

# 12 GHz Modulator Driver/RF Amplifier, Module

The MD-12-M is a 12 GHz Bandwidth RF Amplifier in a compact and user-friendly module designed for a driving optical modulator and RF over Fiber .

MD-12-M 12 GHz Modulator Driver/RF Amplifier



## Product Description

The MD-12-M is a 12 GHz Bandwidth RF Amplifier in a compact and user-friendly module. The MD-12 modulator driver provides a high-quality, single-ended voltage to drive an external LiNbO<sub>3</sub> modulator. Typical applications include driving EML, EAM, and Mach-Zehnder modulators. It amplifies 12.5 Gb/s data input signals to >7.5 Vp-p drive levels. The flat gain and flat group delay response yield a highquality, low-jitter electrical drive signal. The MD-12-M can also be used as wideband RF amplifier with useful bandwidth of up to 15 GHz. Its high gain of 26 dB makes it suitable for many RF link applications.

The MD-12-M has an anodized, precision-machined aluminum housing that is designed for efficient heat dissipation. The output voltage can be adjusted by an internal resistor for 10 dB range. The module has K-connectors for the input/output RF signals and an seven-pin connector for the detector, reference, and power interfaces. Included is a 12 V DC power supply which is all that is needed to power the MD-12-M.

## Features

- Useful Bandwidth up to 15 GHz
- Data rates upto 12.5 Gb/s
- Compact Size
- Variable Gain Control Built-in
- Single 12 V Power Supply Included

## Applications

- 12.5 Gb/s Digital Modulation
- SONET/SDH
- Analog RF Amplification to 15 GHz
- RF over Fiber Link Amplified
- General Laboratory Testing

## PRODUCT SPECIFICATIONS

### General Specifications

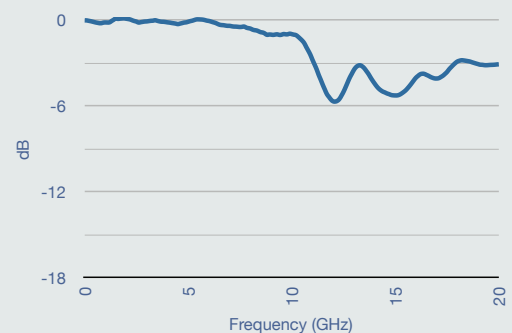
3dB S21 Bandwidth	11 GHz min.
S11 Characteristics	< -10 dB at 10GHz
Saturated Output Power	>26 dBm typ.
RF Gain	14 db to 26 dB, variable
Gain Ripple	±1.5 dB
Input, Output Impedance	50 Ω
Input VSWR to -10 GHz	1.6:1 typ.
Output VSWR	2.0:1 typ.
Total Rower Dissipation	7 W max.
Gain Adjustment Range	10 dB min.

### Digital Applications

Data Rate	Up to 12.5 Gb/s
Pulse Response	10%, rise time 35 ps typ.
Output Amplitude	7.5 Vp-p typ.
Input Range	500 mV to 1.5 V

### Analog Applications

Useful Frequency Range	75 KHz to 15 GHz
P1dB Output	> 23 dBm max.
Group Delay (2 to 10 GHz)	± 25 ps
Noise Figure	11 dB
Small Signal Gain	30 dB typ.



### Typical S21 Response<sup>2</sup>

<sup>2</sup> (Measured by Agilent 8703A Lightwave Component Analyzer)

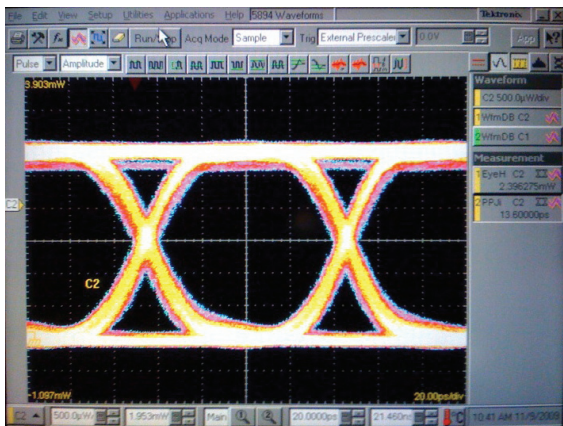
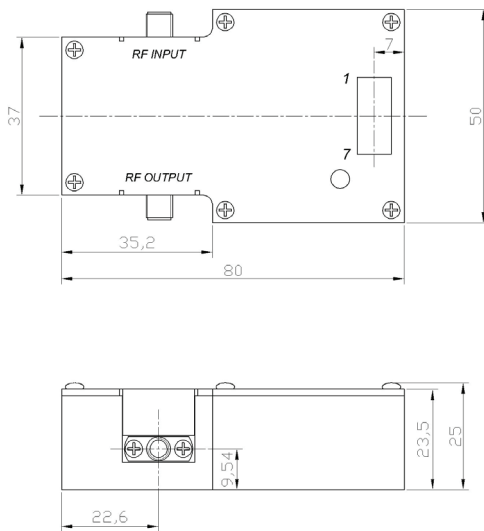
### Ordering Information

**MD-12-M**

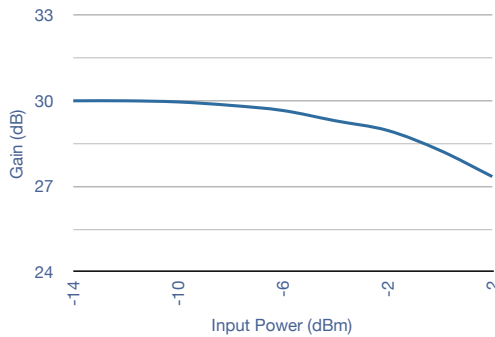
 **OEQuest.com**

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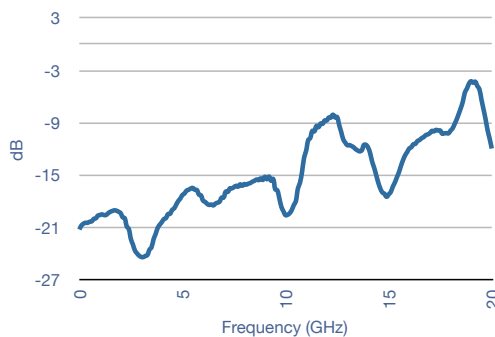
## Mechanical Drawing<sup>3</sup>



Typical Eye Diagram at 10 Gb/s<sup>1</sup>



Typical Gain vs. Input<sup>2</sup>



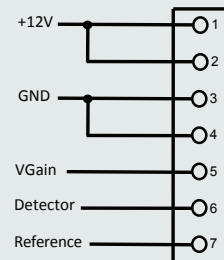
Typical S11 Response<sup>2</sup>

## 12 GHz Modulator Driver/RF Amplifier

### Mechanical Specifications

Operating Temperature	0° C to +70° C
Storage Temperature	-45° C to +100° C
Operating Humidity, non-condensing	85%
Power Supply Requirements	+12 V DC, 1 A max.
Accessories Included	110 V - 240 V AC Adaptor and Cable
RF Input/Output Connector	K Connector Female
Electrical Connector	7-Pin Assembly
Dimensions	80 mm x 50 mm x 25 mm
Housing	Precision Machined Aluminum, Anodized Surface

### PIN Out Diagram



7-Pin Assembly Connector

VGain	Gain Control
Detector	Voltage Input



Looking for a E/O Converter?  
Order an LT-20 module today.

### Ordering Information

**MD-12-M**

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<sup>1</sup> (Measured by Agilent 8703A Lightwave Component Analyzer)

<sup>2</sup> (Measured by Tektronics CSA 8000 Communications Signal Analyzer)

<sup>3</sup> (Measured in Millimeters)