

**PHILIPS**

**Fortimo**

**LED**

Fortimo SLM 1216  
L23 2828 G7



Datasheet

# Experience bright and vivid colors

## Fortimo LED SLM 1216 L23 2828 G7

Fortimo LED SLM Gen7 continues to focus on the combination of Quality of Light and performance. By offering the CoB separate from the holder, even more flexibility in possible system combinations and specifications is achieved. This results in an extensive portfolio of lumen ranges, CCTs and spectra. 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 applications
- Extensive range of CCTs
- Small LES for narrow beam angles and small reflector designs
- Flexibility to select a different lumen output between 800 and 10000 lm
- State of the art Chip-on-Board (CoB) technology, enabling highest system efficacy
- System proposition (CoB + Holder + driver)
- Flexibility to optimize luminaire performance (lm/W or high lm output)
- Xitanium window drivers with SimpleSet for maximum flexibility
- Mini drivers for smallest possible luminaire designs
- Five years system warranty with over 50,000 hours lifetime
- Instant full light

November 2019



## Ordering data

Commercial product name	EOC	12NC	Box quantity
Fortimo SLM C 827 1216 L23 2828 G7	8718699 590772 00	9290 015 93806	10
Fortimo SLM C 830 1216 L23 2828 G7	8718699 590802 00	9290 015 93906	10
Fortimo SLM C 835 1216 L23 2828 G7	8718699 590833 00	9290 015 94006	10
Fortimo SLM C 840 1216 L23 2828 G7	8718699 590864 00	9290 015 94106	10
Fortimo SLM C 850 1216 L23 2828 G7	8718699 590895 00	9290 015 94206	10
Fortimo SLM C 857 1216 L23 2828 G7	8718699 590925 00	9290 015 94306	10
Fortimo SLM C 927 1216 L23 2828 G7	8718699 590956 00	9290 015 94406	10
Fortimo SLM C 930 1216 L23 2828 G7	8718699 590987 00	9290 015 94506	10

Not all products are globally available by default.

Please contact your local Philips Lighting representative for local availability and activation.

## Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo SLM 1216 L23 2828 G7	1600	see performance window	2400	mA

## Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T <sub>c</sub> (case temperature at T <sub>c</sub> 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)

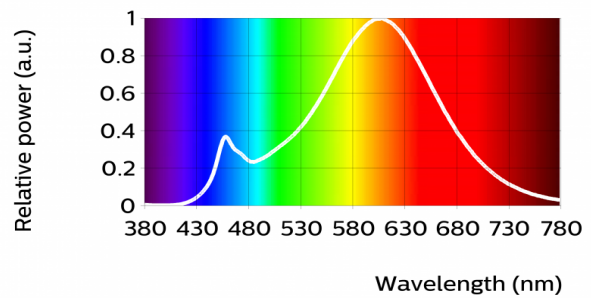
### Fortimo SLM C 827 1216 L23 2828 G7

Parameter	Min	Typ	Max	Unit
Luminous flux	7227	8030	8833	lm
Module efficacy	131	146		lm/W
Correlated color temperature (CCT)		2700		K
Color coordinates (CIEx, CIEy)		(0.458, 0.410)		-
Color consistency			3	SDCM
CRI	80	82		
Photometric code		827/359		
Photobiological safety			RG1 unlimited	



Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI +/- 1.5

Operation point	827	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	7181	163
	Tc-nom 85 °C	6608	153
	Tc-max 95 °C	6498	152
I-nom 1600mA	Tc 25 °C	8772	156
	Tc-nom 85 °C	8030	146
	Tc-max 95 °C	7889	144
I-max 2400mA	Tc 25 °C	12431	140
	Tc-nom 85 °C	11277	130
	Tc-max 95 °C	11056	128



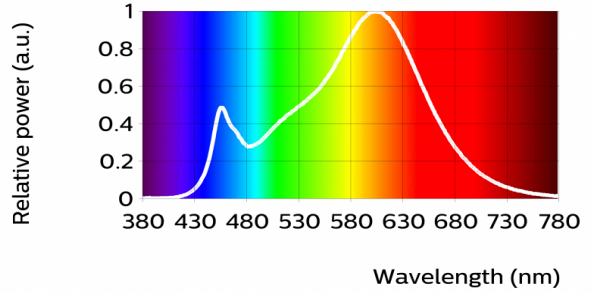
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
79	92	94	76	79	90	82	59	12	82	72	73	82	97

Parameter	Min	Typ	Max	Unit
Luminous flux	7398	8220	9042	lm
Module efficacy	134	149		lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.434, 0.403)		-
Color consistency			3	SDCM
CRI	80	82		
Photometric code		830/359		
Photobiological safety			RG1 unlimited	



Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

Operation point	830	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	7350	167
	Tc-nom 85 °C	6764	157
	Tc-max 95 °C	6652	155
I-nom 1600mA	Tc 25 °C	8979	159
	Tc-nom 85 °C	8220	149
	Tc-max 95 °C	8075	147
I-max 2400mA	Tc 25 °C	12725	143
	Tc-nom 85 °C	11543	133
	Tc-max 95 °C	11317	131



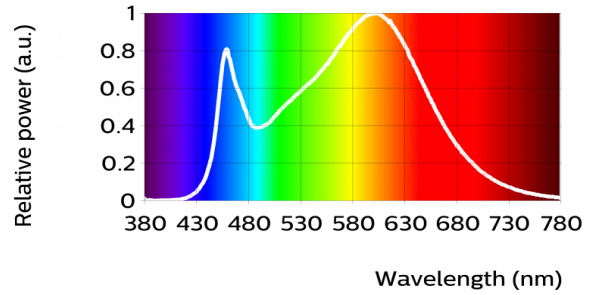
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
83	94	93	80	84	94	81	59	12	87	80	76	86	97

Parameter	Min	Typ	Max	Unit
Luminous flux	7542	8380	9218	lm
Module efficacy	137	152		lm/W
Correlated color temperature (CCT)		3500		K
Color coordinates (CIEx, CIEy)		(0.407, 0.392)		-
Color consistency			3	SDCM
CRI	80	82		
Photometric code		835/359		
Photobiological safety			RG1 unlimited	



Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI +/- 1.5

Operation point	835	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	7492	170
	Tc-nom 85 °C	6895	160
	Tc-max 95 °C	6781	158
I-nom 1600mA	Tc 25 °C	9154	163
	Tc-nom 85 °C	8380	152
	Tc-max 95 °C	8232	150
I-max 2400mA	Tc 25 °C	12974	146
	Tc-nom 85 °C	11769	135
	Tc-max 95 °C	11540	133



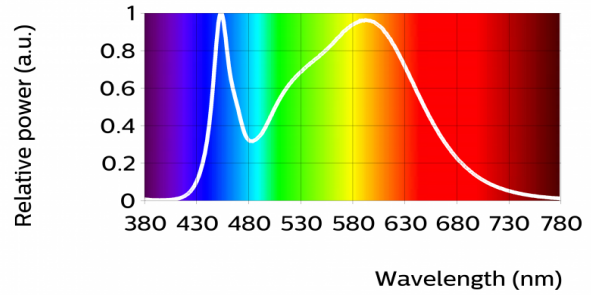
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
86	96	93	80	85	94	83	65	22	90	79	70	89	97

Parameter	Min	Typ	Max	Unit
Luminous flux	7830	8700	9570	lm
Module efficacy	142	158		lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.382, 0.380)		-
Color consistency			3	SDCM
CRI	80	82		
Photometric code		840/359		
Photobiological safety			RG1 unlimited	



Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

Operation point	840	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	7777	176
	Tc-nom 85 °C	7158	166
	Tc-max 95 °C	7040	164
I-nom 1600mA	Tc 25 °C	9503	169
	Tc-nom 85 °C	8700	158
	Tc-max 95 °C	8547	156
I-max 2400mA	Tc 25 °C	13471	151
	Tc-nom 85 °C	12223	141
	Tc-max 95 °C	11984	138



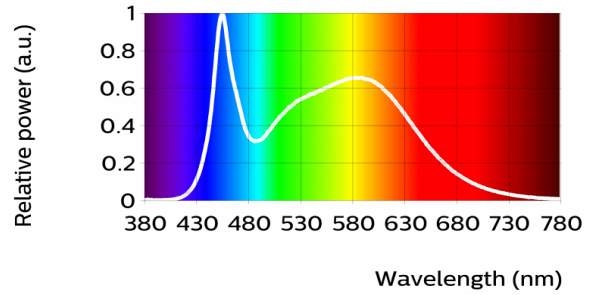
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
84	96	91	77	83	93	81	62	13	90	77	67	88	96

Parameter	Min	Typ	Max	Unit
Luminous flux	7839	8710	9581	lm
Module efficacy	142	158		lm/W
Correlated color temperature (CCT)		5000		K
Color coordinates (CIEx, CIEy)		(0.345, 0.355)		-
Color consistency			3	SDCM
CRI	80	82		
Photometric code		850/359		
Photobiological safety			RG1 unlimited	



Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

Operation point	850	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	7785	176
	Tc-nom 85 °C	7165	166
	Tc-max 95 °C	7047	164
I-nom 1600mA	Tc 25 °C	9512	169
	Tc-nom 85 °C	8710	158
	Tc-max 95 °C	8557	156
I-max 2400mA	Tc 25 °C	13487	152
	Tc-nom 85 °C	12239	141
	Tc-max 95 °C	12001	139



R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
83	92	95	80	82	87	86	68	14	79	78	58	86	98

Fortimo SLM C 857 1216 L23 2828 G7

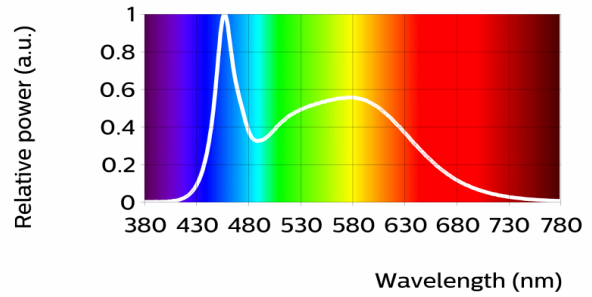
Parameter	Min	Typ	Max	Unit
Luminous flux	7812	8680	9548	lm
Module efficacy	142	158		lm/W
Correlated color temperature (CCT)		5700		K
Color coordinates (CIEx, CIEy)		(0.329, 0.342)		-
Color consistency			3	SDCM
CRI	80	82		
Photometric code		857/359		
Photobiological safety			RG1 unlimited	



At currents higher than 2298 mA the module might be classified as RG2

Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI +/- 1.5

Operation point	857	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	7758	176
	Tc-nom 85 °C	7140	166
	Tc-max 95 °C	7023	164
I-nom 1600mA	Tc 25 °C	9480	168
	Tc-nom 85 °C	8680	158
	Tc-max 95 °C	8528	156
I-max 2400mA	Tc 25 °C	13441	151
	Tc-nom 85 °C	12198	140
	Tc-max 95 °C	11961	138



R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
83	93	95	79	83	88	86	68	14	82	78	61	87	98

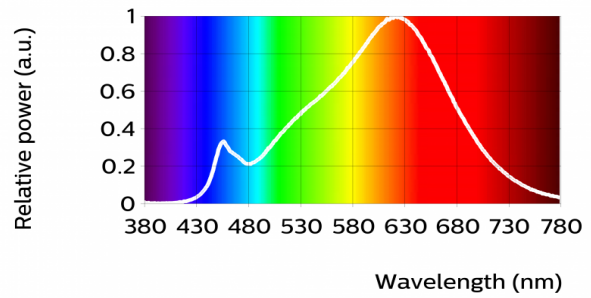


Parameter	Min	Typ	Max	Unit
Luminous flux	5994	6660	7326	lm
Module efficacy	109	121		lm/W
Correlated color temperature (CCT)		2700		K
Color coordinates (CIEx, CIEy)		(0.458, 0.410)		-
Color consistency			3	SDCM
CRI	90	92		
R9	50			
Photometric code		927/359		
Photobiological safety			RG1 unlimited	



Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI +/- 1.5

Operation point	927	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	5957	135
	Tc-nom 85 °C	5481	127
	Tc-max 95 °C	5390	126
I-nom 1600mA	Tc 25 °C	7276	129
	Tc-nom 85 °C	6660	121
	Tc-max 95 °C	6542	119
I-max 2400mA	Tc 25 °C	10308	116
	Tc-nom 85 °C	9348	108
	Tc-max 95 °C	9165	106



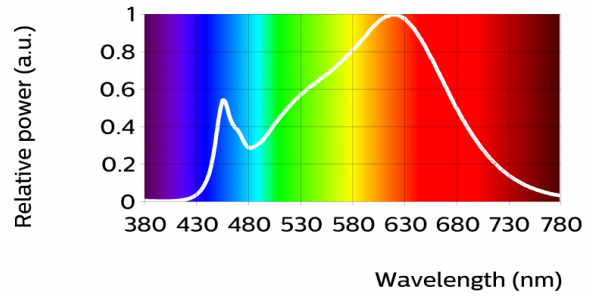
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
92	98	98	92	93	97	91	81	60	94	93	83	95	100

Parameter	Min	Typ	Max	Unit
Luminous flux	6237	6930	7623	lm
Module efficacy	113	126		lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.434, 0.403)		-
Color consistency			3	SDCM
CRI	90	92		
R9	50			
Photometric code		930/359		
Photobiological safety			RG1 unlimited	



Measurement precision for flux +/- 5%. Measurement precision for efficacy +/- 6%. Measurement precision for x, y +/- 0.005. Measurement precision for CRI 1.5

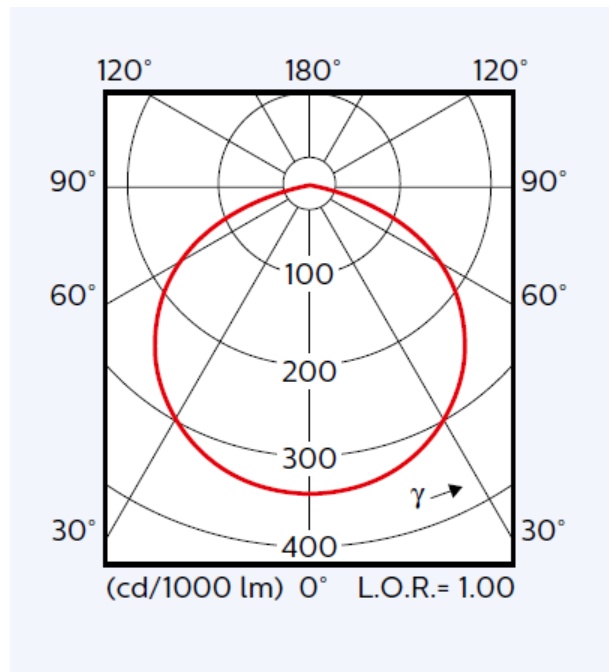
Operation point	930	lm	lm/W
80% I-nom 1280mA	Tc 25 °C	6198	141
	Tc-nom 85 °C	5703	132
	Tc-max 95 °C	5609	131
I-nom 1600mA	Tc 25 °C	7571	134
	Tc-nom 85 °C	6930	126
	Tc-max 95 °C	6807	124
I-max 2400mA	Tc 25 °C	10726	121
	Tc-nom 85 °C	9728	112
	Tc-max 95 °C	9537	110



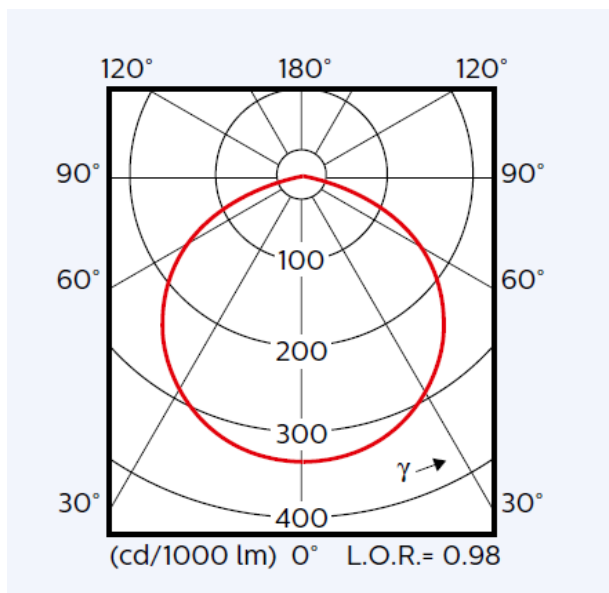
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
94	98	99	92	93	96	91	83	62	94	92	79	95	99

## Beam shape

Bare CoB



CoB with a poke-in holder



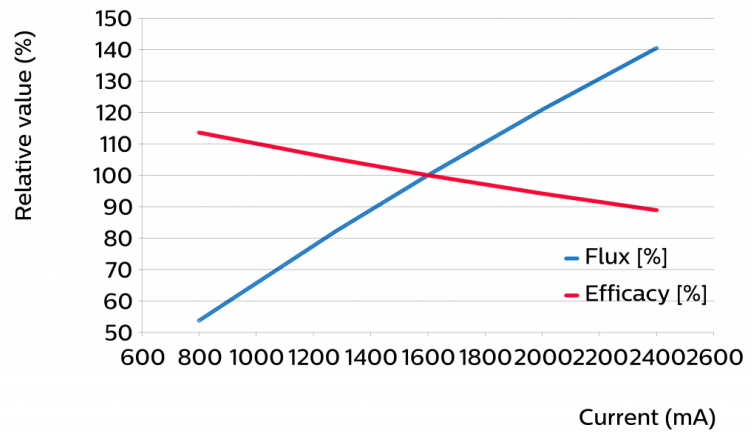
## Electrical characteristics

Parameter	Min	Typ	Max	Unit
Forward voltage	32.4	34.4	37.4	V
Power consumption	51.8	55.0	59.8	W = kWh/1000h
Number of modules in series per chain			1	
Number of modules in parallel per chain			1	
Number of modules in parallel			1	

## Tuning information

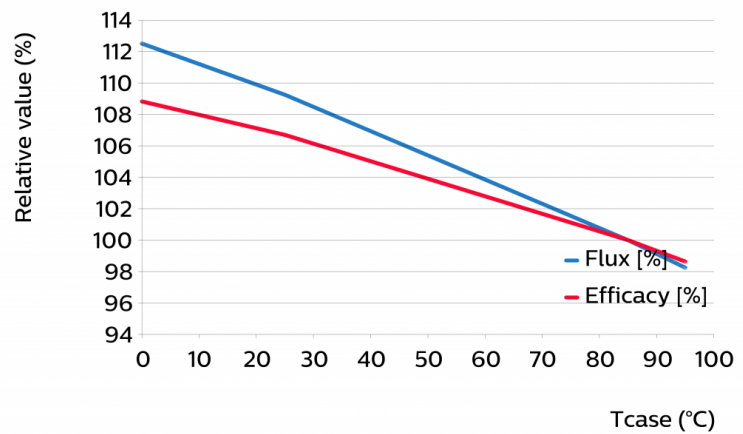
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
2400	140	89
2000	121	94
1600	100	100
1280	82	105
800	54	114



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

Tc [°C]	Flux [%]	Efficacy [%]
95	98	99
85	100	100
25	109	107
0	112	109



## Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% I nom 1280mA	Tc 65°C	>50	>50	>50	>50	>50	>50	>50	46	37
	Tc nom 85°C	>50	>50	>50	>50	43	35	31	20	16
	Tc max 95°C	>50	46	37	44	29	23	21	14	11
I nom 1600mA	Tc 65°C	>50	>50	>50	>50	>50	>50	>50	40	32
	Tc nom 85°C	>50	>50	47	>50	38	30	27	18	14
	Tc max 95°C	>50	42	34	40	26	21	19	12	10
I max 2400mA	Tc 65°C	>50	>50	>50	>50	>50	46	41	27	22
	Tc nom 85°C	>50	43	34	41	27	22	19	13	10
	Tc max 95°C	46	30	24	29	19	15	16	9	7

## Lifetime

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

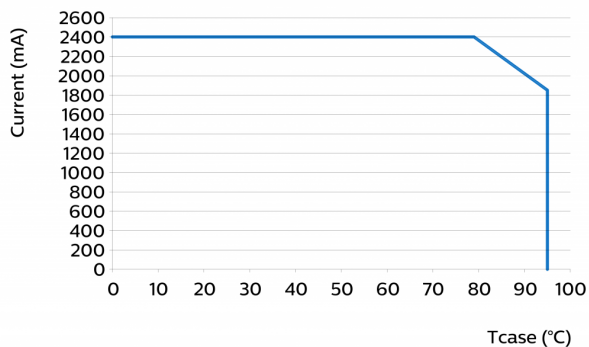
Switching cycles in accordance to EU 1194/2012: >15000

At I life L70B50>50000 hours.

Charts presenting module's lumen maintenance data are available via your sales representative.

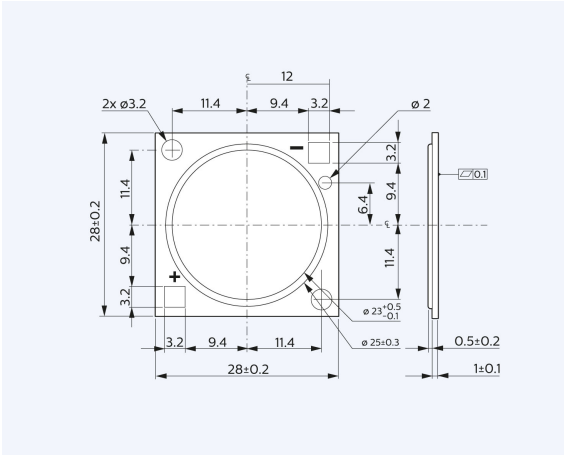
Please refer to the performance window to ensure that your operati

## 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		2.09		gram



## Absolute ratings

Parameter	Min	Max	Unit
Current through the LED module (I-max)		2400	mA
Case temperature (Tc-max)		95	°C
Power at rated Vf-max and I-max		92.6	W
ESD (direct contact)		8	kV
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

### Environmental

RoHS/REACH

### Application

IP rating	No IP-rating
Overheating protection	No
Luminaire class	IEC Class I and Class II
Dimming	Yes



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