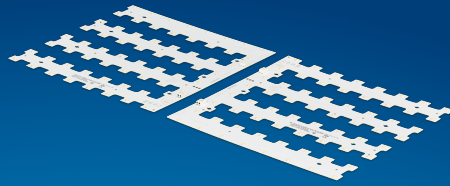


PHILIPS

Fortimo

LED

Fortimo LED Square-S
SMF 8xx HV/LV4



Datasheet

Fortimo LED Square systems

Fortimo LED Square systems consist of white light LED modules with square outer dimensions delivering high energy efficiency and high quality of light. Fortimo LED Square systems are ideal for office applications where the luminaires require a very homogeneous exit surface window. Typical applications are recessed, surface mounted and suspended office luminaires.

Key features and benefits

- LED module efficiency of 200 lm/W (nominal at 4000K, CRI80, S) or 188 lm/W in CRI90 (nominal at 4000K, CRI90, S)
- Long life-time: >70,000 hours
- High color rendering: choice between CRI >80 or CRI >90
- CRI90 products are based on our CRI90 High Efficiency technology
- Excellent color consistency of 3 SDCM
- Choice of color temperatures (3000K, 3500K, 4000K and 6500K)
- Two sizes: Square (1250lm) and Double-Square (2500lm)
- FlexTune tunable white modules available in both lumen packages
- FlexTune tunable white modules can be tuned from 2700K to 6500K in CRI90
- FlexTune tunable white modules work perfectly together with the Xitanium FlexTune non-isolated drivers
- Tunable lumen output, efficacy and lifetime
- Push-in connectors enabling automated wiring
- Five year system warranty when paired with Xitanium drivers

November 2024



Ordering data

Commercial product name	12NC	EPREL registration #	Box quantity
Fortimo LED Square-S SMF 830 HV/LV4	9290 039 93006	10012805	20
Fortimo LED Square-S SMF 835 HV/LV4	9290 039 95306	10012801	20
Fortimo LED Square-S SMF 840 HV/LV4	9290 039 93106	10012807	20
Fortimo LED Square-S SMF 865 HV/LV4	9290 039 93206	10012808	20

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED Square-S SMF 8xx HV/LV4	148	960	960	mA

Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T _c (case temperature at T _c point)	45	75	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)

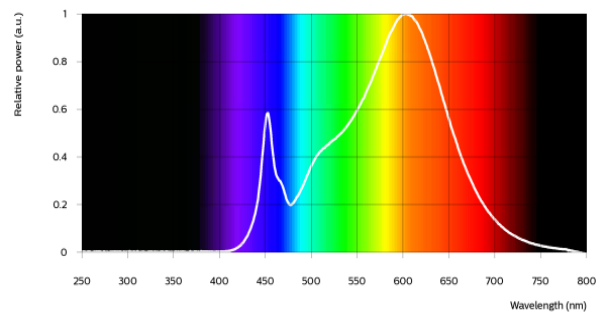
Fortimo LED Square-S SMF 830 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	1160	1197	1270	lm
Efficacy	180	189	212	lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.433, 0.400)		-
Color consistency			3	SDCM
CRI	80			
R9	0			
Radiation angle		120		deg
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 118mA	Tc 25 °C	962	192
	Tc-nom 45 °C	938	188
	Tc-max 85 °C	882	180
I-nom 148mA	Tc 25 °C	1196	190
	Tc-nom 45 °C	1197	189
	Tc-max 85 °C	1097	177
I-max 960mA	Tc 25 °C	6866	152
	Tc-nom 45 °C	6692	149
	Tc-max 85 °C	6276	141



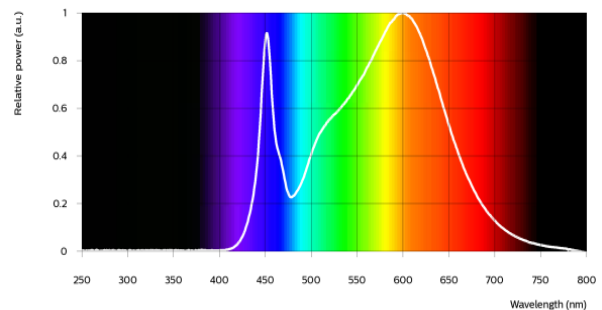
Fortimo LED Square-S SMF 835 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	1190	1230	1300	lm
Efficacy	184	194	217	lm/W
Correlated color temperature (CCT)		3500		K
Color coordinates (CIEx, CIEy)		(0.405, 0.387)		-
Color consistency			3	SDCM
CRI	80			
R9	0			
Radiation angle		120		deg
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 118mA	Tc 25 °C	988	194
	Tc-nom 45 °C	963	193
	Tc-max 85 °C	904	181
I-nom 148mA	Tc 25 °C	1229	192
	Tc-nom 45 °C	1230	194
	Tc-max 85 °C	1124	181
I-max 960mA	Tc 25 °C	7106	155
	Tc-nom 45 °C	6918	152
	Tc-max 85 °C	6483	144



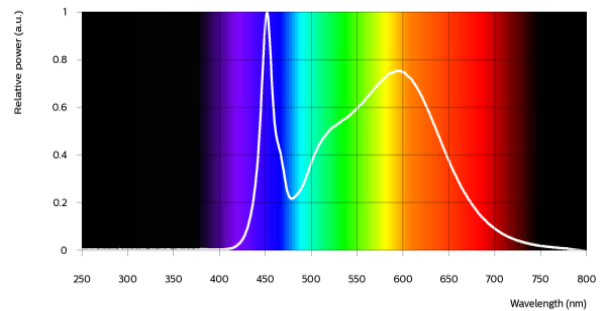
Fortimo LED Square-S SMF 840 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	1220	1266	1380	lm
Efficacy	189	200	230	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.379, 0.375)		-
Color consistency			3	SDCM
CRI	80			
R9	0			
Radiation angle		120		deg
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 118mA	Tc 25 °C	1017	203
	Tc-nom 45 °C	991	198
	Tc-max 85 °C	930	190
I-nom 148mA	Tc 25 °C	1265	201
	Tc-nom 45 °C	1266	200
	Tc-max 85 °C	1157	187
I-max 960mA	Tc 25 °C	7315	161
	Tc-nom 45 °C	7122	158
	Tc-max 85 °C	6675	150



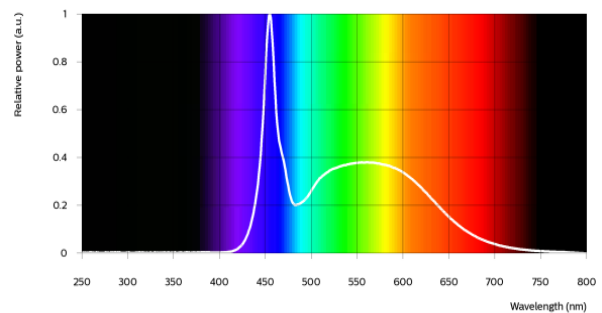
Fortimo LED Square-S SMF 865 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	1200	1220	1340	lm
Efficacy	186	193	224	lm/W
Correlated color temperature (CCT)		6500		K
Color coordinates (CIEx, CIEy)		(0.310, 0.325)		-
Color consistency			3	SDCM
CRI	80			
R9	0			
Radiation angle		120		deg
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	865	lm	lm/W
80% I-nom 118mA	Tc 25 °C	978	196
	Tc-nom 45 °C	950	190
	Tc-max 85 °C	885	181
I-nom 148mA	Tc 25 °C	1219	194
	Tc-nom 45 °C	1220	193
	Tc-max 85 °C	1104	178
I-max 960mA	Tc 25 °C	7115	154
	Tc-nom 45 °C	6902	150
	Tc-max 85 °C	6424	142



Electrical characteristics

Fortimo LED Square-S SMF 830 HV/LV4

Parameter	Min	Typ	Max	Unit
Forward voltage	40.5	42.9	43.7	V
Power consumption	6.0	6.3	6.5	W = kWh/1000h
Number of modules in series per chain			7	
Number of modules in parallel			4	

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

Fortimo LED Square-S SMF 835 HV/LV4

Fortimo LED Square-S SMF 840 HV/LV4

Parameter	Min	Typ	Max	Unit
Forward voltage	40.5	42.9	43.6	V
Power consumption	6.0	6.3	6.5	W = kWh/1000h
Number of modules in series per chain			7	
Number of modules in parallel			4	

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

Fortimo LED Square-S SMF 865 HV/LV4

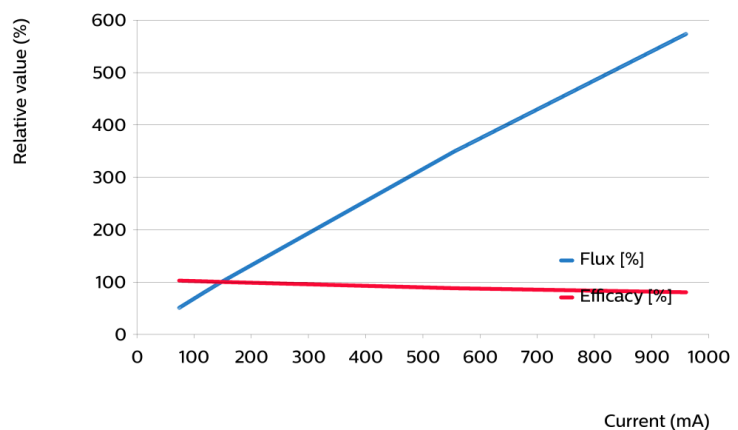
Parameter	Min	Typ	Max	Unit
Forward voltage	40.4	42.7	43.5	V
Power consumption	6.0	6.3	6.4	W = kWh/1000h
Number of modules in series per chain			7	
Number of modules in parallel			4	

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

Tuning information

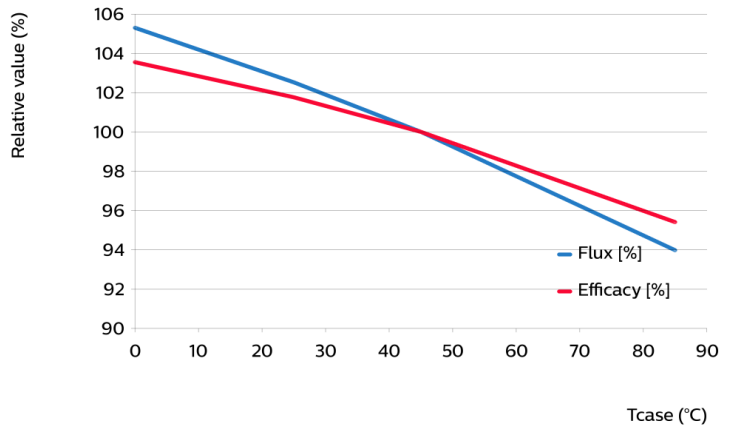
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
960	573	80
554	348	88
148	100	100
118	80	101
74	51	103



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

Tc [°C]	Flux [%]	Efficacy [%]
85	94	95
45	100	100
25	103	102
0	105	104



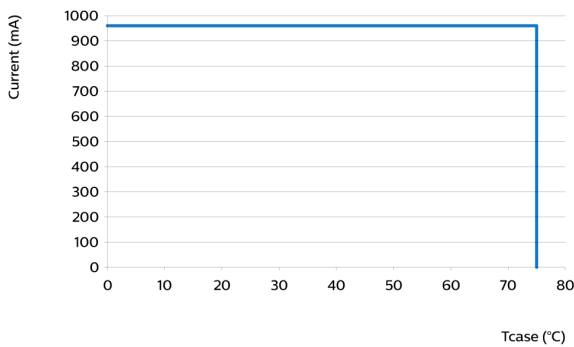
Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% Inom=118.4mA	Tc=25°C	>100	>100	>100	>100	>100	>100	95	93	92
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	75	74	73
	Tc_life=75°C	>100	>100	>100	>100	>100	>100	55	54	53
Inom=148mA	Tc=25°C	>100	>100	>100	>100	>100	>100	95	93	92
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	75	74	73
	Tc_life=75°C	>100	>100	>100	>100	>100	>100	55	54	53
Ilife=960mA	Tc=25°C	>100	>100	>100	>100	>100	>100	83	81	80
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	66	64	63
	Tc_life=75°C	>100	>100	>100	>100	99	97	48	47	46

Lifetime

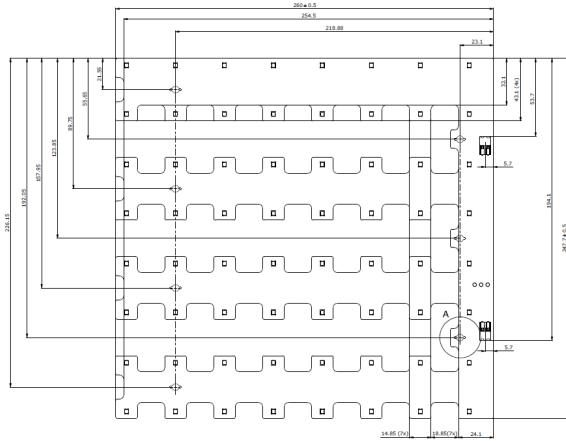
Parameter	Value	Unit
M70F50 nominal	100000	hours
M70F50 life	100000	hours

Performance Window



Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	259.5	260	260.5	mm
Width	247.2	247.7	248.2	mm
Height total		5.5		mm
Height PCB		1.7		mm
Product mass		106		gram



Absolute ratings

Parameter	Min	Max	Unit
Current through the LED module (I-max)		960	mA
Case temperature (Tc-max)		85	°C
ESD (direct contact)	8		kV
Working voltage		350	V _{dc}

Application information

Certificates and Standards

CE
cULus
ENEC
ENEC+

Application

Dimming

Yes



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