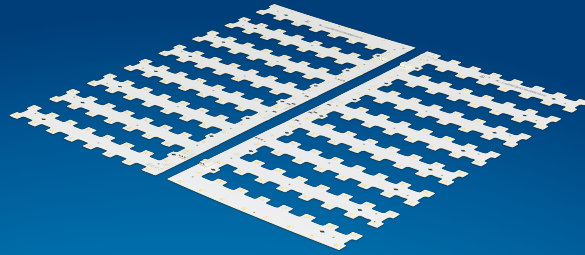


PHILIPS

Fortimo

LED

Fortimo LED Square-DS
SMF 927-965 HV4



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 927-965 HV4	9290 039 94306	10012796	20

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
Fortimo LED Square-DS SMF 927-965 HV4	155	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)

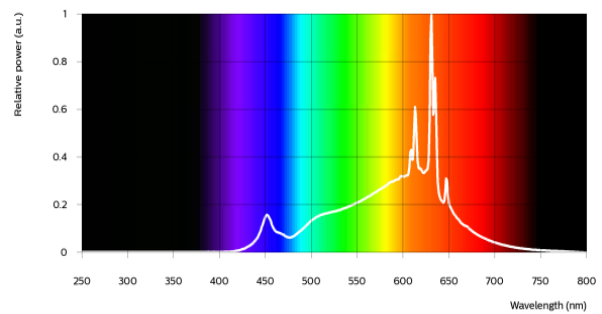
Fortimo LED Square-DS SMF 927-965 HV4 [@927]

Parameter	Min	Typ	Max	Unit
Luminous flux	2220	2265	2470	lm
Efficacy	165	171	197	lm/W
Correlated color temperature (CCT)		2700		K
Color coordinates (CIEx, CIEy)		(0.462, 0.408)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
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	927	lm	lm/W
80% I-nom 124mA	Tc 25 °C	1818	173
	Tc-nom 45 °C	1777	171
	Tc-max 85 °C	1671	162
I-nom 155mA	Tc 25 °C	2264	171
	Tc-nom 45 °C	2265	171
	Tc-max 85 °C	2080	161
I-max 960mA	Tc 25 °C	12648	135
	Tc-nom 45 °C	12347	133
	Tc-max 85 °C	11584	126



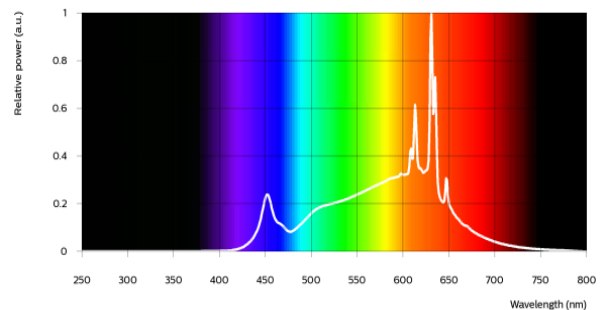
Fortimo LED Square-DS SMF 927-965 HV4 [@930]

Parameter	Min	Typ	Max	Unit
Luminous flux	2240	2306	2500	lm
Efficacy	165	173	199	lm/W
Correlated color temperature (CCT)		3000		K
Color coordinates (CIEx, CIEy)		(0.432, 0.392)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
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	930	lm	lm/W
80% I-nom 124mA	Tc 25 °C	1851	175
	Tc-nom 45 °C	1807	172
	Tc-max 85 °C	1698	165
I-nom 155mA	Tc 25 °C	2305	173
	Tc-nom 45 °C	2306	173
	Tc-max 85 °C	2114	163
I-max 960mA	Tc 25 °C	12866	138
	Tc-nom 45 °C	12549	135
	Tc-max 85 °C	11760	129



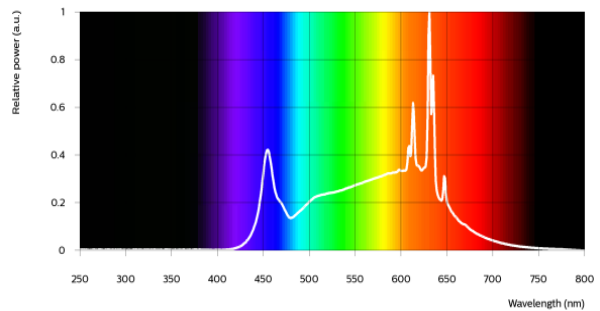
Fortimo LED Square-DS SMF 927-965 HV4 [@935]

Parameter	Min	Typ	Max	Unit
Luminous flux	2280	2344	2550	lm
Efficacy	168	176	203	lm/W
Correlated color temperature (CCT)		3500		K
Color coordinates (CIEx, CIEy)		(0.402, 0.375)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	



Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

Operation point	935	lm	lm/W
80% I-nom 124mA	Tc 25 °C	1882	178
	Tc-nom 45 °C	1836	175
	Tc-max 85 °C	1722	167
I-nom 155mA	Tc 25 °C	2343	176
	Tc-nom 45 °C	2344	176
	Tc-max 85 °C	2144	165
I-max 960mA	Tc 25 °C	13067	141
	Tc-nom 45 °C	12734	138
	Tc-max 85 °C	11919	131



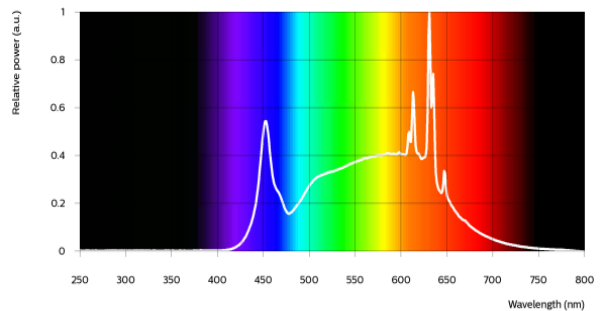
Fortimo LED Square-DS SMF 927-965 HV4 [@940]

Parameter	Min	Typ	Max	Unit
Luminous flux	2310	2372	2580	lm
Efficacy	171	178	205	lm/W
Correlated color temperature (CCT)		4000		K
Color coordinates (CIEx, CIEy)		(0.379, 0.362)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	



Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

Operation point	940	lm	lm/W
80% I-nom 124mA	Tc 25 °C	1905	180
	Tc-nom 45 °C	1856	177
	Tc-max 85 °C	1740	169
I-nom 155mA	Tc 25 °C	2371	178
	Tc-nom 45 °C	2372	178
	Tc-max 85 °C	2165	167
I-max 960mA	Tc 25 °C	13214	143
	Tc-nom 45 °C	12870	140
	Tc-max 85 °C	12035	133



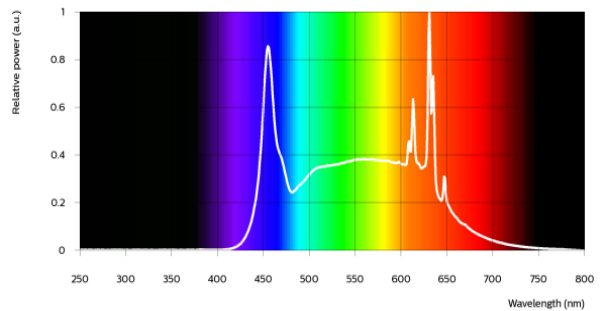
Fortimo LED Square-DS SMF 927-965 HV4 [@950]

Parameter	Min	Typ	Max	Unit
Luminous flux	2360	2412	2620	lm
Efficacy	174	181	208	lm/W
Correlated color temperature (CCT)		5000		K
Color coordinates (CIEx, CIEy)		(0.347, 0.344)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	



Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

Operation point	950	lm	lm/W
80% I-nom 124mA	Tc 25 °C	1937	183
	Tc-nom 45 °C	1886	180
	Tc-max 85 °C	1765	171
I-nom 155mA	Tc 25 °C	2411	181
	Tc-nom 45 °C	2412	181
	Tc-max 85 °C	2197	169
I-max 960mA	Tc 25 °C	13425	147
	Tc-nom 45 °C	13062	144
	Tc-max 85 °C	12199	136



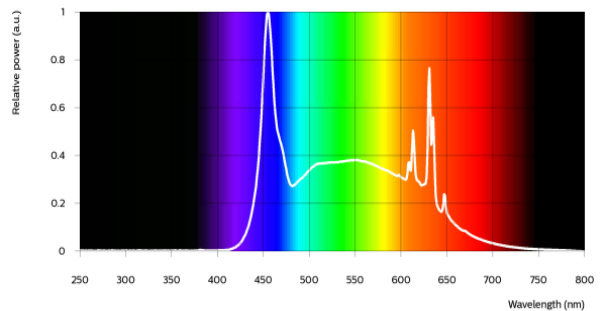
Fortimo LED Square-DS SMF 927-965 HV4 [@965]

Parameter	Min	Typ	Max	Unit
Luminous flux	2370	2445	2650	lm
Efficacy	175	184	211	lm/W
Correlated color temperature (CCT)		6500		K
Color coordinates (CIEx, CIEy)		(0.314, 0.326)		-
Color consistency			3	SDCM
CRI	90			
R9	50			
Radiation angle		120		deg
Photobiological safety			RG1 unlimited	



Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5.

Operation point	965	lm	lm/W
80% I-nom 124mA	Tc 25 °C	1964	185
	Tc-nom 45 °C	1910	182
	Tc-max 85 °C	1785	173
I-nom 155mA	Tc 25 °C	2444	184
	Tc-nom 45 °C	2445	184
	Tc-max 85 °C	2221	171
I-max 960mA	Tc 25 °C	13596	150
	Tc-nom 45 °C	13215	147
	Tc-max 85 °C	12327	139



Electrical characteristics

Fortimo LED Square-DS SMF 927-965 HV4 [@927]

Parameter	Min	Typ	Max	Unit
Forward voltage	80.7	85.4	86.9	V
Power consumption	12.5	13.2	13.5	W = kWh/1000h
Number of modules in series per chain			1	
Number of modules in parallel			5	

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

Fortimo LED Square-DS SMF 927-965 HV4 [@935]

Fortimo LED Square-DS SMF 927-965 HV4 [@965]

Fortimo LED Square-DS SMF 927-965 HV4 [@930]

Fortimo LED Square-DS SMF 927-965 HV4 [@950]

Fortimo LED Square-DS SMF 927-965 HV4 [@940]

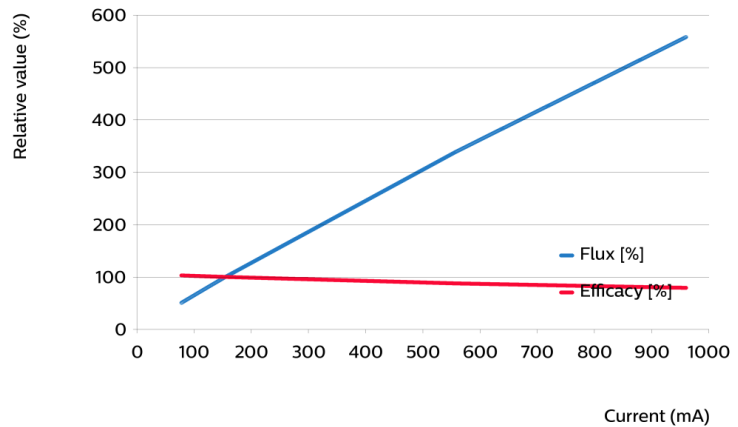
Parameter	Min	Typ	Max	Unit
Forward voltage	81.1	85.8	87.3	V
Power consumption	12.6	13.3	13.5	W = kWh/1000h
Number of modules in series per chain			1	
Number of modules in parallel			5	

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

Tuning information

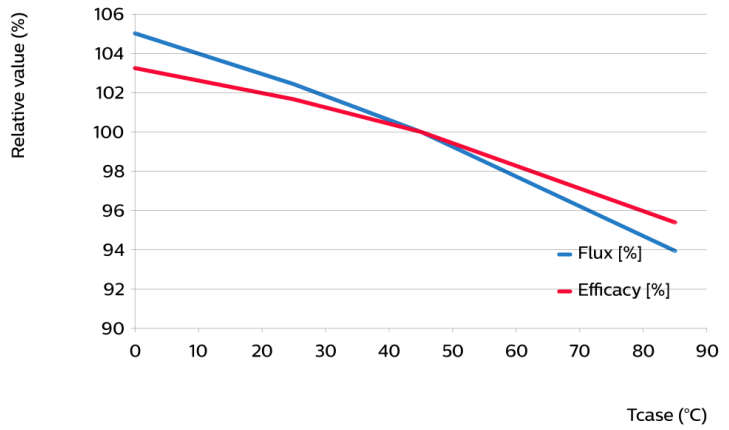
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
960	558	79
558	339	88
155	100	100
124	80	101
78	51	103



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

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



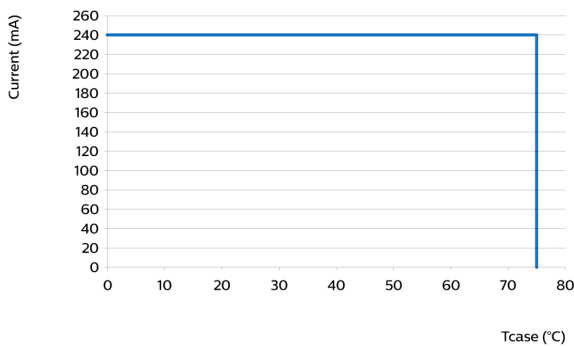
Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70			L80			L90		
		B50	B20	B10	B50	B20	B10	B50	B20	B10
80% Inom=62.4mA	Tc=25°C	>100	>100	>100	>100	>100	>100	67	66	65
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	53	52	52
	Tc_life=75°C	>100	>100	>100	83	81	80	39	38	38
Inom=155mA	Tc=25°C	>100	>100	>100	>100	>100	>100	67	66	65
	Tc_nom=45°C	>100	>100	>100	>100	>100	>100	53	52	52
	Tc_life=75°C	>100	>100	>100	83	81	80	39	38	38
Ilife=300mA	Tc=25°C	>100	>100	>100	>100	>100	>100	56	55	54
	Tc_nom=45°C	>100	>100	>100	94	92	91	44	44	43
	Tc_life=75°C	>100	>100	>100	69	67	66	32	32	31

Lifetime

Parameter	Value	Unit
M70F50 nominal	100000	hours
M70F50 life	100000	hours

Performance Window



Application information

Certificates and Standards

CE
cULus
ENEC
ENEC+

Application

Dimming	Yes
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