# 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

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

**$VP_3$ 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

**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' | 5000K – 0.011 du'v' |

**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
SLE30

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| **SLx30** | | | | | | | | | |
| SLE30-04-004D-927-03-01 | 2,700K | 95 | 4 | 9 | 175 | 9570 | 4.9 | 265 | Yes |
| SLE30-08-009D-927-03-01 | 2,700K | 95 | 9 | 16 | 580 | 20900 | 16.1 | 950 | Yes |
| SLE30-08-025D-927-03-01 | 2,700K | 95 | 25 | 40 | 580 | 5510 | 16.1 | 950 | |
| SLE30-08-036D-927-03-01 | 2,700K | 95 | 36 | 60 | 580 | 2660 | 16.1 | 950 | |
| SLE30-04-004D-930-03-01 | 3,000K | 95 | 4 | 9 | 175 | 10080 | 4.9 | 280 | Yes |
| SLE30-08-009D-930-03-01 | 3,000K | 95 | 9 | 16 | 580 | 22000 | 16.1 | 1000 | Yes |
| SLE30-08-025D-930-03-01 | 3,000K | 95 | 25 | 40 | 580 | 5800 | 16.1 | 1000 | |
| SLE30-08-036D-930-03-01 | 3,000K | 95 | 36 | 60 | 580 | 2800 | 16.1 | 1000 | |
| SLE30-08-009D-940-03-01 | 4,000K | 95 | 9 | 16 | 580 | 23100 | 16.1 | 1050 | Yes |
| SLE30-08-025D-940-03-01 | 4,000K | 95 | 25 | 40 | 580 | 6090 | 16.1 | 1050 | |
| SLE30-08-036D-940-03-01 | 4,000K | 95 | 36 | 60 | 580 | 2940 | 16.1 | 1050 | |
| SLE30-08-009D-950-03-01 | 5,000K | 95 | 9 | 16 | 580 | 23100 | 16.1 | 1050 | Yes |
| SLE30-08-025D-950-03-01 | 5,000K | 95 | 25 | 40 | 580 | 6090 | 16.1 | 1050 | |
| SLE30-08-036D-950-03-01 | 5,000K | 95 | 36 | 60 | 580 | 2940 | 16.1 | 1050 | |
| SLE30-04-004D-827-03-01 | 2,700K | 80 | 4 | 9 | 175 | 11970 | 4.9 | 330 | Yes |
| SLE30-08-009D-827-03-01 | 2,700K | 80 | 9 | 16 | 580 | 26120 | 16.1 | 1185 | Yes |
| SLE30-08-025D-827-03-01 | 2,700K | 80 | 25 | 40 | 580 | 6880 | 16.1 | 1185 | |
| SLE30-08-036D-827-03-01 | 2,700K | 80 | 36 | 60 | 580 | 3320 | 16.1 | 1185 | |
| SLE30-04-004D-830-03-01 | 3,000K | 80 | 4 | 9 | 175 | 12600 | 4.9 | 350 | Yes |
| SLE30-08-009D-830-03-01 | 3,000K | 80 | 9 | 16 | 580 | 27500 | 16.1 | 1250 | Yes |
| SLE30-08-025D-830-03-01 | 3,000K | 80 | 25 | 40 | 580 | 7250 | 16.1 | 1250 | |
| SLE30-08-036D-830-03-01 | 3,000K | 80 | 36 | 60 | 580 | 3500 | 16.1 | 1250 | |

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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## 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-950-03-01 | 5,000K | 95 | 10 | 20 | 290 | 7040 | 8.1 | 480 | Yes |
| SLE16-08-015D-950-03-01 | 5,000K | 95 | 15 | 30 | 440 | 6570 | 12.2 | 755 | Yes |
| SLE16-08-025D-950-03-01 | 5,000K | 95 | 25 | 40 | 440 | 4370 | 12.2 | 755 | |
| SLE16-08-036D-950-03-01 | 5,000K | 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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## Product Performance Parameters
SLE16 with larger SLE30 heatsink

| 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 (with SLE30 heatsink)** | | | | | | | | | |
| SLE16-06-010D-927-03-03 | 2,700K | 95 | 10 | 20 | 370 | 7480 | 10.3 | 510 | Yes |
| SLE16-08-015D-927-03-03 | 2,700K | 95 | 15 | 30 | 580 | 7600 | 16.1 | 870 | Yes |
| SLE16-08-025D-927-03-03 | 2,700K | 95 | 25 | 40 | 580 | 5510 | 16.1 | 950 | |
| SLE16-08-036D-927-03-03 | 2,700K | 95 | 36 | 60 | 580 | 2660 | 16.1 | 950 | |
| SLE16-06-010D-930-03-03 | 3,000K | 95 | 10 | 20 | 370 | 7880 | 10.3 | 540 | Yes |
| SLE16-08-015D-930-03-03 | 3,000K | 95 | 15 | 30 | 580 | 8000 | 16.1 | 920 | Yes |
| SLE16-08-025D-930-03-03 | 3,000K | 95 | 25 | 40 | 580 | 5800 | 16.1 | 1000 | |
| SLE16-08-036D-930-03-03 | 3,000K | 95 | 36 | 60 | 580 | 2800 | 16.1 | 1000 | |
| SLE16-06-010D-940-03-03 | 4,000K | 95 | 10 | 20 | 370 | 8270 | 10.3 | 565 | Yes |
| SLE16-08-015D-940-03-03 | 4,000K | 95 | 15 | 30 | 580 | 8400 | 16.1 | 965 | Yes |
| SLE16-08-025D-940-03-03 | 4,000K | 95 | 25 | 40 | 580 | 6090 | 16.1 | 1050 | |
| SLE16-08-036D-940-03-03 | 4,000K | 95 | 36 | 60 | 580 | 2940 | 16.1 | 1050 | |
| SLE16-06-010D-950-03-03 | 5,000K | 95 | 10 | 20 | 370 | 8270 | 10.3 | 565 | Yes |
| SLE16-08-015D-950-03-03 | 5,000K | 95 | 15 | 30 | 580 | 8400 | 16.1 | 965 | Yes |
| SLE16-08-025D-950-03-03 | 5,000K | 95 | 25 | 40 | 580 | 6090 | 16.1 | 1050 | |
| SLE16-08-036D-950-03-03 | 5,000K | 95 | 36 | 60 | 580 | 2940 | 16.1 | 1050 | |
| SLE16-06-010D-827-03-03 | 2,700K | 80 | 10 | 20 | 370 | 9350 | 10.3 | 640 | Yes |
| SLE16-08-015D-827-03-03 | 2,700K | 80 | 15 | 30 | 580 | 9500 | 16.1 | 1090 | Yes |
| SLE16-08-025D-827-03-03 | 2,700K | 80 | 25 | 40 | 580 | 6880 | 16.1 | 1185 | |
| SLE16-08-036D-827-03-03 | 2,700K | 80 | 36 | 60 | 580 | 3320 | 16.1 | 1185 | |
| SLE16-06-010D-830-03-03 | 3,000K | 80 | 10 | 20 | 370 | 9850 | 10.3 | 675 | Yes |
| SLE16-08-015D-830-03-03 | 3,000K | 80 | 15 | 30 | 580 | 10000 | 16.1 | 1150 | Yes |
| SLE16-08-025D-830-03-03 | 3,000K | 80 | 25 | 40 | 580 | 7250 | 16.1 | 1250 | |
| SLE16-08-036D-830-03-03 | 3,000K | 80 | 36 | 60 | 580 | 3500 | 16.1 | 1250 | |

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
5. NOTE THAT THESE LIGHT ENGINES USE THE LARGER SLE30 HEATSINK WITH THE SLC16 LIGHT CUP

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## Product Performance Parameters
SLE11

| 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 |
|---|---|---|---|---|---|---|---|---|---|
| **SLE11** | | | | | | | | | |
| SLE11-06-025D-927-03-01 | 2,700K | 95 | 25 | 40 | 240 | 2360 | 6.7 | 405 | |
| SLE11-06-036D-927-03-01 | 2,700K | 95 | 36 | 60 | 240 | 1140 | 6.7 | 405 | |
| SLE11-06-025D-930-03-01 | 3,000K | 95 | 25 | 40 | 240 | 2490 | 6.7 | 430 | |
| SLE11-06-036D-930-03-01 | 3,000K | 95 | 36 | 60 | 240 | 1200 | 6.7 | 430 | |
| SLE11-06-025D-940-03-01 | 4,000K | 95 | 25 | 40 | 240 | 2610 | 6.7 | 450 | |
| SLE11-06-036D-940-03-01 | 4,000K | 95 | 36 | 60 | 240 | 1260 | 6.7 | 450 | |
| SLE11-06-025D-950-03-01 | 5,000K | 95 | 25 | 40 | 240 | 2610 | 6.7 | 450 | |
| SLE11-06-036D-950-03-01 | 5,000K | 95 | 36 | 60 | 240 | 1260 | 6.7 | 450 | |
| SLE11-06-025D-827-03-01 | 2,700K | 80 | 25 | 40 | 240 | 2950 | 6.7 | 510 | |
| SLE11-06-036D-827-03-01 | 2,700K | 80 | 36 | 60 | 240 | 1420 | 6.7 | 510 | |
| SLE11-06-025D-830-03-01 | 3,000K | 80 | 25 | 40 | 240 | 3110 | 6.7 | 535 | |
| SLE11-06-036D-830-03-01 | 3,000K | 80 | 36 | 60 | 240 | 1500 | 6.7 | 535 | |

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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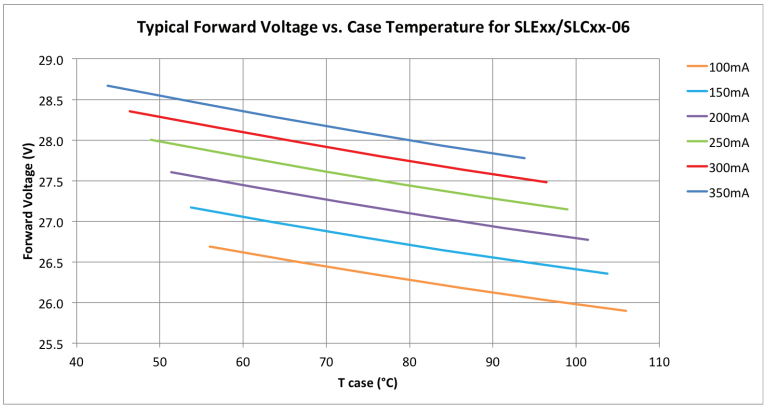
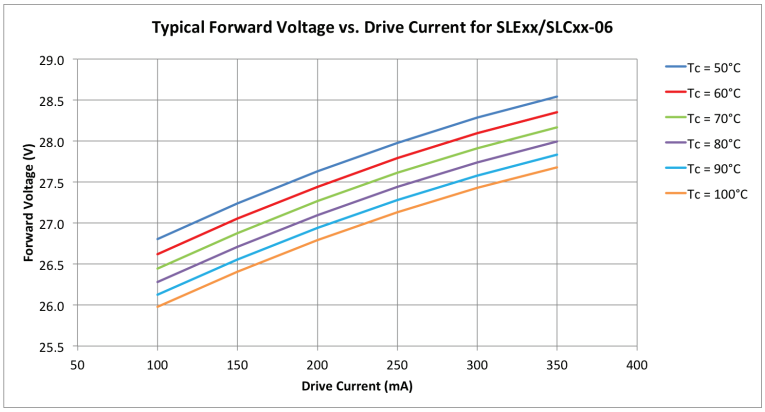
## Electrical Characteristics

| 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.

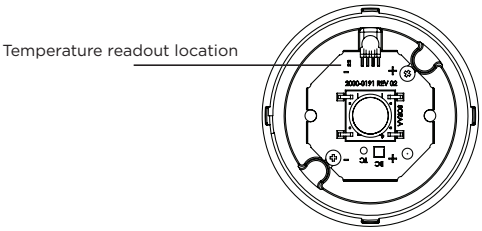


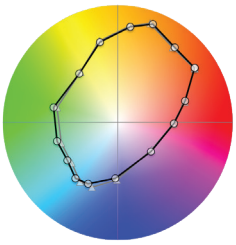
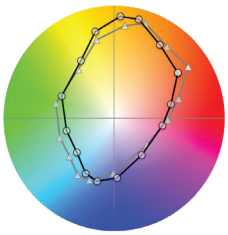
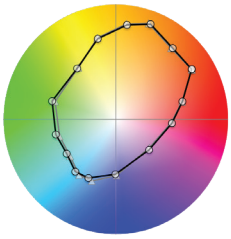
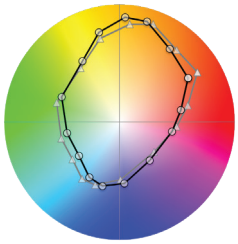
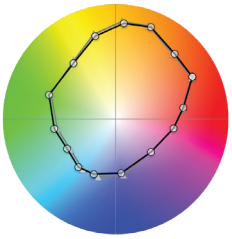
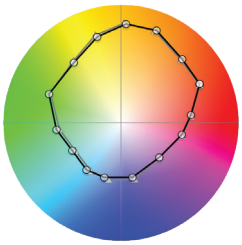

Figure 1.1

## 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 |
| 5,000K 95CRI | 93 | 94 | 94 | 93 | 92 | 90 | 97 | 95 | 90 | 86 | 90 | 79 | 93 | 97 |
| 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 | |
| 5,000K |  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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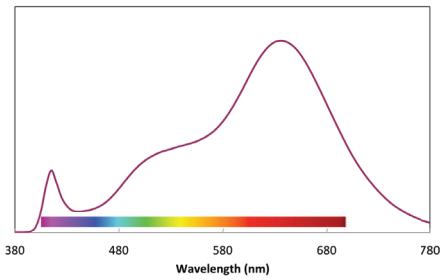
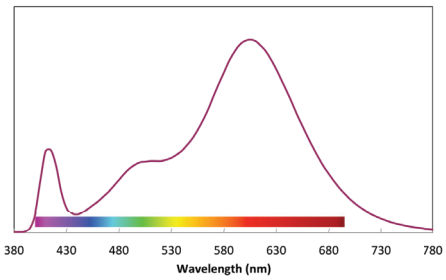
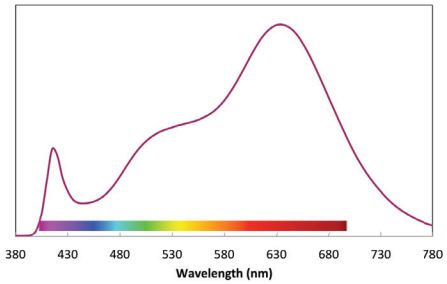
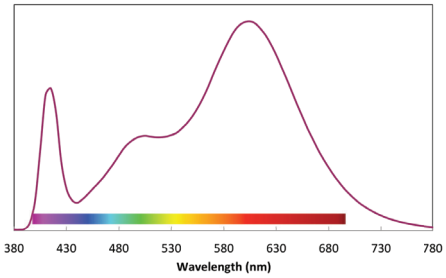
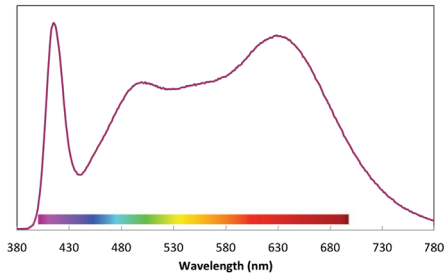
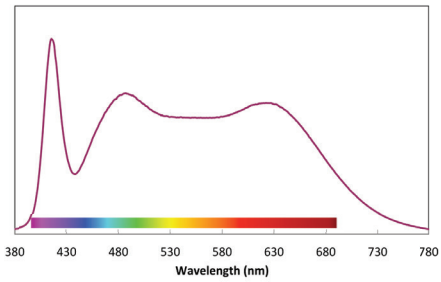
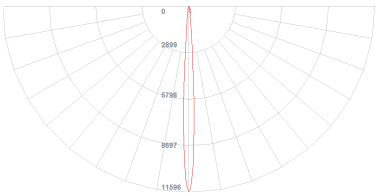
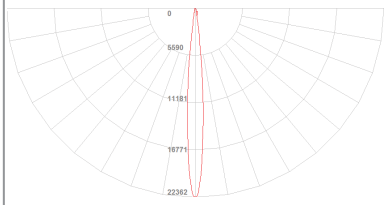
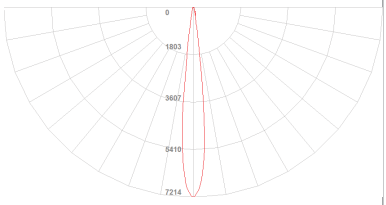
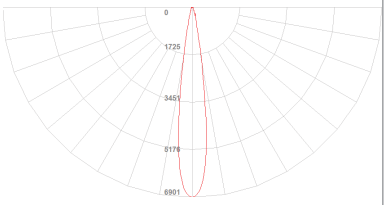
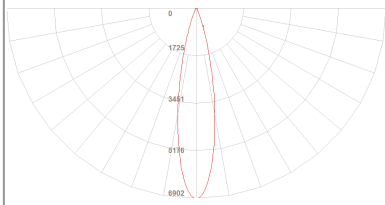
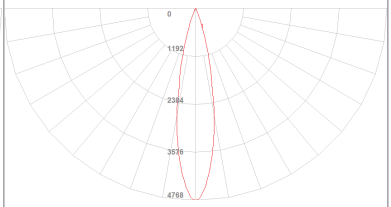
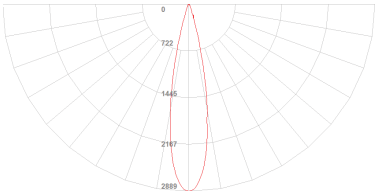
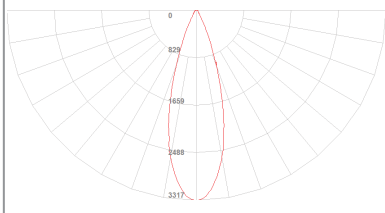
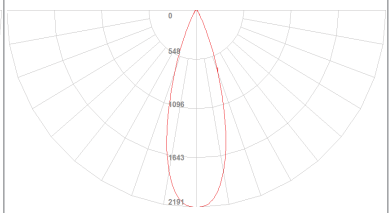
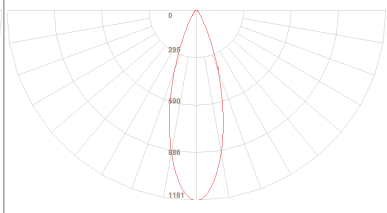
## Spectral Power Distributions

| | 95 CRI | 80 CRI |
|---|---|---|
| 2,700K |  |  |
| 3,000K |  |  |
| 4,000K |  | |
| 5,000K |  | |

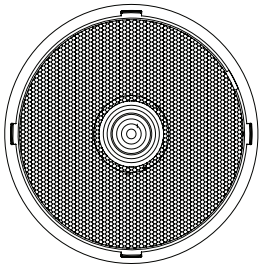
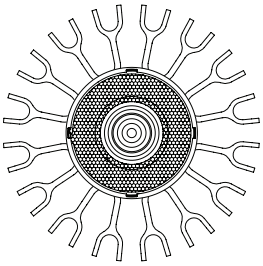
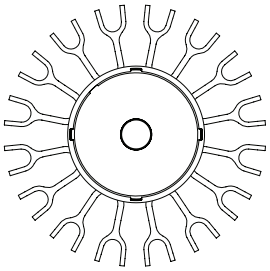
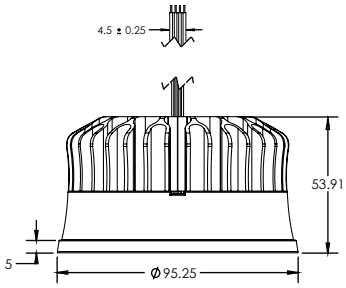
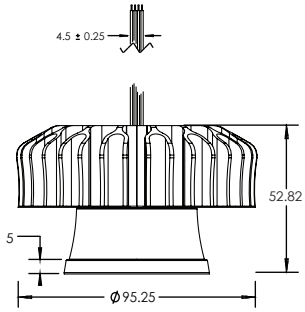
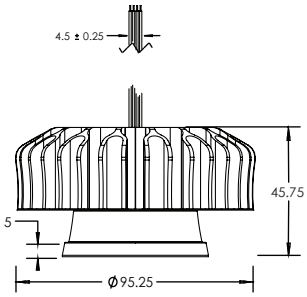
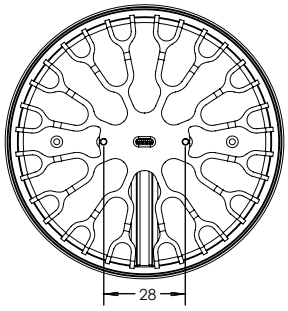
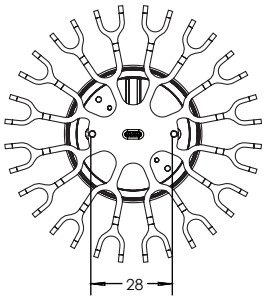
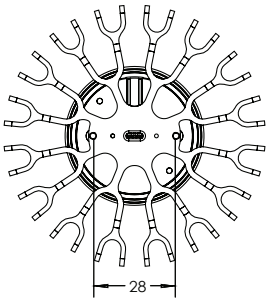
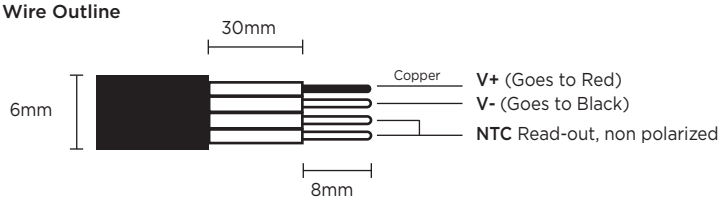
Notes:
1. At 70°C reference point temperature, 300mA for SLE16-06-xxx and SLE11-06-xxx and 600mA for SLE30-08-xxx and SLE16-08-xxx.

## Beam Diagrams

| | SLx30 | SLx16 | SLx11 |
|---|---|---|---|
| Narrow Spot<br>4 Degree |  | | |
| Narrow Spot<br>9 & 10 Degree | 9 Degree<br>  | 10 Degree<br>  | |
| Spot<br>15 Degree | |  | |
| Narrow Flood<br>25 Degree |  |  |  |
| Flood<br>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

| SLE30 | SLE16-08-xxx-xxx-xx-03 | SLE16-06-10D-xxx-xx-03 |
|---|---|---|
| Top View<br>  <br>87.0 Lens Diameter | Top View<br>  <br>47.0 Lens Diameter | Top View<br>  <br>46.7 Lens Diameter |
|  |  |  |
| Bottom View<br>  | Bottom View<br>  | Bottom View<br>  |
| **Wire Outline**<br>  <br>**V+** (Goes to Red)<br>**V-** (Goes to Black)<br>**NTC** Read-out, non polarized<br>* Wire Tickness: 2mm<br>* Total Wire Length: 430mm | | |

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

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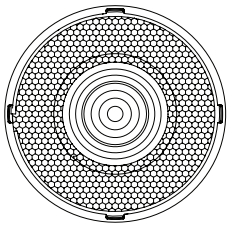
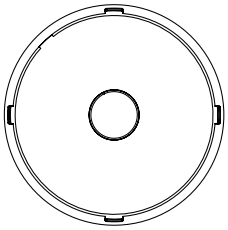
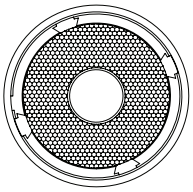
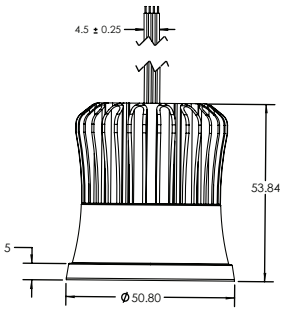
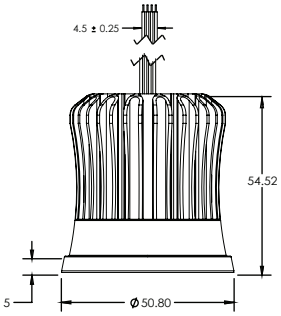
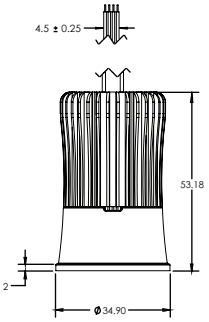
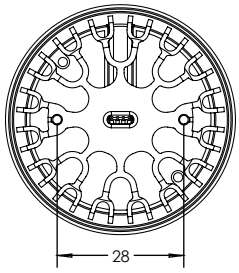
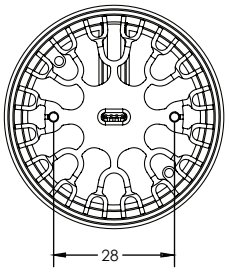
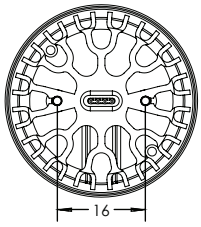
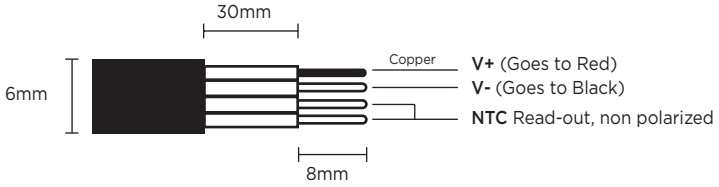
## Mechanical Outline: SLE

| SLE16-08-xx | SLE16-06-10D-xx | SLE11 |
|---|---|---|
| Top View  47.0 Lens Diameter | Top View  46.7 Lens Diameter | Top View  27.6 Lens Diameter |
|   |   |   |
| Bottom View   | Bottom View   | Bottom View   |
| Wire Outline   * Wire Tickness: 2mm<br>* Total Wire Length: 430mm | | |

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

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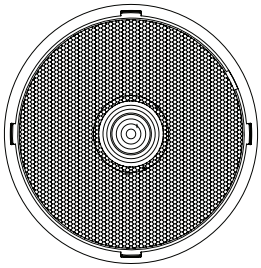
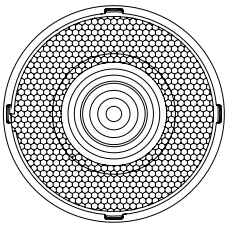
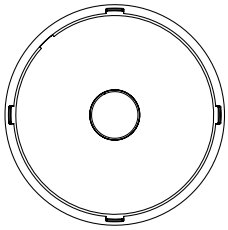
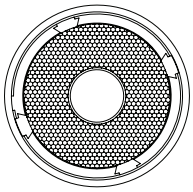
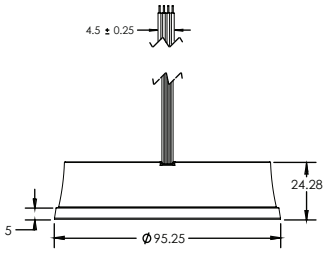
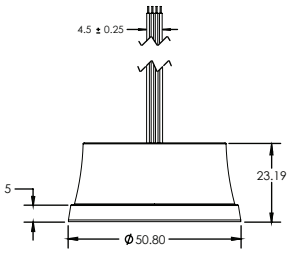
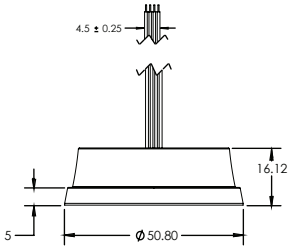
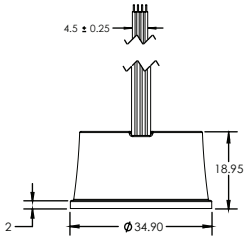
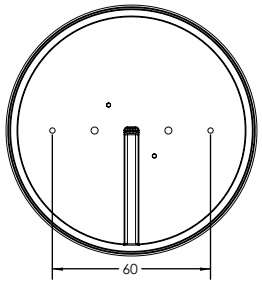
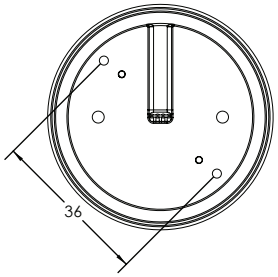
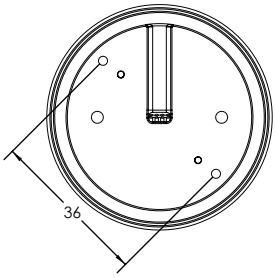
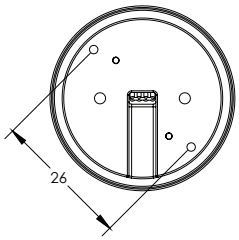
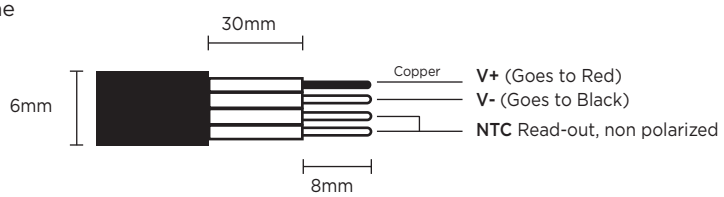
## Mechanical Outline: SLC

| SLC30 | SLC16-08-xx | SLC16-06-10D-xx<br>SLC16-08-15D-xx | SLC11 |
|---|---|---|---|
| Top View | Top View | Top View | Top View |
|  |  |  |  |
| 87.0 Lens Diameter | 47.0 Lens Diameter | 46.7 Lens Diameter | 27.6 Lens Diameter |
|  |  |  |  |
| Bottom View | 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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Information and specifications subject to change. Light Engine HS Rev 3 03.16.16

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