

# PHILIPS

## Fortimo

### LED

Fortimo SLM C 1211 L19  
2828 G7 HE



## Datasheet

### Fortimo SLM C 1211 L19 2828 G7 HE

Fortimo LED SLM Gen 7 CRI90 HE continues to focus on the combination of Quality of Light and efficacy. The new HE range has a significant improvement on CRI90 efficacy and close the efficacy gap to < 5% vs. CRI80 range. In the meantime, the new HE range will be delivered with 2 SDCM color consistency. The superior efficacy and color consistency of Fortimo SLM G7 HE will further unlock the extraordinary potential of light, facilitate the innovation and inspire the next generation luminaire design at our OEM customers. Please also check the online Easy Design-in Tool for your perfect system combination ([www.easydesignintool.com](http://www.easydesignintool.com)).

#### Key features and benefits

- Best quality of light available for all application
- 10%-12% efficacy improvement vs. current G7 CRI90 range.
- Excellent color consistency management (2 SDCM)
- System proposition (Module + Driver + Holder)
- Flexibility to optimize luminaire performance (high efficacy or high lm output)
- 50,000 hours lifetime

January 2021



## Ordering data

| Commercial product name                  | EOC               | 12NC           | Box quantity |
|--|-------------------|----------------|--------------|
| Fortimo SLM C 935 1211 L19 2828 G7 HE    | 8719514 345997 00 | 9290 028 73606 | 10           |
| Fortimo SLM C 940 1211 L19 2828 G7 HE    | 8719514 346147 00 | 9290 028 74106 | 10           |
| Fortimo SLM C 927 1211 L19 2828 G7 HE    | 8719514 292215 00 | 9290 028 54606 | 10           |
| Fortimo SLM C 930 1211 L19 2828 G7 HE    | 8719514 280588 00 | 9290 028 35006 | 10           |
| Fortimo SLM C 930 PW 1211 L19 2828 G7 HE | 8719514 280502 00 | 9290 028 33806 | 10           |
| Fortimo SLM C 935 PW 1211 L19 2828 G7 HE | 8719514 292253 00 | 9290 028 54706 | 10           |
| Fortimo SLM C 940 PW 1211 L19 2828 G7 HE | 8719514 292277 00 | 9290 028 54806 | 10           |
| Fortimo SLM C 930 PC 1211 L19 2828 G7 HE | 8719514 280540 00 | 9290 028 34406 | 10           |

## Drive currents

| Parameter                         | Nominal* | Life**                 | Max*** | Unit |
|-----------------------------------|----------|------------------------|--------|------|
| Fortimo SLM C 1211 L19 2828 G7 HE | 1200     | see performance window | 2000   | mA   |

## Module temperatures

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| Parameter                               | Nominal* | Life**                 | Max*** | Unit |
|---|----------|------------------------|--------|------|
| $T_c$ (case temperature at $T_c$ point) | 85       | see performance window | 95     | °C   |

\* Nominal value at which typical performance is specified

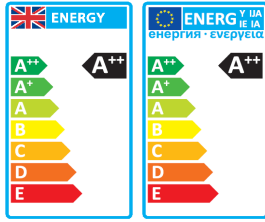
\*\* Value at which life time is specified

\*\*\* Maximum value for safe operation, do not operate above this value

## Optical characteristics - table per color (CCT)

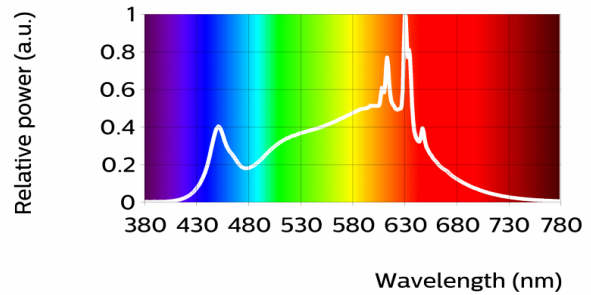
### Fortimo SLM C 935 1211 L19 2828 G7 HE

| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5690 | 5989           | 6588          | lm   |
| Module efficacy                    |      | 144            |               | lm/W |
| Correlated color temperature (CCT) |      | 3500           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.407, 0.392) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 90   | 92             |               |      |
| R9                                 | 50   |                |               |      |
| Photometric code                   |      | 935/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



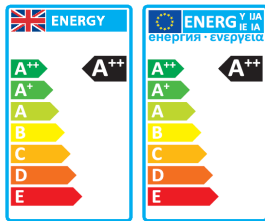
Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 935          | lm    | lm/W |
|-----------------|--------------|-------|------|
| 80% I-nom 960mA | Tc 25 °C     | 5480  | 164  |
|                 | Tc-nom 85 °C | 4906  | 151  |
|                 | Tc-max 95 °C | 4810  | 148  |
| I-nom 1200mA    | Tc 25 °C     | 6728  | 158  |
|                 | Tc-nom 85 °C | 5989  | 144  |
|                 | Tc-max 95 °C | 5866  | 142  |
| I-max 2000mA    | Tc 25 °C     | 10497 | 140  |
|                 | Tc-nom 85 °C | 9232  | 126  |
|                 | Tc-max 95 °C | 9021  | 123  |



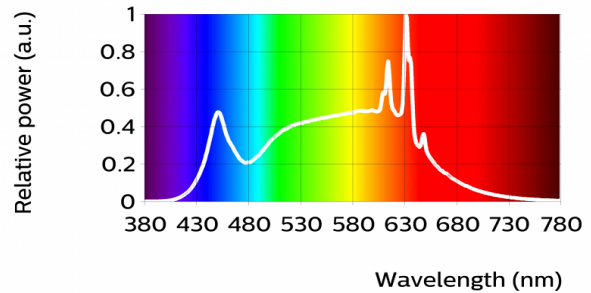
### Fortimo SLM C 940 1211 L19 2828 G7 HE

| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5806 | 6111           | 6722          | lm   |
| Module efficacy                    |      | 147            |               | lm/W |
| Correlated color temperature (CCT) |      | 4000           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.382, 0.380) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 90   | 92             |               |      |
| R9                                 | 50   |                |               |      |
| Photometric code                   |      | 940/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



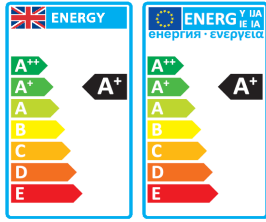
Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 940          | lm    | lm/W |
|-----------------|--------------|-------|------|
| 80% I-nom 960mA | Tc 25 °C     | 5592  | 168  |
|                 | Tc-nom 85 °C | 5006  | 154  |
|                 | Tc-max 95 °C | 4908  | 151  |
| I-nom 1200mA    | Tc 25 °C     | 6865  | 162  |
|                 | Tc-nom 85 °C | 6111  | 147  |
|                 | Tc-max 95 °C | 5985  | 145  |
| I-max 2000mA    | Tc 25 °C     | 10711 | 143  |
|                 | Tc-nom 85 °C | 9420  | 128  |
|                 | Tc-max 95 °C | 9205  | 126  |



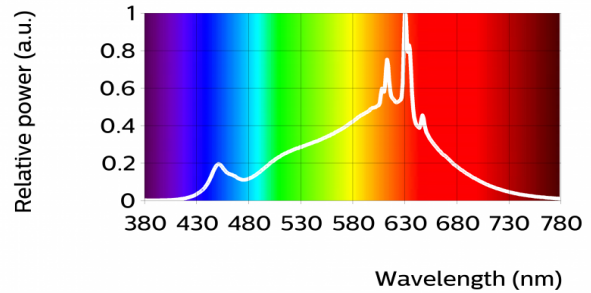
Fortimo SLM C 927 1211 L19 2828 G7 HE

| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5188 | 5461           | 6008          | lm   |
| Module efficacy                    |      | 132            |               | lm/W |
| Correlated color temperature (CCT) |      | 2700           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.458, 0.410) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 90   | 92             |               |      |
| R9                                 | 50   |                |               |      |
| Photometric code                   |      | 927/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



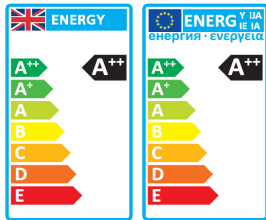
Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 927          | lm   | lm/W |
|-----------------|--------------|------|------|
| 80% I-nom 960mA | Tc 25 °C     | 4999 | 150  |
|                 | Tc-nom 85 °C | 4475 | 137  |
|                 | Tc-max 95 °C | 4388 | 135  |
| I-nom 1200mA    | Tc 25 °C     | 6135 | 144  |
|                 | Tc-nom 85 °C | 5461 | 132  |
|                 | Tc-max 95 °C | 5349 | 129  |
| I-max 2000mA    | Tc 25 °C     | 9564 | 127  |
|                 | Tc-nom 85 °C | 8411 | 114  |
|                 | Tc-max 95 °C | 8219 | 112  |



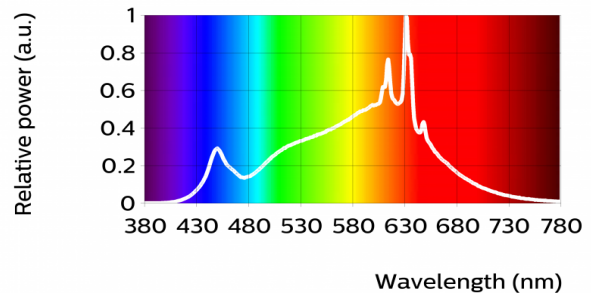
Fortimo SLM C 930 1211 L19 2828 G7 HE

| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5421 | 5706           | 6277          | lm   |
| Module efficacy                    |      | 137            |               | lm/W |
| Correlated color temperature (CCT) |      | 3000           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.434, 0.403) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 90   | 92             |               |      |
| R9                                 | 50   |                |               |      |
| Photometric code                   |      | 930/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



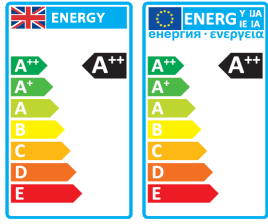
Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 930          | lm   | lm/W |
|-----------------|--------------|------|------|
| 80% I-nom 960mA | Tc 25 °C     | 5222 | 157  |
|                 | Tc-nom 85 °C | 4675 | 144  |
|                 | Tc-max 95 °C | 4584 | 141  |
| I-nom 1200mA    | Tc 25 °C     | 6410 | 151  |
|                 | Tc-nom 85 °C | 5706 | 137  |
|                 | Tc-max 95 °C | 5588 | 135  |
| I-max 2000mA    | Tc 25 °C     | 9994 | 133  |
|                 | Tc-nom 85 °C | 8790 | 120  |
|                 | Tc-max 95 °C | 8589 | 117  |



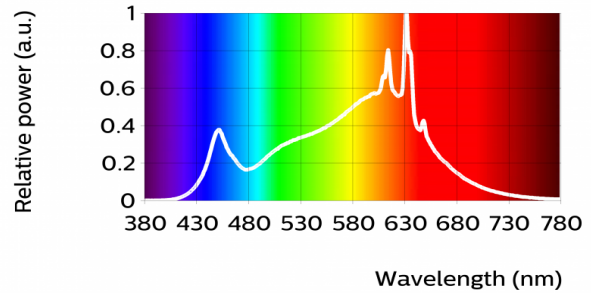
Fortimo SLM C 930 PW 1211 L19 2828 G7 HE

| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5500 | 5789           | 6368          | lm   |
| Module efficacy                    |      | 139            |               | lm/W |
| Correlated color temperature (CCT) |      | 3000           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.422, 0.386) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 90   | 92             |               |      |
| R9                                 | 50   |                |               |      |
| Photometric code                   |      | 930/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



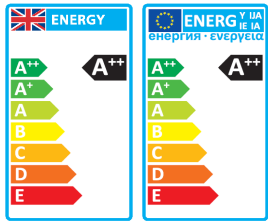
Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 930          | lm    | lm/W |
|-----------------|--------------|-------|------|
| 80% I-nom 960mA | Tc 25 °C     | 5298  | 159  |
|                 | Tc-nom 85 °C | 4743  | 146  |
|                 | Tc-max 95 °C | 4650  | 143  |
| I-nom 1200mA    | Tc 25 °C     | 6504  | 153  |
|                 | Tc-nom 85 °C | 5789  | 139  |
|                 | Tc-max 95 °C | 5670  | 137  |
| I-max 2000mA    | Tc 25 °C     | 10143 | 135  |
|                 | Tc-nom 85 °C | 8921  | 121  |
|                 | Tc-max 95 °C | 8717  | 119  |



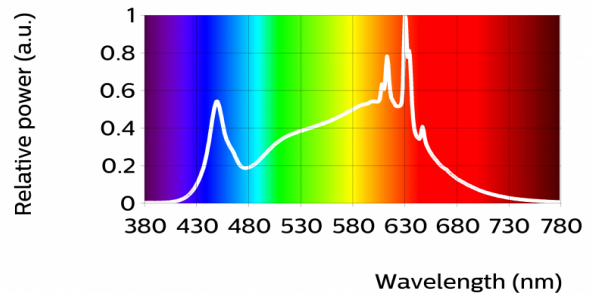
Fortimo SLM C 935 PW 1211 L19 2828 G7 HE

| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5715 | 6016           | 6618          | lm   |
| Module efficacy                    |      | 145            |               | lm/W |
| Correlated color temperature (CCT) |      | 3500           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.398, 0.376) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 90   | 92             |               |      |
| R9                                 | 50   |                |               |      |
| Photometric code                   |      | 935/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



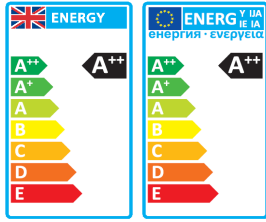
Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 935          | lm    | lm/W |
|-----------------|--------------|-------|------|
| 80% I-nom 960mA | Tc 25 °C     | 5504  | 165  |
|                 | Tc-nom 85 °C | 4928  | 151  |
|                 | Tc-max 95 °C | 4831  | 149  |
| I-nom 1200mA    | Tc 25 °C     | 6759  | 159  |
|                 | Tc-nom 85 °C | 6016  | 145  |
|                 | Tc-max 95 °C | 5892  | 142  |
| I-max 2000mA    | Tc 25 °C     | 10549 | 140  |
|                 | Tc-nom 85 °C | 9278  | 126  |
|                 | Tc-max 95 °C | 9065  | 124  |



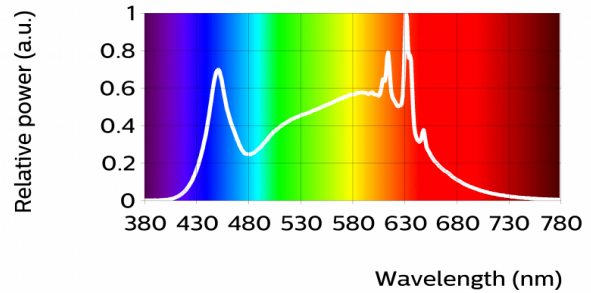
Fortimo SLM C 940 PW 1211 L19 2828 G7 HE

| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5842 | 6150           | 6765          | lm   |
| Module efficacy                    |      | 148            |               | lm/W |
| Correlated color temperature (CCT) |      | 4000           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.374, 0.364) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 90   | 92             |               |      |
| R9                                 | 50   |                |               |      |
| Photometric code                   |      | 940/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



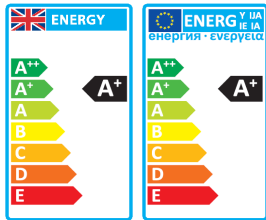
Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 940          | lm    | lm/W |
|-----------------|--------------|-------|------|
| 80% I-nom 960mA | Tc 25 °C     | 5626  | 169  |
|                 | Tc-nom 85 °C | 5037  | 155  |
|                 | Tc-max 95 °C | 4939  | 152  |
| I-nom 1200mA    | Tc 25 °C     | 6909  | 163  |
|                 | Tc-nom 85 °C | 6150  | 148  |
|                 | Tc-max 95 °C | 6023  | 145  |
| I-max 2000mA    | Tc 25 °C     | 10783 | 144  |
|                 | Tc-nom 85 °C | 9484  | 129  |
|                 | Tc-max 95 °C | 9267  | 127  |



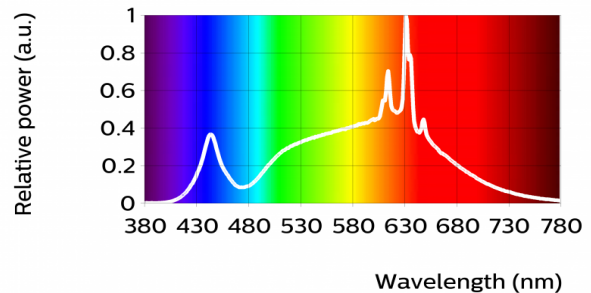
Fortimo SLM C 930 PC 1211 L19 2828 G7 HE

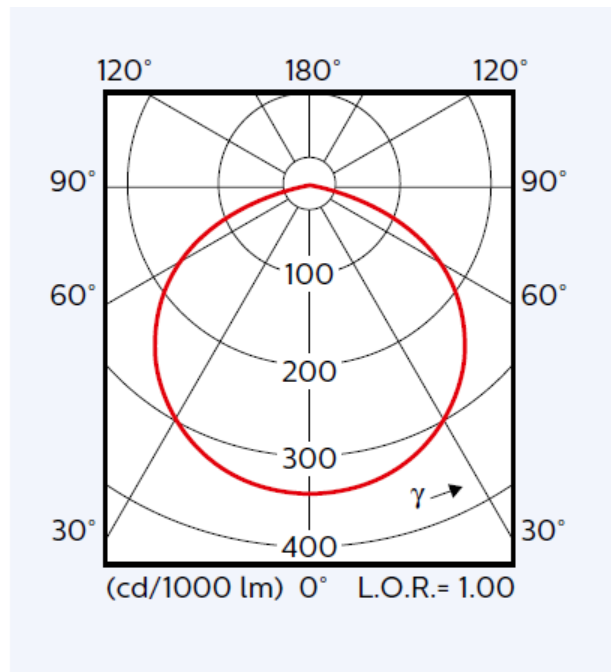
| Parameter                          | Min  | Typ            | Max           | Unit |
|------------------------------------|------|----------------|---------------|------|
| Luminous flux                      | 5013 | 5277           | 5805          | lm   |
| Module efficacy                    |      | 127            |               | lm/W |
| Correlated color temperature (CCT) |      | 3000           |               | K    |
| Color coordinates (CIEx, CIEy)     |      | (0.422, 0.386) |               | -    |
| Color consistency                  |      |                | 2             | SDCM |
| CRI                                | 91   | 93             |               |      |
| R9                                 | 70   |                |               |      |
| Photometric code                   |      | 930/259        |               |      |
| Photobiological safety             |      |                | RG1 unlimited |      |



Measurement precision for flux +/- 5%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

| Operation point | 930          | lm   | lm/W |
|-----------------|--------------|------|------|
| 80% I-nom 960mA | Tc 25 °C     | 4830 | 145  |
|                 | Tc-nom 85 °C | 4324 | 133  |
|                 | Tc-max 95 °C | 4239 | 131  |
| I-nom 1200mA    | Tc 25 °C     | 5928 | 140  |
|                 | Tc-nom 85 °C | 5277 | 127  |
|                 | Tc-max 95 °C | 5168 | 125  |
| I-max 2000mA    | Tc 25 °C     | 9241 | 123  |
|                 | Tc-nom 85 °C | 8128 | 111  |
|                 | Tc-max 95 °C | 7942 | 108  |







## Electrical characteristics

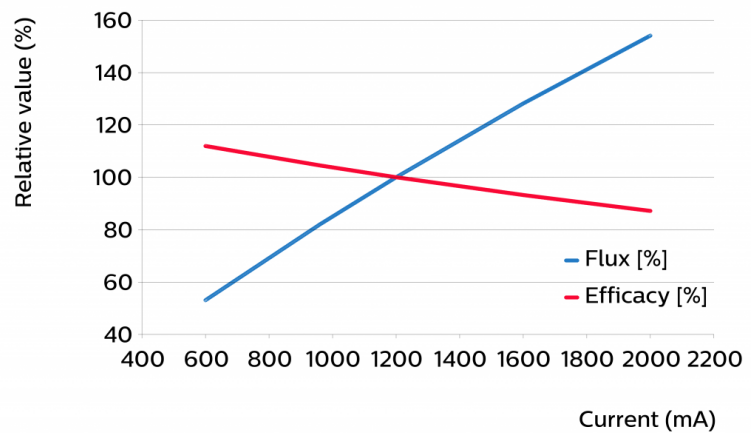
| Parameter                             | Min  | Typ  | Max  | Unit          |
|---------------------------------------|------|------|------|---------------|
| Forward voltage                       | 32.3 | 34.6 | 37.3 | V             |
| Power consumption                     | 38.8 | 41.5 | 44.8 | W = kWh/1000h |
| Number of modules in series per chain |      |      | 1    |               |
| Number of modules per chain           |      |      | 1    |               |
| Number of modules in parallel         |      |      | 1    |               |

Measurement precision for Vf +/- 3%. Measurement precision for power +/- 3.3%.

## Tuning information

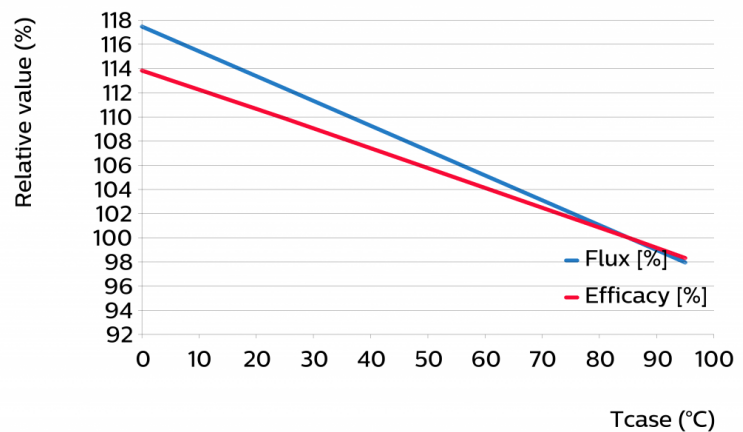
Flux and efficacy versus current (at Tc nominal)

| I [mA] | Flux [%] | Efficacy [%] |
|--------|----------|--------------|
| 2000   | 154      | 87           |
| 1600   | 128      | 93           |
| 1200   | 100      | 100          |
| 960    | 82       | 104          |
| 600    | 53       | 112          |



Flux and efficacy versus temperature at Tc (at I nominal)

| Tc [°C] | Flux [%] | Efficacy [%] |
|---------|----------|--------------|
| 95      | 98       | 98           |
| 85      | 100      | 100          |
| 25      | 112      | 110          |
| 0       | 117      | 114          |



## Lumen maintenance

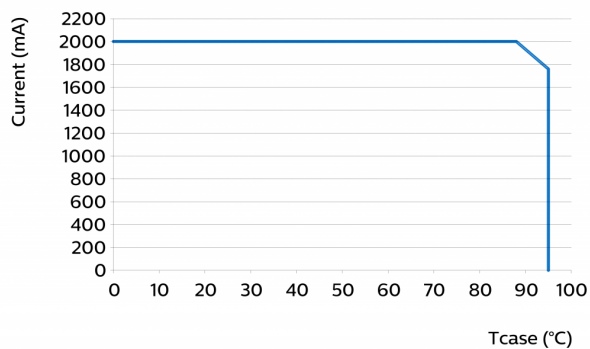
| Operation point  | Lumen maintenance<br>x 1000 hours | L70 |     |     | L80 |     |     | L90 |     |     |
|------------------|-----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                  |                                   | B50 | B20 | B10 | B50 | B20 | B10 | B50 | B20 | B10 |
| 80% i nom 960 mA | Tc 65°C                           | >50 | >50 | >50 | >50 | >50 | >50 | >50 | >50 | 43  |
|                  | Tc nom 85°C                       | >50 | >50 | >50 | >50 | 50  | 40  | 36  | 24  | 19  |
|                  | Tc max 95°C                       | >50 | >50 | 44  | >50 | 34  | 27  | 25  | 16  | 13  |
| i nom 1200 mA    | Tc 65°C                           | >50 | >50 | >50 | >50 | >50 | >50 | >50 | 50  | 40  |
|                  | Tc nom 85°C                       | >50 | >50 | >50 | >50 | 46  | 37  | 33  | 22  | 18  |
|                  | Tc max 95°C                       | >50 | >50 | 71  | 48  | 32  | 25  | 23  | 15  | 12  |
| I max 2000 mA    | Tc 65°C                           | >50 | >50 | >50 | >50 | >50 | >50 | >50 | 36  | 29  |
|                  | Tc nom 85°C                       | >50 | >50 | 45  | >50 | 35  | 28  | 25  | 16  | 13  |
|                  | Tc max 95°C                       | >50 | 39  | 31  | 37  | 24  | 19  | 17  | 11  | 9   |

## Lifetime

| Parameter      | Value  | Unit  |
|----------------|--------|-------|
| C10 at Tc life | 50000  | hours |
| M70F50 nominal | >50000 | hours |
| M70F50 life    | >50000 | hours |

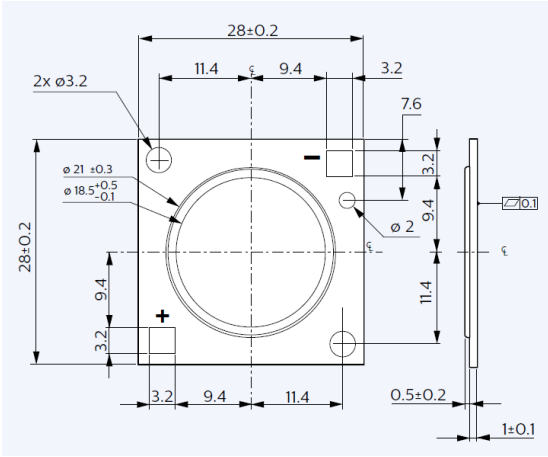
Switching cycles in accordance to EU 1194/2012: >15000.

## Performance Window



## Mechanical characteristics

| Parameter            | Min  | Typ  | Max  | Unit |
|----------------------|------|------|------|------|
| Length               | 27.8 | 28   | 28.2 | mm   |
| Width                | 27.8 | 28   | 28.2 | mm   |
| Height PCB           | 0.9  | 1    | 1.1  | mm   |
| Height including dam | 1.2  | 1.5  | 1.8  | mm   |
| Product mass         |      | 2.05 |      | gram |



## Absolute ratings

| Parameter                              | Min | Max  | Unit            |
|--|-----|------|-----------------|
| Current through the LED module (I-max) |     | 2000 | mA              |
| Case temperature (Tc-max)              |     | 95   | °C              |
| ESD (direct contact)                   | 8   |      | kV              |
| Working voltage                        |     | 60   | V <sub>dc</sub> |
| Ambient temperature                    | -20 | 40   | °C              |
| Storage temperature                    | -40 | 80   | °C              |

## Application information

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### Certificates and Standards

IEC 62031:2008/A1:2012/A2:2014

EN 62031:2008/A1:2013/A2:2015

Relevant clauses of IEC 62471:2006 (Incl. IEC/TR 62471-2: 2009 and IEC/TR 62778: 2014)

Relevant clauses of IEC 60838-1:2004/A1:2008/A2:2011 with IEC 60838-2-2:2006 /A1:2012

Relevant clauses of EN 62471:2008 (With IEC/TR 62471-2: 2009 and IEC/TR 62778: 2014)

Relevant clauses of EN 60838-1:2004/A1:2008/A2:2011 with EN 60838-2-2:2006/A1:2012

UL 8750

ENEC+

CE

### Application

Dimming

Yes



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