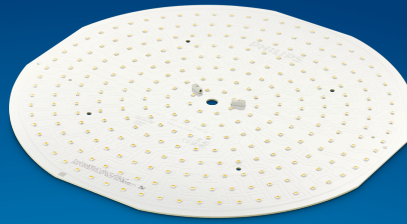


PHILIPS

Fortimo

LED

Fortimo LED CS 350 HF
9xx LV6



Datasheet

Fortimo Circular Shape

The Fortimo LED Circular Shape (CS) is a unique portfolio which offers a combination of energy efficiency, homogenous lighting, long lifetime and design flexibility, making them an important component in many lighting applications. Its form factor makes it easy to design-in and handle in production. Thanks to the availability of three different dimensions, a wide range of needs is covered for our customers.

Key features and benefits

- Typical module efficiency of 200 Lm/W (at 4000K CRI80)
- CRI90 High Efficiency typical performance of 189 Lm/W (at 4000K CRI90)
- Long lifetime: >72,000 hours
- Excellent color consistency of 3 SDCM
- Typical output per dimension available:
 - 220 mm: 2500lm
 - 350 mm: 5500lm
 - 540 mm: 4125lm
- CCTs available: 3000K, 4000K
- CRI >80 & >90 (Based on high efficiency technology)
- Available in Low Voltage (LV)
- Available in front connector (FC)
- PCB thickness of 1.6mm
- Available dimensions: 220mm / 350mm / 540mm / 540Dmm (includes cutout for sensor)
- Wide temperature (Tc) range -40°C to +85°C
- Five-year system warranty (when paired with Xitanium LED drivers)

March 2023



Ordering data

Commercial product name	12NC	EPREL registration #	Box quantity
Fortimo LED CS 350 HF 930 LV6	9290 029 59206	1500759	20
Fortimo LED CS 350 HF 940 LV6	9290 029 59406	1500760	20

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED CS 350 HF 9xx LV6	768	4800	4800	mA

Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T _c (case temperature at T _c point)	35	55	85	°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)

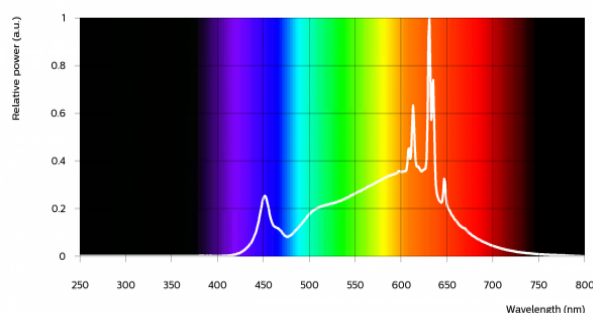
Fortimo LED CS 350 HF 930 LV6

Parameter	Min	Typ	Max	Unit
Luminous flux	4980	5146	5600	lm
Efficacy	169	178	205	lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.436, 0.402)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
Photobiological safety			RG1 unlimited	



Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5 .

Operation point	930	lm	lm/W
80% I-nom 614mA	Tc 25 °C	4179	182
	Tc-nom 35 °C	4133	179
	Tc-max 85 °C	3841	163
I-nom 768mA	Tc 25 °C	5204	180
	Tc-nom 35 °C	5146	178
	Tc-max 85 °C	4782	162
I-max 4800mA	Tc 25 °C	29333	142
	Tc-nom 35 °C	28996	140
	Tc-max 85 °C	26849	127



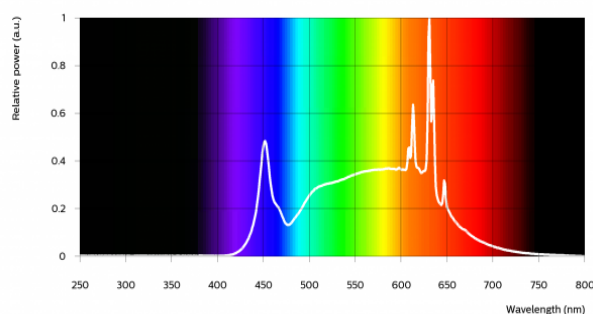
Fortimo LED CS 350 HF 940 LV6

Parameter	Min	Typ	Max	Unit
Luminous flux	5340	5500	6030	lm
Efficacy	181	190	220	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.384, 0.379)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
Photobiological safety			RG1 unlimited	



Measurement precision $\pm 5\%$ for the flux data and $\pm 6\%$ for the efficacy data. Measurement precision for color coordinates ± 0.005 . Measurement precision for CRI ± 1.5 .

Operation point	940	lm	lm/W
80% I-nom 614mA	Tc 25 °C	4473	195
	Tc-nom 35 °C	4418	192
	Tc-max 85 °C	4084	174
I-nom 768mA	Tc 25 °C	5569	193
	Tc-nom 35 °C	5500	190
	Tc-max 85 °C	5084	172
I-max 4800mA	Tc 25 °C	31389	152
	Tc-nom 35 °C	30988	150
	Tc-max 85 °C	28556	135



Electrical characteristics

Fortimo LED CS 350 HF 930 LV6

Parameter	Min	Typ	Max	Unit
Forward voltage	35.6	37.7	38.4	V
Power consumption	27.4	29.0	29.5	W = kWh/1000h
Number of modules in series per chain			1	
Number of modules in parallel			1	

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

Fortimo LED CS 350 HF 940 LV6

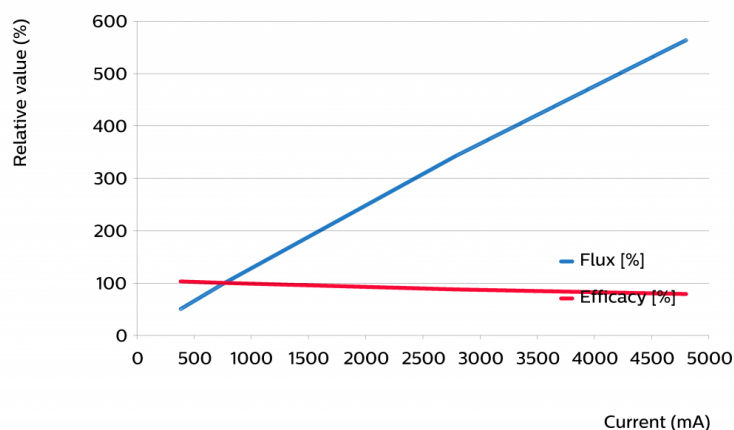
Parameter	Min	Typ	Max	Unit
Forward voltage	35.6	37.7	38.4	V
Power consumption	27.4	29.0	29.5	W = kWh/1000h
Number of modules in series per chain			1	
Number of modules in parallel			1	

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

Tuning information

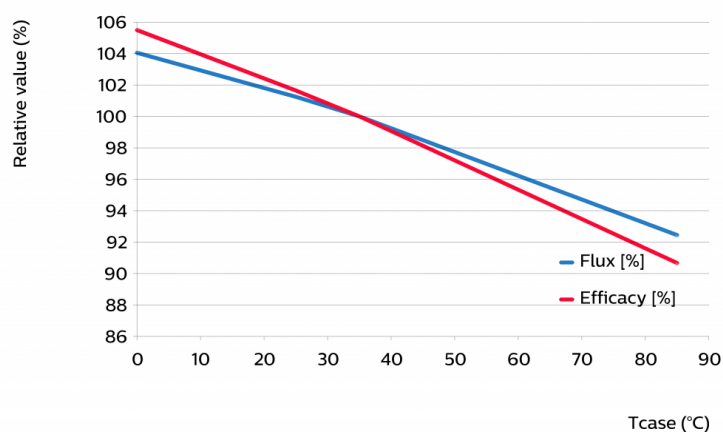
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
4800	563	79
2784	342	88
768	100	100
614	80	101
384	50	103



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

Tc [°C]	Flux [%]	Efficacy [%]
85	92	91
35	100	100
25	101	102
0	104	105



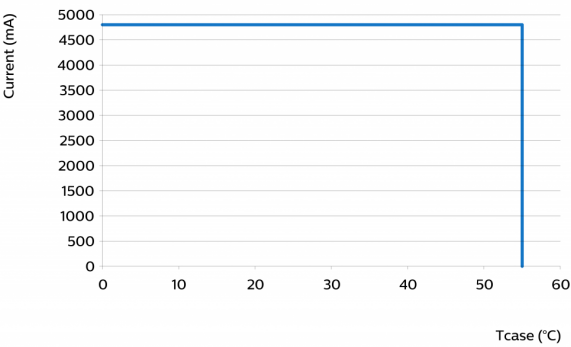
Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I-nom 614mA	Tc 25°C	>72	>72	>72	>72	>72	>72	>72	>72	>72
	Tc-nom 35°C	>72	>72	>72	>72	>72	>72	>72	>72	>72
	Tc-life 55°C	>72	>72	>72	>72	>72	>72	54	53	53
I-nom 768 mA	Tc 25°C	>72	>72	>72	>72	>72	>72	>72	>72	>72
	Tc-nom 35°C	>72	>72	>72	>72	>72	>72	69	68	67
	Tc-life 55°C	>72	>72	>72	>72	>72	>72	52	51	51
I-life 4800 mA	Tc=25°C	>72	>72	>72	>72	>72	>72	56	55	54
	Tc-nom 35°C	>72	>72	>72	>72	>72	>72	48	47	46
	Tc-life 55°C	>72	>72	>72	>72	>72	>72	36	35	35

Lifetime

Parameter	Value	Unit
M70F50 nominal	>72000	hours
M70F50 life	>72000	hours

Performance Window



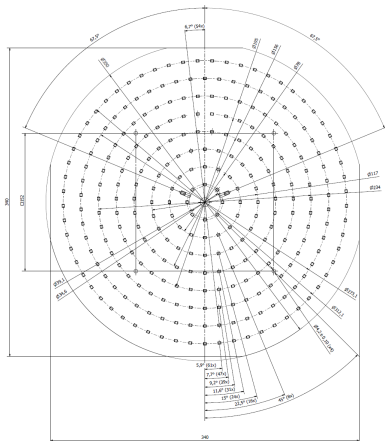
Wiring

Specification item	Value	Unit	Condition
Input wire cross-section	0.25...0.75	mm ²	solid wire
	18...24	AWG	solid wire
Input wire strip length	7.5...8.5	mm	
Input wire cross-section	0.33...0.5	mm ²	stranded wire
	20...22	AWG	stranded wire
Input wire strip length	7.5...8.5	mm	



Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	339.75	340	340.25	mm
Width	339.75	340	340.25	mm
Height PCB		1.6		mm
Height	5.9	6.1	6.3	mm
Product mass		320		gram



Absolute ratings

Parameter	Min	Max	Unit
Current through the LED module (I-max)		4800	mA
Case temperature (Tc-max)		85	°C
ESD (direct contact)	8		kV
Working voltage		350	V _{dc}

Application information

Certificates and Standards

CE
ENEC
ENEC+
UL

Environmental

RoHS/REACH

Application

Dimming	Yes
Suitable for Damp Locations	



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