

## ***Product Bulletin***



### **MOD-9189**

### **OC-192, 10 Gb/s Integrated Amplitude Modulator and Attenuator**

As part of the commitment to meet the needs of our customers, JDS Uniphase is introducing this new product which has been developed to provide intrinsic attenuation flexibility for multichannel systems.

The integrated 10 Gb/s amplitude modulator and attenuator employs an integrated attenuator which allows the pre-emphasis of all ITU wavelengths in a DWDM optical link.

Supplied in a hermetic package and qualified to Telcordia™ GR-468-CORE, this product ensures high reliability and performance at all times.

#### **Key Features**

- Zero-chirp or fixed-chirp versions available for optimum link design
- Wide optical bandwidth for use in C and L-band EDFA DWDM links
- True hermetic, qualified to Telcordia™ GR-468-CORE
- Separate DC bias electrode for long-term stability and reliability
- Low drive voltage for ease of use with wide range of commercially available drivers
- High modulator on/off extinction ratio
- Continuously tunable attenuation

#### **Applications**

- Ideal for OC-192 C-band and L-band DWDM applications

#### **Compliance**

- Telcordia™ GR-468-CORE

## 10 Gb/s Integrated Amplitude Modulator and Attenuator Performance Specifications

Parameter	Min	Value Typ	Max	Units
<b>Optical</b>				
Operating Wavelength	1525	-	1605	nm
Insertion Loss (end of life)	4.0	5.0	7.0	dB
Modulator On/Off Extinction Ratio (DC)	20	-	-	dB
Attenuation Range	20	-	-	dB
Optical Return Loss	-	-	-45	dB
<b>Electrical</b>				
RF Port				
Chirp	-	0 ±0.2	-	see note 1
S11 Return Loss				
0.13 - 3 GHz	-	-	-14	dB
3 - 9 GHz	-	-	-10	dB
9 - 15 GHz	-	-	-6	dB
S21 Electro-Optical Bandwidth (-3 dBe)	8.0	9.0	-	
Vpi (at 10 Gb/s PRBS into 50Ω)	4.9	-	6.1	V
Extinction Ratio (at 10 Gb/s PRBS)	12.0	14.0	-	dB
Rise/Fall Time (10%/90%)	-	35	45	ps
Bias Port				
Vpi (DC)	3.2	-	5.8	V
Attenuator Port				
Vpi (DC)	4.7	-	8.4	V

Parameter	Specification
<b>Fiber</b>	
Input	Fujikura SM-15-P-8/125-UV/UV-400
Output	Corning SMF-28
<b>Packaging</b> (details available upon request)	
RF Connection	Anritsu K-Connector <sup>2</sup>
Attenuator, DC Bias, Ground Pins	DC feedthroughs
<b>Environmental</b>	
Qualification & Reliability	True hermetic to GR-468-CORE
Operating Temperature	0°C to +70°C
Storage Temperature	-40°C to +80°C

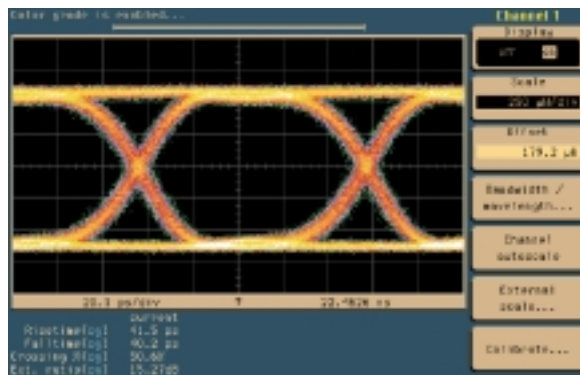
1. Other chirp values are available on a custom basis.

2. K is a trademark of the Anritsu Corporation.

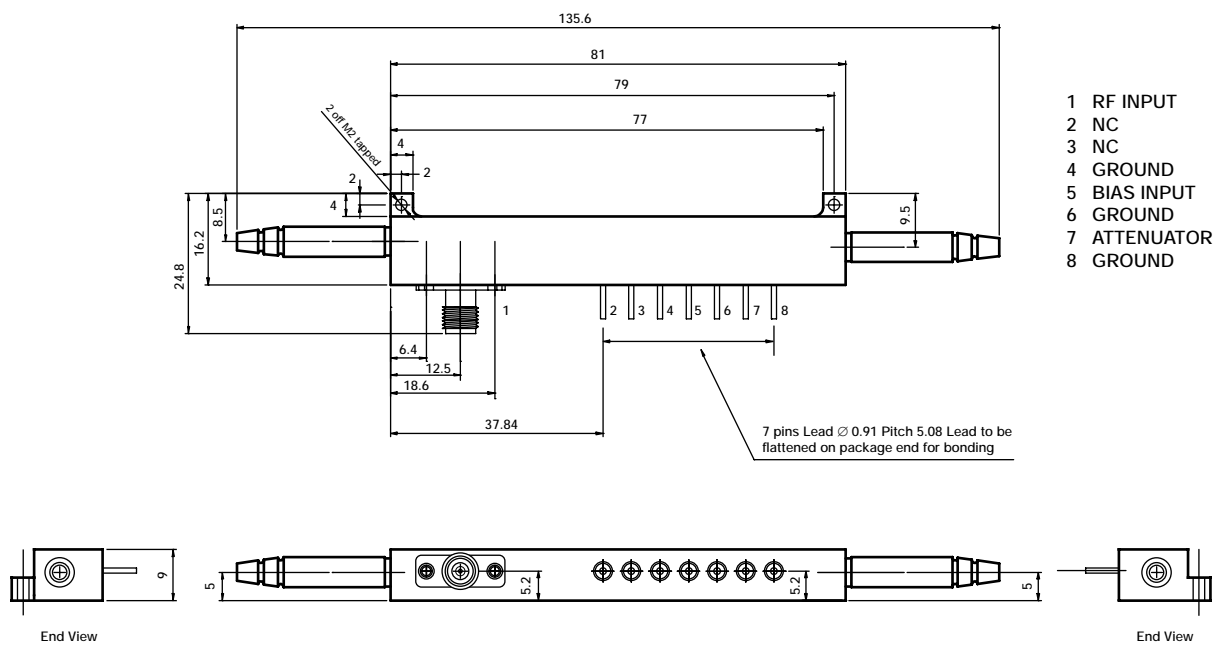
3. Contact JDS Uniphase for details of a compatible range of digital drivers.

## Performance

### Eye Diagram



Dimensions in millimeters except where indicated



## Ordering Information

For more information on this or other products and their availability, please contact your local JDS Uniphase sales representative or JDS Uniphase directly at +44 1376 502110, or by fax +44 1376 502125, or via email at [sales.uk@uk.jdsuniphase.com](mailto:sales.uk@uk.jdsuniphase.com). Visit our Web site at [www.jdsuniphase.com](http://www.jdsuniphase.com).

## Part Numbers & Options

### IOAP-MOD-9189-N-M-P

Defines Output Tap Coupler Option

**0** = No coupler (supplied as standard)

**1** = 1% tap coupler (available to special order at additional cost)

Defines Output Connector Type

**F** = FC/PC connector (supplied as standard, at no additional cost)

**B** = Bare Fiber (available to special order at no additional cost)

Defines Input Connector Type

**F** = FC/PC connector (supplied as standard, at no additional cost)

**B** = Bare Fiber (available to special order at no additional cost)

Default part number is IOAP-MOD9189-F-F-0 (modulators)



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