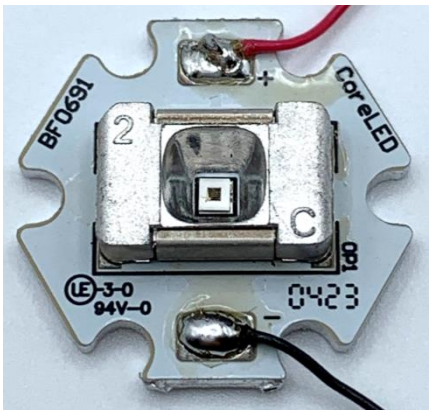
Surface Mounted Reflectors (SMR)

12mm x 7.5mm IR STARBOARD

Family Datasheet

Rev 1.0 – 02/16/23



CoreLED P/N 11003-STAR-IR-P1616

- 70º FWHM Flood
  - Osram OSLON P1616 IR LED

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
- Precision alignment (within ±0.1mm)
- 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

Surface Mounted Reflectors (SMR)

12mm x 7.5mm IR STARBOARD

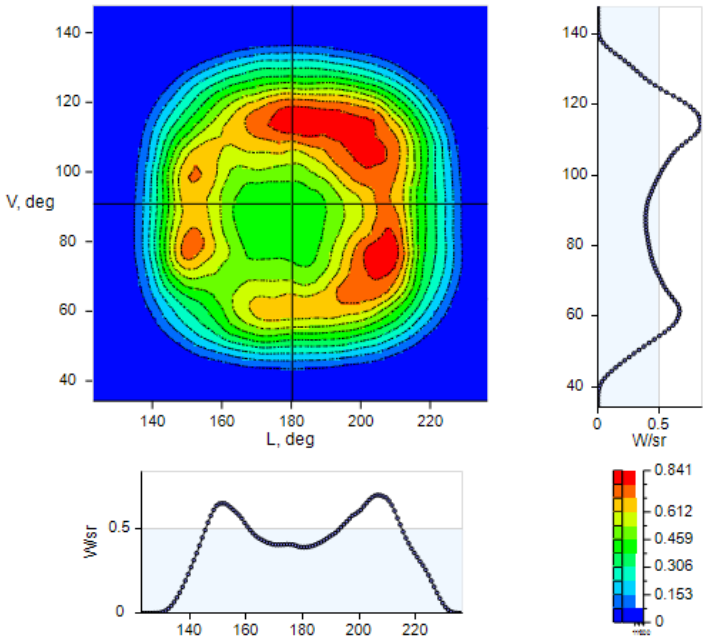
Family Datasheet

Rev 1.0 – 02/16/23

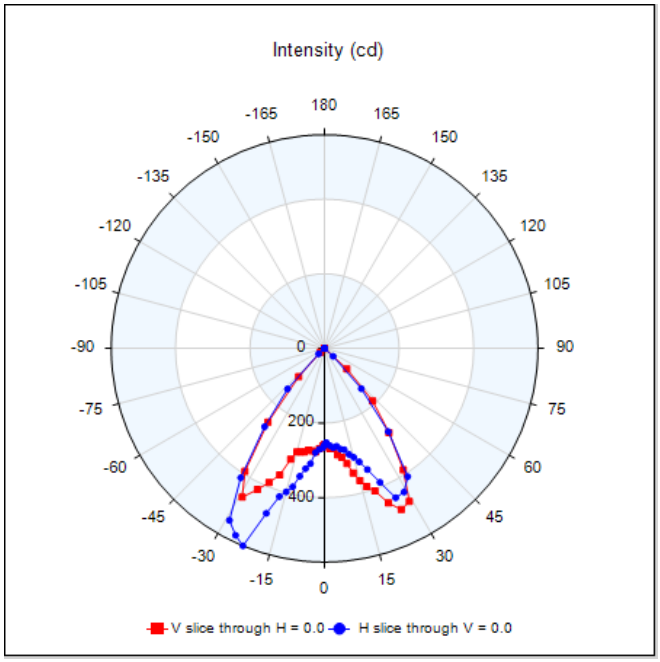
Emitted Pattern Profile

Oslon P1616 IR 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%



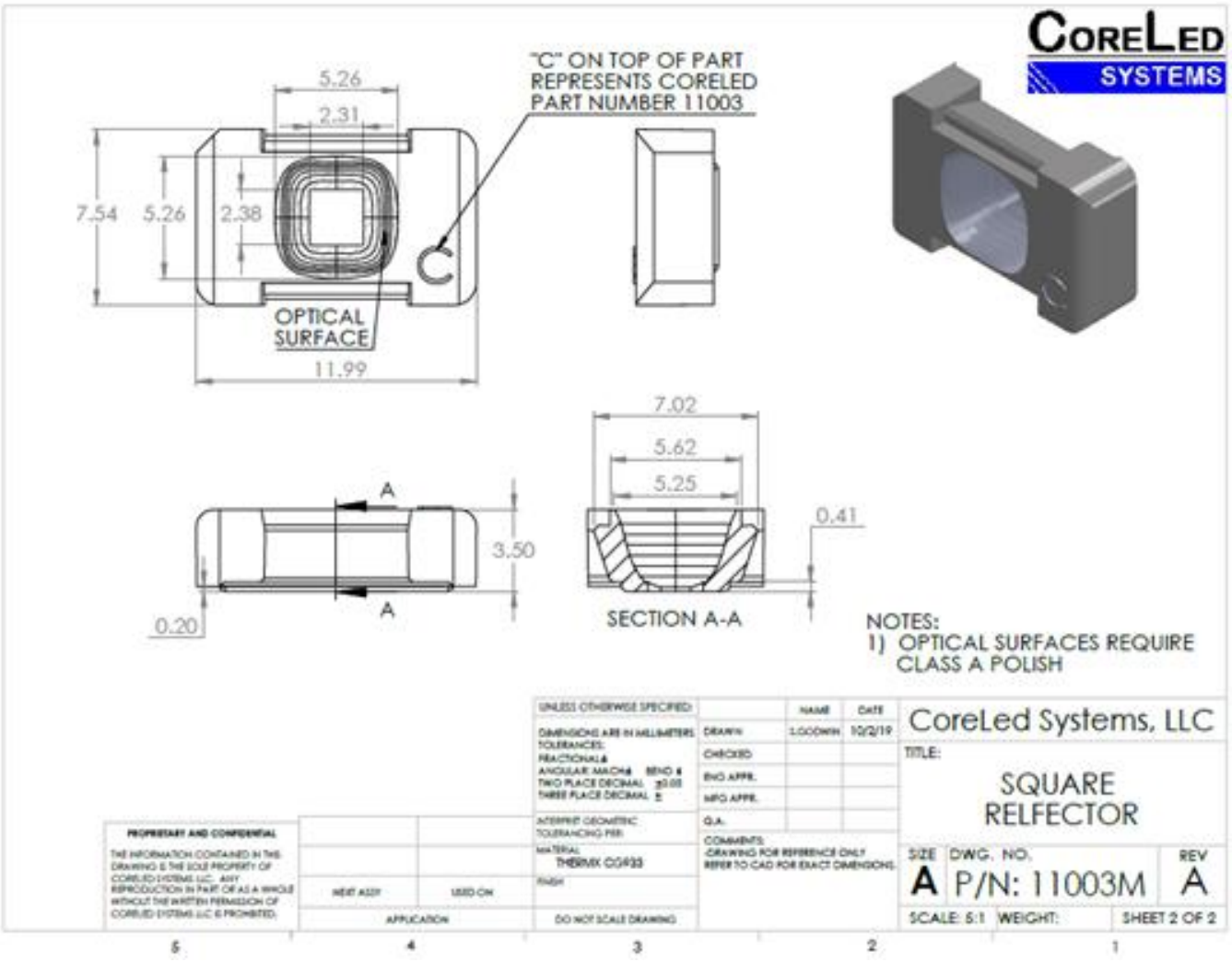
Radiant Intensity
W/sr vs Angle



70 DEGREE FWHM

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

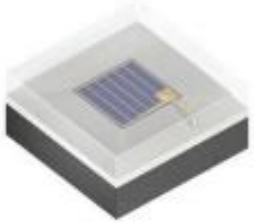
Mechanical Profile: Reflector ("Square")



CAD files available upon request from CoreLed Engineering

LED Information

SFH 4180S



OSLON® P1616

High Power Infrared Emitter (940 nm)

Features:

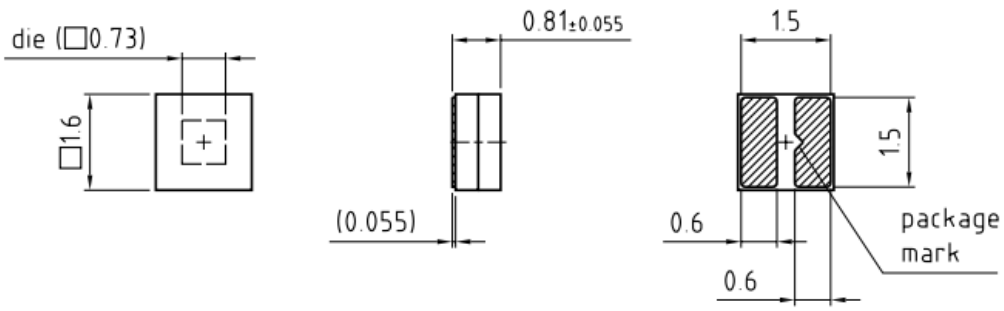
- Package: clear silicone
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM)
- IR lightsource with high efficiency
- Double stack emitter
- Centroid wavelength 940 nm

Ordering Information

Type	Total radiant flux [1] I_F = 1000 mA; t_p = 10 ms Φ_e	Total radiant flux [1] typ. I_F = 1000 mA; t_p = 10 ms Φ_e	Ordering Code
SFH 4180S	1000 ... 1400 mW	1.15 W	Q65112A8326

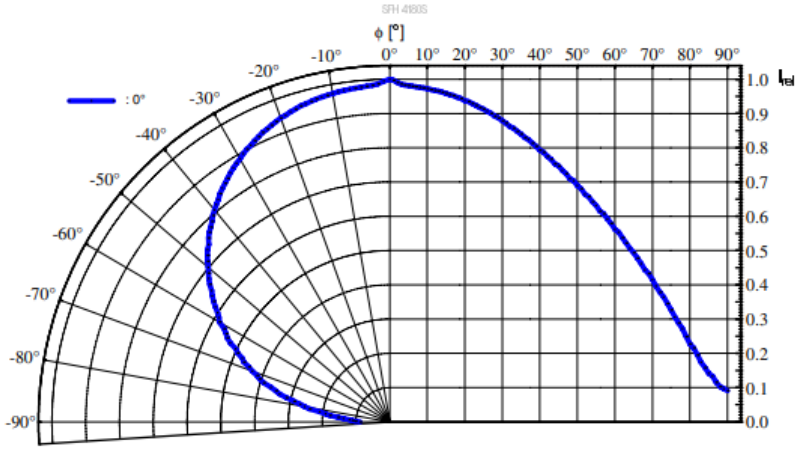
The brightness values are measured during a current pulse of typically 10ms, with a tolerance of +/- 12%.

Dimensional Drawing [6]

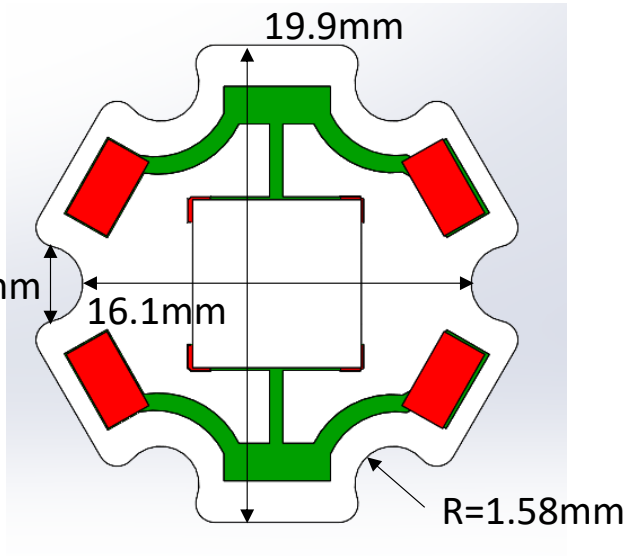


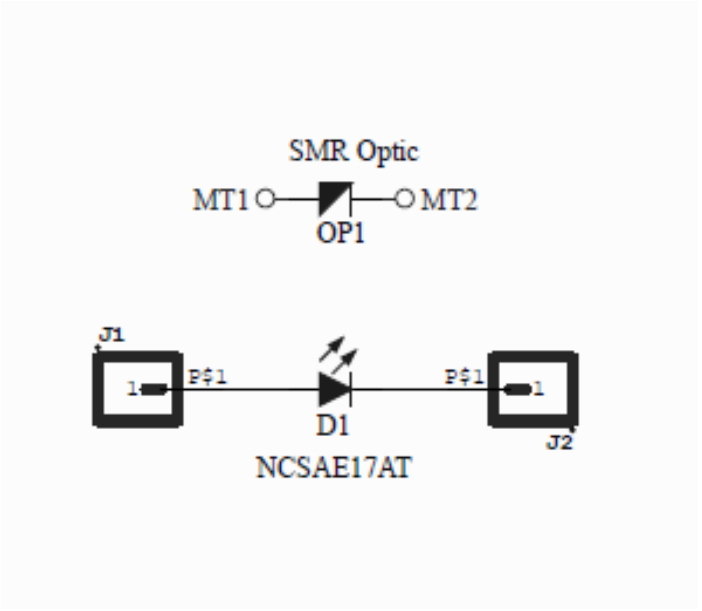
Radiation Characteristics [4], [5]

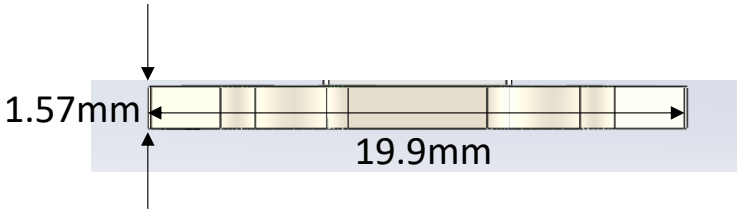
$I_{e,rel} = f(\varphi)$

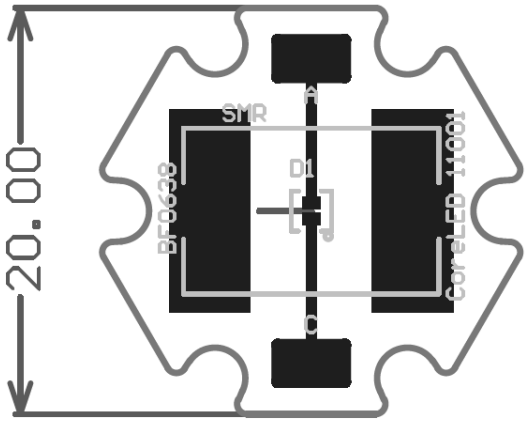


Starboard Schematic

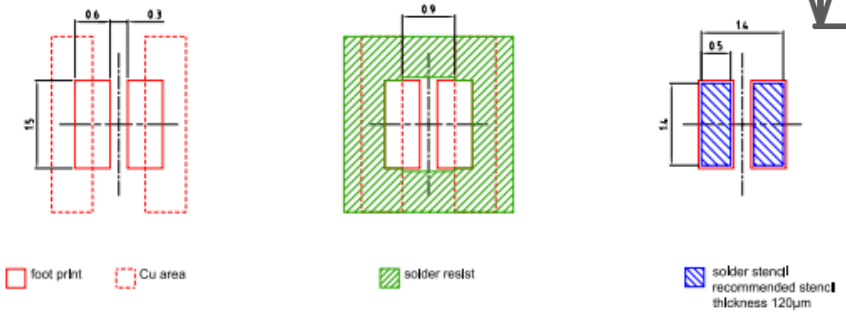


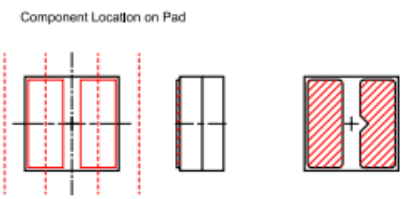






Recommended Solder Pad [6]





Electrical:

Characteristics

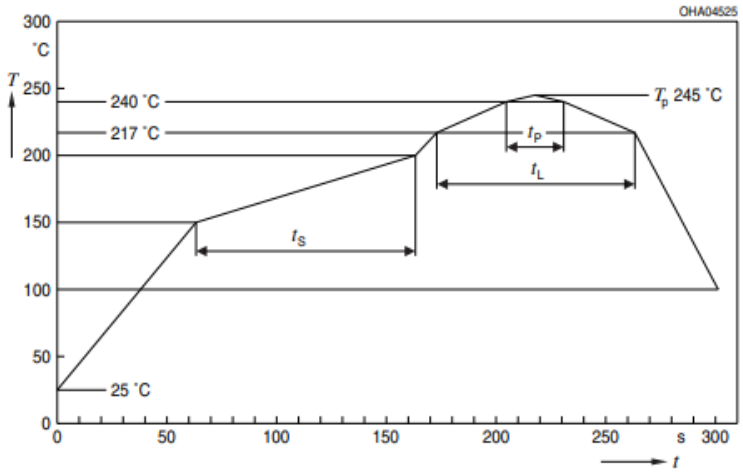
I_F = 1000 mA; t_p = 10 ms; T_A = 25 °C

Parameter	Symbol		Values
Peak wavelength	λ_{peak}	typ.	950 nm
Centroid wavelength	$\lambda_{centroid}$	typ.	940 nm
Forward voltage	V_F	typ. max.	2.95 V 3.3 V
Forward voltage I_F = 2 A; t_p = 100 µs	V_F	typ. max.	3.4 V 4.0 V
Reverse current [2] V_R = 5 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 Minimum	Recommendation	Maximum	Unit
Ramp-up rate to preheat*) 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*) 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.