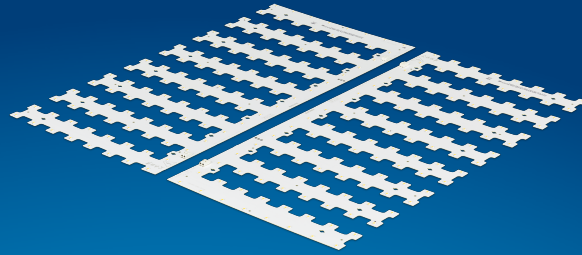


PHILIPS

Fortimo

LED

Fortimo LED Square-DS
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-DS SMF 830 HV/LV4	9290 039 93606	10012797	20
Fortimo LED Square-DS SMF 835 HV/LV4	9290 039 95406	10012811	20
Fortimo LED Square-DS SMF 840 HV/LV4	9290 039 93706	10012799	20
Fortimo LED Square-DS SMF 865 HV/LV4	9290 039 93806	10012802	20

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED Square-DS SMF 8xx HV/LV4	296	1920	1920	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)

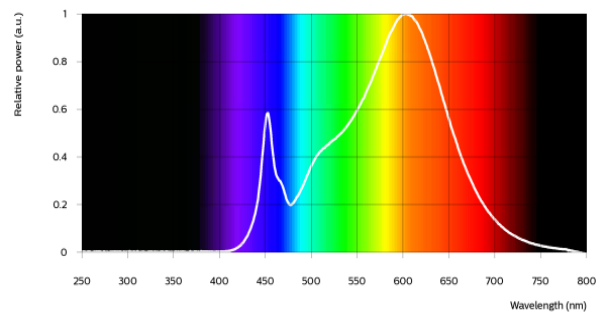
Fortimo LED Square-DS SMF 830 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	2320	2394	2540	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 237mA	Tc 25 °C	1924	191
	Tc-nom 45 °C	1877	188
	Tc-max 85 °C	1764	178
I-nom 296mA	Tc 25 °C	2393	188
	Tc-nom 45 °C	2394	189
	Tc-max 85 °C	2193	177
I-max 1920mA	Tc 25 °C	13731	152
	Tc-nom 45 °C	13383	149
	Tc-max 85 °C	12553	142



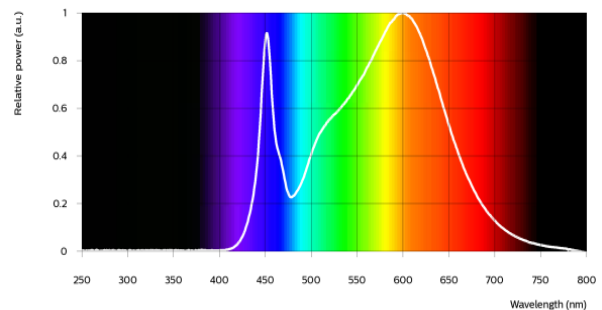
Fortimo LED Square-DS SMF 835 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	2390	2459	2600	lm
Efficacy	185	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 237mA	Tc 25 °C	1936	186
	Tc-nom 45 °C	1885	183
	Tc-max 85 °C	1770	174
I-nom 296mA	Tc 25 °C	2394	183
	Tc-nom 45 °C	2459	194
	Tc-max 85 °C	2189	171
I-max 1920mA	Tc 25 °C	13095	131
	Tc-nom 45 °C	12734	128
	Tc-max 85 °C	11901	121



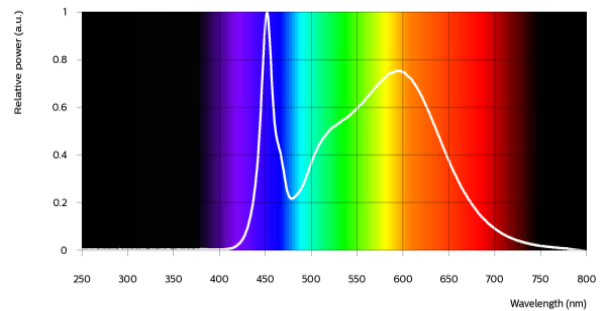
Fortimo LED Square-DS SMF 840 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	2450	2532	2760	lm
Efficacy	190	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 237mA	Tc 25 °C	2034	201
	Tc-nom 45 °C	1981	198
	Tc-max 85 °C	1860	188
I-nom 296mA	Tc 25 °C	2531	199
	Tc-nom 45 °C	2532	200
	Tc-max 85 °C	2314	187
I-max 1920mA	Tc 25 °C	14631	161
	Tc-nom 45 °C	14243	158
	Tc-max 85 °C	13350	150



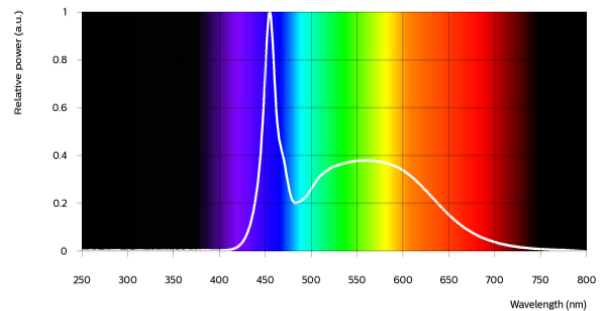
Fortimo LED Square-DS SMF 865 HV/LV4

Parameter	Min	Typ	Max	Unit
Luminous flux	2400	2440	2690	lm
Efficacy	186	193	225	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 237mA	Tc 25 °C	1956	196
	Tc-nom 45 °C	1899	190
	Tc-max 85 °C	1771	181
I-nom 296mA	Tc 25 °C	2439	194
	Tc-nom 45 °C	2440	193
	Tc-max 85 °C	2207	178
I-max 1920mA	Tc 25 °C	14229	154
	Tc-nom 45 °C	13805	150
	Tc-max 85 °C	12848	142



Electrical characteristics

Fortimo LED Square-DS SMF 830 HV/LV4

Parameter	Min	Typ	Max	Unit
Forward voltage	40.5	42.9	43.7	V
Power consumption	12.0	12.7	12.9	W = kWh/1000h
Number of modules in series per chain			7	
Number of modules in parallel			2	

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

Fortimo LED Square-DS SMF 835 HV/LV4

Parameter	Min	Typ	Max	Unit
Forward voltage	40.5	42.9	43.6	V
Power consumption	12.0	12.7	12.9	W = kWh/1000h
Number of modules in series per chain			7	
Number of modules in parallel			2	

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

Fortimo LED Square-DS SMF 840 HV/LV4

Parameter	Min	Typ	Max	Unit
Forward voltage	40.5	42.9	43.6	V
Power consumption	12.0	12.6	12.9	W = kWh/1000h
Number of modules in series per chain			7	
Number of modules in parallel			2	

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

Fortimo LED Square-DS SMF 865 HV/LV4

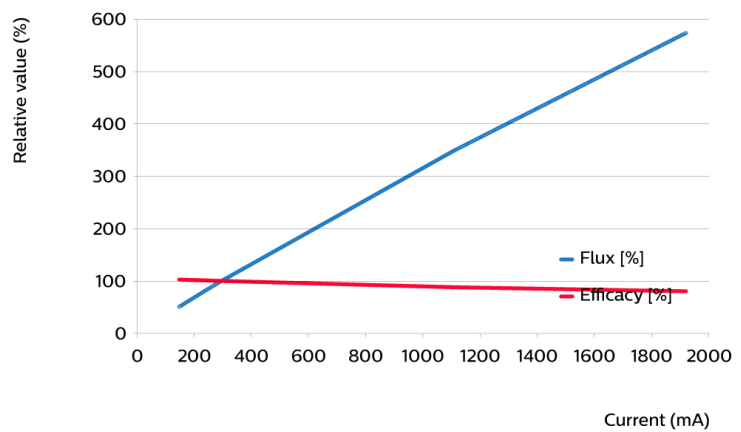
Parameter	Min	Typ	Max	Unit
Forward voltage	40.4	42.7	43.5	V
Power consumption	12.0	12.6	12.9	W = kWh/1000h
Number of modules in series per chain			7	
Number of modules in parallel			2	

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

Tuning information

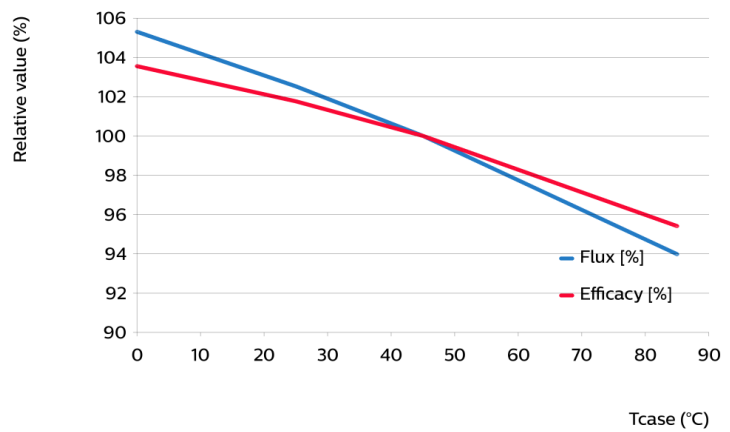
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
1920	573	80
1108	348	88
296	100	100
237	80	101
148	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



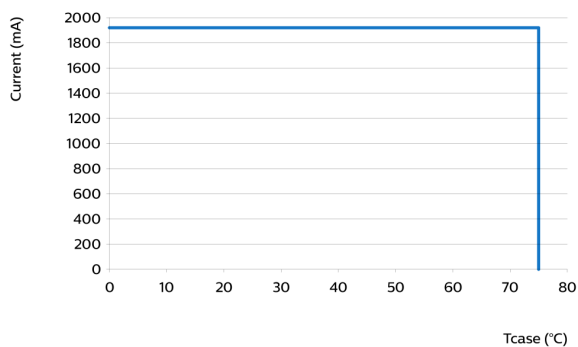
Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% Inom=236.8mA	Tc=25°C	>100	>100	>100	>100	>100	>100	95	94	93
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	75	74	74
	Tc_life=75°C	>100	>100	81	>100	>100	81	55	54	54
Inom=296mA	Tc=25°C	>100	>100	>100	>100	>100	>100	95	94	93
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	75	74	74
	Tc_life=75°C	>100	>100	81	>100	>100	81	55	54	54
Ilife=1920mA	Tc=25°C	>100	>100	>100	>100	>100	>100	83	81	81
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	66	65	64
	Tc_life=75°C	>100	>100	81	>100	99	81	48	47	47

Lifetime

Parameter	Value	Unit
M70F50 nominal	100000	hours
M70F50 life	100000	hours

Performance Window



Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	520	520.5	521	mm
Width	255.5	260	260.5	mm
Height total	5.1	5.5	5.9	mm
Height PCB		1.7		mm
Product mass		208		gram



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