



MD-12-DC



DEVICE

12 GHz Modulator Driver w/ Adjustable DC Bias

The Optilab MD-12-DC Modulator Driver (MD) is a 12 GHz Bandwidth RF Amplifier in a compact and user-friendly module that provides a high-quality, single-ended voltage to drive an external LiNbO3 modulator. Typical applications include driving EML, EAM, and Mach-Zehnder devices, and it can also be used as a wideband RF amplifier with useable bandwidth of up to 12 GHz, including its +26 dBm adjustable output, making it suitable for many RF link applications. The MD-12-DC amplifies 12.5 Gb/s data input signals to >7.5 Vp-p drive levels, and the at gain and group delay response yield a high quality, low-jitter electrical drive signal for digital applications. Featuring a 12 V DC power supply, this versatile module also has an anodized, precision-machined aluminum housing designed for efficient heat dissipation during prolonged use. In addition to its amplification function, the MD-12-DC also features a manually adjustable DC bias output voltage port, to further compliment its effectiveness when used with a standard LiNbO3 external modulator. Contact Optilab for more information.

OVERVIEW

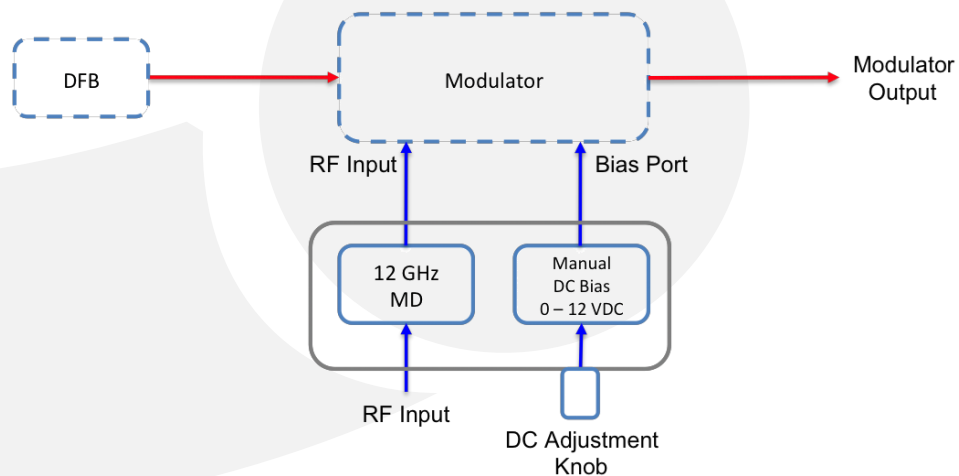
FEATURES

- Bandwidth up to 12 GHz
- Data rates exceed 12.5 Gb/s
- Compact size
- Built in heat sink
- Inverting Amplifier
- Manual DC Bias Output Port to 12 Volt
- Variable Gain Control built-in
- Single 12 V Power supply

USE IN

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

FUNCTIONAL DIAGRAM





MD-12-DC

SPECIFICATIONS

| | |
|------------------------|--------------------------|
| 3 dB S21 Bandwidth | 10 GHz min., 12 GHz typ. |
| S11 Characteristics | < -10 dB at 10 GHz |
| Saturated Output Power | > 26 dBm typ. |

GENERAL

| | |
|-------------------------|--------------------------|
| 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. |
| Total Power Dissipation | 2 : 1 typ. |
| Gain Adjustment Range | 6 dB typ. |

DC CONTROL

| | |
|------------------------------|------------------|
| Manual DC Control Adjustment | - 12 V to + 12 V |
| Manual Bias Adjustment Range | - 12 V to + 12 V |
| Additional Features | On/Off Switch |

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 |

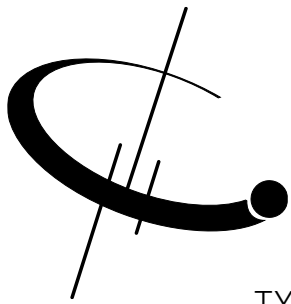
ANALOG APPLICATIONS

| | |
|---------------------------|------------------|
| Useful Frequency Range | 75 KHz to 15 GHz |
| P1 dB Output | > 23 dBm max. |
| Group Delay (2 to 10 GHz) | ± 25 ps |
| Noise Figure | 11 dB max |
| Small Signal Gain | 30 dB typ. |

MECHANICAL

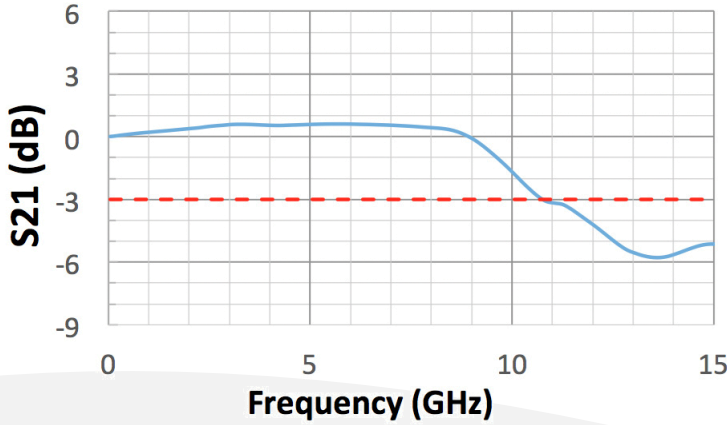
| | |
|---------------------------|-----------------------------------|
| Operating Temperature | 0 °C to +70 °C |
| Storage Temperature | -45 °C to +100 °C |
| Operating Humidity | 85% |
| Power Supply Requirements | + 12 V DC, 1 A max. |
| Replacement Power Supply | 110 V- 240 V AC Adaptor and Cable |
| RF Input/Output Connector | K Connector Female |
| Electrical Connector | 4-pin Molex |
| Dimensions | 126 mm x 37 mm x 26 mm |



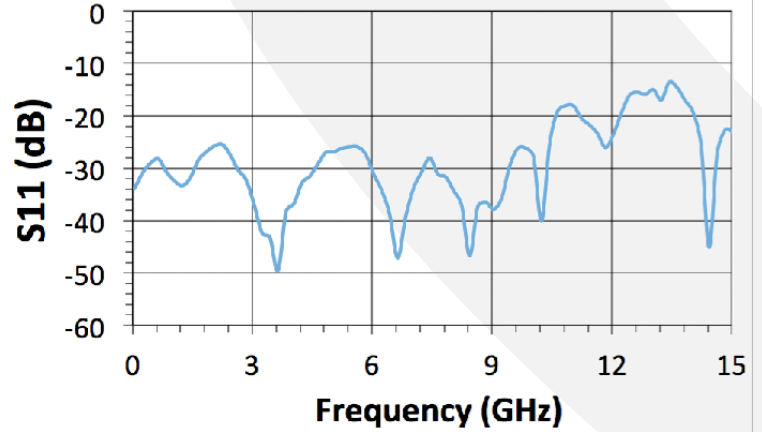


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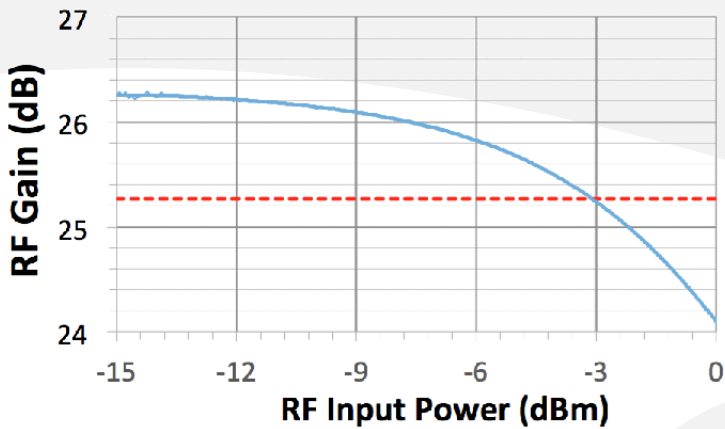
TYPICAL S21 RESPONSE



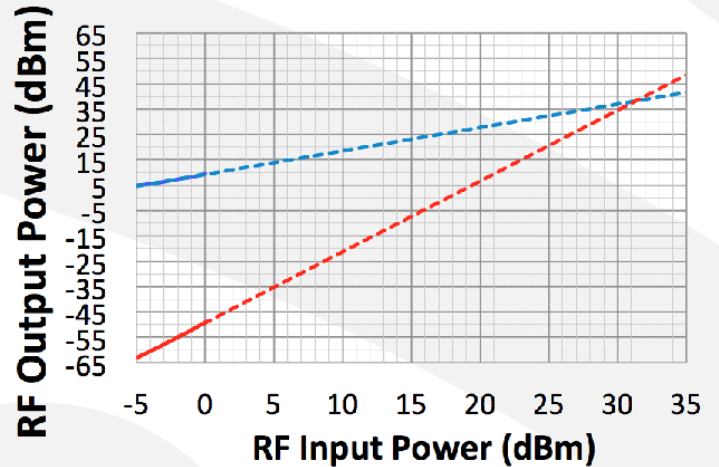
TYPICAL S11 RESPONSE



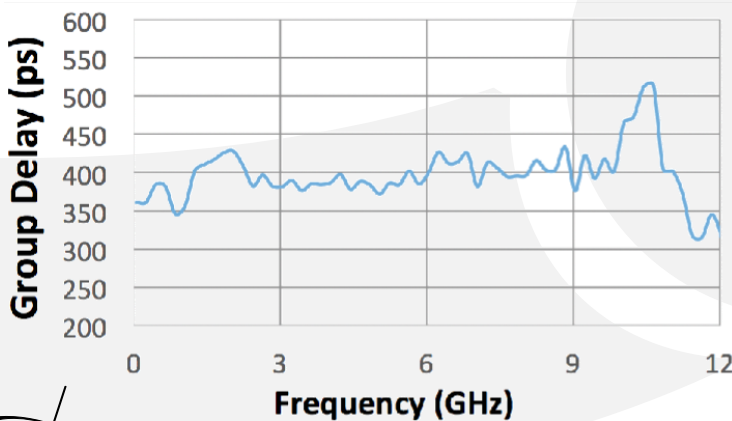
1 DB COMPRESSION



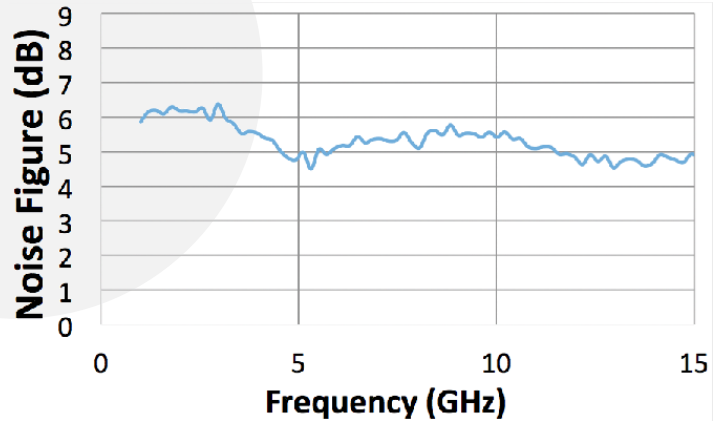
THIRD ORDER INTERCEPT



GROUP DELAY



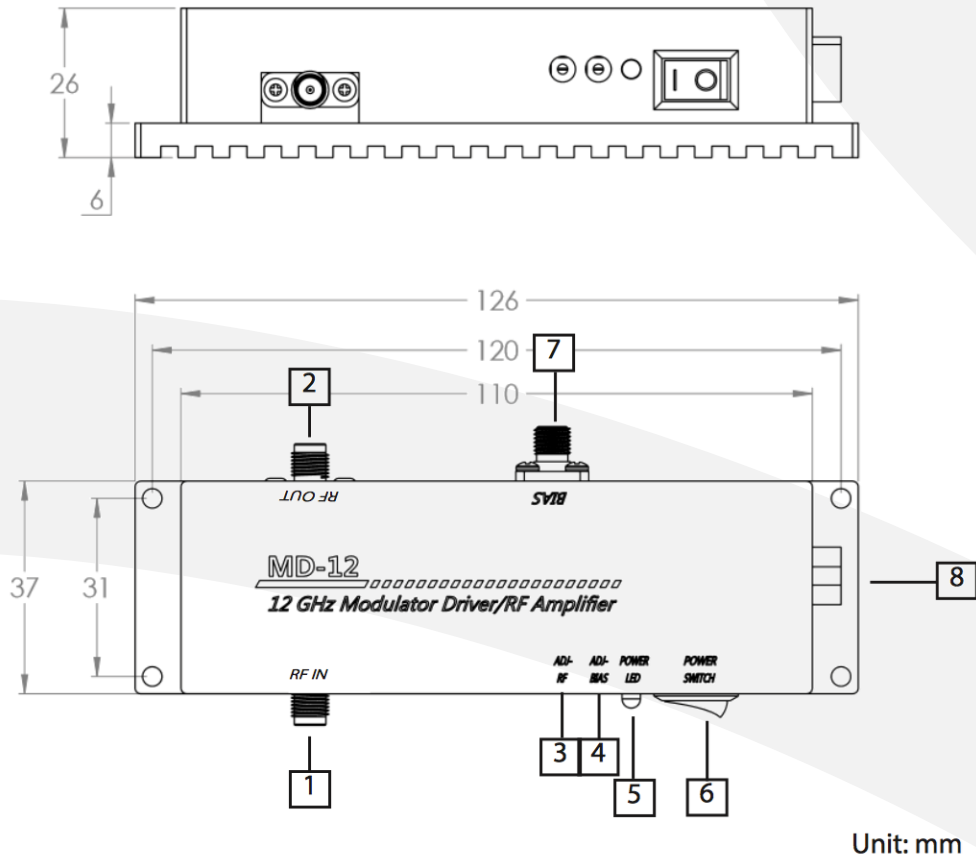
NOISE FIGURE





MD-12-DC

MECHANICAL DRAWING



Unit: mm

| | |
|---|-----------------------|
| 1 | RF input |
| 2 | RF output |
| 3 | RF gain adjust |
| 4 | DC bias adjust |
| 5 | Power LED |
| 6 | Power switch |
| 7 | Bias out |
| 8 | DC power input, molex |

