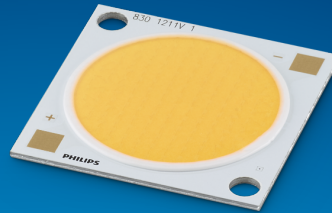


# PHILIPS

## Fortimo

### LED

Fortimo SLM VO 1211  
LES22 G1



## Datasheet

### Fortimo SLM VO 1211 LES22 G1

The Fortimo SLM VO gen1 is a range of LED modules which aims at making a good performance accessible in downlights and spot lights without sacrificing lifetime. It offers a good Lm/W performance and there's a wide choice of CCT's available in CRI80 or CRI90. Due to it's dimensions, the Fortimo SLM VO gen1 can easily be used with a wide range of holders and reflectors which are available in the market.

#### Key features and benefits

- Extensive range of CCT's in CRI >80 and CRI >90
- Multiple lumen packages
- Typical 148 Lm/W (3000K CRI>80, at Tc 85°C)
- Lifetime: >50,000 hours
- System proposition: COB + holder + driver
- Five years system warranty when combined with Xitanium drivers

December 2019



## Ordering data

Commercial product name	EOC	12NC	Box quantity
Fortimo SLM VO 827 1211 LES22 G1	8718699 724894 00	9290 021 35806	100
Fortimo SLM VO 830 1211 LES22 G1	8718699 724917 00	9290 021 35906	100
Fortimo SLM VO 835 1211 LES22 G1	8718699 724931 00	9290 021 36006	100
Fortimo SLM VO 840 1211 LES22 G1	8718699 724955 00	9290 021 36106	100
Fortimo SLM VO 850 1211 LES22 G1	8718699 724979 00	9290 021 36206	100
Fortimo SLM VO 927 1211 LES22 G1	8718699 724993 00	9290 021 36306	100
Fortimo SLM VO 930 1211 LES22 G1	8718699 725013 00	9290 021 36406	100
Fortimo SLM VO 935 1211 LES22 G1	8718699 725037 00	9290 021 36506	100
Fortimo SLM VO 940 1211 LES22 G1	8718699 725051 00	9290 021 36606	100

## Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo SLM VO 1211 LES22 G1	1000	see performance window	2000	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)

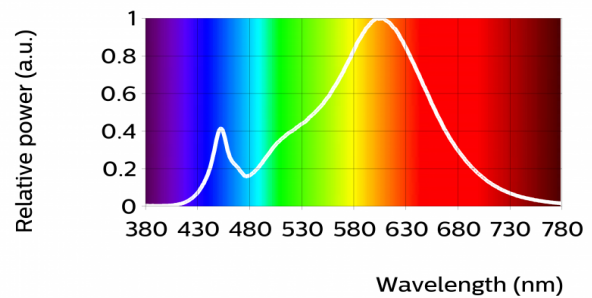
### Fortimo SLM VO 827 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4509	4849	5334	lm
Module efficacy	130	140		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%, for efficacy +/- 6%, for x, y +/- 0.005, for CRI +/- 1.5

Operation point	827	lm	lm/W
50% I-nom 500mA	Tc 25 °C	2828	168
	Tc-nom 85 °C	2607	159
	Tc-max 95 °C	2567	157
I-nom 1000mA	Tc 25 °C	5366	152
	Tc-nom 85 °C	4849	140
	Tc-max 95 °C	4755	138
I-max 2000mA	Tc 25 °C	9611	125
	Tc-nom 85 °C	8527	113
	Tc-max 95 °C	8330	111



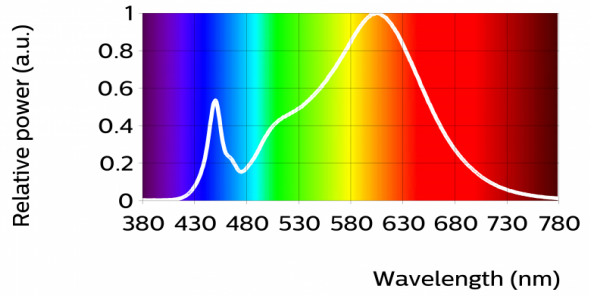
Fortimo SLM VO 830 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4723	5078	5586	lm
Module efficacy	136	146		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	



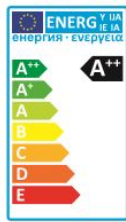
Measurement precision for flux +/- 5%, for efficacy +/- 6%, for x, y +/- 0.005, for CRI +/- 1.5

Operation point	830	lm	lm/W
50% I-nom 500mA	Tc 25 °C	2961	176
	Tc-nom 85 °C	2730	166
	Tc-max 95 °C	2688	164
I-nom 1000mA	Tc 25 °C	5620	159
	Tc-nom 85 °C	5078	146
	Tc-max 95 °C	4980	144
I-max 2000mA	Tc 25 °C	10071	131
	Tc-nom 85 °C	8937	119
	Tc-max 95 °C	8730	116



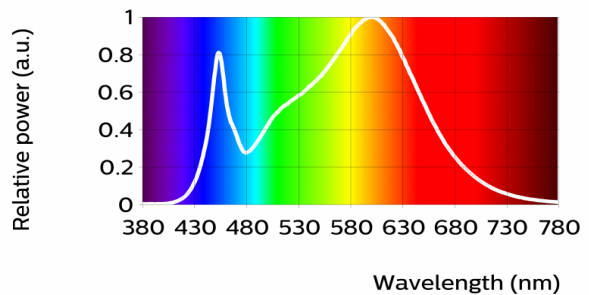
Fortimo SLM VO 835 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4845	5210	5730	lm
Module efficacy	140	150		lm/W
Correlated color temperature (CCT)		3500		K
Color coordinates (CIEx, CIEy)		(0.408, 0.393)		-
Color consistency			3	SDCM
CRI	80	82		
Photometric code		835/359		
Photobiological safety			RG1 unlimited	



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

Operation point	835	lm	lm/W
50% I-nom 500mA	Tc 25 °C	3037	181
	Tc-nom 85 °C	2800	170
	Tc-max 95 °C	2757	168
I-nom 1000mA	Tc 25 °C	5765	163
	Tc-nom 85 °C	5210	150
	Tc-max 95 °C	5109	148
I-max 2000mA	Tc 25 °C	10334	135
	Tc-nom 85 °C	9172	122
	Tc-max 95 °C	8960	119



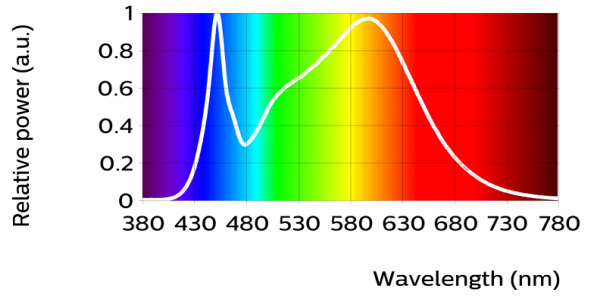
Fortimo SLM VO 840 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4961	5335	5868	lm
Module efficacy	143	154		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	



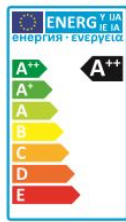
Measurement precision for flux +/- 5%, for efficacy +/- 6%., for x, y +/- 0.005, for CRI +/- 1.5

Operation point	840	lm	lm/W
50% I-nom 500mA	Tc 25 °C	3109	185
	Tc-nom 85 °C	2867	174
	Tc-max 95 °C	2823	172
I-nom 1000mA	Tc 25 °C	5904	167
	Tc-nom 85 °C	5335	154
	Tc-max 95 °C	5232	151
I-max 2000mA	Tc 25 °C	10588	138
	Tc-nom 85 °C	9399	125
	Tc-max 95 °C	9182	122



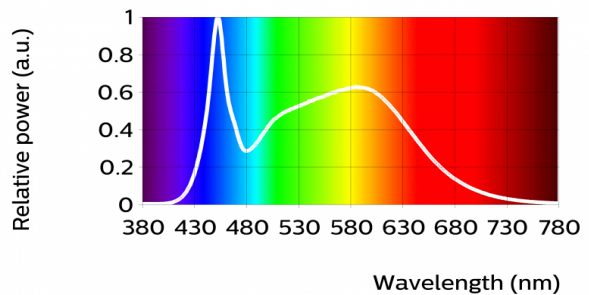
Fortimo SLM VO 850 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4994	5370	5907	lm
Module efficacy	144	155		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%, for efficacy +/- 6%., for x, y +/- 0.005, for CRI +/- 1.5

Operation point	850	lm	lm/W
50% I-nom 500mA	Tc 25 °C	3127	186
	Tc-nom 85 °C	2883	175
	Tc-max 95 °C	2839	173
I-nom 1000mA	Tc 25 °C	5940	168
	Tc-nom 85 °C	5370	155
	Tc-max 95 °C	5265	152
I-max 2000mA	Tc 25 °C	10658	139
	Tc-nom 85 °C	9462	126
	Tc-max 95 °C	9245	123



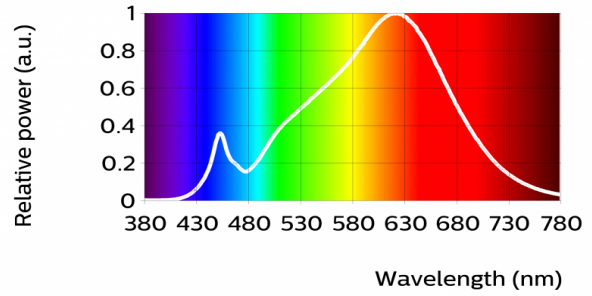
Fortimo SLM VO 927 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	3846	4135	4549	lm
Module efficacy	111	119		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%, for efficacy +/- 6%., for x, y +/- 0.005, for CRI +/- 1.5

Operation point	927	lm	lm/W
50% I-nom 500mA	Tc 25 °C	2413	144
	Tc-nom 85 °C	2224	135
	Tc-max 95 °C	2190	134
I-nom 1000mA	Tc 25 °C	4576	129
	Tc-nom 85 °C	4135	119
	Tc-max 95 °C	4054	117
I-max 2000mA	Tc 25 °C	8188	107
	Tc-nom 85 °C	7263	97
	Tc-max 95 °C	7095	95



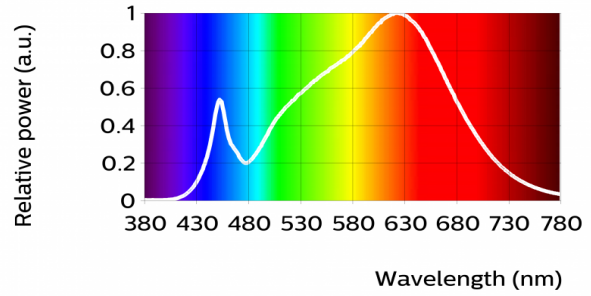
Fortimo SLM VO 930 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4036	4340	4774	lm
Module efficacy	116	125		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%, for efficacy +/- 6%., for x, y +/- 0.005, for CRI +/- 1.5

Operation point	930	lm	lm/W
50% I-nom 500mA	Tc 25 °C	2532	151
	Tc-nom 85 °C	2334	142
	Tc-max 95 °C	2298	140
I-nom 1000mA	Tc 25 °C	4804	136
	Tc-nom 85 °C	4340	125
	Tc-max 95 °C	4256	123
I-max 2000mA	Tc 25 °C	8604	112
	Tc-nom 85 °C	7634	101
	Tc-max 95 °C	7458	99



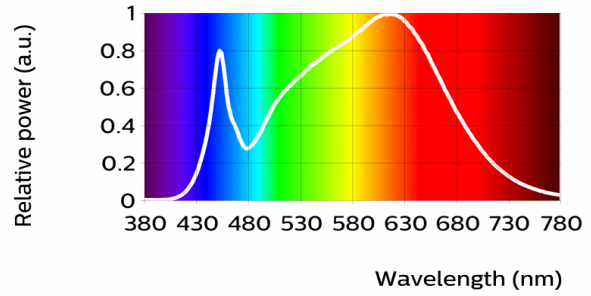
Fortimo SLM VO 935 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4176	4490	4939	lm
Module efficacy	120	129		lm/W
Correlated color temperature (CCT)		3500		K
Color coordinates (CIEx, CIEy)		(0.408, 0.393)		-
Color consistency			3	SDCM
CRI	90	92		
R9	50			
Photometric code		935/359		
Photobiological safety			RG1 unlimited	



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

Operation point	935	lm	lm/W
50% I-nom 500mA	Tc 25 °C	2621	156
	Tc-nom 85 °C	2416	147
	Tc-max 95 °C	2379	145
I-nom 1000mA	Tc 25 °C	4973	140
	Tc-nom 85 °C	4490	129
	Tc-max 95 °C	4406	127
I-max 2000mA	Tc 25 °C	8906	116
	Tc-nom 85 °C	7902	105
	Tc-max 95 °C	7720	103





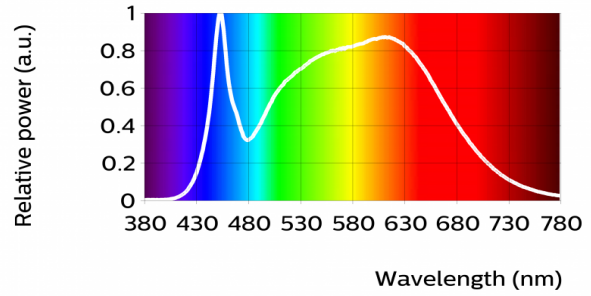
Fortimo SLM VO 940 1211 LES22 G1

Parameter	Min	Typ	Max	Unit
Luminous flux	4297	4620	5082	lm
Module efficacy	124	133		lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.382, 0.380)		-
Color consistency			3	SDCM
CRI	90	92		
R9	50			
Photometric code		940/359		
Photobiological safety			RG1 unlimited	



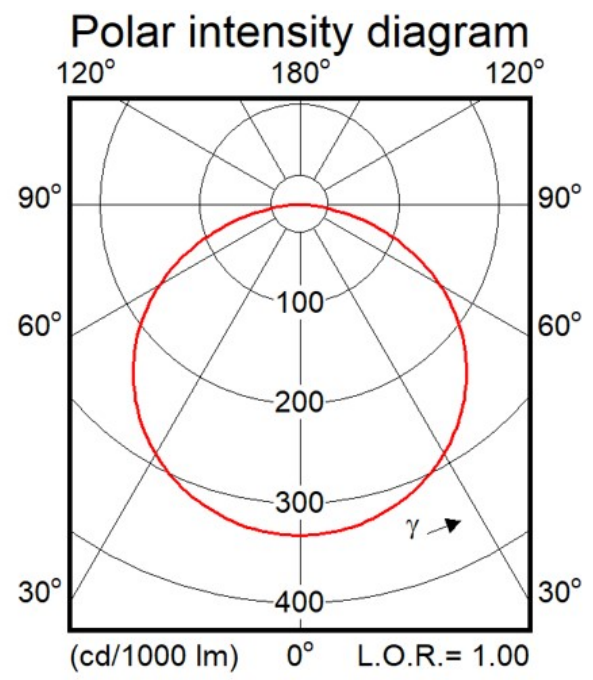
Measurement precision for flux +/- 5%, for efficacy +/- 6%., for x, y +/- 0.005, for CRI +/- 1.5

Operation point	940	lm	lm/W
50% I-nom 500mA	Tc 25 °C	2693	160
	Tc-nom 85 °C	2483	151
	Tc-max 95 °C	2445	149
I-nom 1000mA	Tc 25 °C	5112	144
	Tc-nom 85 °C	4620	133
	Tc-max 95 °C	4530	131
I-max 2000mA	Tc 25 °C	9159	119
	Tc-nom 85 °C	8128	108
	Tc-max 95 °C	7940	106



## Beam shape

Bare CoB



## Electrical characteristics

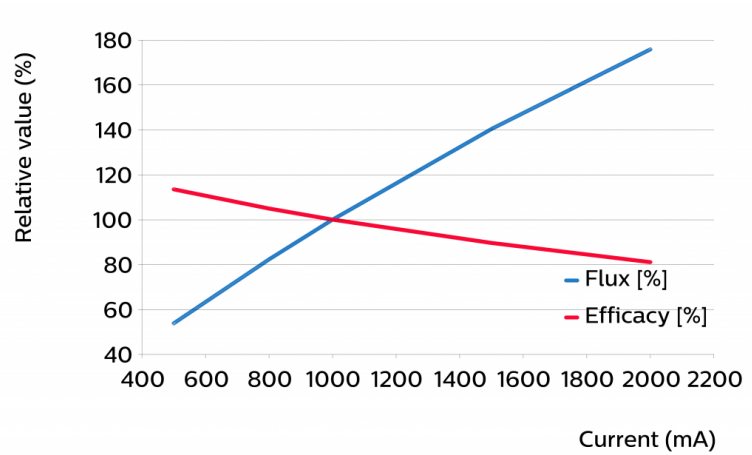
Parameter	Min	Typ	Max	Unit
Forward voltage	30.9	34.7	36.9	V
Power consumption	30.9	34.7	36.9	W = kWh/1000h

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

## Tuning information

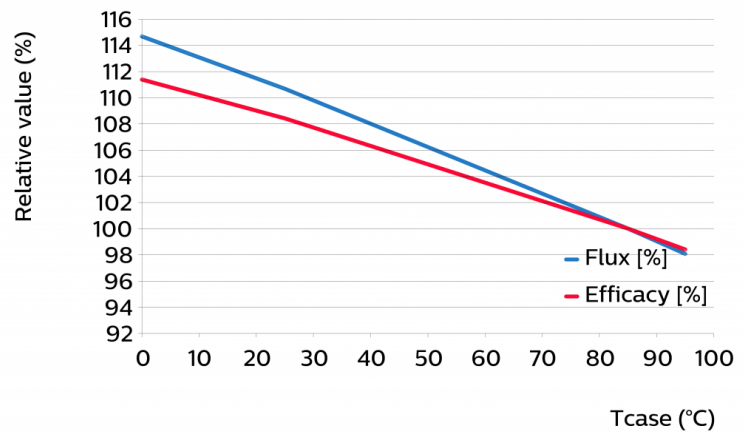
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
2000	176	81
1500	140	90
1000	100	100
800	82	105
500	54	113



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

Tc [°C]	Flux [%]	Efficacy [%]
95	98	98
85	100	100
25	111	108
0	115	111



## Lumen maintenance

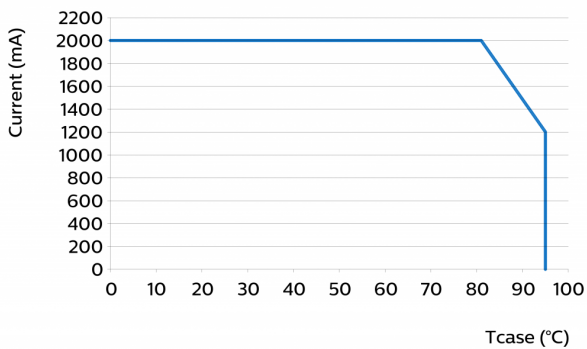
Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80%I-nom 800mA	Tc 65°C	>50	>50	>50	>50	>50	>50	>50	39	31
	Tc-nom 85°C	>50	>50	46	>50	36	29	26	17	14
	Tc-max 95°C	>50	40	32	28	25	20	18	12	9
I-nom 1000mA	Tc 65°C	>50	>50	>50	>50	>50	>50	>50	34	27
	Tc-nom 85°C	>50	>50	42	19	32	26	23	15	12
	Tc-max 95°C	>50	36	29	34	22	18	16	11	9
I-max 2000 mA	Tc 65°C	>50	>50	47	>50	37	30	26	17	14
	Tc-nom 85°C	43	28	23	27	18	14	13	8	7
	Tc-max 95°C	30	20	16	19	13	10	9	6	5

## Lifetime

Parameter	Value	Unit
M70F50 nominal	>50000	hours

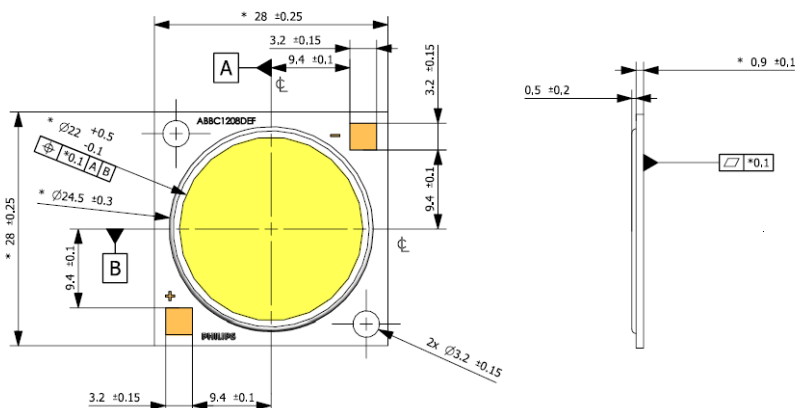
Switching cycles in accordance to EU 1194/2012: >15000

## Performance Window



## Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	27.75	28	28.25	mm
Width	27.25	28	28.25	mm
Height PCB	0.8	0.9	1	mm
Product mass		2.1		gram



## Absolute ratings

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Parameter	Min	Max	Unit
Current through the LED module (I-max)		2000	mA
Case temperature (Tc-max)		95	°C
ESD (direct contact)		2	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

CE  
ENEC  
ENEC+  
IEC 62031  
IEC TR 62778  
UL  
UL 8750

### Application

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



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18/12/2019