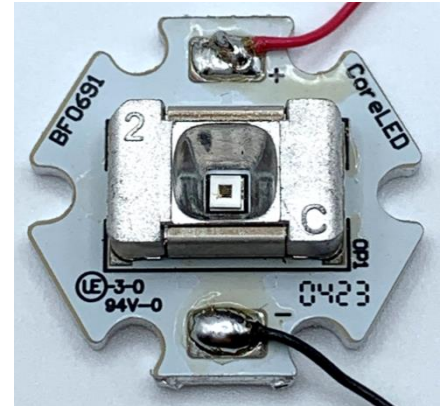


CoreLED P/N 11003-STAR-P1616-IR###

- 70° FWHM Flood
 - Osram OSOLON P1616 IR LED
 - Available in either 940nm or 850nm options
 - P/N 11003-STAR-P1616-IR940nm
 - P/N 11003-STAR-P1616-IR850nm



Product Description:

The SMR product family is a series of vacuum metallized high temperature polymer mini-reflectors that attach directly to a standard Starboard Circuit Board. These components achieve high collection efficiency, a variety of engineered beam patterns, and are supplied for high volume electronics assembly.

Key Features:

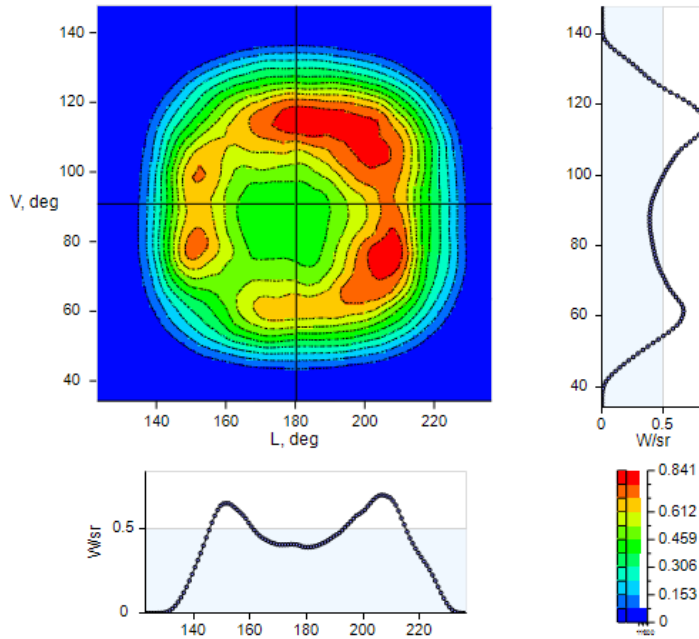
- Optical reflector mounted on starboard for easy assembly
- Supplied on 20mm Starboard
- Increased control of IR radiation/light output (940nm or 850nm)
- Precision alignment (within ± 0.1 mm)
- Family of optical beam patterns
- Manufactured without the need for additional components to attach the optics
- Provided on starboard for evaluation and testing

STARBOARD mounted optics are meant for PROTOTYPE and EVALUATION purposes only

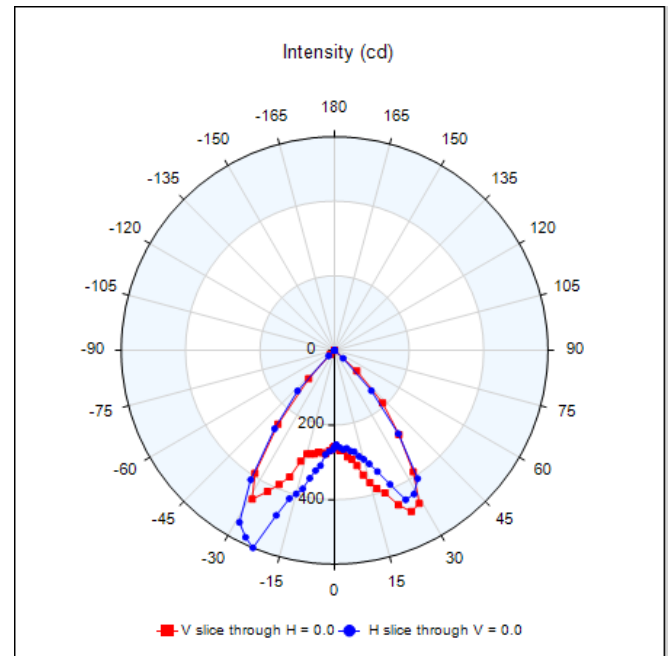
Emitted Pattern Profile

Oslon P1616-IR940nm SFH 4180 (Measured)

IES NEMA Type	5H x 5V
Horizontal Beam Angle (50%)	72.6
Vertical Beam Angle (50%)	68.2
Horizontal Field Angle (10%)	91.9
Vertical Field Angle (10%)	89.9
Total Efficiency	86%



Radiant Intensity
W/sr vs Angle



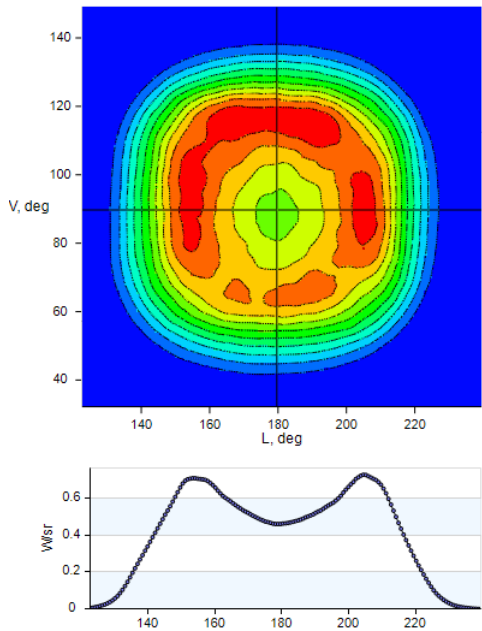
70 DEGREE FWHM

IES files and Raytrace models are available upon request from
CoreLed Engineering.

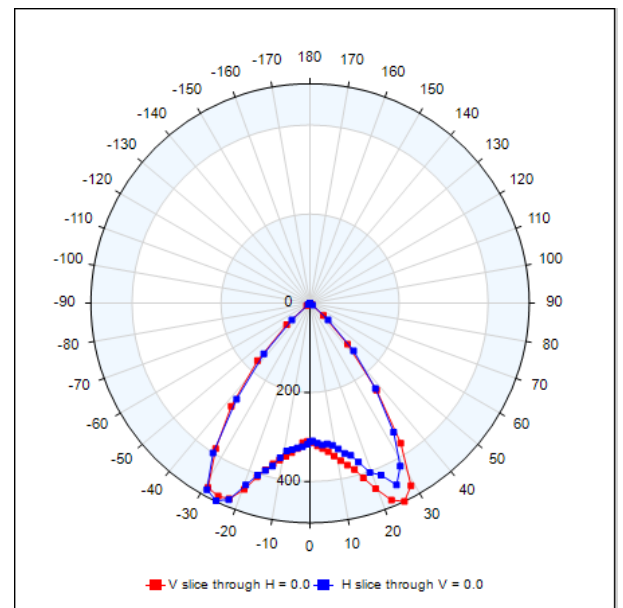
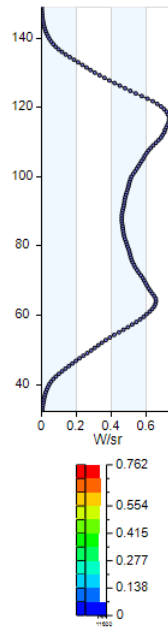
Emitted Pattern Profile

Oscon P1616-IR850nm SFH 4170 (Measured)

IES NEMA Type	5H x 5V
Horizontal Beam Angle (50%)	64.9
Vertical Beam Angle (50%)	73.7
Horizontal Field Angle (10%)	86.9
Vertical Field Angle (10%)	94.6
Total Efficiency	86%



Radiant Intensity
W/sr vs Angle



70 DEGREE FWHM

IES files and Raytrace models are available upon request from
CoreLed Engineering.

LED Information

Features:

- Package: clear silicone
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)
- IR lightsource with high efficiency
- Double stack emitter
- Centroid wavelength 940 nm

SFH 4180S

OSLON[®] P1616

High Power Infrared Emitter (940 nm)



Ordering Information

Type	Total radiant flux ¹⁾ $I_F = 1000 \text{ mA}; t_p = 10 \text{ ms}$ Φ_e	Total radiant flux ¹⁾ typ. $I_F = 1000 \text{ mA}; t_p = 10 \text{ ms}$ Φ_e	Ordering Code
SFH 4180S	1000 ... 1400 mW	1.15 W	Q65112A8326

The brightness values are measured during a current pulse of typically 10ms, with a tolerance of +/- 12%.

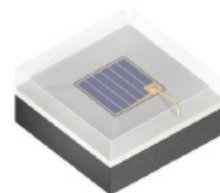
Features:

- Package: clear silicone
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)
- IR lightsource with high efficiency
- Double stack emitter
- Centroid wavelength 850 nm

SFH 4170S

OSLON[®] P1616

High Power Infrared Emitter (850 nm)



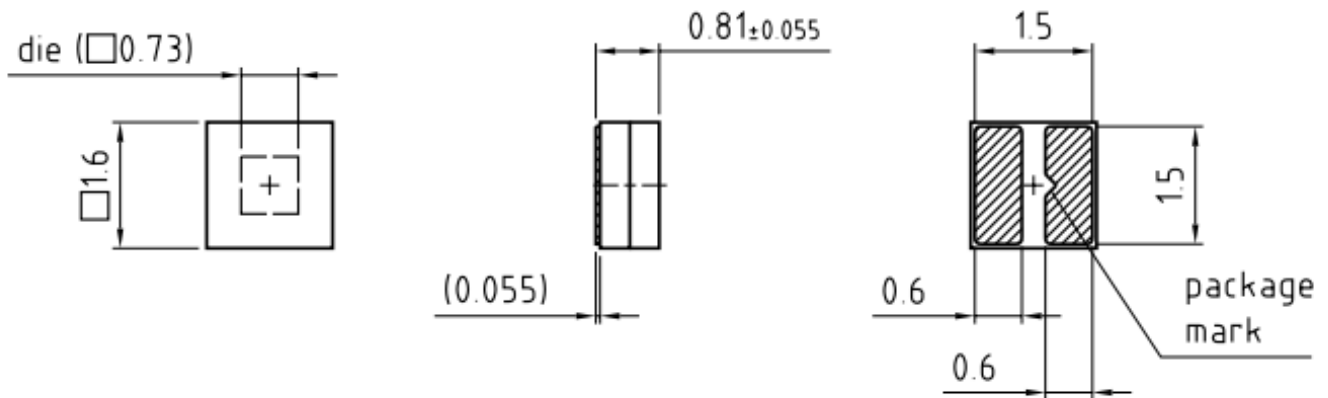
Ordering Information

Type	Total radiant flux ¹⁾ $I_F = 1000 \text{ mA}; t_p = 10 \text{ ms}$ Φ_e	Total radiant flux ¹⁾ typ. $I_F = 1000 \text{ mA}; t_p = 10 \text{ ms}$ Φ_e	Ordering Code
SFH 4170S	1000 ... 1400 mW	1.15 W	Q65112A9014

The brightness values are measured during a current pulse of typically 10ms, with a tolerance of +/- 12%.

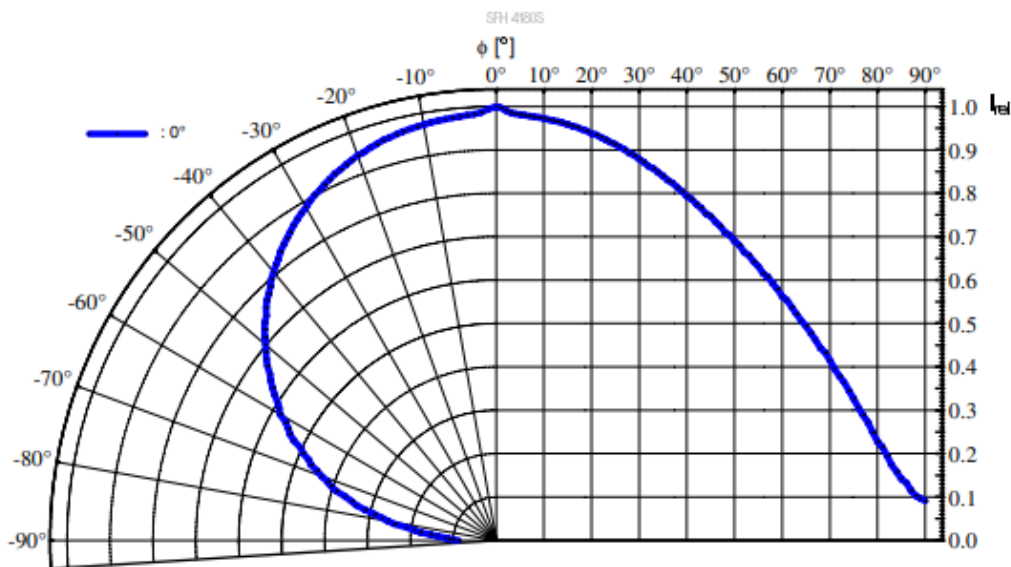
LED Information: Dimensions & Radiation Profile

Dimensional Drawing ⁶⁾

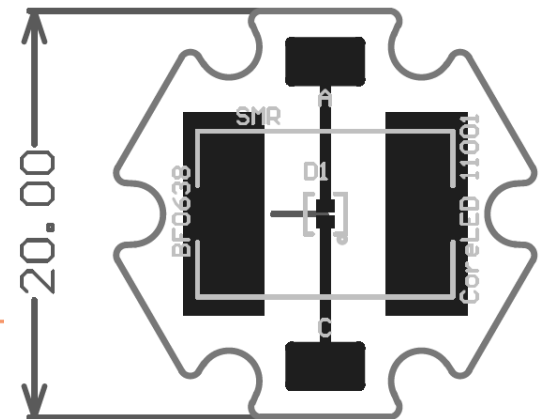
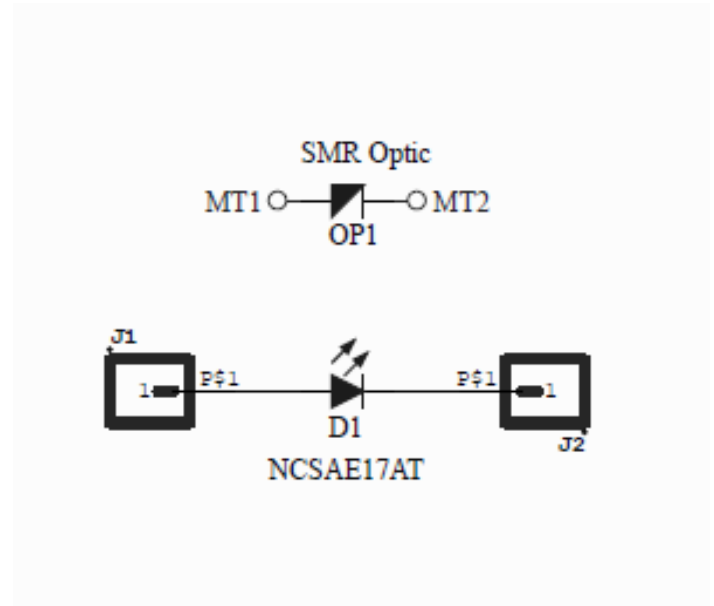
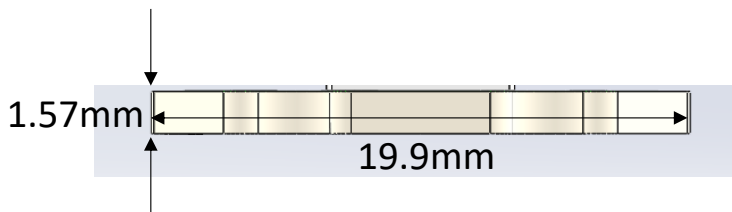
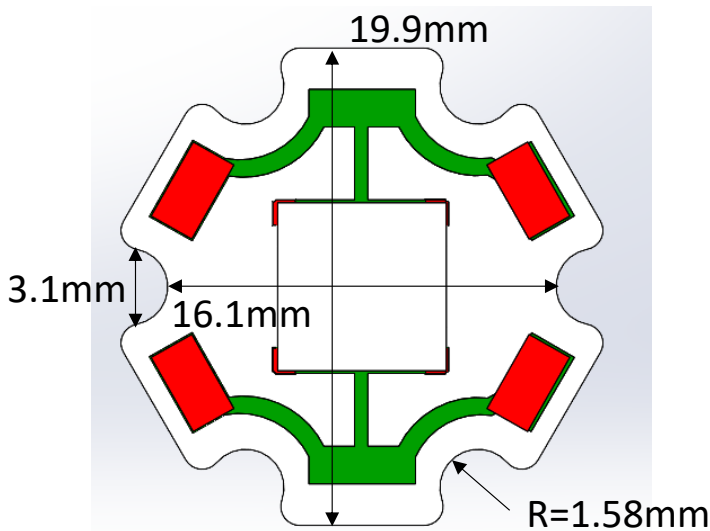


Radiation Characteristics ^{4), 5)}

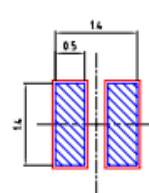
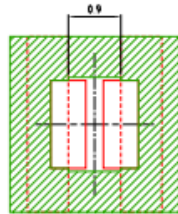
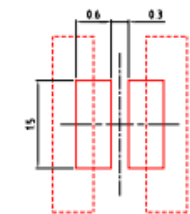
$$I_{e,rel} = f(\varphi)$$



Starboard Schematic



Recommended Solder Pad ⁶⁾

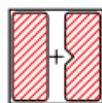
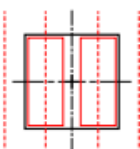


□ foot print □ Cu area

■ solder resist

■ solder stencil recommended stencil thickness 120µm

Component Location on Pad



Electrical:

Characteristics

$I_F = 1000 \text{ mA}$; $t_p = 10 \text{ ms}$; $T_A = 25 \text{ }^\circ\text{C}$

Parameter	Symbol		Values
Peak wavelength	λ_{peak}	typ.	950 nm
Centroid wavelength	$\lambda_{\text{centroid}}$	typ.	940 nm
Forward voltage	V_F	typ. max.	2.95 V 3.3 V
Forward voltage $I_F = 2 \text{ A}$; $t_p = 100 \text{ } \mu\text{s}$	V_F	typ. max.	3.4 V 4.0 V
Reverse current ²⁾ $V_R = 5 \text{ V}$	I_R	typ. max.	0.01 μA 10 μA
Radiant intensity	I_e	typ.	280 mW/sr

Characteristics

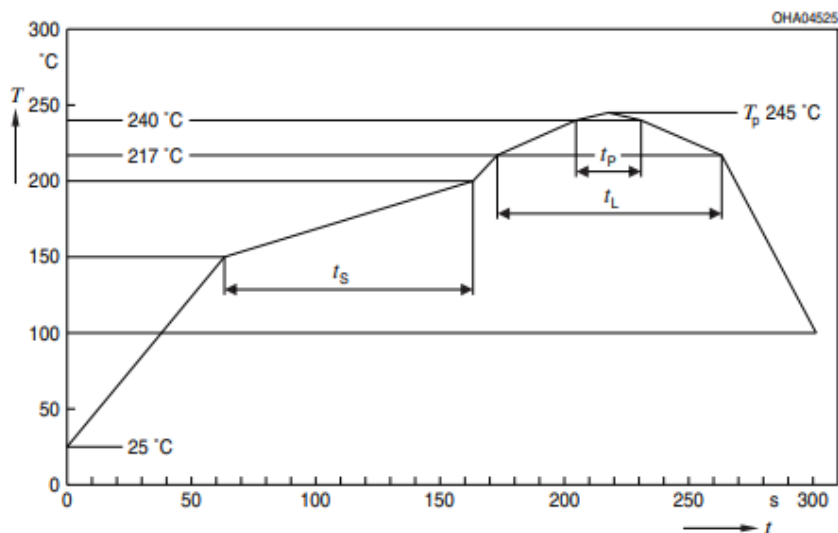
$I_F = 1000 \text{ mA}$; $T_A = 25 \text{ }^\circ\text{C}$

Parameter	Symbol		Values
Peak wavelength	λ_{peak}	typ.	860 nm
Centroid wavelength	$\lambda_{\text{centroid}}$	typ.	850 nm
Spectral bandwidth at 50% $I_{\text{rel,max}}$ (FWHM)	$\Delta\lambda$	typ.	30 nm
Forward voltage	V_F	typ. max.	3.25 V 3.6 V
Forward voltage $I_F = 2 \text{ A}$; $t_p = 100 \text{ } \mu\text{s}$	V_F	typ. max.	3.7 V 4.3 V
Reverse current ²⁾ $V_R = 5 \text{ V}$	I_R	typ. max.	0.01 μA 10 μA
Radiant intensity	I_e	typ.	280 mW/sr

Thermal: LED Solder Profile.

Reflow Soldering Profile

Product complies to MSL Level 3 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat ¹⁾ 25 °C to 150 °C			2	3	K/s
Time t_s T_{Smin} to T_{Smax}	t_s	60	100	120	s
Ramp-up rate to peak ¹⁾ T_{Smax} to T_p			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_p		245	260	°C
Time within 5 °C of the specified peak temperature $T_p - 5$ K	t_p	10	20	30	s
Ramp-down rate* T_p to 100 °C			3	6	K/s
Time 25 °C to T_p				480	s

Packaging:

Individually packaged in static controlled bag.