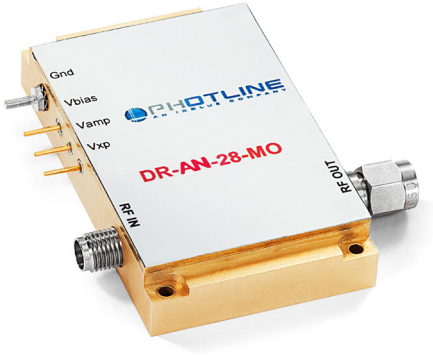
DR-AN-28-MO

28 GHz Analog Medium Output Voltage Driver

PHOTLINE DRIVER



The Photline DR-AN-28-MO is a wideband RF 3-stages (inverting) amplifier module designed for analog applications at frequencies up to 20 GHz.

The Photline DR-AN-28-MO is characterized by a low Noise Figure and a linear transfer function whose 1 dB compression point is above 20 dBm. It exhibits flat Group Delay and Gain curves with reduced ripple over the entire bandwidth.

The Photline DR-AN-28-MO operates from a single power supply for safety and ease of use, and offers gain control over 3 dB. It comes in a compact housing with K type RF connectors (compatible SMA) and with an optional heat sink.

This amplifier module is ideally suited to drive optical modulators for analog applications.

FEATURES

- Output voltage 6 V_{pp}
- Linear amplifier
- Flat gain up to 28 GHz
- Single voltage power supply
- Low group delay variation

APPLICATIONS

- $LiNbO_3$ & InP modulators
- OFDM, RoF, Phase modulation
- Research & Development

OPTIONS

- Heat-sink
- 2.4 mm RF connectors

RELATED EQUIPMENTS

- MX-LN-20, MXAN-LN-20 modulators
- MBC-AN Automatic Bias Controllers

Performance Highlights

Parameter	Min	Typ	Max	Unit
Cut-off Frequencies	50 k	-	28 G	Hz
Output Voltage	-	6	9	V_{pp}
Gain	-	30	-	dB
Saturated output power	-	23	-	dBm
Output power 1dB comp	20	21	-	dBm
Noise figure	5	-	7	dB

Measurements for V_{bias} = 10 V, V_{amp} = 0.8 V, V_{xp} = 0.65 V, I_{bias} = 400 mA

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DC Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{bias}	9	10	12.5	V
Current consumption	I_{bias}	-	300	450	mA
Gain control voltage	V_{amp}	0	0.8	1.2	V
Output power ctrl voltage	V_{xp}	0	0.65	0.9	V

Electrical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Lower frequency	f_{3db}, lower	-3 dB point	45	-	50	kHz
Upper frequency	f_{3db}, upper	-3 dB point	25	28	-	GHz
Gain	S_{21}	Small signal	-	30	-	dB
Gain ripple	-	< 28 GHz	-	±1.5	-	dB
Input return loss	S_{11}	50 MHz < f < 20 GHz	-	-10	-9	dB
Output return loss	S_{22}	50 MHz < f < 20 GHz	-	-10	-9	dB
Isolation	S_{12}	50 MHz < f < 20 GHz	-	-60	-	dB
Output power 1dB	P_{1dB}	2 GHz < f < 20 GHz	20	21	-	dBm
Saturated power	P_{sat}	f < 20 GHz	-	23	-	dBm
Output voltage	V_{out}	Linear	0	7	-	V_{pp}
		Maximum swing	0	9	-	
Noise figure	NF	f < 3 GHz	7	-	-	dB
		3 GHz < f < 26 GHz	5	-	-	
Power dissipation	P	-	-	3	5.6	W

Conditions: V_{in} = 0.5 V_{pp}, T_{amb} = 25 °C, 50 Ω system

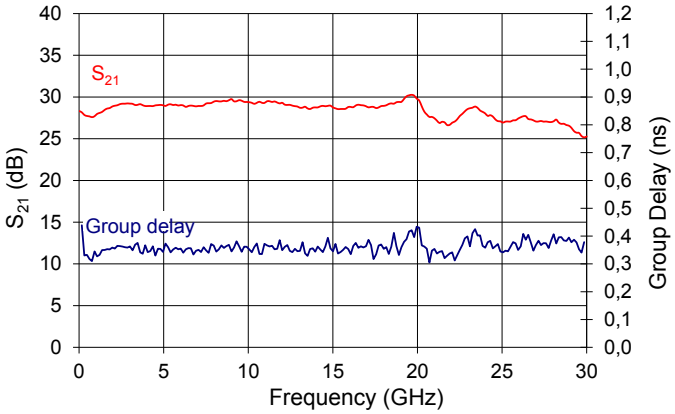
Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min	Max	Unit
RF input voltage	V_{in}	-	1	V_{pp}
Supply Voltage	V_{bias}	0	13	V
DC current	I_{bias}	0	450	mA
Gain control voltage	V_{amp}	0	1.5	V
Output power ctrl voltage	V_{xp}	0	1	V
Power dissipation	P_{diss}	-	5.8	W
Temperature of operation	T_{op}	-5	+50	°C
Storage temperature	T_{st}	-40	+70	°C

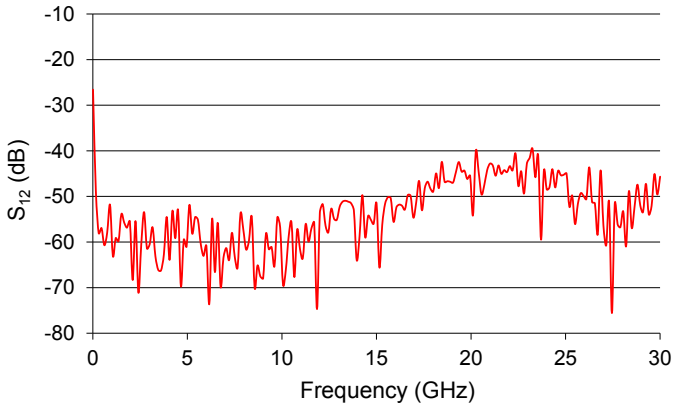
S_{21} and Group Delay Parameter Curves

Conditions: V_{bias} = 10 V, V_{amp} = 0.4 V, V_{xp} = 0.2 V, I_{bias} = 365 mA



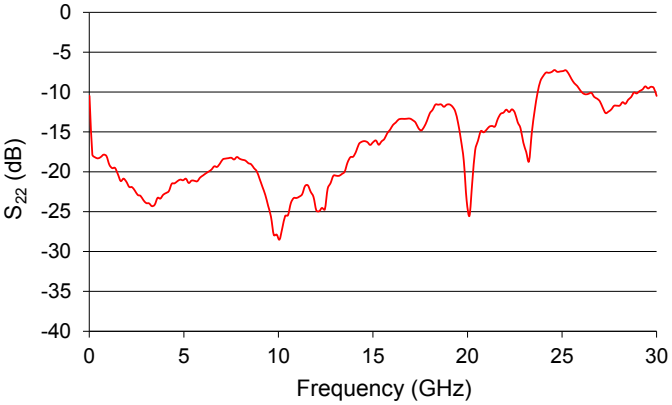
S_{12} Parameter Curve

Conditions: V_{bias} = 10 V, V_{amp} = 0.4 V, V_{xp} = 0.2 V, I_{bias} = 365 mA



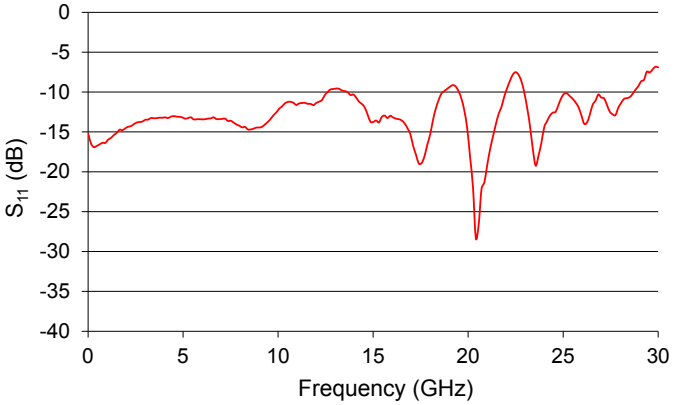
S_{22} Parameter Curve

Conditions: V_{bias} = 10 V, V_{amp} = 0.4 V, V_{xp} = 0.2 V, I_{bias} = 365



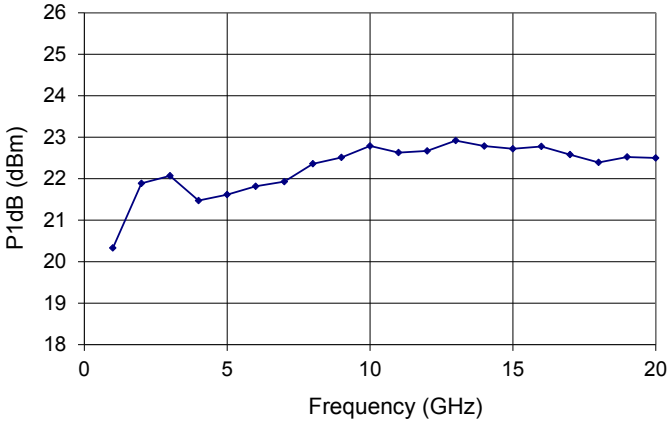
S_{11} Parameter Curve

Conditions: V_{bias} = 10 V, V_{amp} = 0.4 V, V_{xp} = 0.2 V, I_{bias} = 365 mA



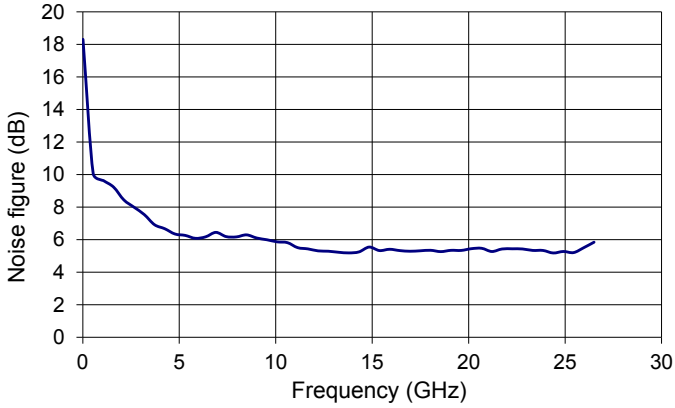
Saturated Output Power Curve

Conditions: V_{bias} = 10 V, V_{amp} = 0.4 V, V_{xp} = 0.2 V, I_{bias} = 365

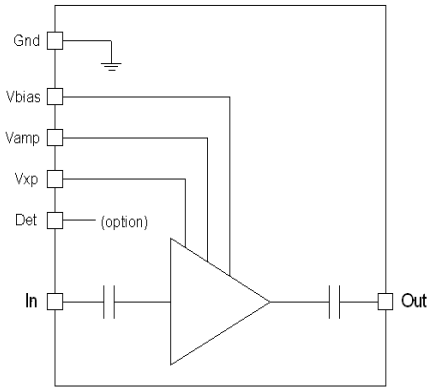


Noise Figure Curve

Conditions: V_{bias} = 10 V, V_{amp} = 0.4 V, V_{xp} = 0.2 V, I_{bias} = 365 mA

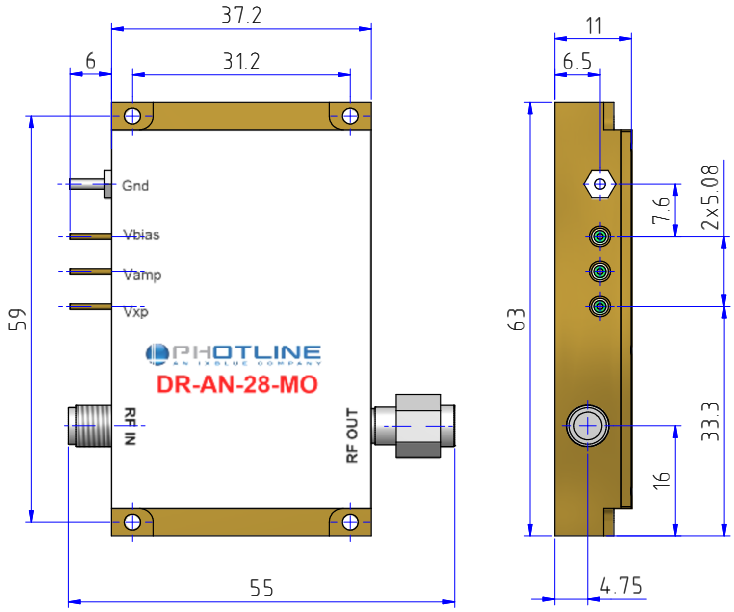


Electrical Schematic Diagram



Mechanical Diagram and Pinout

All measurements in mm

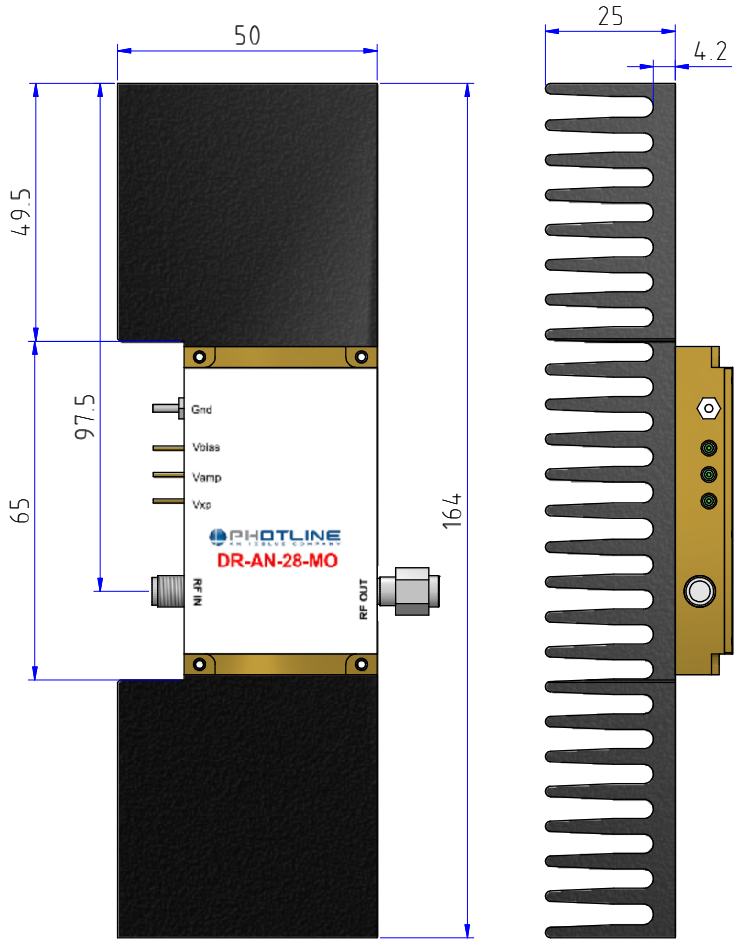


The heatsinking of the module is necessary. It's user responsability to use an adequate heatsink. Refer to page 5 for iXBlue recommended heatsink.

PIN	Function	Unit
IN	RF In	K connector female
OUT	RF Out	K connector male
V_{bias}	Power supply voltage	Set a typical operating specification
V_{amp}	Output voltage amplitude adjustment	Adjust for gain control tuning
V_{xp}	Output voltage cross point adjustment	Adjust for cross point control tuning

Mechanical Diagram And Pinout With HS-MO3 Heatsink

All measurements in mm



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About us

iXBlue Photonics includes iXBlue iXFiber brand that produces specialty optical fibers and Bragg gratings based fiber optics components and iXBlue Photline brand that provides optical modulation solutions based on the company lithium niobate ($LiNbO_3$) modulators and RF electronic modules.

iXBlue Photonics serves a wide range of industries: sensing and instruments, defense, telecommunications, space and fiber lasers as well as research laboratories all over the world.

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