CORNING

Varioptic® Lenses

Marketing Datasheet

Corning® Varioptic® C-S-25H0-026 Auto Focus Lens Module

Overview

The Corning® Varioptic® C-S-25H0-026 auto focus lens module integrates a fixed lens module with a Corning® Varioptic® A-25H0 variable focus lens in an M12x0.5 receptacle (S-mount). The C-S-module has an FPC cable and can be connected to a standard 0.5 mm pitch FPC connector. It can be easily integrated with a standard M12 sensor board. The C-S-module is compatible with imaging sensor formats up to 1/2.5''. The C-S-module can be controlled by the same driver as the A-25H0. For more information on this module, please refer to the C-S-25H0-026 Technical Datasheet (TEDS).

Ordering Information

- **Corning® Varioptic® C-S-25H0-026-42 auto focus lens module:** 6-pin, 0.5 mm pitch, bent flex cable (FPC-A-42) without IR-cut filter.
- **Corning® Varioptic® C-S-25H0-026-42I auto focus lens module:** 6-pin, 0.5 mm pitch, bent flex cable (FPC-A-42) with IR-cut filter.

Performance Summary

- Effective focal length 2.6 mm
- F number 2.5
- Image circle diameter 7.2 mm
- Focus range 4 mm to infinity

Applications

Corning Varioptic C-S-25H0-026 liquid lens modules have been used in:

- Close-up focus applications
- Surveillance
- Industrial endoscopes
- …

Contents

ESD

Opto-Electrical Performance

Performances described below are for 25°C and for the lens setting described in the 'Module Setting Recommendations' section of this document.

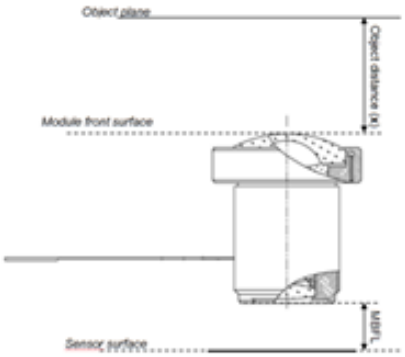
Optical Performances at V∞	***Symbol***	***Min***	***Typ***	***Max***	***Unit***	***Notes***
Voltage for infinite focus	V_∞		39.5		V	(1)
Focal length at V_∞	EFL		2.6		mm	
Image circle diameter			7.2		mm	
Corner Chief Ray Angle	CRA			17	°	
Mechanical back focal length at V_∞, without IR-cut filter			5.26		mm	(4)
Mechanical back focal length at V_∞, with IR-cut filter			5.36		mm	(4)
F- number	F#		2.5		-	
Relative Illumination	RI	69			%	
Diagonal Field of view	DFOV			160	°	(2)
IR filter cut-off wavelength	λ_c		650		nm	
Focus control performances						
Focus distance	x	0.4		∞	cm	(1)
Voltage for x= 4 mm	V_{4mm}		54		V	(4);

Notes:

(1) For more information on the behavior of the A-25H0 lens with voltage, please refer to the A-25H TEDS.
(2) For a sensor size of 7.2 mm diagonal (1/2.5").
(3) For other sensor sizes, the Field of View (FOV) and distortion is:

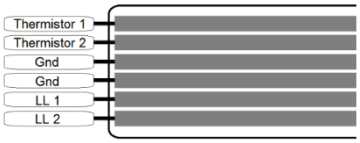
Sensor diagonal	**Sensor format**	**Diagonal FOV**	**Horizontal FOV**	**Vertical FOV**	**Radial distortion (%)**
4 mm	1/4"	86°	68°	52°	-21%
5.7 mm	1/3.2"	126°	100°	74°	-47%
6 mm	1/3"	134°	116°	76°	-53%
6.7 mm	1/2.7"	152°	120°	88°	-67%
7.2 mm	1/2.5"	160°	128°	94°	-77%

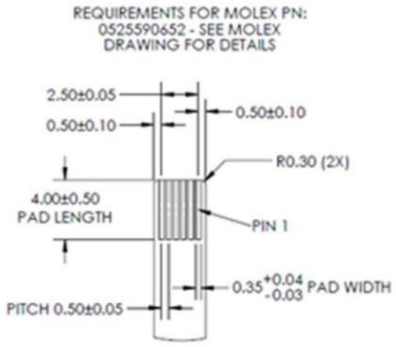
(4) Definition of x and MBFL:



Electrical Specifications

Electrical Connection





The following 0.5 mm pitch, 6-pin FPC connectors are compatible with the FPC tip:

- 525590652 from Molex
- 5034800600 from Molex

Driver

A dedicated compact IC has been designed to drive Corning Varioptic Lenses, namely the Maxim MAX14574. For details, please contact your local sales channel.

Important note:

Corning Varioptic Lenses are sensitive to electrostatic discharge (ESD). Use caution when handling.

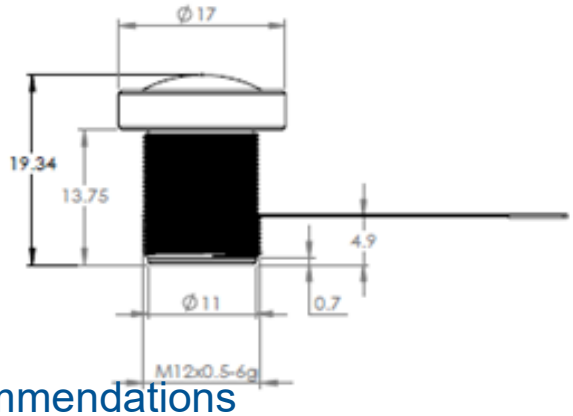
Absolute Maximum Ratings

Parameter	*Symbol*	*Min*	*Typ*	*Max*	*Unit*	*Notes*
Operating Temperature	T	-30	..	85	°C	
Storage Temperature	T_{stg}	-40	..	85	°C	
AC Input RMS Voltage	V_{max}			60	V	(1)
Input Voltage Frequency	f		1	5	kHz	(1)

Notes:

(1) For more information on the A-25H0 electrical driving, please refer to the A-25H0 TEDS.

Mechanical Dimensions



Module Setting Recommendations

Use caution when configuring the initial lens module settings. Although the user has complete control over module configuration settings, only a limited number of configurations will provide optimum image quality.

Setting Procedure without Voltage:

1. Set a scene which is at a distance of at least 5 m from the camera.
2. Insert and slightly screw the C-S-module on the M12 camera lens holder (C-S-module unpowered).
3. The image should be out of focus.
4. Screw the C-S-module clockwise until the center of the image becomes sharp.
5. From this position, screw the C-S-module clockwise by an additional 1 and 1/4 turns with accuracy of ± 1/4 turn: the image becomes out of focus again.
6. Fix the C-S-module in this position.
7. Power the C-S-module: the infinite focus will be obtained for V_{∞} and the focus at a closer position will be obtained by applying a higher voltage, up to V_{max}.

Setting Procedure with Voltage:

1. Connect the C-S-module to the driver and adjust the voltage control to 39.5 V_{rms}
2. Turn on the camera and point the camera in the direction of a scene that is at least 5 m from the module, or at a distance of x_0 if using at the maximum focus distance x_0.
3. Screw the C-S-module clockwise until the image becomes sharp.
4. Optional: Block the C-S-module in that position.