



FRC Series 35mm Diameter Reflectors for SEOUL SEMICONDUCTOR A3 (Acriche) and P7LEDs

- High efficiency
- Faceted designs provide homogeneous focused spot *and* spilled/direct light
- 34.5 mm diameter for MR-11 lamp applications
- 3 beams available

The FRC A3P7 reflectors are specifically designed for the Acriche® (A3) and P7 LEDs from Seoul Semiconductor.

A software-optimized aspheric profile combined with precision facets provides a homogeneous central spot as well as useful peripheral spilled light.

The high collection efficiency exceeds 90% of the total flux emitted by the LEDs.

Typical applications are:

- Flashlights/Torches
- General Illumination
- Reading Lamps
- Architectural Lighting
- Other applications where a focused spot with wide peripheral spill are desired



Acriche® and Z-Power® are trademarks of Seoul Semiconductor. For technical specification on LEDs please refer to the Z-Power datasheet or visit www.seoulsemiconductor.com

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General Characteristics

Lens Material	Polycarbonate, black color, with aluminum reflective coating.
Operating Temperature range	-40deg C / +100 deg C
Storage Temperature range	-40deg C / +100 deg C

Please note that small defects in the reflective coating, and flow lines and weld lines on the external surfaces of the reflectors are acceptable if the optical performance of the reflector 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 internal reflective surfaces of the reflectors with fingers; finger oils and contamination will absorb or refract light.
- Cleaning: Clean the reflectors only if necessary. Use only soap and water to clean the surfaces reflective surfaces. Never expose the reflectors to solvents such as alcohol, as it will damage the plastic and/or coating.

Scope

This datasheet provides information about the following FRC series reflectors when used on Seoul A3 and P7 LEDs.

- FRC-N1-A3P7-0R narrow beam reflector
- FRC-M1-A3P7-0R medium beam reflector, with polished facets
- FRC-M2-A3P7-0R medium beam reflector, with textured facets

Part Identification

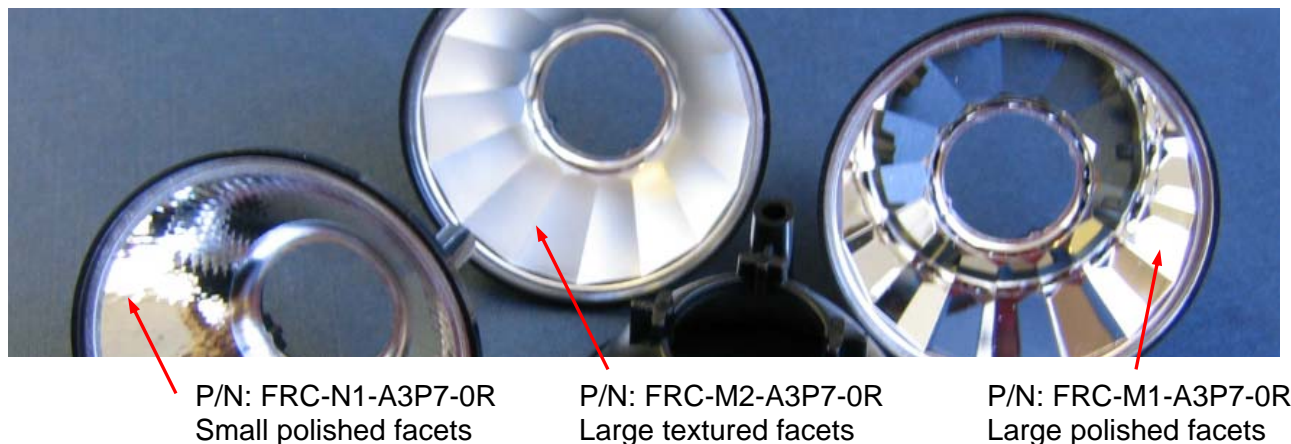


Figure 1. Visual appearance of reflectors, for differentiating between part numbers.



Optical Characteristics: Beam Divergence and On-axis Efficiency

On Acriche A3 LED	Central Spot		Spilled Light / Halo	
	On-axis intensity (candela/lumen)	Beam Angle (degrees)	~ Intensity (candela/lumen)	Beam Angle (degrees)
Narrow Beam (P/N: FRC-N1-A3P7-0R)	4.5	15	0.3	90
Medium Beam, Polished Facets (P/N: FRC-M1-A3P7-0R)	1.5	29	0.3	90
Medium Beam, Textured Facets (P/N: FRC-M2-A3P7-0R)	1.0	36	0.3	90

On Z-Power P7 LED	Central Spot		Spilled Light / Halo	
	On-axis intensity (candela/lumen)	Beam Angle (degrees)	~ Intensity (candela/lumen)	Beam Angle (degrees)
Narrow Beam (P/N: FRC-N1-A3P7-0R)	10	11	0.3	90
Medium Beam, Polished Facets (P/N: FRC-M1-A3P7-0R)	2.8	26	0.3	90
Medium Beam, Textured Facets (P/N: FRC-M2-A3P7-0R)	1.7	32	0.3	90

* The "Beam Angle" for the central spot is measured at the full-width at half-maximum (FWHM); the "Beam Angle" for the spilled light is measured at the Full Beam at visually-perceived cut-off.

Illumination Calculations

To calculate peak candela: Find the central spot "on-axis intensity" value in the table above, then multiply this value by the lumens output from your LED (refer to the Acriche A3 or P7 LED datasheet <http://www.seoulsemiconductor.com/> for nominal lumens values). Or for a more accurate value, refer to their .pdf spec for intensity binning.

Example calculation:

If the Fraen narrow reflector FRC-M1-A3P7-0R is used on P7 LED at 2800 mA, the typical luminous flux of the LED is 700 lumens:

The calculation is: (2.8 candela/lumen) x (700 lumens) = 1960 candela peak on-axis.

The beam angle of the main spot is specified in the table above is 26 degrees full beam-width measured at half-peak. This means at 13 degrees off-axis (half of 26 degrees), the intensity should be half of 1960 candela, or 980 candelas.

1 candela at 1-meter distance produces 1 Lux. This means the peak intensity at 1 meter will be 1960 lux. The intensity decreases as a function of the distance squared, so at 2 meters the peak intensity will be $1960 / (2^2) = 490$ lux. At 3 meters distance, the peak intensity will be $1960 / (3^2) = 218$ lux.

Mechanical Characteristics

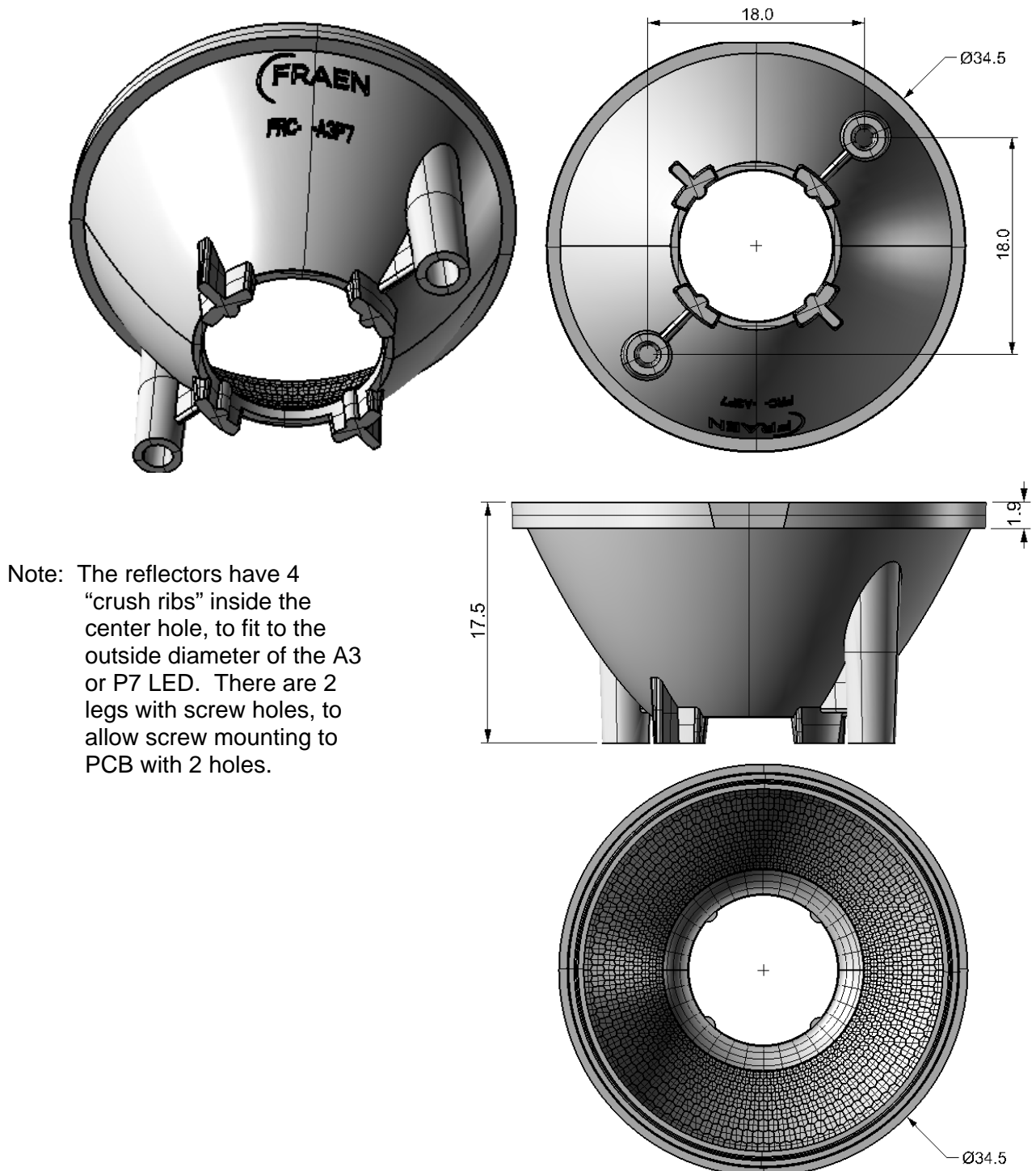
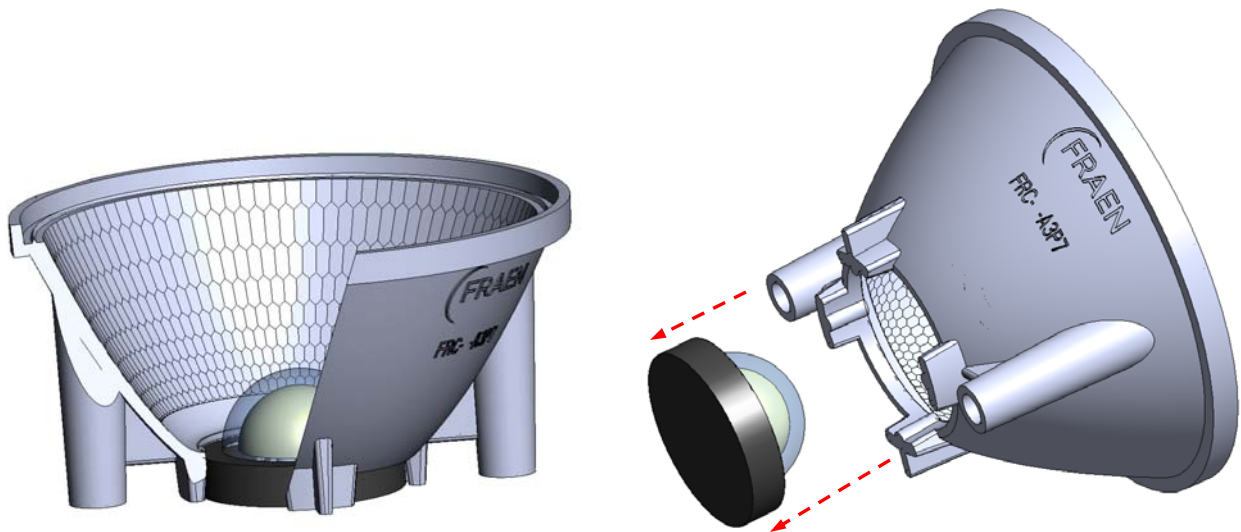


Figure 2. Views and main dimensions of reflectors.



CAUTION: The reflectors have 4 “crush ribs” inside the center hole, to fit to the outside diameter of the A3 or P7 LED. There are 2 legs with screw holes, to allow screw mounting to PCB with 2 holes.

Figure 3. The reflector should touch the top of the PCB (same datum as the bottom of the A3 or P7 LED), and the reflector should self-center on the outside diameter of the LED body.

Ordering part numbers

FRC-__-A3P7-0R

- FRC-N1-A3P7-0R narrow beam reflector
- FRC-M1-A3P7-0R medium beam reflector, with polished facets
- FRC-M2-A3P7-0R medium beam reflector, with textured facets

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01	01-February-2010	C. Jones	Revised format. “M2” part number added.
00	15-September-2008	C. Jones	Initial Release