



FSG SERIES LENSES

for SEOUL SEMICONDUCTOR Z-POWER P5™ LEDs

- Highly efficient color mixing lens
- Available in 2 different beams
- Patent Pending

The FSG lens series is a range of two lenses specifically designed for the Seoul Semiconductor LEDs : Z-Power P5™. www.seoulsemiconductor.com

A software-optimized aspheric profile combined with front shaped micro-lens arrays enable the generation of two different lens models: narrow beam and medium beam.

The high collection efficiency reaches 85% of the total flux emitted from the LED.

Each of these lenses is available assembled with Fraen's Lens Holder. The holder assures the proper relative placement between the lens and the Z-Power™ P5 LED.

Heat staking the four legs of the holder to the customer's PCB or heat sink provides excellent optical and mechanical assembly (see Fraen Application Note FAN01-EN (at www.fraensrl.com)).

Typical applications are:

- Architectural Lighting
- Entertainment lighting
- Wall washing
- Internal lighting.
- Applications requiring excellent uniformity of color mixing



(1) Z-Power is a trademark of Seoul Semiconductor. For technical specification on LEDs please refer to the Z-Power datasheet or visit www.seoulsemiconductor.com

For ordering instructions, please contact

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Website: www.fraensrl.com



General Characteristics

Lens Material	Optical Grade PMMA
Holder Material	PC ABS
Operating Temperature range	-40deg C / + 80 deg C
Storage Temperature range	-40deg C / + 80 deg C

Average transmittance in visible spectrum (400 – 700nm) >90%, as measured using 3mm thick Optical Grade PMMA.

Please note that flow lines and weld lines on the external surfaces of the lenses are acceptable if the optical performance of the lens is within the specification described in the section "OPTICAL CHARACTERISTICS"

IMPORTANT NOTE – Lenses handling and cleaning:

Handling: Always use gloves to handle lenses and/or handle the lenses only by the flange. Never touch the outside surfaces of the lenses with fingers; finger oils and contamination will absorb or refract light.

Cleaning: Clean lenses only if necessary. Use only soap and water to clean the surfaces and lenses. Never expose the lenses to alcohol, as it will damage the plastic.

Optical Characteristics :

		Typical Total Divergence (degrees)			
Lens Part Number	Type of lens	Blue LEDs ●	Green LEDs ●	Red LEDs ●	White LEDs ○
FSG-M1-SSP5-H	Medium beam	22.5	23.5	21.0	23.0
FSG-W1-SSP5-H	Wide beam	30.0	29.0	27.0	28.0

The typical total divergence is the full angle measured where the luminous intensity is half of the peak value of intensity. That typical divergence varies with LED color due to different chip size and chip position tolerance.

		Typical on-axis Intensity (cd/lm)			
Lens Part Number	Type of lens	Blue LEDs ●	Green LEDs ●	Red LEDs ●	White LEDs ○
FSG-M1-SSP5-H	Medium beam	2.9	3.9	2.8	3.2
FSG-W1-SSP5-H	Wide beam	1.8	2.7	1.7	2.1

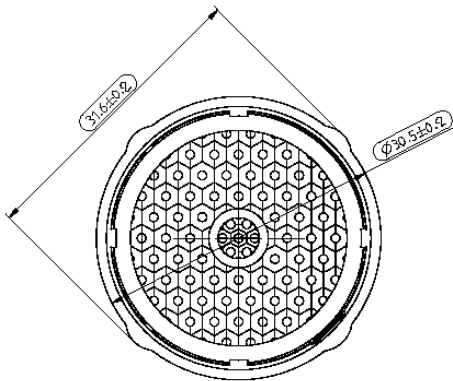
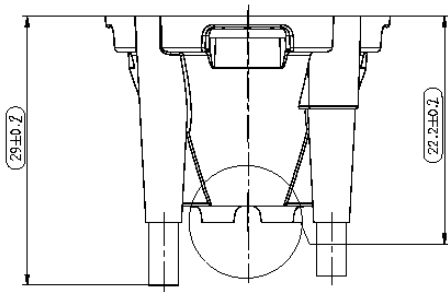
Luminous intensity depends on the flux binning and tolerances of the LEDs. Please refer to the LEDs datasheet for more details on flux binning and mechanical tolerances.

IMPORTANT - Assembly information:

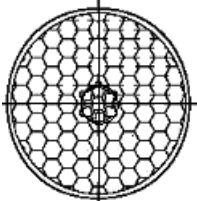
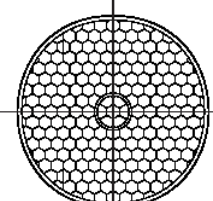
For best optical performance (shown above), correct mechanical position of the lens on the LED is critical. To achieve correct lens position on the LED, the lens must be used with a holder.

Mechanical Characteristics

Lens + holder assembly view



The outside mechanical dimensions of all the lenses (Medium and Wide beam) are the same, except the fronts of the lens. Each can be identified by their **top view**:

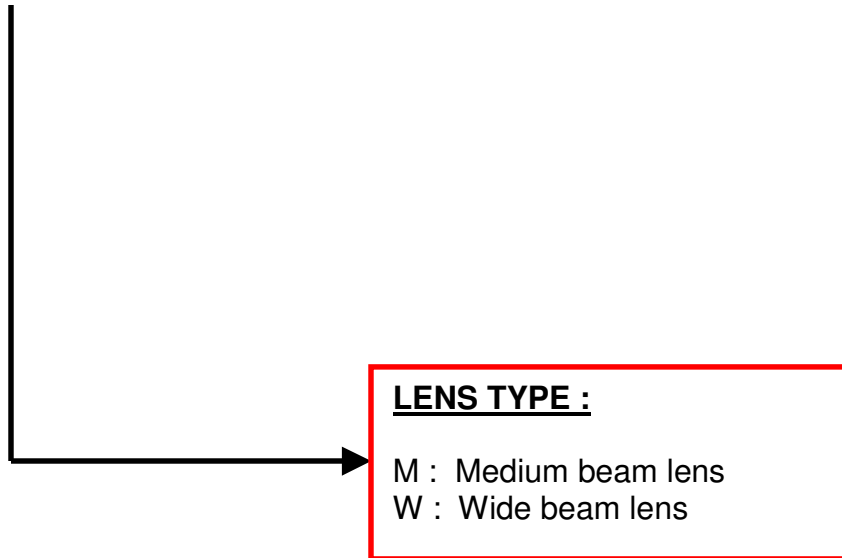
Medium Beam assembly: FSG-M1-SSP5-H	Wide beam assembly: FSG-W1-SSP5-H
	
<i>light texture on microlens</i> 2.6mm hexagonal shaped microlens array	1.7mm hexagonal shaped microlens array

Light texture on the micro-lenses improves evenness of the beam.



Ordering part numbers

FSG-x1-SSP5-H



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Document Revision Record

Rev	Date	Author	Description
00	08-17-2006	S.A.H.	Initial Release
01	08-24-2006	S.A.H.	Replace Preliminary Data with Actual Data