

# CATV Band Dual Output Modulator



### Key Features

- Flat frequency response
- Two optical output ports
- Integrated phase modulator
- High optical damage threshold

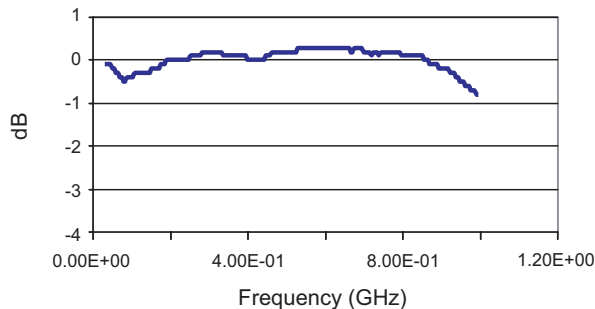
### Applications

- High performance 1550 nm CATV band transmitters

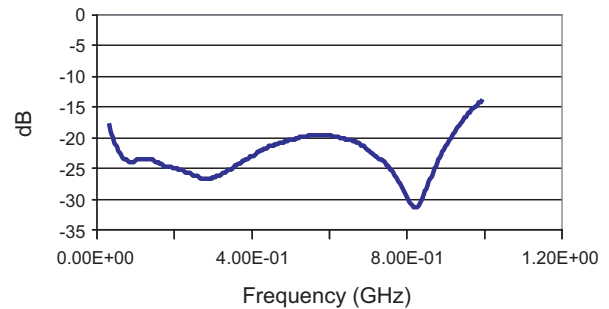
The JDSU community antenna television (CATV) band dual output modulator is widely accepted for use in externally modulated 1550 nm transmitters. Two optical outputs offer flat frequency response and excellent composite second order distortion (CSO) performance. This product is rated for operation at optical power levels to 200 mW.

A dedicated production line and strict process control measures ensure minimal variation in device-to-device characteristics.

Typical Frequency Response, S21

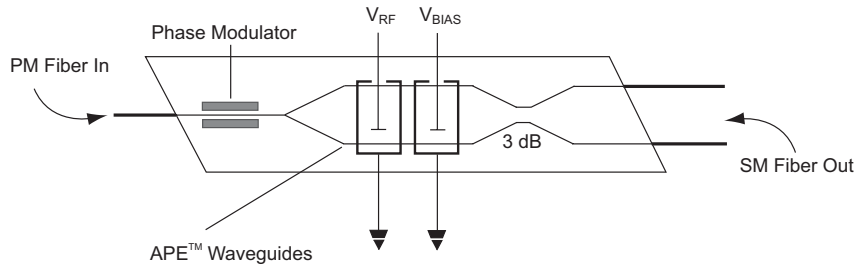


Typical Return Loss Curve, S11



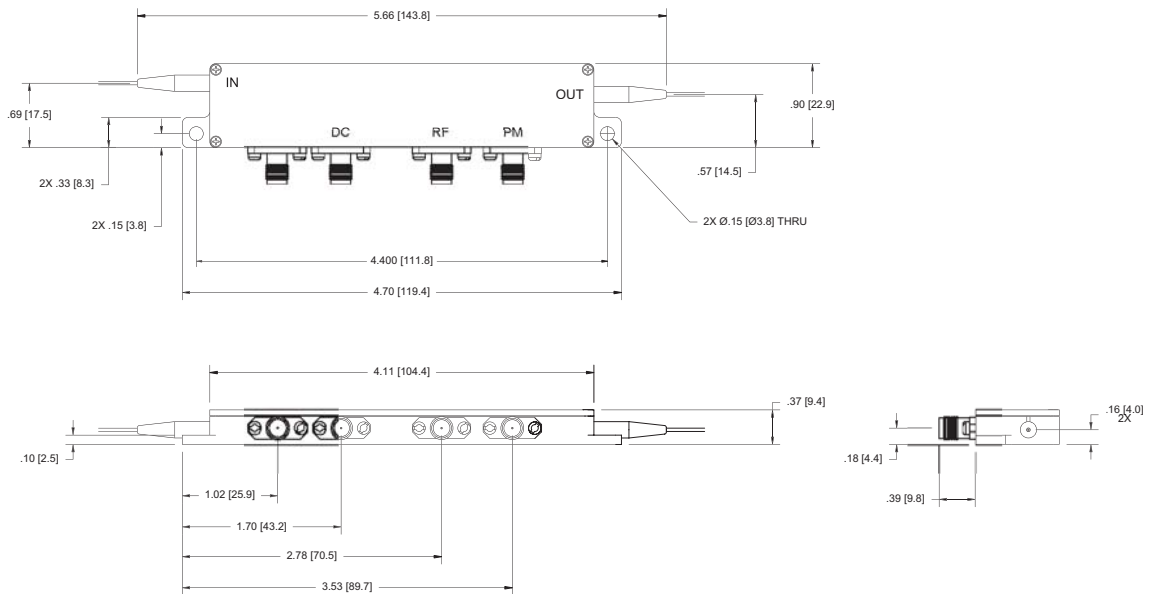
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**CATV Band Dual Output Modulator Schematic**



**CATV Band Dual Output Modulator Dimensions Diagram**

(Specifications in inches [mm] unless otherwise noted.)



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## Specifications

Parameter	Specification	
<b>General</b>		
Material	Lithium niobate	
Crystal orientation	X-cut, y-propagating	
<b>Optical<sup>1</sup></b>		
Operating wavelength	1540 to 1560 nm	
Input optical power	Maximum	200 mW
On/off extinction ratio	Minimum	20 dB
Optical return loss	Maximum	-45 dB
Optical insertion loss <sup>2</sup>	Maximum	4.5 dB
Insertion loss imbalance between outputs	Maximum	1.0 dB
<b>Electrical<sup>1</sup></b>		
Intensity modulator		
$V_{\pi}$ , signal electrode, 100 MHz	Maximum	5.9 V
$V_{\pi}$ , bias electrode, DC <sup>3</sup>	Maximum	5.0 V
Operating bandwidth	Minimum	47 to 860 MHz
Amplitude flatness	Maximum	$\pm 0.5$ dB
Phase flatness	Maximum	$\pm 5^{\circ}$
S11	Maximum	-18 dB
Delta phase optical outputs <sup>4</sup>	Maximum	0.26 $^{\circ}$
Bias electrode impedance	>10 k $\Omega$	
Passive bias point, relative to quadrature, at 1550 nm	$\pm 3$ V	
Phase Modulator		
Half-wave voltage, DC	Maximum	8.5 V
Operating bandwidth, DC	2.5 GHz	
S11	Maximum	-8 dB
Input impedance	50 $\Omega$	
Bias port		
Applied DC voltage	Maximum	$\pm 15$ V
Phase modulator port		
Applied RF power	Maximum	30 dBm
RF port		
Applied DC voltage	Maximum	0 V
Applied RF power	Maximum	24 dBm
<b>Mechanical</b>		
Input fiber	Fujikura SM 15-P-8/125-UV/UV-400, 70 cm minimum Hytrel 900 $\mu$ m loose tube, 12 inches	
Output fiber	SMF-28, 95 cm minimum Hytrel 900 $\mu$ m loose tube 12 inches	
Electrical connectors (package)	SMA connectors	
<b>Environmental</b>		
Operating temperature	0 to 70 $^{\circ}$ C	
Storage temperature	-40 to 80 $^{\circ}$ C	

1. All measurements made at 23 $^{\circ}$ C unless otherwise noted.

2. Insertion loss is measured at the maximum of the modulator's transfer function and does not include the 3 dB loss incurred when operated at quadrature.

3. The bias point of this device is most stable when operated with applied DC voltage close to 0 V.

4. For an 80 channel NTSC, 3% OMI CATV link, with correctly operating modulator bias control, 0.26 $^{\circ}$  delta phase yields a maximum of 68 dBc CSO on both outputs.



**Ordering Information**

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at [customer.service@jdsu.com](mailto:customer.service@jdsu.com).

**Sample: 10020476**

<b>Product Code</b>	<b>Description</b>
10020476	1550 nm, PM/SM, no connectors

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