

# NanoSpeed™ Narrow-Band Modulator/VOA

(Protected by U.S. patent 7,403,677B1 and pending patents)

## Product Description

The NS narrow band modulator/VOA provides small signal modulation in addition to electrically controlled attenuation function. The NS series variable optical attenuators are designed to meet the most demanding operation requirements of ultra-high reliability and fast response time with minimum mechanical footprint. This device comes with a miniature integrated driver with a 5 V power and modulation signal.

The NS Series VOA is available in either normally-transparent or normally-opaque configurations.



## Performance Specifications

NS Variable Optical Attenuator	Min	Typical	Max	Unit
Wavelength	400		1800	nm
Insertion Loss		0.4	1.0	dB
Polarization Dependent Loss		0.1	0.3	dB
Return Loss	45	50		dB
Attenuation Range	22	28	36	dB
Response Time (Rise, Fall)			300	ns
Modulation Rate (10% depth)		0.8	1.6**	MHz
Resolution		Continuous		dB
Operating Optical Power			500	mW
Operating Temperature	-5	~ 70		°C
Storage Temperature	-40	~ 85		°C
Package Dimension		49.9X7.6X7.6		mm

\* Driver kit is recommended

\*\*Special circuit, Maximum modulation depth is 10% at 1dB attenuation

## Features

- No Moving Parts
- High Reliability
- Solid-State High Speed
- Low Insertion Loss
- Epoxy-Free Optical Path
- Low Power Consumption
- Simple Driver

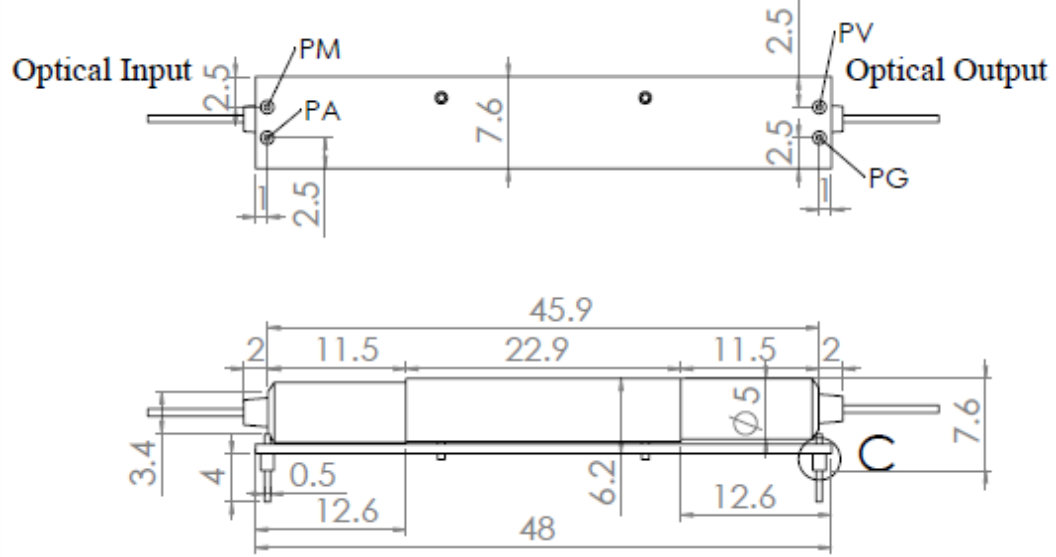
## Applications

- Power Control
- Power Regulation
- Power Balance
- Instrumentation



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## Mechanical Footprint Dimensions (Unit:mm)



## VOA Pin Definition

- PM: Modulation Driving Signal
- PA: Attenuation Driving Signal
- PV: Vcc +5 Volts
- PG: Gnd

## Electrical Performance Specifications

Parameter	Minimum	Typical	Maximum	Unit	Notes
Power Supply Current			70	mA	
Power Supply Voltage	4.75	5	5.25	V	
Start Up Surge Current			100	mA	
Modulation Signal Pk~Pk			1.6*	V	
Modulation Signal Impedance		200		Ω	800KHz**
Modulation bandwidth		200		KHz	
Attenuation Signal			4.8	V	
Attenuation Signal Impedance			4	KΩ	
Power Consumption		325	400	mW	

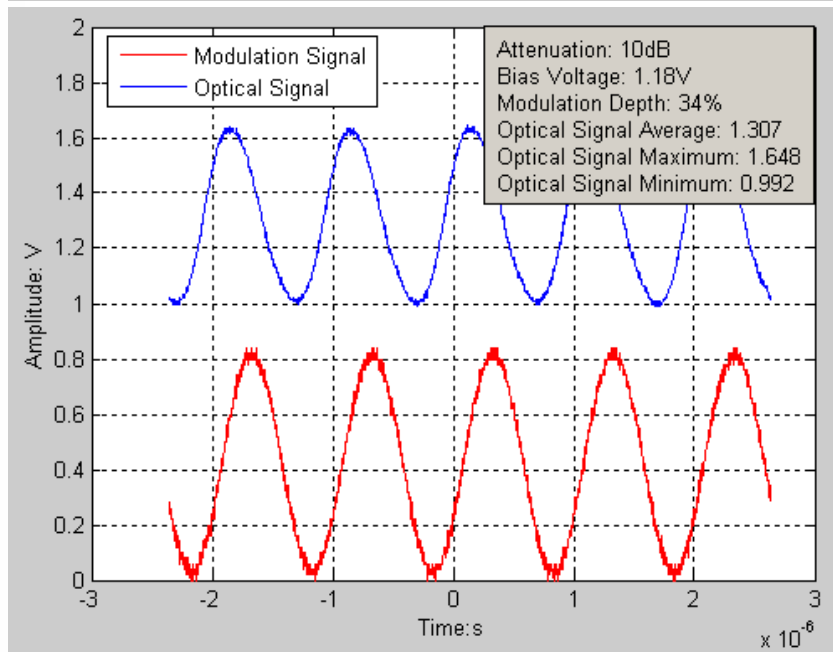
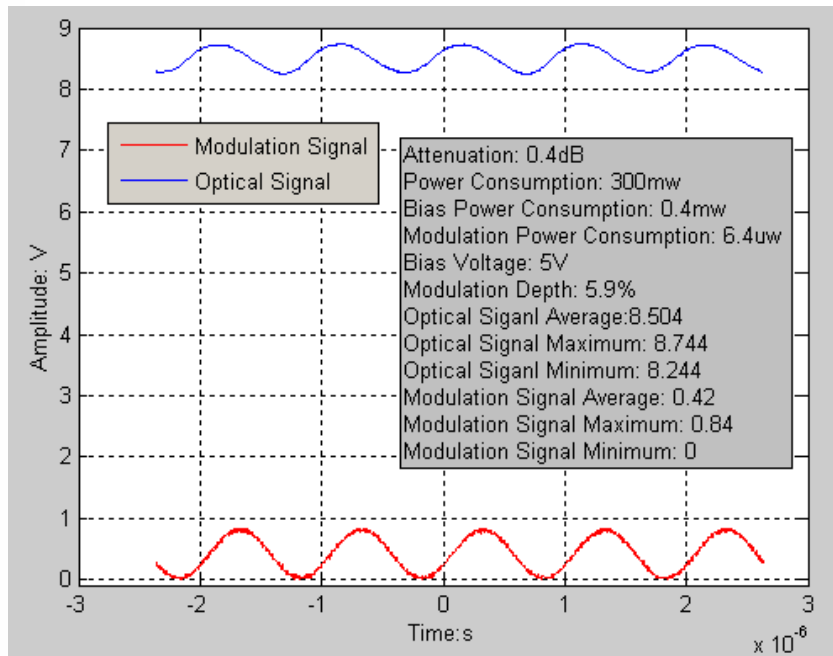
\* Exceeding limits may damage the board

\*\*200Ω modulation signal Impedance is measured with frequency at the peak modulation frequency



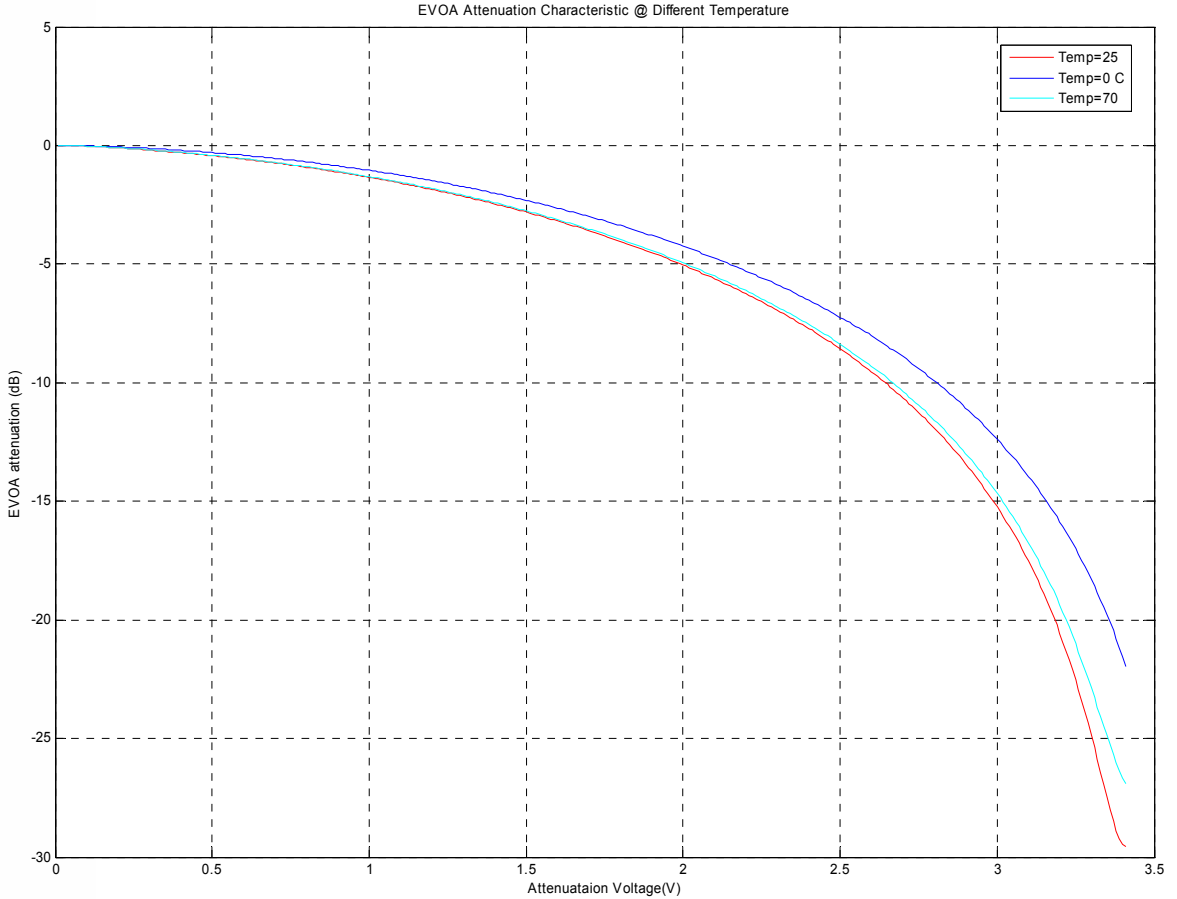
# NanoSpeed™ Narrow-Band Modulator/VOA

## Typical Modulation Curve



# NanoSpeed™ Narrow-Band Modulator/VOA

## Typical Curve of Attenuation versus Voltage



## Ordering Information

NVOA	5 <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Type	Wavelength	State	Package	Fiber Type	Fiber Length	Connector	
	Regular slope=2	1060=1 C+L=2 1310=3 1410=4 1550=5 650=6 780=7 850=8 1310 & 1550=9 Special=0	Transparent = 1 Opaque = 2		SMF-28 =1 Special=0	Bare fiber =1 900um loose tube=3 Special=0	0.25m = 1 0.5m = 2 1.0 m = 3 Special =0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC = 7 Special = 0



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