SORAA LED Optical Light Engine

GaN-on-GaN™ Technology

SLE-16 (SLE30 heatsink)

SLC-30

SLE-30

SLE-16

SLC-16

SLE-11

SLC-11

Features

Soraa Point Source Optics™
Exceptional beam control from 9 degrees narrow spot to 36 degrees flood with smooth uniform light distributions

Soraa VP_3 Vivid Color™ and VP_3 Natural White™
Accurate color rendering and white rendering based on light emission across the full visible range from 400nm to 700nm

Soraa SNAP System™ Compatible
Narrow spot versions compatible with Soraa SNAP for flexible light distribution adjustment and white point change

Integrated Temperature Sensor
Reference point temperature readout enables in situ, in fixture temperature assessment

Qualification
UL8750 recognized
CE, RoHS

Projected Lifetime
50,000 hours to L70 and color stability based on CCT, at specified operating conditions.
Projections based on LM-80 testing.
- 2700K – 0.007 du'v'
- 3000K – 0.007 du'v'
- 4000K – 0.009 du'v'
- Typical du'v' within field angle = 0.006
- Typical dCCT within the field angle (2700K and 3000K) =150K
- Typical dCCT within the field angle (4000K) = 250K

Note: This specification sheet covers both SLE (with heatsink) and SLC (without heatsink) products. The nomenclature SLx is used to identify both SLE and SLC products. Please consult the Application Guide for details on SLC operation.

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Product Performance Parameters
SLE16

Reference Number	CCT (K)	CRI	Beam angle	Field angle	Optimal Drive Current (mA)	Peak Intensity (Cd)	Nominal power consumption (W)	Luminous Flux (lm)	SNAP compatible
SLE16									
SLE16-06-010D-927-03-01	2,700K	95	10	20	290	6370	8.1	435	Yes
SLE16-08-015D-927-03-01	2,700K	95	15	30	440	5940	12.2	680	Yes
SLE16-08-025D-927-03-01	2,700K	95	25	40	440	3960	12.2	680	
SLE16-08-036D-927-03-01	2,700K	95	36	60	440	1900	12.2	680	
SLE16-06-010D-930-03-01	3,000K	95	10	20	290	6710	8.1	460	Yes
SLE16-08-015D-930-03-01	3,000K	95	15	30	440	6260	12.2	720	Yes
SLE16-08-025D-930-03-01	3,000K	95	25	40	440	4170	12.2	720	
SLE16-08-036D-930-03-01	3,000K	95	36	60	440	2010	12.2	720	
SLE16-06-010D-940-03-01	4,000K	95	10	20	290	7040	8.1	480	Yes
SLE16-08-015D-940-03-01	4,000K	95	15	30	440	6570	12.2	755	Yes
SLE16-08-025D-940-03-01	4,000K	95	25	40	440	4370	12.2	755	
SLE16-08-036D-940-03-01	4,000K	95	36	60	440	2110	12.2	755	
SLE16-06-010D-827-03-01	2,700K	80	10	20	290	7960	8.1	545	Yes
SLE16-08-015D-827-03-01	2,700K	80	15	30	440	7430	12.2	855	Yes
SLE16-08-025D-827-03-01	2,700K	80	25	40	440	4950	12.2	855	
SLE16-08-036D-827-03-01	2,700K	80	36	60	440	2380	12.2	855	
SLE16-06-010D-830-03-01	3,000K	80	10	20	290	8380	8.1	575	Yes
SLE16-08-015D-830-03-01	3,000K	80	15	30	440	7820	12.2	900	Yes
SLE16-08-025D-830-03-01	3,000K	80	25	40	440	5210	12.2	900	
SLE16-08-036D-830-03-01	3,000K	80	36	60	440	2510	12.2	900	

Notes:

1. At 25°C ambient for 50,000 hour life
2. Beam angle defined at 50% of peak intensity
3. Field angle defined at 10% of peak intensity
4. For other drive currents and conditions, consult the Application Guide

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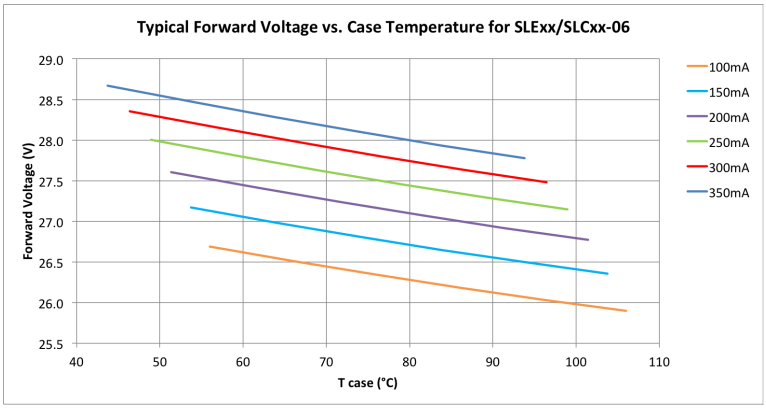
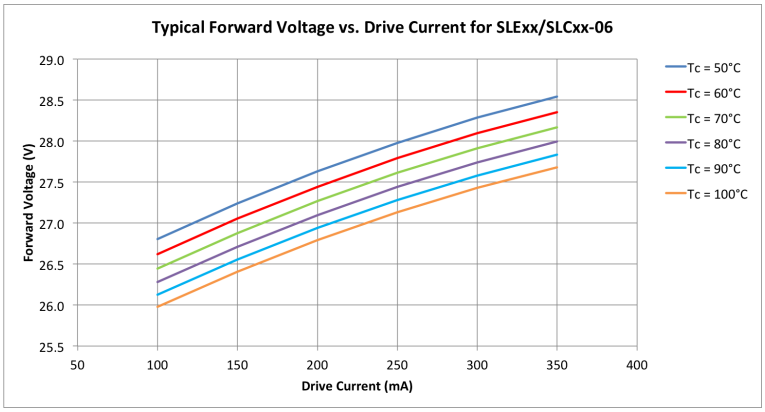
Electrical Characteristics

Product part number	Maximum Current (mA)	Maximum Tcase (°C)
SLE30-04-004D-xxx-xx-xx	188	100
SLE30-08-xxxD-xxx-xx-xx	750	100
SLE16-08-xxxD-xxx-xx-03	750	100
SLE16-08-xxxD-xxx-xx-01	750	100
SLE16-06-xxxD-xxx-xx-03	375	100
SLE16-06-xxxD-xxx-xx-01	375	100
SLE11-06-xxxD-xxx-xx-xx	375	100

Notes:
1. Forward voltage depends on drive current and temperature. For driver selection a supportable range of 20V to 35V is recommended.
2. Dimming can be achieved with Pulse Width Modulation and Current Amplitude Modulation or a combination of both.

Typical Forward Voltage Charts





Notes:
1. These charts can be applied to SLExx/SLCxx-08 by multiplying current by 2; and to SLE30/SLC30-04 by dividing current by 2.

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Reference Temperature Readout

Tc	-20 °C	-10 °C	0 °C	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C	90 °C	100 °C	110 °C	120 °C
Resistance (kOhm)	480	271	158	95	59	38	25	16	11	7.8	5.6	4.0	2.9	2.2	1.7

Notes:
1. Tolerance: +/- 5°C
2. Temperature can be assessed with an NTC next to the LED on the mounting board inside the Light Engine. See figure 1.1 for example.

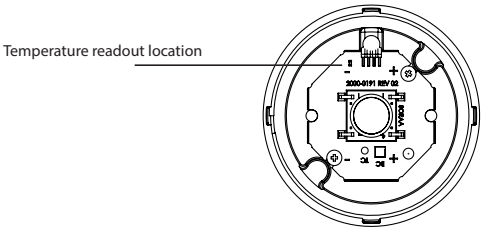


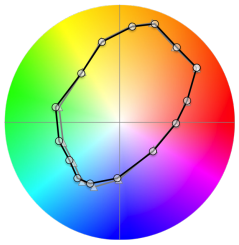
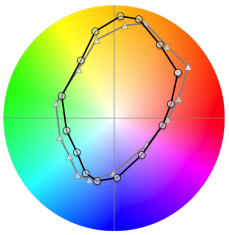
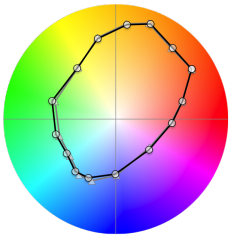
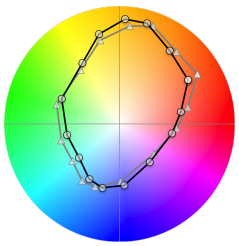
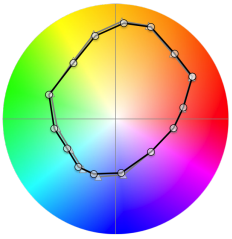
Figure 1.1

Individual Color Rendering Index

	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
2,700K 95CRI	96	97	98	93	94	93	98	97	95	95	89	76	96	98
3,000K 95CRI	96	97	97	94	94	92	98	97	96	93	90	75	96	97
4,000K 95CRI	98	98	97	97	97	94	98	97	94	95	95	84	98	99
2,700K 80CRI	81	94	88	81	85	97	79	56	7	91	82	91	85	93
3,000K 80CRI	85	96	89	85	88	97	82	61	16	94	87	86	88	94

Notes:
1. At 70°C reference point temperature, 300mA for SLE16-06-xxx and SLE11-06-xxx and 600mA for SLE30-08-xxx and SLE16-08-xxx.

CQS Color Accuracy

	95 CRI	80 CRI
2,700K	 Qg = 102, Qf = 93	 Qg = 96, Qf = 79
3,000K	 Qg = 101, Qf = 94	 Qg = 96, Qf = 83
4,000K	 Qg = 100, Qf = 94	

Notes:
1. CQS color samples, charts in La'b'
2. At 70°C reference point temperature, 300mA for SLE16-06-xxx and SLE11-06-xxx and 600mA for SLE30-08-xxx and SLE16-08-xxx.

Key:
–△–Refference
–○–Soraa

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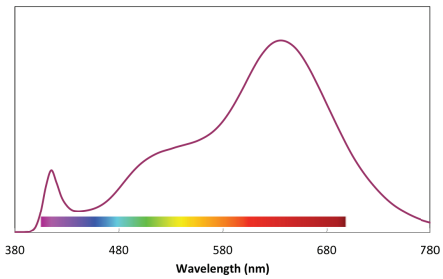
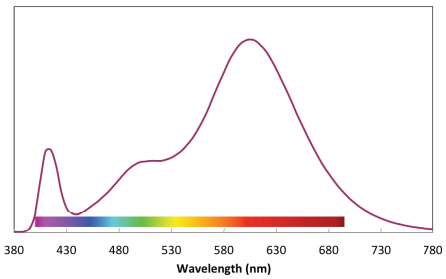
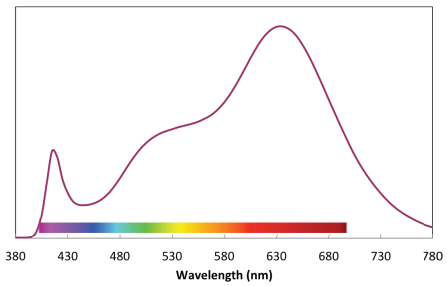
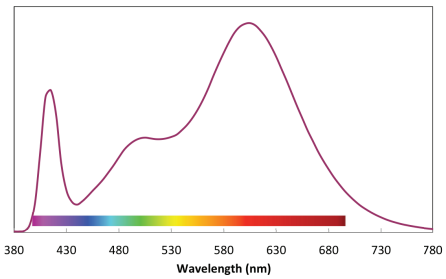
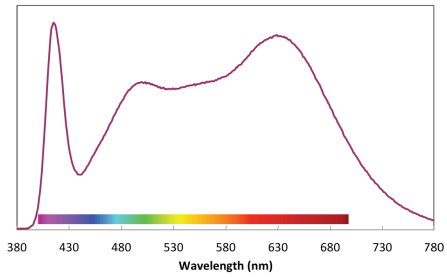
Spectral Power Distributions

	95 CRI	80 CRI
2,700K		
3,000K		
4,000K		

Notes:

1. At 70°C reference point temperature, 300mA for SLE16-06-xxx and SLE11-06-xxx and 600mA for SLE30-08-xxx and SLE16-08-xxx.

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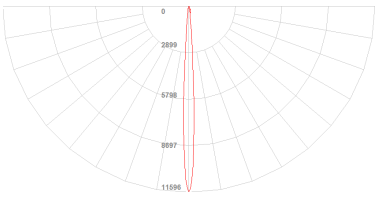
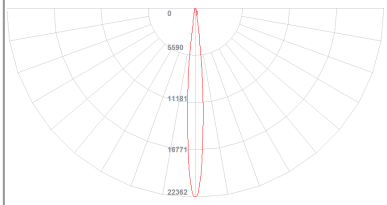
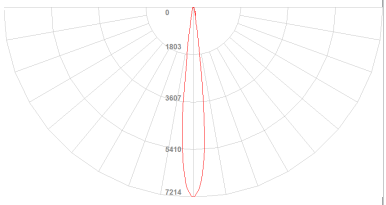
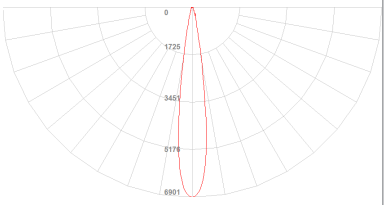
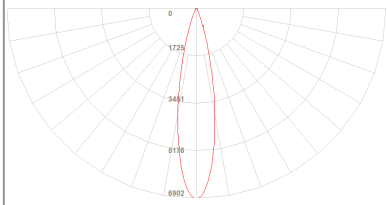
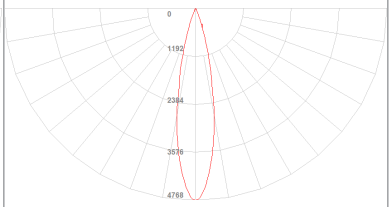
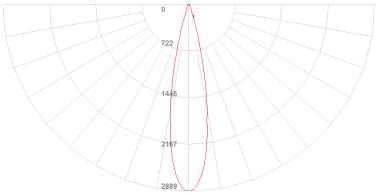
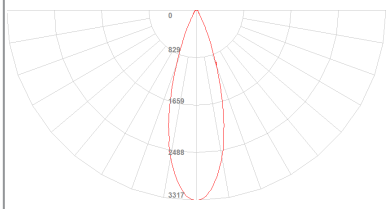
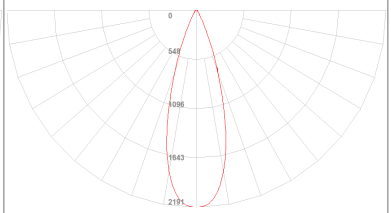
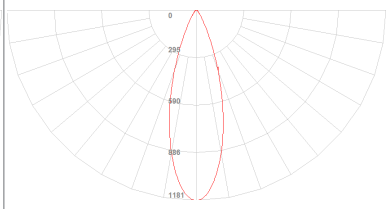
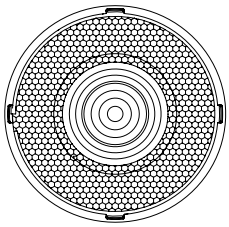
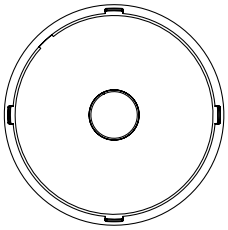
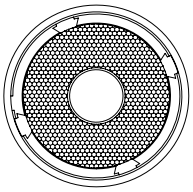
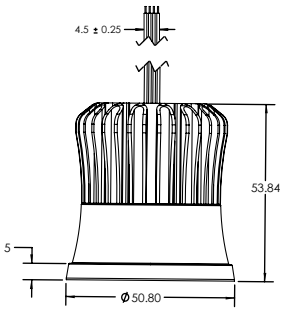
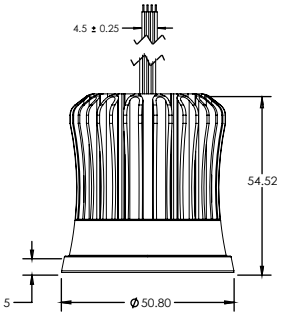
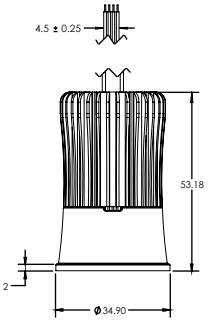
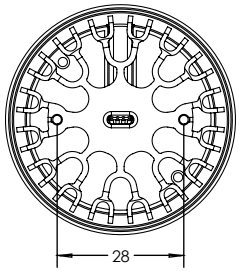
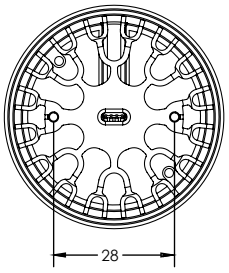
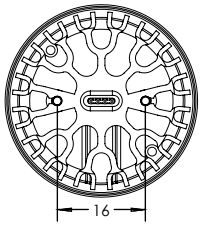
Beam Diagrams

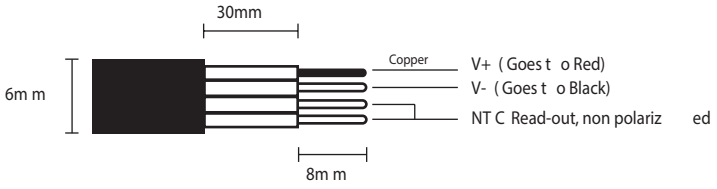
	SLx30	SLx16	SLx11
Narrow Spot 4 Degree			
Narrow Spot 9 & 10 Degree	9 Degree 	10 Degree 	
Spot 15 Degree			
Narrow Flood 25 Degree			
Flood 36 Degree			

Notes:
1. Beam plots for 3,000K 95CRI
2. At 70°C reference point temperature, 300mA for SLE16-06-xxx and SLE11-06-xxx and 600mA for SLE30-08-xxx and SLE16-08-xxx.

Mechanical Outline: SLE

SLE16-08-xx	SLE16-06-10D-xx	SLE11
Top View	Top View	Top View
		
47.0 Lens Diameter	46.7 Lens Diameter	27.6 Lens Diameter
		
Bottom View	Bottom View	Bottom View
		

Wire Outline



* Wire Tickness: 2mm
* Total Wire Length: 430mm

Notes:
1. Drawings not to scale, different scales used
2. Dimensions in mm

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SNAP SYSTEM ACCESSORIES

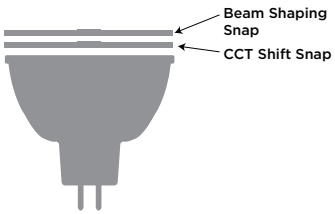
SMALL (2")

DESCRIPTION

The award winning Soraa SNAP SYSTEM™ is the first LED lamp/accessory solution that is optimized to work as an integrated system. Based on high brightness single source GaN on GaN™ LED technology, it completely redefines accessory application. The effects that can be achieved are similar to what can be done with halogen sources, but are enabled by a relatively low operating temperature and ground-breaking optical design, materials, and methods of attachment.

STACKING ACCESSORIES

SNAP SYSTEM accessories can be stacked in combination. For example, a beam spreader can be used in combination with CCT shifter. When combining the beam shaping Snap accessory with CCT shifting Snap Accessory, for best results always place CCT shifting Snap on the lamp first, as shown in diagram below.



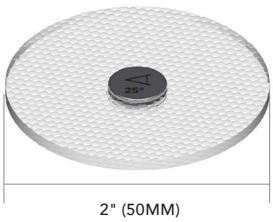
ATTACHMENT

The SNAP SYSTEM's self-centering magnetic interconnect system makes using accessories completely user friendly. Simply attached the SNAP SYSTEM accessory directly to any Narrow Spot Soraa lamp, the magnetic force from both the accessory and lamp will securely attached to one another and center itself.

COMPATIBILITY

The SNAP SYSTEM accessories Small (2") are compatible with the lamps and Optical Light Engines outlined below. The SNAP SYSTEM are only compatible with SORAA Narrow Spot lamps and Optical Light Engines. See each accessory data for exact diameter.

Small (2")
MR16
GU10
PAR20
OLE/C 16



PHOTOMETRICS

IES files of accessories is available for download at http://www.soraa.com/products/snap_system

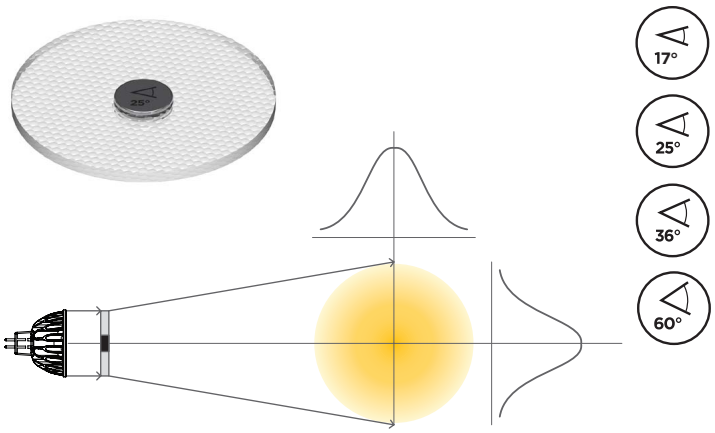
SORAA SNAP SYSTEM LED ACCESSORIES – SMALL (2")

BEAM SPREADER SNAP

Use in any application where reducing the number of beam angle SKUs is required. Reduces inventory costs. Shortens specification, design, sales cycles. Provides maximum flexibility up to the time of installation.

Beam	Part Number	Product Code	CBCP of 10˚ Lamp	Field Angle
17°	AC-GC-1717-00	03263	30%	33°
25°	AC-GC-2525-00	00325	29%	40°
36°	AC-GC-3636-00	00327	14%	55°
60°	AC-GC-6060-00	00329	5%	103°

Lumen Transmissivity: 90%
Diameter: 50.0 mm Thickness: 2 mm
Magnetic Attach Force: 0.45 lb-F

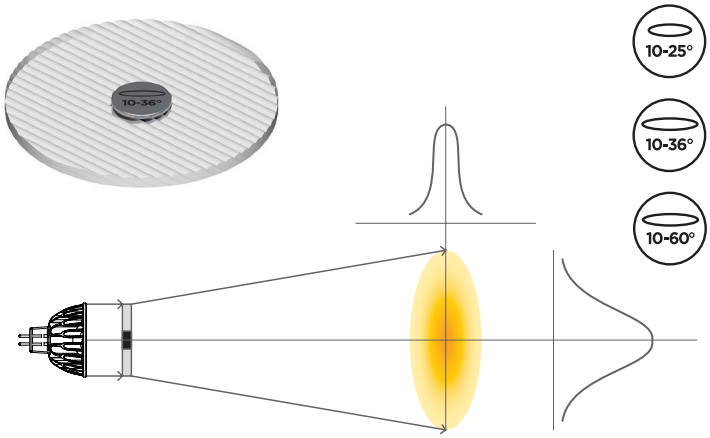


LINEAR SNAP

Use in wall washes and illuminating asymmetric objects. Reduces required number of light fixtures and spill illumination of target objects.

Beam	Part Number	Product Code	CBCP of 10˚ Lamp	Field Angle Horiz.	Field Angle Vert.
10° - 25°	AC-GE-1025-00	00331	52%	27°	35°
10° - 36°	AC-GE-1036-00	00333	38%	27°	43°
10° - 60°	AC-GE-1060-00	03259	25%	25°	70°

Lumen Transmissivity: 90%
Diameter: 50.0 mm Thickness: 2 mm
Magnetic Attach Force: 0.45 lb-F

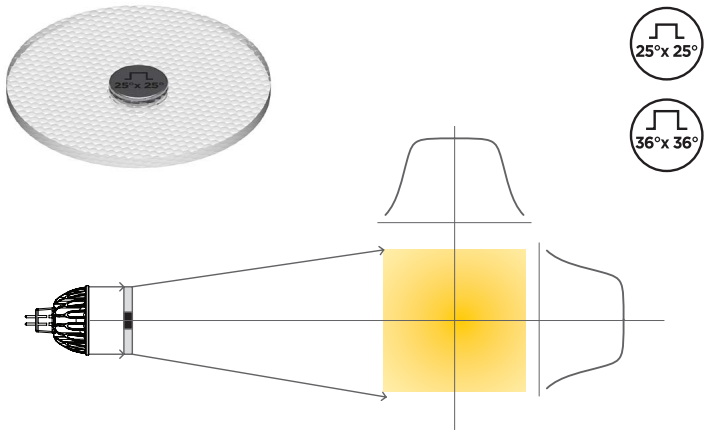


FLAT TOP SNAP

Provides even illumination center to edge. Eliminates video camera saturation, for use in applications such as critical video surveillance.

Beam	Part Number	Product Code	CBCP of 10˚ Lamp	Field Angle Horiz.	Field Angle Vert.
25° x 25°	AC-FR-2525-00	00335	19%	44°	44°
36° x 36°	AC-FR-3636-00	00337	14%	46°	46°

Lumen Transmissivity: 90%
Diameter: 50.0 mm Thickness: 2 mm
Magnetic Attach Force: 0.45 lb-F



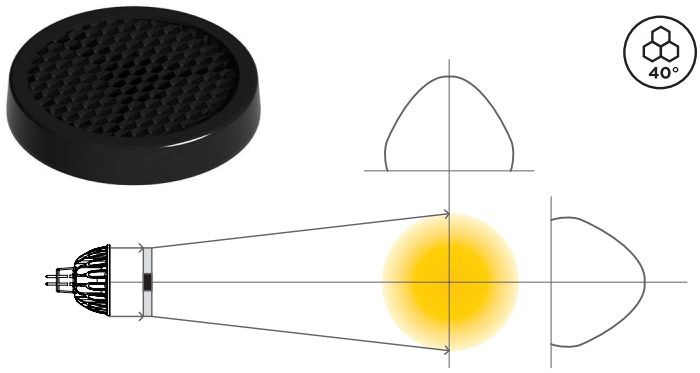
SORAA SNAP SYSTEM LED ACCESSORIES – SMALL (2")

LOUVER SNAP

Eliminates high angle glare, making light beams disappear in downlight applications.

Cutoff Angle	Part Number	Product Code	CBCP of 10° Lamp
40°	AC-LU-4040-00	00339	63%

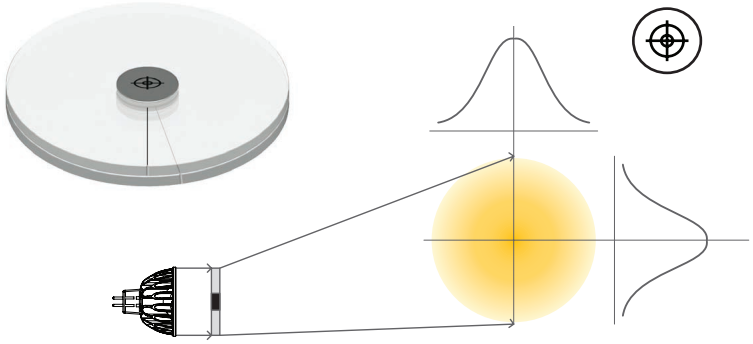
Diameter: 51.1 mm Thickness: 9.0 mm
Magnetic Attach Force: 0.45 lb-F
Reduces angular intensity to 0.1% of peak at 40° full angle.
Fits around lamp face. Can be used in combination with gimbal ring fixtures.



AIM SNAP

Designed with two lenses the Aim Snap bends the beam from 0 degree to maximum deflection angle of 20 degrees, while maintaining uniform and consistent color and shape.

Part Number	Product Code	Lumen Transmission	Beam Angle	Max Deflection
AC-AM-0020-00	03255	85%	13°	20°



Suggested method of use:

Use the orientation lines to adjust beam deflection angle.

Narrower angle between orientation lines results in more deflection

Wider angle between orientation lines results in lesser deflection

Stacked orientation lines will result in undesirable optical artifacts. Rotate one lens slightly to mitigate.

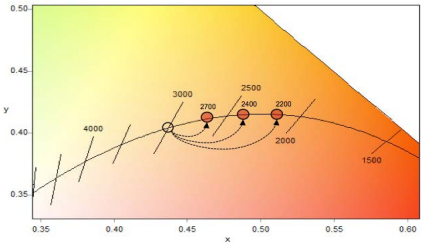
Note: May be used with Beam Spreader, Linear, and Flat Top SNAP accessory.

CCT SHIFTER SNAP

Use in hospitality and restaurant applications to simulate warm dimming. Create custom colors for festive occasions or brand identity. Single Lamp SKU can be used for multiple color temperatures

CTO*	Part Number	Product Code	Lumen Transmissivity	Mired Shift
1/4	AC-CC-0001-00	00323	90%	37
1/2	AC-CC-0002-00	00321	75%	83
3/4	AC-CC-0003-00	00319	60%	120

*Color Temperature Orange
Diameter: 50.0 mm Thickness: 2 mm
Magnetic Attach Force: 0.45 lb-F



CCT SHIFT EFFECT

Starting Lamp CCT	1/4 CTO	1/2 CTO	3/4 CTO
2,700K	2,450K	2,200K	2,000K
3,000K	2,700K	2,400K	2,200K
4,000K	3,500K	3,000K	2,700K

SORAA SNAP SYSTEM LED ACCESSORIES – SMALL (2")

CLEAR SNAP

Use together with gel and dichroic filters for total color freedom. Produce the exact mood and effect for any environment with the Clear SNAP accessory, Clear Snap are sold in quantities of ten.

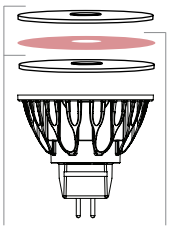
CL

Part Number	Product Code	Lumen Transmissivity (1 Snap)	Lumen Transmissivity (2 Snaps)
AC-CL-0000-00	02183	93%	87%

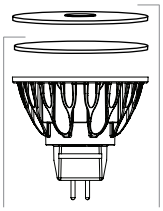
Diameter: 50.0 mm Thickness: 2 mm
Magnetic Attach Force: 0.45 lb-F

Suggested method of use for:

Gel Filter

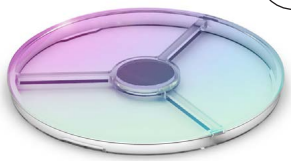


Dichroic Filter



ENHANCE

Enhance is a unique color-enhancing filter. Designed to modify the spectrum of Soraa Vivid lamps, it increases the vividness of warm colors (including red, orange and pink colors) as well as greens. In applications where a more colorful setting is sought, Enhance lets the richness of colors stand out even more.



Part Number	Product Code	Lumen Transmissivity	Whiteness
AC-EN-0001-00	03281	75%	130%

Diameter: 50.0 mm Thickness: 2 mm
Magnetic Attach Force: 0.20 lb-F

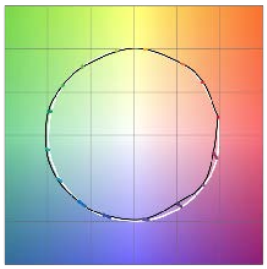
Application Notes:

Can be used in combination with any SORAA Vivid 10° lamp.
Recommended use with CCTs of 3000K and 2700K

Recommend that the Enhance be combined with either a Louver Snap accessory (for 10° spot applications) or with a Beam Spreader Snap accessory (for other beam angles).

When stacking the Enhance Snap with other Snap accessories the Enhance Snap should be placed as the first filter on the lamp, followed by other Snaps.

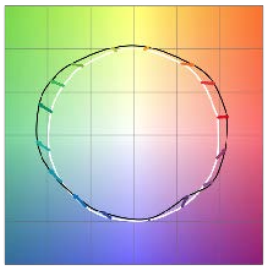
SORAA VIVID



Rf:90, Rg:100

Rw (Whiteness): 120 (2700K & 3000K)

ENHANCE SNAP



Rf:75, Rg:112

Rw (Whiteness): 130 (2700K & 3000K)