8 Channel MEMS Variable Attenuation Array

(Compact Size, 8 channels, 0-5V, 780-2640nm, 40/70dB attenuation, SM, MM, PM)

(Protected by U.S. patent 8,666,218 and other patents pending)

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The MEMS series VOA array utilizes a micro-electro-mechanical mechanism with a compact design, simple construction, and easy direct drive, delivering exceptional optical performance. We offer two versions: one with high repeatability and attenuation of up to 40dB and another less precise version with up to 70 dB attenuation. Each channel in the VOA is controlled by directly applying an electrical voltage.

The MEMS series VOA array complies with Telcordia 1209 and 1221 reliability standards.

A version designed for reliable operation in vibration-prone environments is available as an option.

Features

- Low Loss
- High Reliability
- Low Power Consumption
- Compact

Applications

- Gain Control
- Power Equalizer

RoHS COMPLIANT

Specifications

Parameter		Min	Typical	Max	Unit
Operating Wavelength			850~1310, 1260~1620		nm
Insertion Loss (without connector)			0.6	0.8	dB
Attenuation Dynamic Range		45	50	60	dB
Repeatability (0-60 °C)			0.3	0.5	dB
Polarization Dependent Loss (SM, 0~15dB)			0.1	0.2	dB
Extinction Ratio (PM)		18	22		dB
Return Loss	SM, PM:	50			dB
	MM:	35			dB
Wavelength Dependent Loss [1]			0.45	0.8	dB
Response Time (0~20dB)			1	3	ms
Optical Power Handling (CW)			300	400	mW/ch
Polarization Mode Dispersion			≤ 0.05		ps
Optical Cross Talk			≥ 65		dB
Attenuation Resolution			Continuous		dB
Max. Power Consumption			< 0.2[2]		W
Electric Power Input (DC)			5		V
Electrical Control Signal			0 ~ 5		V
Operating Temperature			-20 ~ +75		°C
Storage Temperature			-40 ~ +85		°C
Relative Humidity Range			0 ~ 85		%

Notes:

[1]. Within 40nm band, 0~20dB

[2]. At the maximum attenuation 50dB for all 8 channels

Rev 06/16/26

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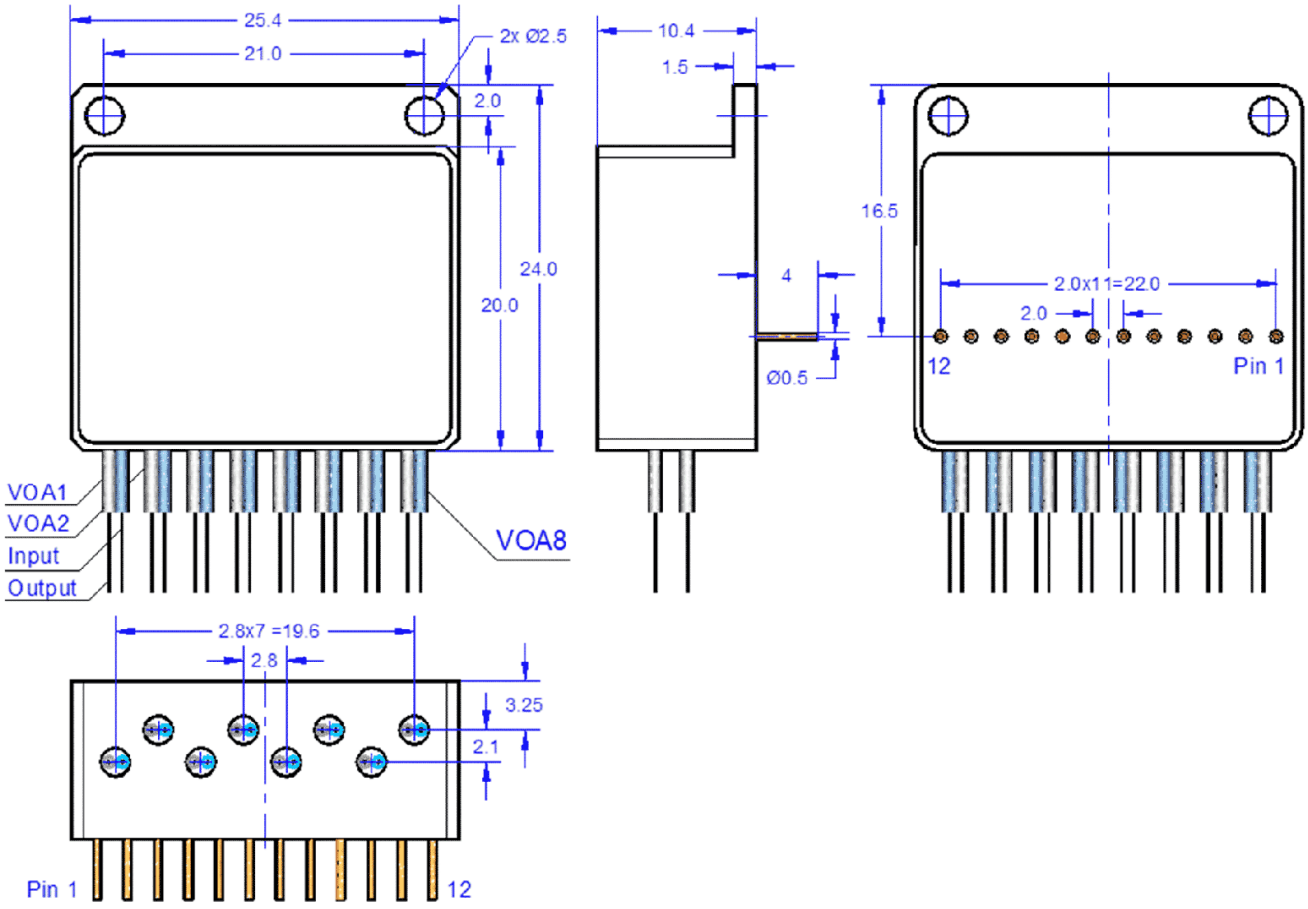
Dimensions (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Driving Instruction

Pin 1	VOA 1 (0 ~ 5V)	**Pin 7**	VOA 5 (0 ~ 5V)
Pin 2	VOA 2 (0 ~ 5V)	**Pin 8**	VOA 6 (0 ~ 5V)
Pin 3	VOA 3 (0 ~ 5V)	**Pin 9**	VOA 7 (0 ~ 5V)
Pin 4	VOA 4 (0 ~ 5V)	**Pin 10**	VOA 8 (0 ~ 5V)
Pin 5	GND	**Pin 11**	GND
Pin 6	GND	**Pin 12**	5V power supply

NOTE: The control signal current is less than 0.2mA

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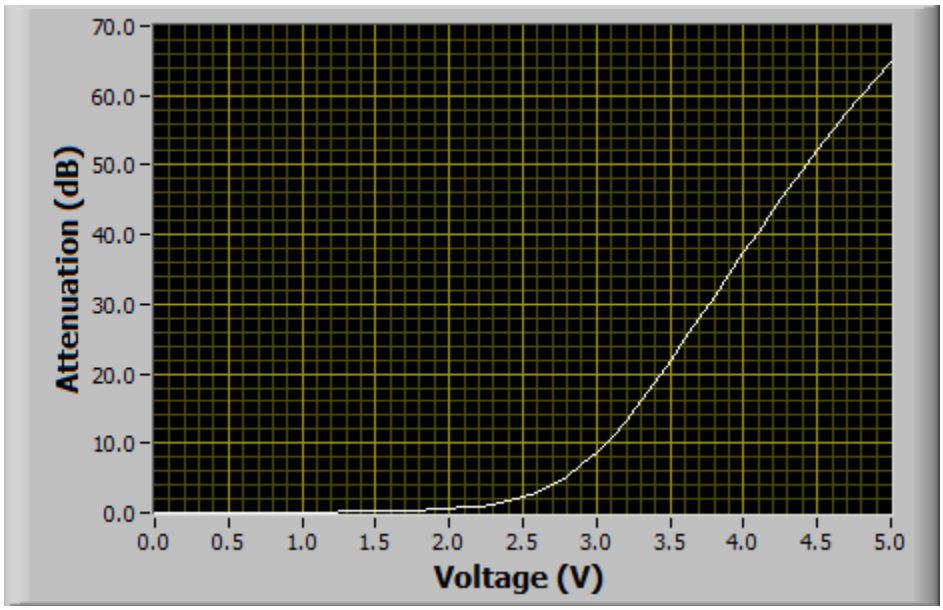
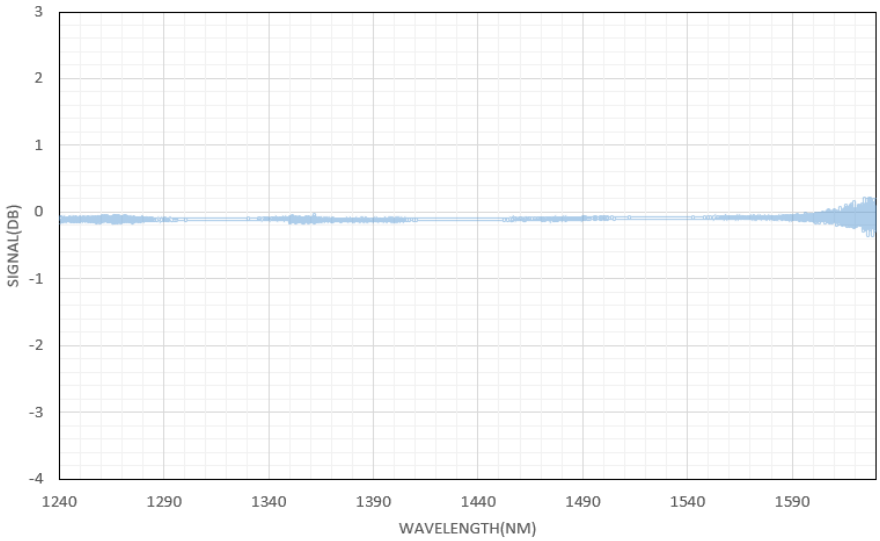
VOA array typical attenuation curve

8-Channel MEMS VOA array typical attenuation curve



Typical Insertion Loss vs Wavelength (1240-1630nm)



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Ordering Information (Part Number)

	☐☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**Type**	**Wavelength**	**Off State**	**Attenuation**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector [2]**
VOAA-	8-ch = 08 7-ch = 07 6-ch = 06 5-ch = 05 4-ch = 04 3-ch = 03 2-ch = 02 V8-ch [1] = V8	1060 = 1 C+L = 2 1310 = 3 1550 = 5 780 = 7 850 = 8 850~1310 = A 1260~1620 = B Special = 0	Transparent = 1 Opaque = 2 Special = 0	45dB = 8 60dB = 6	SMF28 = 1 HI1060 = 2 HI780 = 3 MM50/125 = 5 MM62.5/125 = 6 PM1550 = B PM1310 = D PM980 = E PM850 = F PM780 = A Special = 0	Bare fiber = 1 0.9mm tube = 3 Special = 0	0.25 m = 1 0.5 m = 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/PC = 7 Duplex LC/PC = 8 LC/APC = A LC/UPC = U Special = 0

[1]. For operating in vibration environment

[2]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Note:

"**transparent**" means no attenuation without applying a controlling voltage-off state, the "**opaque**" means the highest attenuation without applying a controlling voltage.

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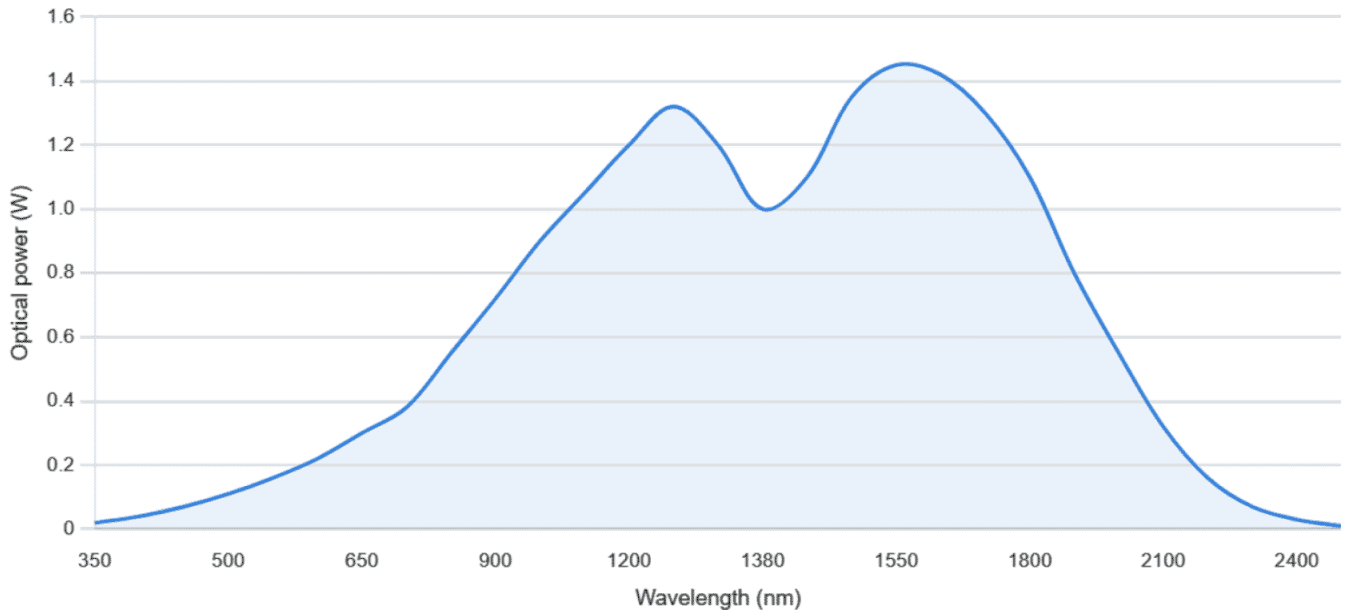
Regular Single Mode / Polarization Maintaining Fiber Optical Power Handing vs Wavelength



Single mode fiber optical power is limited by nonlinear effects in addition to absorption that increase loss and generate heat. The curve shows the approximate safe CW power envelope for standard single-mode fiber. Actual limits depend on fiber design, core size, length, and laser characteristics. Specialty fibers can significantly increase the power limit.

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