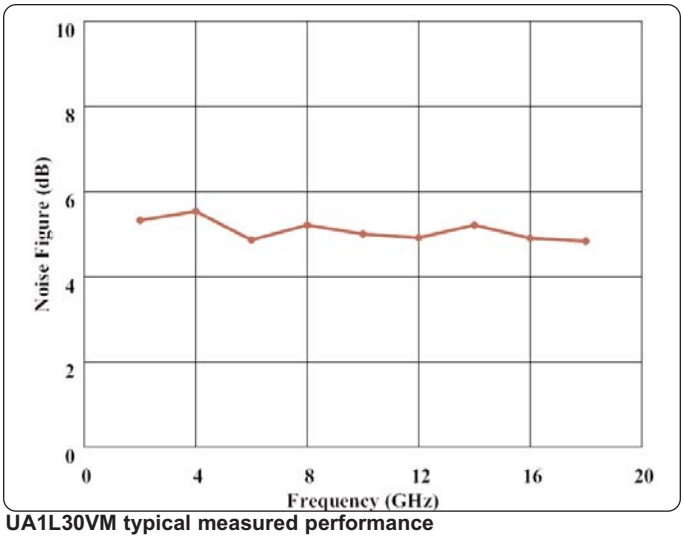

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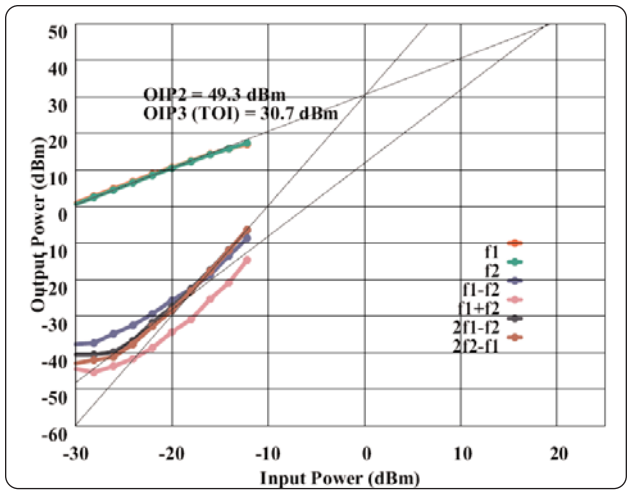

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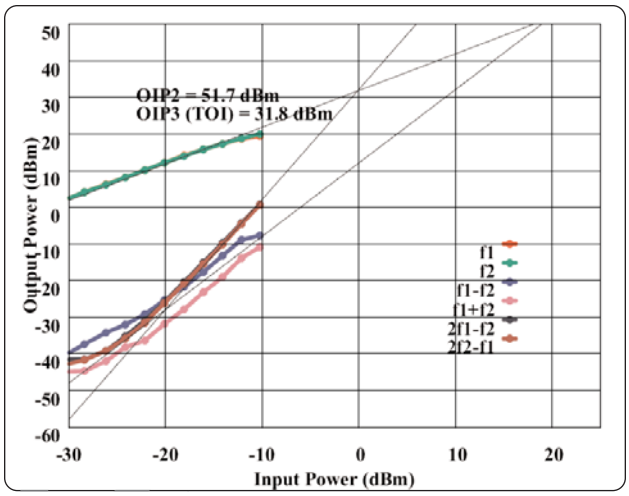

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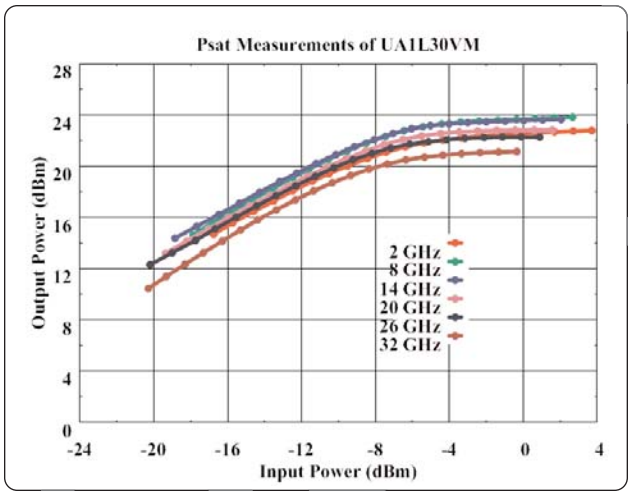
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IMD Performance of UA1L30VM @ 10 GHz




IMD Performance of UA1L30VM @ 4 GHz




**UA1L30VM typical measured performance**
**Bias: Vd1= Vd2= Vd3 =7V, Vg1=Vg2=Vg3 =–0.05 V**

## UA1L30VM Options

OPT001: with Output Power Detector

OPT002: with Low Noise Figure Option ( Less Output Power)

OPT003: with Performance Specifications to 40GHz

OPT004: with Peak Power Detector

OPTSBB: with Bias Board

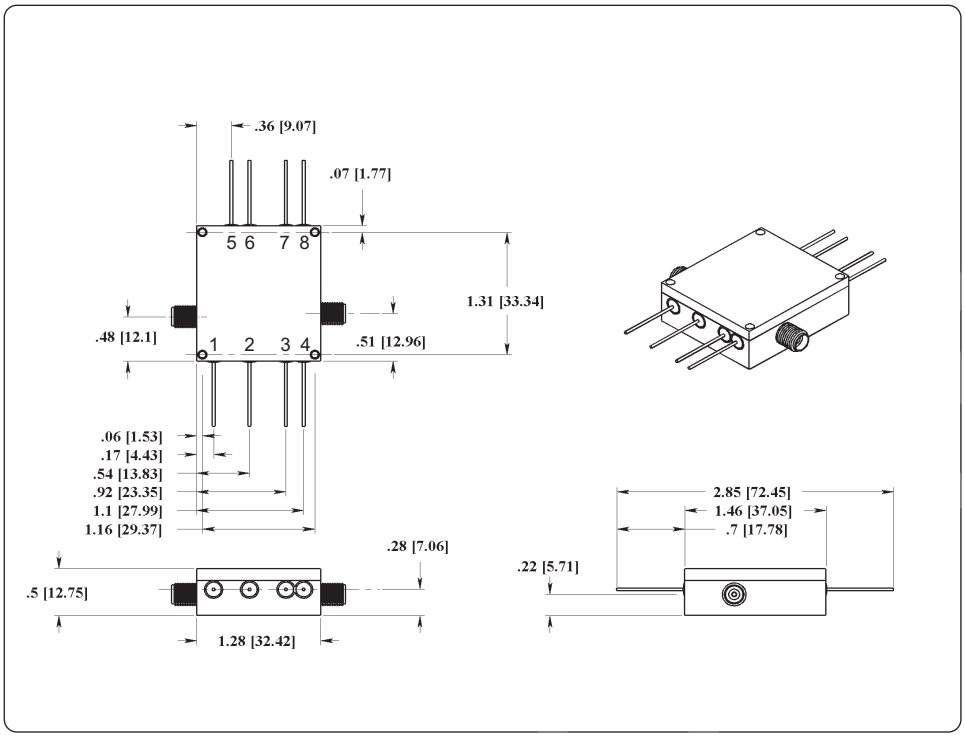
## Operating Specifications

| Parameter | Description | Minimum | Typical | Maximum |
|---|---|---|---|---|
| Vdd1 (V) | First Drain Voltage | — | +7 | +8 |
| Vdd2 (V) | Second Drain Voltage | — | +7 | +8 |
| Vdd3 (V) | Third Drain Voltage | — | +7 | +8 |
| Id1 (mA) | First Drain Current | — | 85 | — |
| Id2 (mA) | Second Drain Current | — | 150 | — |
| Id3 (mA) | Third Drain Current | — | 240 | — |
| Vg1 (V) | First Gate Voltage | –1 | –0.2 to 0 | +0.5 |
| Vg2 (V) | Second Gate Voltage | –1 | –0.2 to 0 | +0.5 |
| Vg3 (V) | Third Gate Voltage | –1 | –0.2 to 0 | +0.5 |
| Pdc (W) | Power Dissipation | — | 3.4 | — |
| Tbs (°C) | Case Temperature | — | — | 75** |

** Four threaded holes are provided for convenient heatsink attachment. The package body temperature must not exceed Tbs maximum.



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## Physical Characteristics

**(all measurements in inches[mm])**

**DC pin diameter is 0.03in [0.76mm]**

**Mounting holes: 2-56 Through, x4**

## UA1L30VM Pin Definition

| Pin | Function | Operational Notes |
|---|---|---|
| RFin | RF Input | K-Connector (f) |
| RFout | RF Output | K-Connector (f) |
| 1 (Vg1) | 1st stage gate bias | Adjust for optimum gain (-0.2 V to 0 V typical) |
| 2 (Vg2) | 2nd stage gate bias | Adjust for optimum gain (-0.2 V to 0 V typical) |
| 3 (Vg3) | 3rd stage gate bias | Adjust for optimum gain (-0.2 V to 0 V typical). |
| 4 (Det) | RF Power Detector | (option) |
| 5 (Vd1) | 1st stage drain bias | Set at typical operating specification, adjust for desired amplitude |
| 6 (Vd2) | 2nd stage drain bias | Set at typical operating specification, adjust for desired amplitude |
| 7 (Vd3) | 3rd stage drain bias | Set at typical operating specification, adjust for desired amplitude |
| 8 (Ref) | RF Power Reference | (option) |

Bias Recommendations (in order):

1) Bias gates; 2) Bias Drains; 3) Adjust for the optimum gain



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