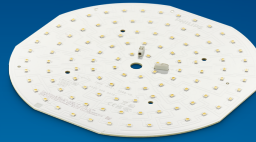


PHILIPS

Fortimo

LED

Fortimo LED CS 220 HF
8xx 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 220 HF 830 LV6	9290 029 58006	1500769	20
Fortimo LED CS 220 HF 840 LV6	9290 029 58206	1500754	20

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED CS 220 HF 8xx LV6	289	1680	1680	mA

Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T _c (case temperature at T _c point)	35	65	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)

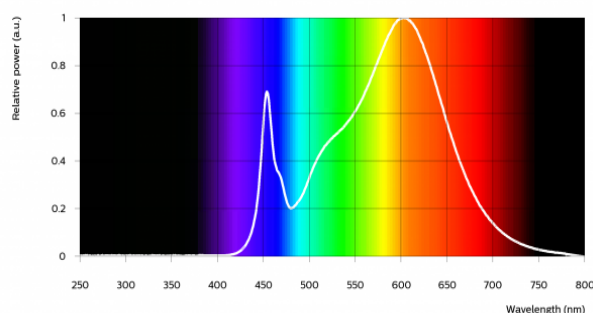
Fortimo LED CS 220 HF 830 LV6

Parameter	Min	Typ	Max	Unit
Luminous flux	2250	2320	2470	lm
Efficacy	177	186	209	lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.433, 0.400)		-
Color consistency			3	SDCM
CRI	80			
R9	0			
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	830	lm	lm/W
80% I-nom 231mA	Tc 25 °C	1890	191
	Tc-nom 35 °C	1868	189
	Tc-max 85 °C	1733	179
I-nom 289mA	Tc 25 °C	2348	188
	Tc-nom 35 °C	2320	186
	Tc-max 85 °C	2152	176
I-max 1680mA	Tc 25 °C	12116	152
	Tc-nom 35 °C	11967	151
	Tc-max 85 °C	11077	142



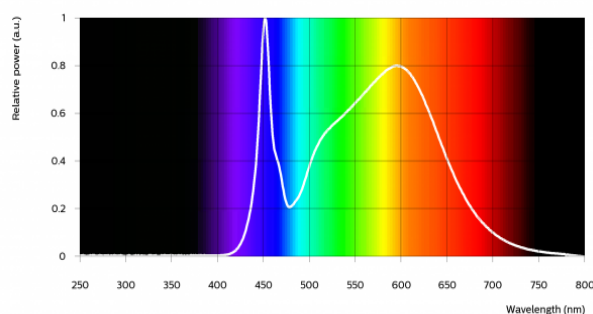
Fortimo LED CS 220 HF 840 LV6

Parameter	Min	Typ	Max	Unit
Luminous flux	2420	2500	2750	lm
Efficacy	190	200	233	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.381, 0.377)		-
Color consistency			3	SDCM
CRI	80			
R9	0			
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	840	lm	lm/W
80% I-nom 231mA	Tc 25 °C	2037	206
	Tc-nom 35 °C	2011	204
	Tc-max 85 °C	1863	192
I-nom 289mA	Tc 25 °C	2532	203
	Tc-nom 35 °C	2500	200
	Tc-max 85 °C	2316	190
I-max 1680mA	Tc 25 °C	13159	165
	Tc-nom 35 °C	12989	163
	Tc-max 85 °C	12008	154



Electrical characteristics

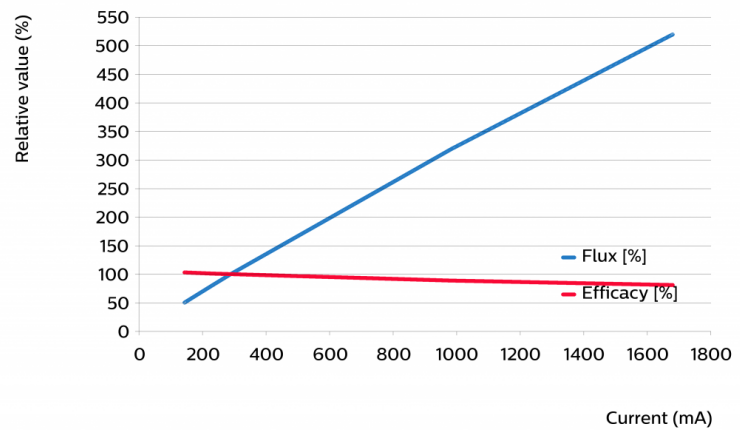
Parameter	Min	Typ	Max	Unit
Forward voltage	40.8	43.2	44.0	V
Power consumption	11.8	12.5	12.7	W = kWh/1000h
Number of modules in series per chain			1	
Number of modules in parallel			1	

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

Tuning information

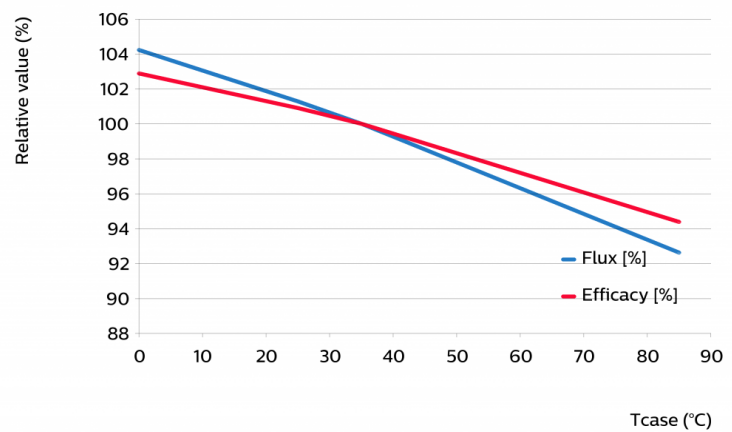
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
1680	519	81
984	319	89
289	100	100
231	80	101
144	50	103



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

Tc [°C]	Flux [%]	Efficacy [%]
85	93	94
35	100	100
25	101	101
0	104	103



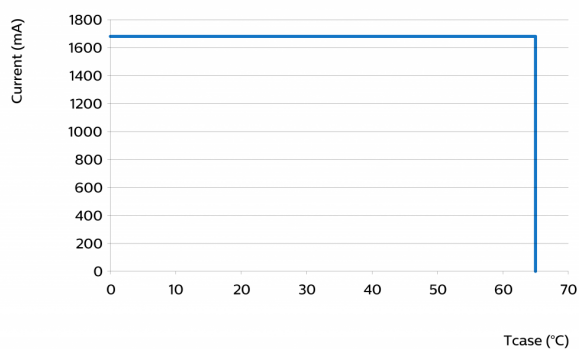
Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I-nom 231mA	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 65°C	>72	>72	>72	>72	>72	>72	68	65	66
I-nom 289 mA	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 65°C	>72	>72	>72	>72	>72	>72	65	64	63
I-life 1680 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 65°C	>72	>72	>72	>72	>72	>72	46	45	44

Lifetime

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

Performance Window



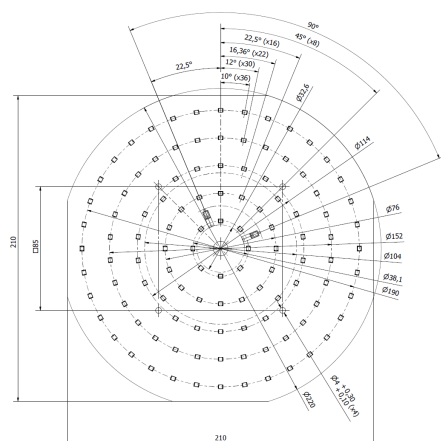
Wiring

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



Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	209.75	210	210.25	mm
Width	209.75	210	210.25	mm
Height PCB		1.6		mm
Height	5.9	6.1	6.3	mm
Product mass		122		gram



Absolute ratings

Parameter	Min	Max	Unit
Current through the LED module (I-max)		1680	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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21/03/2023