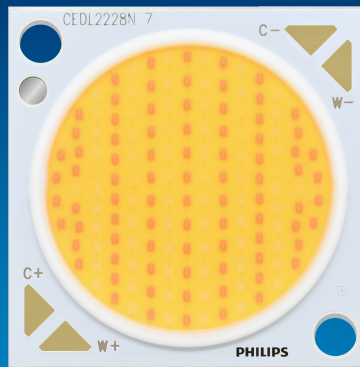


PHILIPS

Fortimo

LED

Fortimo SLM C CED L22
2828 G7N



Datasheet

BioUp CED technology brings all aspects of human centric lighting together

Fortimo SLM CED G1

By combining FlexTune tunable white technology with high MDER spectra it's now possible to create a dynamic lighting system that enables a biological effect whilst not compromising on the visual and emotional benefits. BioUp CED technology is tunable from 2700K from to 5000K with flux up to 4500lm. One of the unique features is that there is no MDER enhancement at 2700K so an ideal evening setting can be created. Whilst the MDER at 5000K reaches its peak up to 0.97, which boosts the biological activation effect of the light source significantly.

Key features and benefits

Flux output up to 4500lm

Color temperature tunable from 2700K to 5000K

High MDER at 5000K of up to 0.97

Quality of light: CRI >80 and R9 >50 (CRI >90 and R9 >50 at 2700K)

System approach: Module + Holder (coming soon) + driver

Compatible PCB and LES size with Fortimo SLM G7N to enable easier design-in

Lifetime of L90 >50,000 hours

April 2023



Ordering data

Commercial product name	EOC	12NC	EPREL registration #	Box quantity
Fortimo SLM C CED L22 2828 G7N	8720169 236783 00	9290 034 53080	1528151	10

For Philips FlexTune driver configuration (color coordinate-based model), use 0.3105, 0.3125 (3040lm) for Cool White, and 0.4590, 0.4065 (2800lm) for Warm White, at a rated current of 720mA for both channels.

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo SLM C CED L22 2828 G7N	720	See performance window	1200	mA

Module temperatures

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

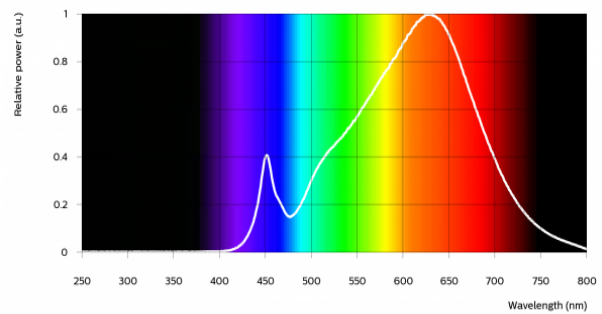
Optical characteristics - table per color (CCT)

Fortimo SLM C CED L22 2828 G7N_2700K

Parameter	Min	Typ	Max	Unit
Luminous flux	2660	2800	3080	lm
Efficacy		113		lm/W
Correlated color temperature (CCT)		2700		K
Color coordinates (CIEx, CIEy)		(0.459, 0.407)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
Photometric code		927/359		
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	927	lm	lm/W
80% I-nom 576mA	Tc 25 °C	2484	126
	Tc-nom 85 °C	2294	119
	Tc-max 95 °C	2247	117
I-nom 720mA	Tc 25 °C	3039	121
	Tc-nom 85 °C	2800	113
	Tc-max 95 °C	2741	111
I-max 1200mA	Tc 25 °C	4749	106
	Tc-nom 85 °C	4342	99
	Tc-max 95 °C	4241	97

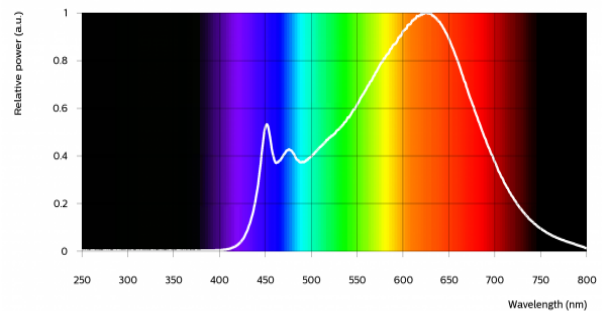


Fortimo SLM C CED L22 2828 G7N_3000K

Parameter	Min	Typ	Max	Unit
Luminous flux	2693	2835	3118	lm
Efficacy		114		lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.429, 0.388)		-
CRI	80			
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	830	lm	lm/W
80% I-nom 576mA	Tc 25 °C	2526	128
	Tc-nom 85 °C	2330	121
	Tc-max 95 °C	2281	119
I-nom 720mA	Tc 25 °C	3080	122
	Tc-nom 85 °C	2835	114
	Tc-max 95 °C	2774	113
I-max 1200mA	Tc 25 °C	4772	106
	Tc-nom 85 °C	4353	98
	Tc-max 95 °C	4247	96

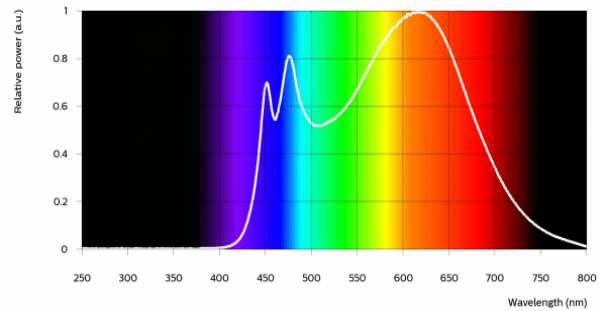


Fortimo SLM C CED L22 2828 G7N_3500K

Parameter	Min	Typ	Max	Unit
Luminous flux	2736	2880	3168	lm
Efficacy		116		lm/W
Correlated color temperature (CCT)		3500		K
Color coordinates (CIEx, CIEy)		(0.397, 0.368)		-
CRI	80			
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	835	lm	lm/W
80% I-nom 576mA	Tc 25 °C	2566	130
	Tc-nom 85 °C	2367	123
	Tc-max 95 °C	2317	121
I-nom 720mA	Tc 25 °C	3128	124
	Tc-nom 85 °C	2880	116
	Tc-max 95 °C	2817	115
I-max 1200mA	Tc 25 °C	4848	107
	Tc-nom 85 °C	4422	100
	Tc-max 95 °C	4315	98

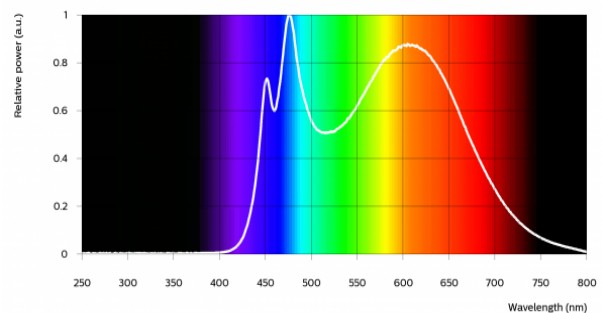


Fortimo SLM C CED L22 2828 G7N_4000K

Parameter	Min	Typ	Max	Unit
Luminous flux	2769	2915	3206	lm
Efficacy		118		lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.375, 0.353)		-
CRI	80			
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 .

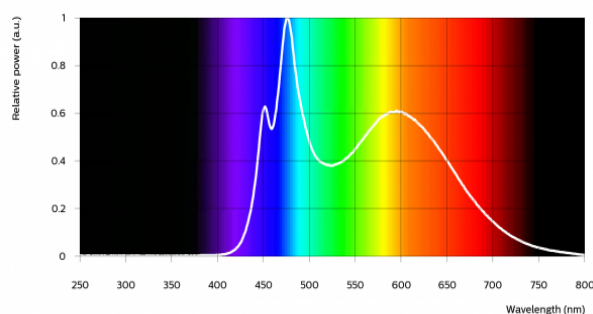
Operation point	840	lm	lm/W
80% I-nom 576mA	Tc 25 °C	2597	131
	Tc-nom 85 °C	2396	124
	Tc-max 95 °C	2345	122
I-nom 720mA	Tc 25 °C	3166	125
	Tc-nom 85 °C	2915	118
	Tc-max 95 °C	2852	116
I-max 1200mA	Tc 25 °C	4907	109
	Tc-nom 85 °C	4477	101
	Tc-max 95 °C	4368	99

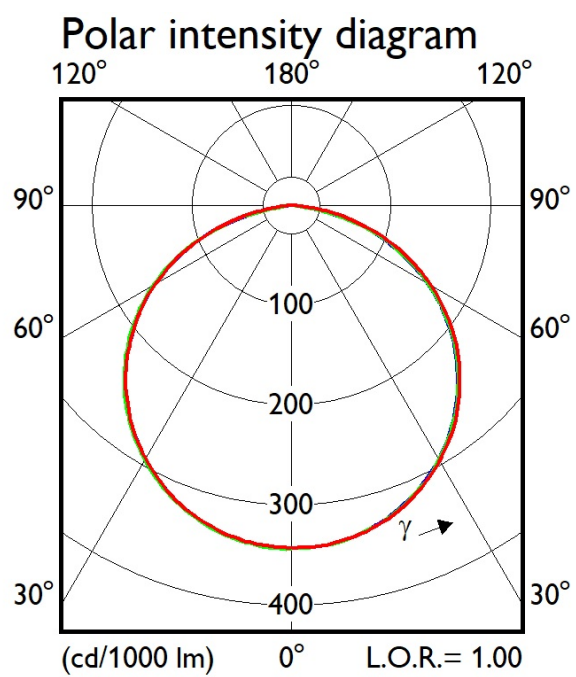


Parameter	Min	Typ	Max	Unit
Luminous flux	2822	2970	3267	lm
Efficacy		120		lm/W
Correlated color temperature (CCT)		5000		K
Color coordinates (CIEx, CIEy)		(0.344, 0.334)		-
CRI	80			
R9	50			
Photobiological safety			RG1 unlimited	

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	850	lm	lm/W
80% I-nom 576mA	Tc 25 °C	2645	134
	Tc-nom 85 °C	2441	126
	Tc-max 95 °C	2389	124
I-nom 720mA	Tc 25 °C	3225	128
	Tc-nom 85 °C	2970	120
	Tc-max 95 °C	2906	118
I-max 1200mA	Tc 25 °C	4999	111
	Tc-nom 85 °C	4562	103
	Tc-max 95 °C	4451	101





Electrical characteristics

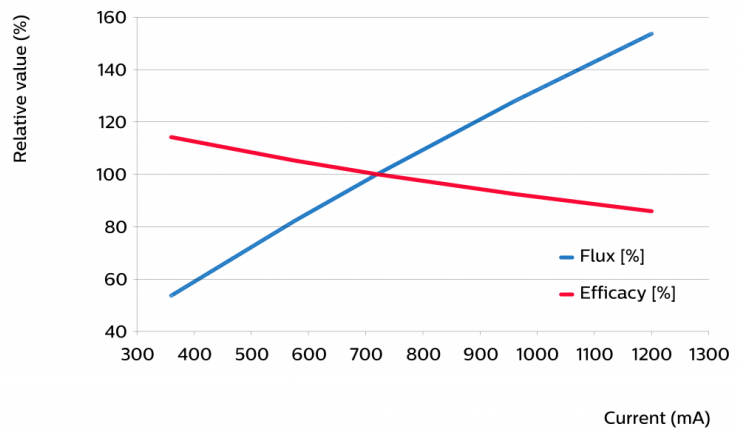
Parameter	Min	Typ	Max	Unit
Forward voltage	34.0	34.4	37.0	V
Power consumption		24.8		W = kWh/1000h
Number of modules in series per chain			1	
Number of modules per chain			1	
Number of modules in parallel			1	

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

Tuning information

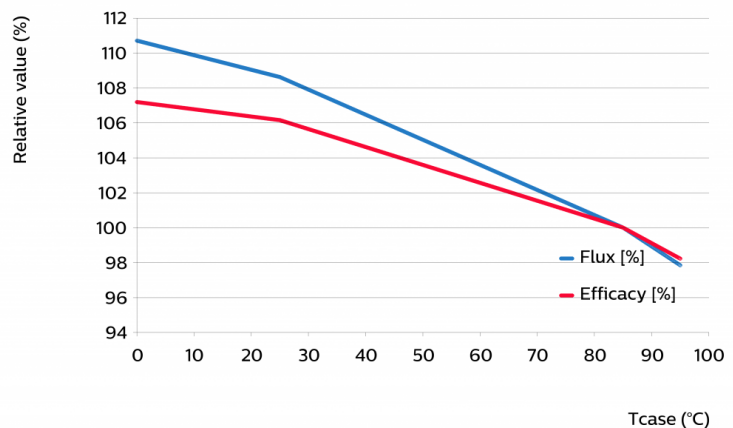
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
1200	154	86
960	128	92
720	100	100
576	82	105
360	54	114



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

Tc [°C]	Flux [%]	Efficacy [%]
95	98	98
85	100	100
25	109	106
0	111	107



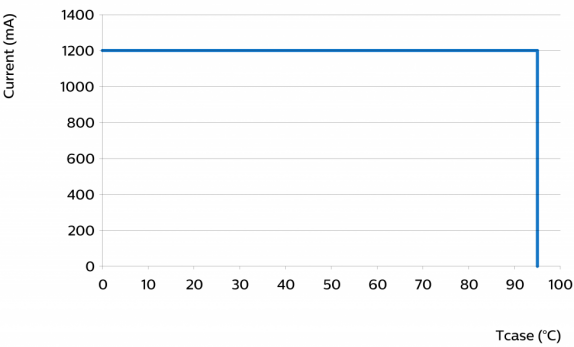
Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I-nom 576mA	Tc 75°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc 85°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc 95°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
I-nom 720mA	Tc 75°C	>50	>50	>50	>50	>50	>50	>50	>50	>50
	Tc 85°C	>50	>50	>50	>50	>50	>50	>50	47	43
	Tc 95°C	>50	>50	>50	>50	>50	>50	48	40	37
I-max 1200mA	Tc 75°C	>50	>50	>50	>50	47	43	26	22	20
	Tc 85°C	>50	>50	>50	47	40	36	22	18	17
	Tc 95°C	>50	>50	>50	40	34	31	19	16	14

Lifetime

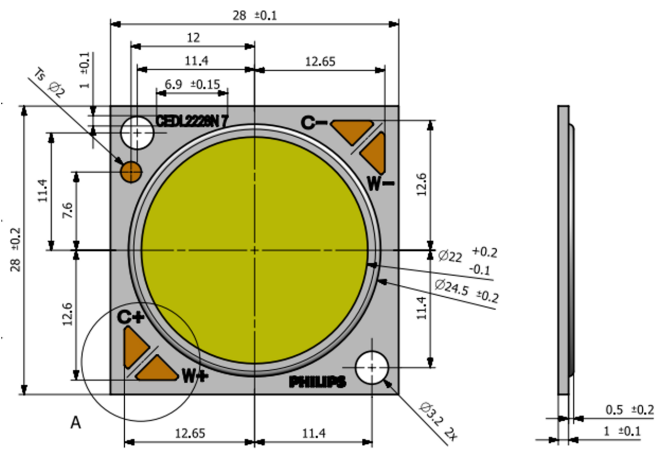
Parameter	Value	Unit
C10 at Tc life	50000	hours
M70F50 nominal	>50000	hours

Performance Window



Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	27.9	28	28.1	mm
Width	27.8	28	28.2	mm
Height PCB	0.9	1	1.1	mm
Height Total	1.2	1.5	1.8	mm
Product mass		2.2		gram



Absolute ratings

Parameter	Min	Max	Unit
Current through the LED module (I-max)		1200	mA
Case temperature (Tc-max)		95	°C
ESD (direct contact)	8		kV
Working voltage		60	V _{dc}
Ambient temperature	-20	40	°C
Storage temperature	-40	80	°C

Application information

Certificates and Standards

CB
 CE
 ENEC
 ENEC+
 EPRS 001
 IEC/EN 62031
 UKCA
 UL
 UL 8750

Environmental

RoHS/REACH

Application

Dimming	Yes
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