Ø1.9 mm Aperture Tunable Lens
16 mm Cage Mount, Metric



VL19S/M

Description

The VL19S/M 16 mm cage-mounted, SM05 threaded, tunable lens is controlled by piezoelectric actuators and designed for use in the visible region. This TLens®* is designed with a variable focal length from 20 cm to infinity and features ultra-low power consumption of <1 mW.

*TLens® is a registered trademark of poLight ASA.

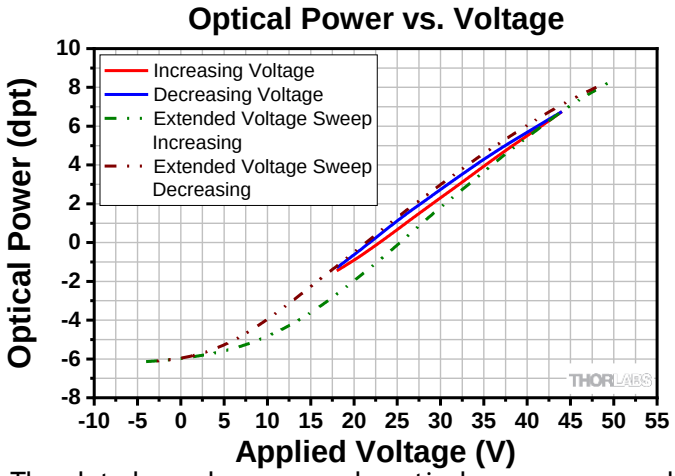
Specifications

TLens® Mechanical Specifications	Symbol	Min	Typical	Max
Length	TLL	4.850 mm	4.900 mm	4.950 mm
Width	TLW	4.350 mm	4.400 mm	4.450 mm
Thickness	TLT	0.515 mm	0.545 mm	0.575 mm
Flatness	-	-	-	0.030 mm
Weight	-	-	15 mg	-
Connector Type			SMC Male	
Optical Specifications	**Symbol**	**Min**	**Typical**	**Max**
Clear Aperture - Sensor Side[a]	FUA	Ø1.89 mm	Ø1.90 mm	Ø1.91 mm
Clear Aperture - Object Side[a]	BUA	Ø2.21 mm	Ø2.25 mm	Ø2.29 mm
Transmitted Wavefront Error (RMS)[b]	WFE	-	30 nm	50 nm
Average Transmittance (Between 400 and 650 nm)	T	-	95%	-
Actuator Specifications	**Symbol**	**Min**	**Typical**	**Max**
Minimum Optical Power	PL	-	-4 m^{-1}	-1 m^{-1}
Maximum Optical Power	PH2	5 m^{-1}	9 m^{-1}	
Hysteresis[b]	HYST	-	1 m^{-1}	-
Response Time[c]	RT	-	-	1 ms
Equivalent Capacitance @ 0 V	C	10 nF	25 nF	40 nF
Operating Conditions	**Symbol**	**Min**	**Typical**	**Max**
Operating Voltage (Between Top and Bottom Electrode)	V_{OP}	0 V	-	50 V
Duty Cycle Over Lifetime-Operating Voltage Cycle	DC	-	10%	-
Operating Voltage Cycles	-	10^6	-	-
Operating Temperature	T_{op}	-20 °C	-	85 °C
Relative Humidity	RH	-	-	85%

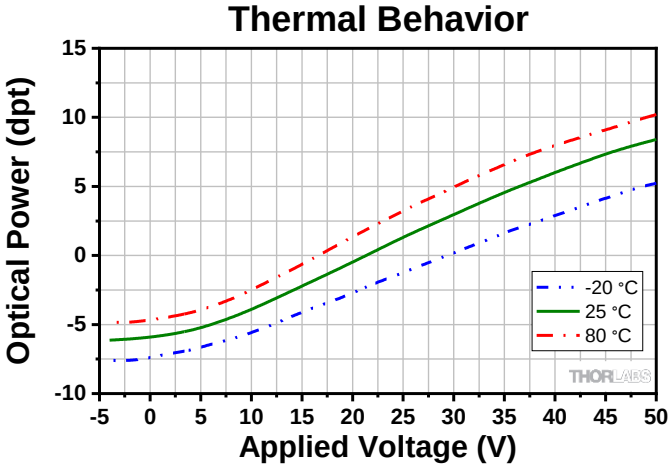
a. The sensor side is the side with the Thorlabs logo and part number, the object side is the opposite.
b. Over Operating Range from -1 dpt to 5 dpt
c. The Time for the System to Reach 1-1/e ≈ 63.2% of its Final (Asymptotic) Value

Absolute Maximum Ratings[a]		
	Min	Max
Storage Temperature	-40 °C	85 °C
Applied Voltage (Top Electrode - Bottom Electrode)	-15 V	60 V
Applied Current	-	1 mA

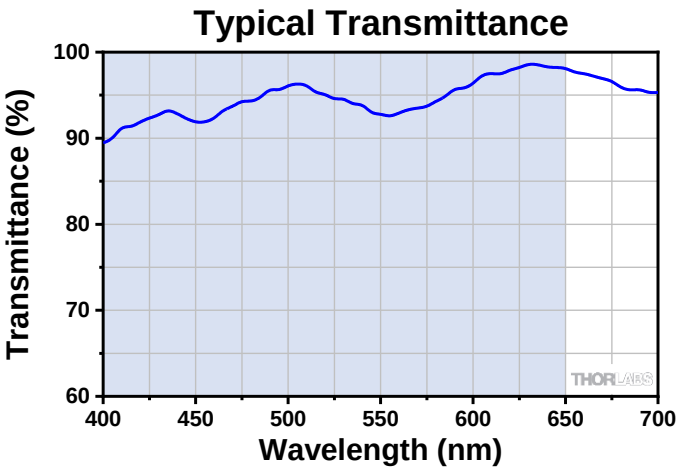
Typical Performance Plots



The plot above shows example optical power versus voltage curves for an unmounted tunable lens at room temperature. The solid curve illustrates a scan between infinity and the minimum focal length. The optical power response is shown for both increasing and for decreasing voltage. The dotted curve shows the optical power vs. voltage for an extended voltage range.

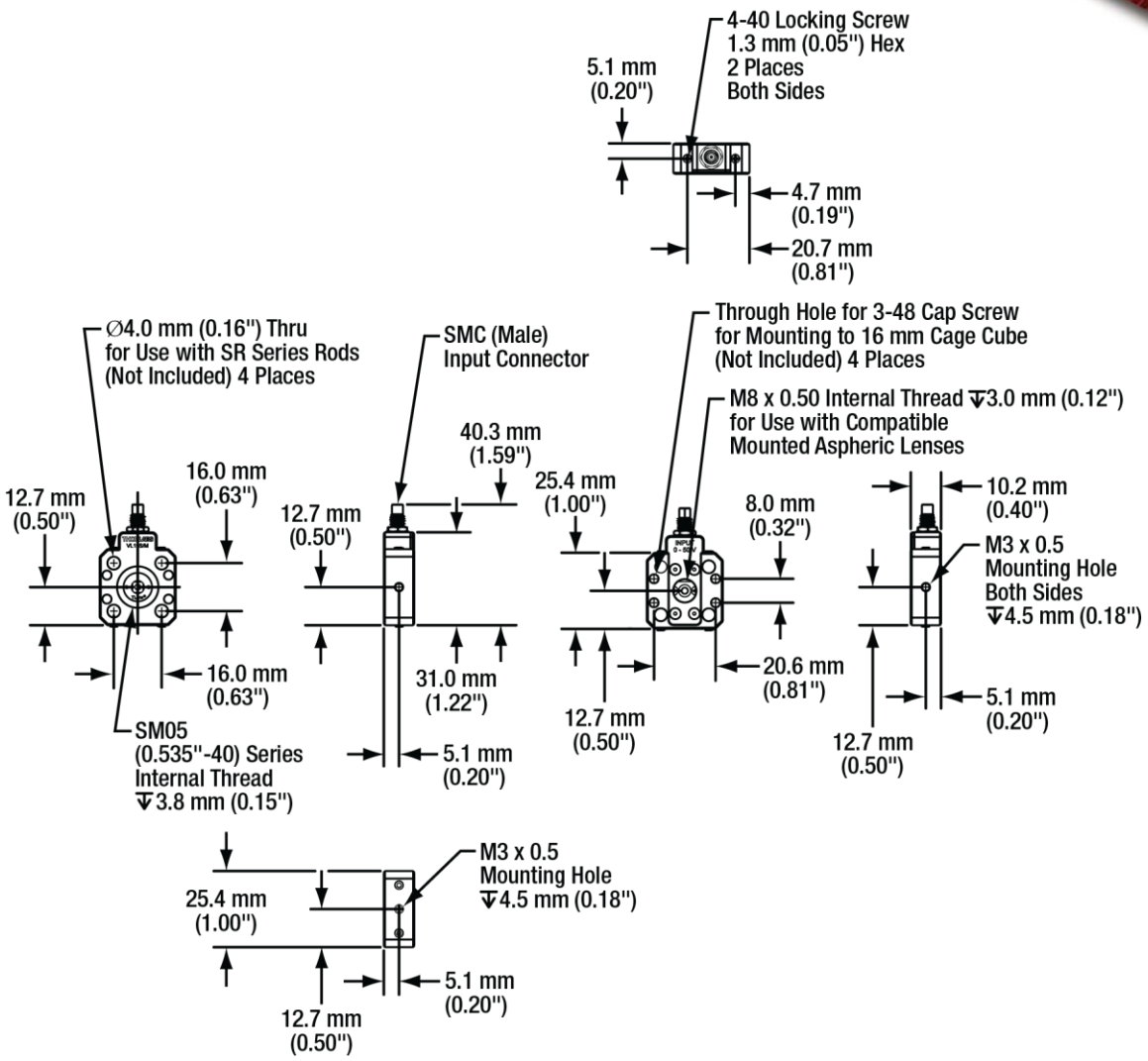


The curves above show the typical thermal behavior of an unmounted tunable lens operating at room temperature (25 °C), -20 °C, and 80 °C. Any stress that may affect the lens' thermal behavior is negligible in our cage plate mounts.



This plot shows the typical transmittance of an unmounted tunable lens. The blue shaded region indicates the specified 400 – 650 nm wavelength range for optimum performance.

Drawings


4-40 Locking Screw
1.3 mm (0.05") Hex
2 Places
Both Sides
5.1 mm
(0.20")
4.7 mm
(0.19")
20.7 mm
(0.81")
Ø4.0 mm (0.16") Thru
for Use with SR Series Rods
(Not Included) 4 Places
SMC (Male)
Input Connector
Through Hole for 3-48 Cap Screw
for Mounting to 16 mm Cage Cube
(Not Included) 4 Places
M8 x 0.50 Internal Thread ↧3.0 mm (0.12")
for Use with Compatible
Mounted Aspheric Lenses
40.3 mm
(1.59")
12.7 mm
(0.50")
16.0 mm
(0.63")
25.4 mm
(1.00")
8.0 mm
(0.32")
10.2 mm
(0.40")
M3 x 0.5
Mounting Hole
Both Sides
↧4.5 mm (0.18")
16.0 mm
(0.63")
31.0 mm
(1.22")
20.6 mm
(0.81")
5.1 mm
(0.20")
SM05
(0.535"-40) Series
Internal Thread
↧3.8 mm (0.15")
5.1 mm
(0.20")
12.7 mm
(0.50")
12.7 mm
(0.50")
M3 x 0.5
Mounting Hole
↧4.5 mm (0.18")
25.4 mm
(1.00")
5.1 mm
(0.20")
12.7 mm
(0.50")