

Key Features

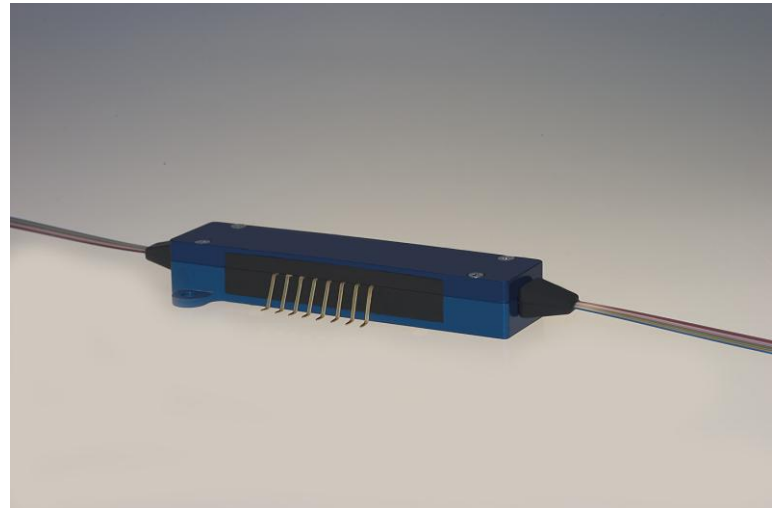
- ✦ High Speed < 1 μ s
- ✦ Wide attenuation range >40 dB
- ✦ Low PDL
- ✦ C and L bands available
- ✦ No moving parts
- ✦ Compact package

Applications

- ✦ Channel power equalization and blocking
- ✦ Optical transient suppression
- ✦ Analog signal modulation
- ✦ Power control in WDM and configurable networks

Compliance

- ✦ Telcordia qualified
- ✦ RoHS 5 of 6 compliant



Kotura's UltraVOA™ Array is a silicon photonic integrated circuit that provides reliable solid state current-controlled optical attenuation and enables ultra-fast power management in optical networks. Utilizing fast carrier absorption in reliable silicon *p-i-n* structures, the UltraVOA™ Array is well suited to both metro and long-haul transmission applications. The high speed of these VOAs makes them particularly useful for optical transient suppression and analog signal modulation applications.

Optical Specifications

Specification	Units	Min	Typical	Max	Notes
Operating wavelengths	nm	1525	1550	1568	Inquire about L-Band
Number of Optical Ports	--			4	
Insertion Loss	dB		1.8	2.0	Without connectors
Maximum Attenuation ¹	dB	40			Blocking state
Operational Attenuation Range	dB	0		20	
Response time	μ s		1	2	10 – 90% step response
PDL	dB			0.4	0-20 dB attenuation
Wavelength dependent loss	dB/nm		0.1	0.2	0-20 dB attenuation
Attenuation efficiency	dB	0.5		2.2	0-40 attenuation
Wavelength dependence of attenuation	dB/nm			0.1	0-20 dB attenuation
Optical return loss	dB	40			
Optical cross-talk	dBc			-50	Channel to channel
Electrical cross-talk	dB			0.1	Channel to channel
Chromatic dispersion	ps/nm	-0.05		0.05	0 dB attenuation
PMD	ps		0.1	0.2	0 dB attenuation
Optical power	dBm			17	

¹ Default attenuation state is 0dB at no applied current

Electrical Specifications

<i>Specification</i>	<i>Units</i>	<i>Min</i>	<i>Typical</i>	<i>Max</i>	<i>Notes</i>
TEC supply current	A			1.9	
TEC supply Voltage	V			4.9	
Recommended Thermistor Setting	°C	70			For optimal attenuation range
Thermistor Resistance	kΩ			10	
Operating Current	mA		40	45	Maximum qualified long-term drive current.
Forward voltage	V			5.0	At 45 mA current

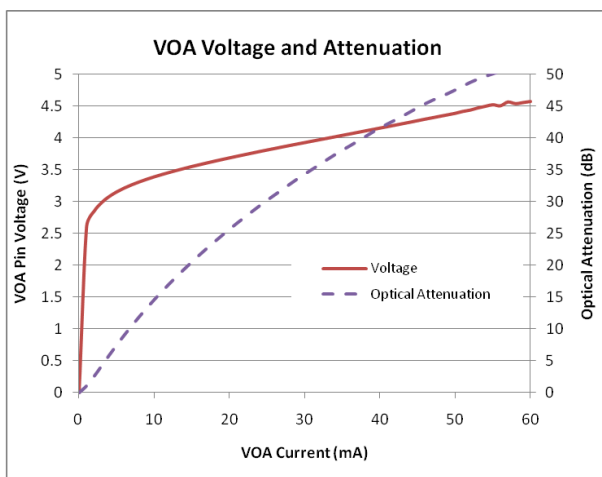
Environmental Specifications

<i>Specification</i>	<i>Units</i>	<i>Min</i>	<i>Typical</i>	<i>Max</i>	<i>Notes</i>
Operating temperature	°C	0		70	Case temperature
Storage temperature	°C	-40		85	Ambient
Operating relative humidity	%			85	

Absolute Maximum Ratings (limited duration)

<i>Specification</i>	<i>Units</i>	<i>Min</i>	<i>Typical</i>	<i>Max</i>	<i>Notes</i>
Optical power per channel	dBm			20	
Max current per channel	mA			100	
Reverse bias voltage	V			20	
Max soldering temperature	°C			230	5 seconds

Product Description



Electrically, each VOA on the silicon chip is a series connection of 4 PIN diodes. As shown in the chart to the left, current flows at a threshold voltage of approximately 2.5 volts. The attenuation is determined by the current, and a voltage to current converter is recommended to drive the device. Since there are no moving parts, reliability for repeated operations is assured and attenuation is a smooth, monotonic function of current with no hysteresis.

The package includes a thermo-electric cooler for temperature stabilization of the VOA when maximum performance is desired.

