

## Single-Channel UltraVOA™

### Key Features

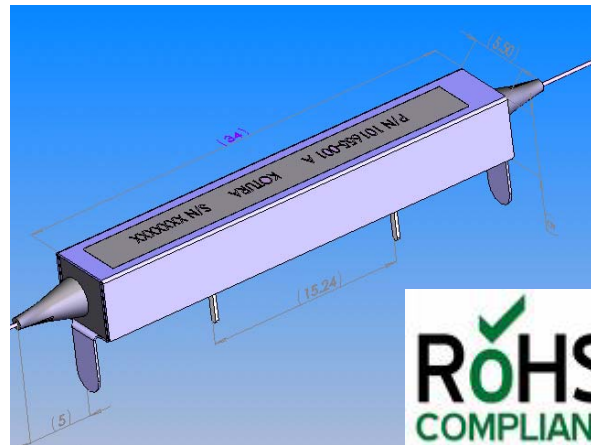
- ✚ High Speed < 1  $\mu$ s
- ✚ Wide attenuation range >25 dB
- ✚ Low PDL
- ✚ C and L bands available
- ✚ No moving parts
- ✚ Compact package

### Applications

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

### Compliance

- ✚ RoHS 6 of 6 compliant



Kotura's Single-Channel UltraVOA™ is based on silicon photonic integrated circuit technology 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 Single-Channel UltraVOA™ 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	L-band available
Insertion Loss	dB		1.8	2.0	Unconnectorized
Attenuation range <sup>1</sup>	dB			25	
Response time	$\mu$ s		1		10 – 90% step response
PDL	0		0.2	0.4	
	0-25			0.5	
Wavelength dependent loss <sup>2</sup>	dB		0.1	0.2	Over attenuation range
Attenuation efficiency	dB/mA	0.15		1.7	0-25 dB, room temperature
Wavelength dependence of attenuation	0-25 dB			0.05	
Optical return loss	dB	39			
PMD	ps		0.05	0.1	
Chromatic dispersion	ps/nm	-0.05		0.05	
Optical power	dBm			17	
Repeatability	dB			0.1	Over all operating conditions
Temperature dependence of attenuation @ 25 dB	dB/°C			0.15	

<sup>1</sup> Default attenuation state is 0dB at no power applied

<sup>2</sup> Includes both ripple and slope over 1 nm window (WDL)

## Electrical Specifications

Specification		Units	Min	Typical	Max	Notes
Drive current	At 25 dB	mA		55	65	
Drive voltage	At 25 dB	V		4		

## Environmental Specifications

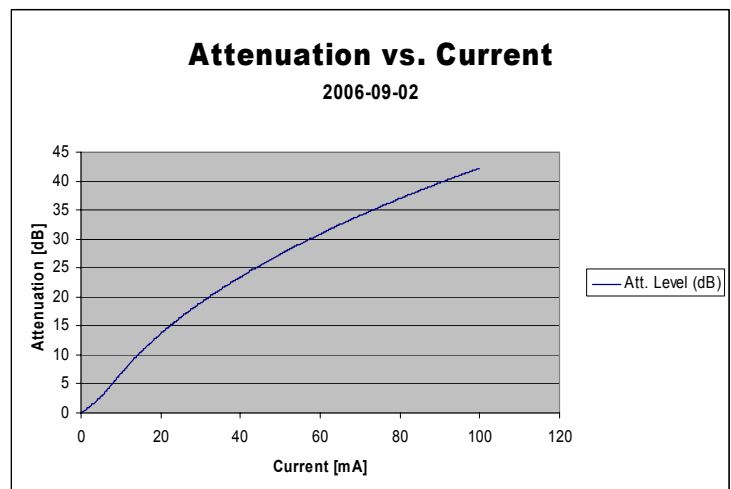
Specification		Units	Min	Typical	Max	Notes
Operating temperature		°C	0		75	Case temperature
Storage temperature		°C	-40		85	Ambient
Environmental operating RH		%			85	

## Maximum Ratings

Specification		Units	Min	Typical	Max	Notes
Optical power		dBm			19	
Electrical power dissipation		mW			325	At steady state
Max driving voltage		V			5	
Max current		mA			65	
Max forward current		mA			100	For > 20 dB attenuation
Max reverse bias voltage		V			20	
Max soldering temperature		°C			230	

## Product Description

Kotura's VOA is a solid-state silicon device much like an analog integrated circuit. Ridge light waveguides formed in intrinsic silicon pass the light signal between p and n junctions grown adjacent to the waveguide. The *p-i-n* structure forms a diode which, when forward biased, injects carriers into the light path. Light is attenuated by means of the free-carrier absorption mechanism. Response times are faster than a microsecond. Attenuation is a direct function of diode current and is temperature dependent as the SVOA does not use a TEC controller. Typical current vs. attenuation performance of a Single-Channel Ultra VOA array is shown in the figure. Attenuation range much above the specified range can be easily achieved.



## Package Outline

### Package dimension

Length → 34 mm  
 Width → 5.5 mm  
 Height → 5 mm

### Connector options

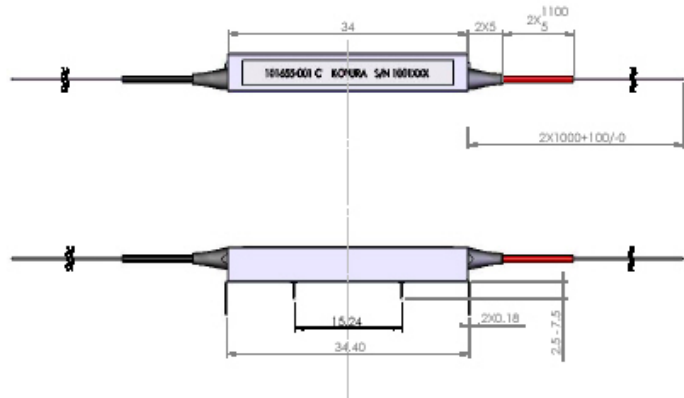
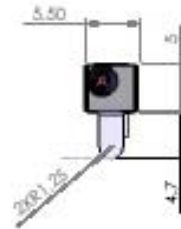
LC, FC, APC, SC, MU, etc.

### Fiber length

Default fiber length is 2±10% meters unless otherwise specified

### Fiber type

SMF 28E



## Electrical Pin Connections

Pin	Description
1	VOA Anode
2	VOA Cathode

## Ordering Information

For more information on this or other products and their availability, please contact Kotura directly at (626) 236-4500 or via e-mail at [sales@kotura.com](mailto:sales@kotura.com).