

## 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

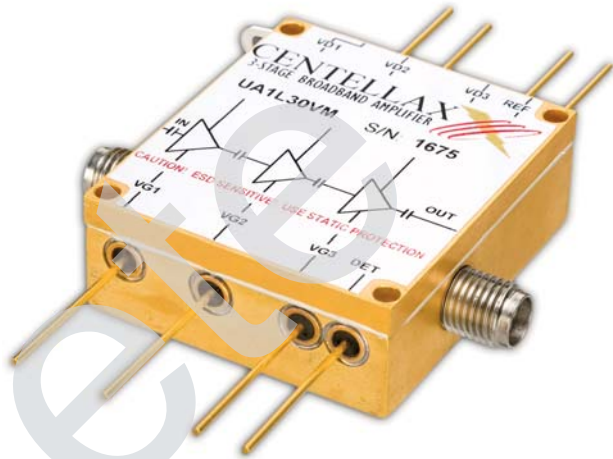
### Description

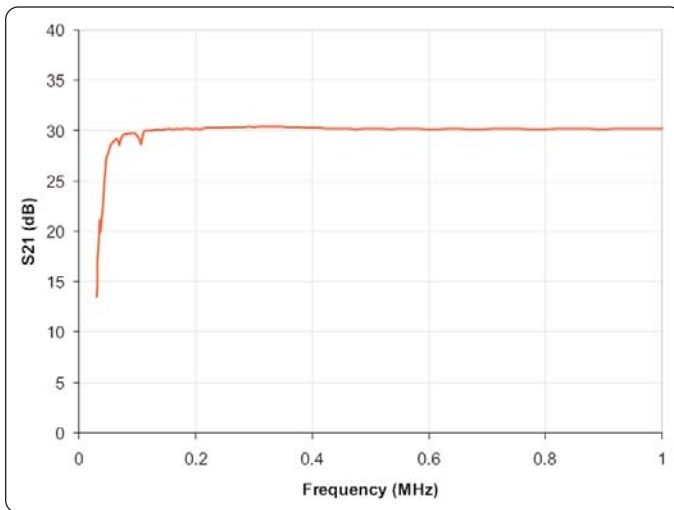
The UA1L30VM Amplifier is a general-purpose broadband amplifier designed for microwave communications, test equipment, and military systems. Its small size and exceptional performance make it a versatile gain block which can improve power and gain in a single package potentially replacing 2 or 3 narrower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

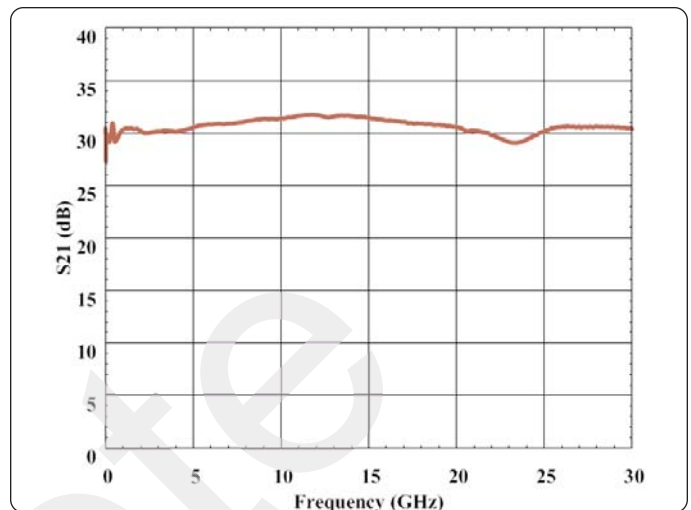
$$V_{d1} = V_{d2} = V_{d3} = 7V, V_{g1} = V_{g2} = V_{g3} = -0.05 V, Z_0 = 50\Omega$$

Parameter	Description	Minimum	Typical	Maximum
S21 (dB)	Small Signal Gain 0.01 - 30 GHz	27	30	-
S11 (dB)	Input Match 0.01 - 30 GHz	-	-12	-10
S22 (dB)	Output Match 0.01 - 30 GHz	-	-12	-10
P <sub>sat</sub> (dBm)	Saturated Power Output	-	22	-

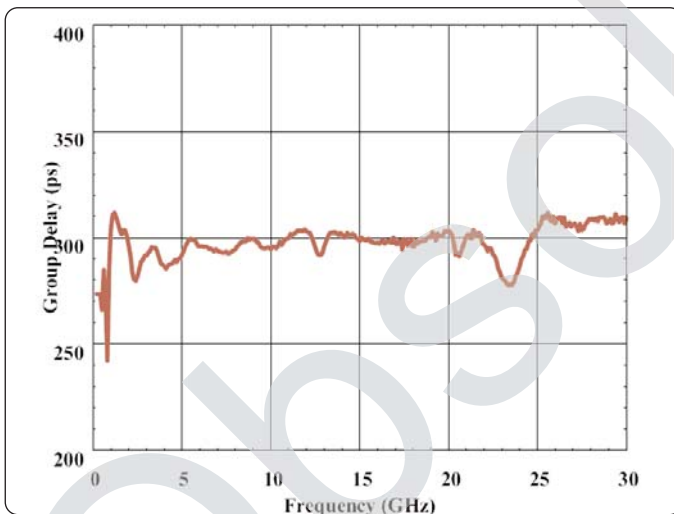




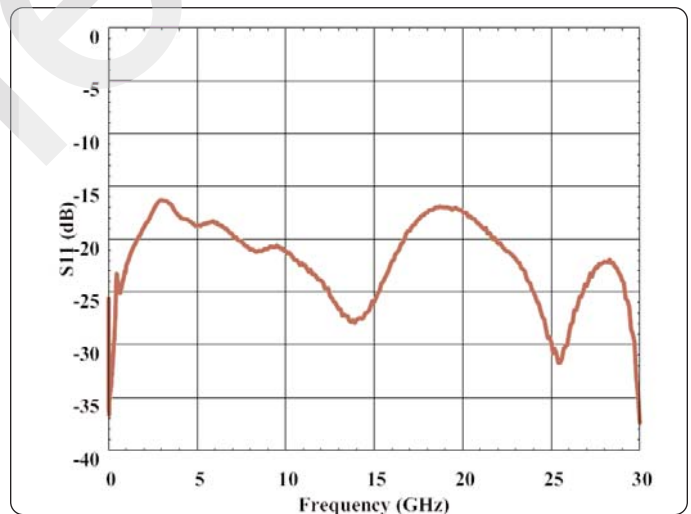
UA1L30VM typical measured performance  
Bias:  $V_{d1} = V_{d2} = V_{d3} = 7V$ ,  $V_{g1} = V_{g2} = V_{g3} = -0.05 V$



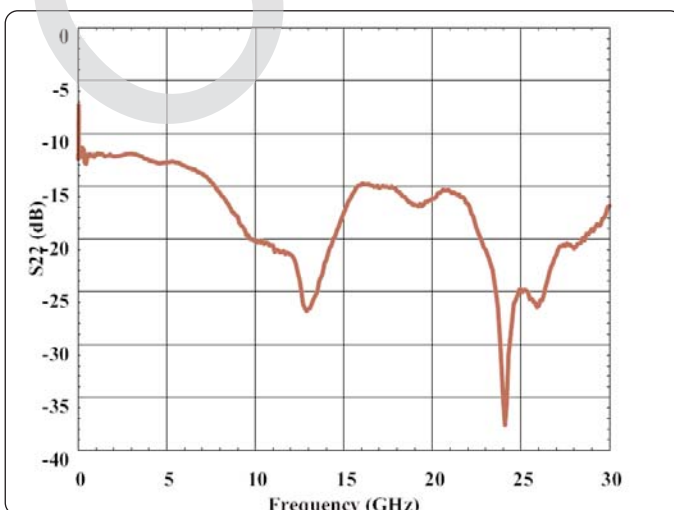
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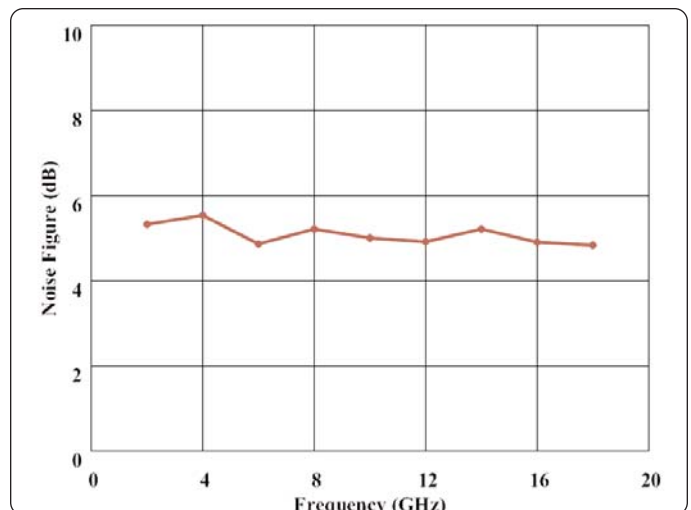
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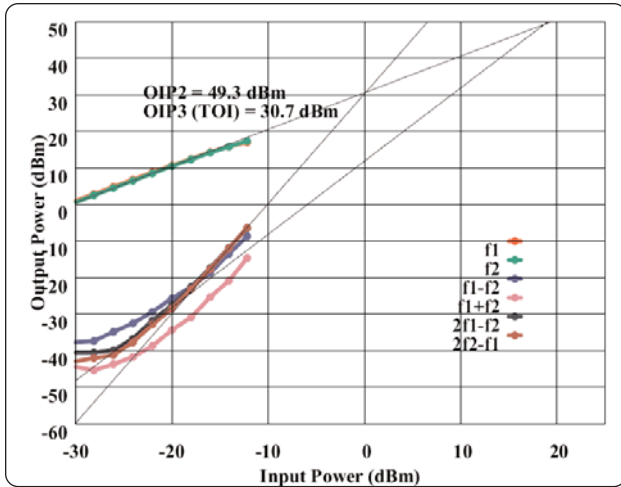
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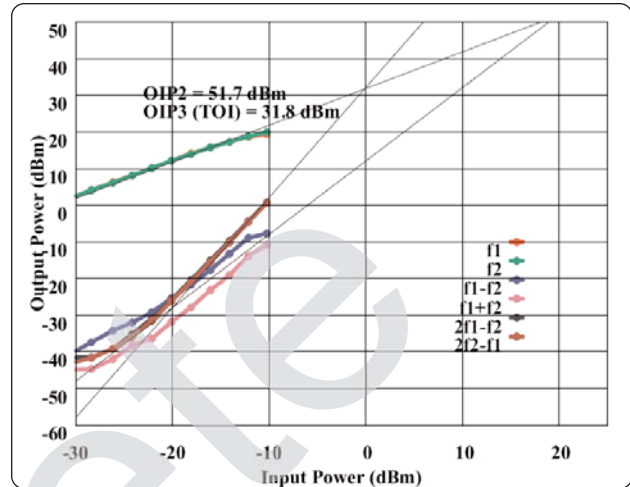
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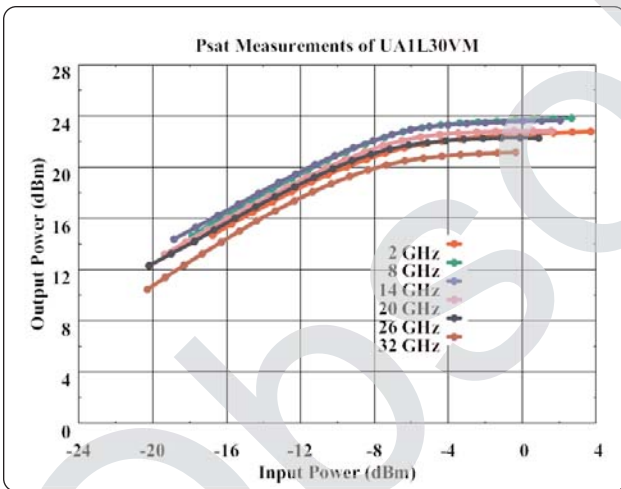
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IMD Performance of UA1L30VM @ 10 GHz



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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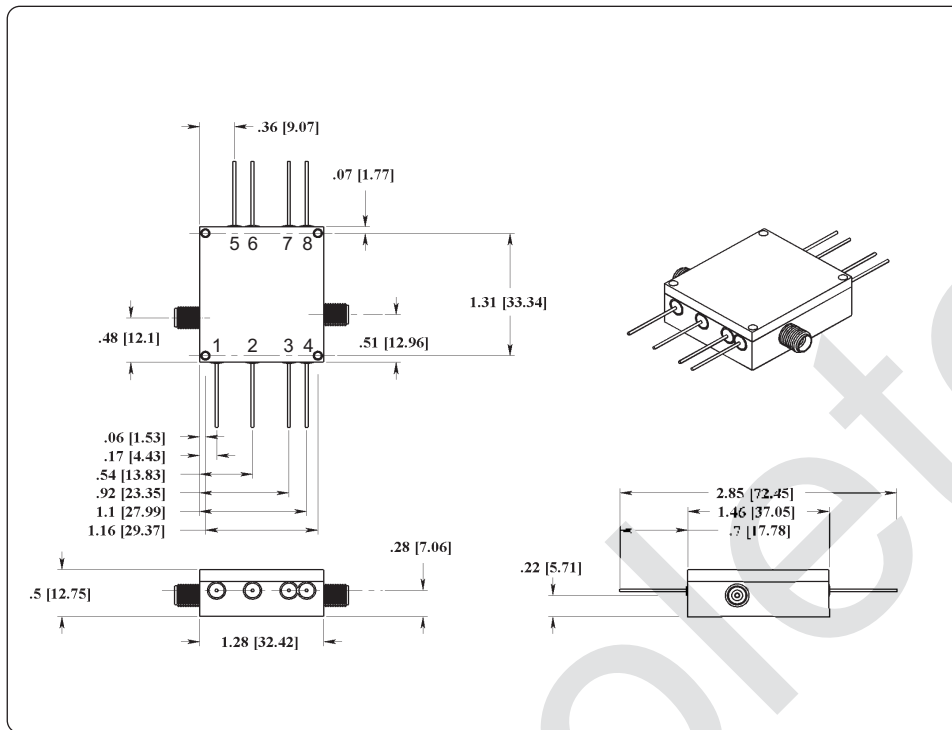
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## Physical Characteristics

(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