

FO Strip VOcs

Fortimo LED Strip VOcs is an efficient and flexible dual channel LED module from Advance. When paired with CertaDrive Xcs drivers it creates a ready made system to reduce luminaire SKU count by up to 9x (3x CCT and 3x Flux outputs).

Key features and benefits

Features

• Low system cost and optimized performance with five-year limited system warranty if paired with Advance CertaDrive Xcs
• High efficiency LEDs
• CRI80 color rendering
• 50,000 hours lifetime
• Mechanical footprint compatibility with LED Strip product family
• 3 SDCM color consistency at endpoints

Benefits

•Maximize SKU and component flexibility with fewer luminaire SKUs to produce or warehouse

Applications

• Education
• Office
• Healthcare
• Retail
• Hospitality

Ordering data

Commercial product name	12NC	Box quantity
FO Strip VOcs 19in 4000lm 835-850 LV1	9290 027 46613	144

Drive currents

Parameter	Nominal*	Life**	Max***	Unit
FO Strip VOcs 19in 4000lm 835-850 LV1	660	1100	1400	mA

Module temperatures

Parameter	Nominal*	Life**	Max***	Unit
T_c (case temperature at T_c point)	45	85	90	°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

Suggested maximum current at elevated ambient

Setting	1	2	3	4	Unit
Luminaire maximum ambient	35	45	55	65	°C
Suggested maximum current*	800	800	600	400	mA

* Drive current that may be possible at the reference external ambient temperature. The maximum suggested current given is for a typical non-lensed luminaire design with good thermal transfer capability. Use of a lensed luminaire or luminaires with non-optimal thermal characteristics will require a further current reduction to meet the same maximum ambient temperature. The current suggestion is based on the module Tc-life and thermal testing must be used to verify Tc-life is never exceeded for your specific luminaire. It may be necessary to adjust the final current value in order to meet the Tc-life rating of the module.

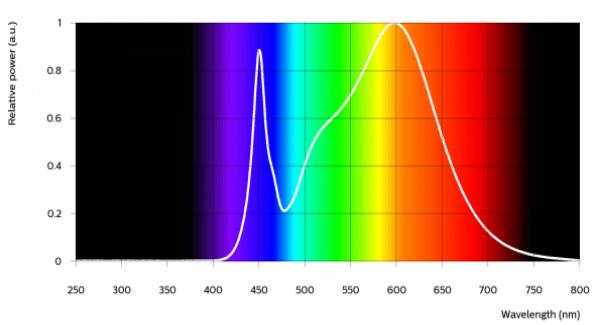
Optical characteristics - table per color (CCT)

FO Strip VOcs 19in 4000lm 835-850 LV1 [3500K]

Parameter	Min	Typ	Max	Unit
Luminous flux	3630	3920	4210	lm
Efficacy	161	179		lm/W
Correlated color temperature (CCT)		3500		K
Color consistency			3	SDCM
CRI	80			
R9	0			

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 and R9 ± 3.

Operation point	835	lm	lm/W
80% I-nom 528mA	Tc 25 °C	3270	187
	Tc-nom 45 °C	3180	184
	Tc-life 85 °C	2980	175
I-nom 660mA	Tc 25 °C	4030	182
	Tc-nom 45 °C	3920	179
	Tc-life 85 °C	3670	170
I-life 1100mA	Tc 25 °C	6430	169
	Tc-nom 45 °C	6260	166
	Tc-life 85 °C	5860	157

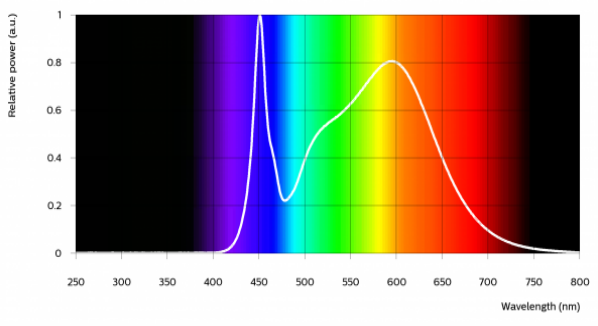


FO Strip VOcs 19in 4000lm 835-850 LV1 [4000K]

Parameter	Min	Typ	Max	Unit
Luminous flux	3830	4140	4450	lm
Efficacy	176	195		lm/W
Correlated color temperature (CCT)		4000		K
CRI	80			
R9	0			

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 and R9 ± 3.

Operation point	840	lm	lm/W
80% I-nom 528mA	Tc 25 °C	3450	204
	Tc-nom 45 °C	3360	200
	Tc-life 85 °C	3150	190
I-nom 660mA	Tc 25 °C	4250	199
	Tc-nom 45 °C	4140	195
	Tc-life 85 °C	3880	185
I-life 1100mA	Tc 25 °C	6800	184
	Tc-nom 45 °C	6610	180
	Tc-life 85 °C	6190	171

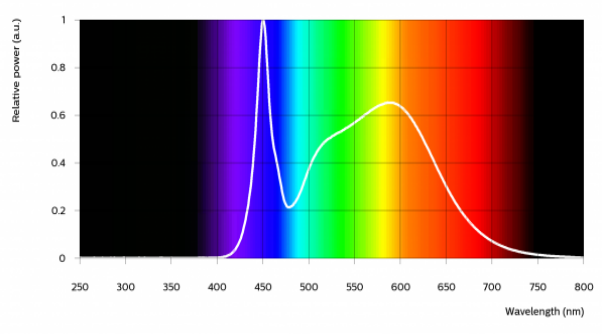


FO Strip VOcs 19in 4000lm 835-850 LV1 [5000K]

Parameter	Min	Typ	Max	Unit
Luminous flux	3750	4050	4350	lm
Efficacy	167	185		lm/W
Correlated color temperature (CCT)		5000		K
Color consistency			3	SDCM
CRI	80			
R9	0			

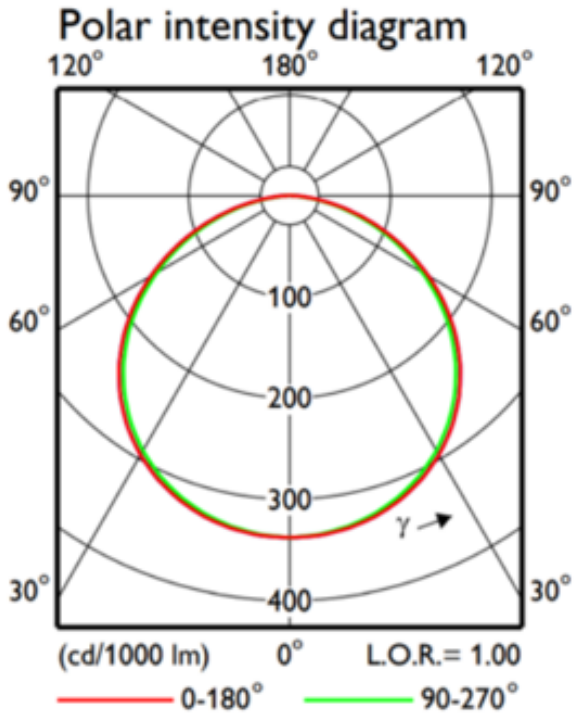
Measurement precision ± 5% for the flux data and ± 6% for the efficacy data. Measurement precision for color coordinates ± 0.005. Measurement precision for CRI ± 1.5 and R9 ± 3.

Operation point	850	lm	lm/W
80% I-nom 528mA	Tc 25 °C	3370	193
	Tc-nom 45 °C	3280	189
	Tc-life 85 °C	3080	180
I-nom 660mA	Tc 25 °C	4150	188
	Tc-nom 45 °C	4050	185
	Tc-life 85 °C	3790	176
I-life 1100mA	Tc 25 °C	6660	175
	Tc-nom 45 °C	6490	172
	Tc-life 85 °C	6060	163



Beam shape

The LED-module has a Lambertian light distribution.



Electrical characteristics

FO Strip VOcs 19in 4000lm 835-850 LV1 [3500K]
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Parameter	Min	Typ	Max	Unit
Forward voltage	31.7	33.2	34.8	V
Power consumption	20.9	21.9	23.0	W
Number of modules in series per chain			1	

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

FO Strip VOcs 19in 4000lm 835-850 LV1 [4000K]

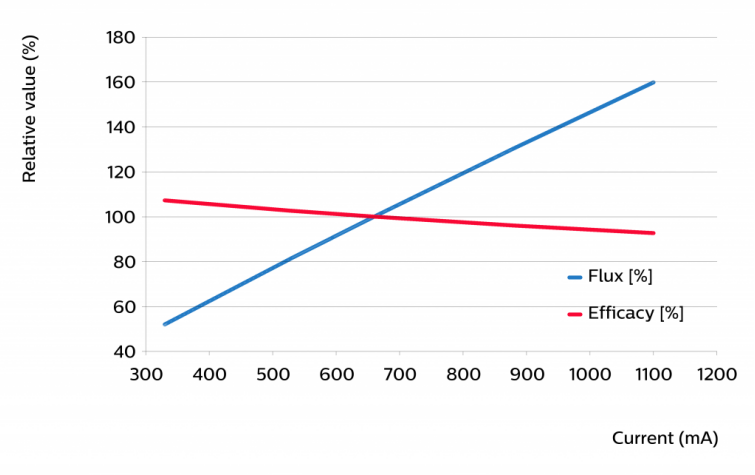
Parameter	Min	Typ	Max	Unit
Forward voltage	30.7	32.2	33.8	V
Power consumption	20.3	21.3	22.3	W
Number of modules in series per chain			1	

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

Tuning information

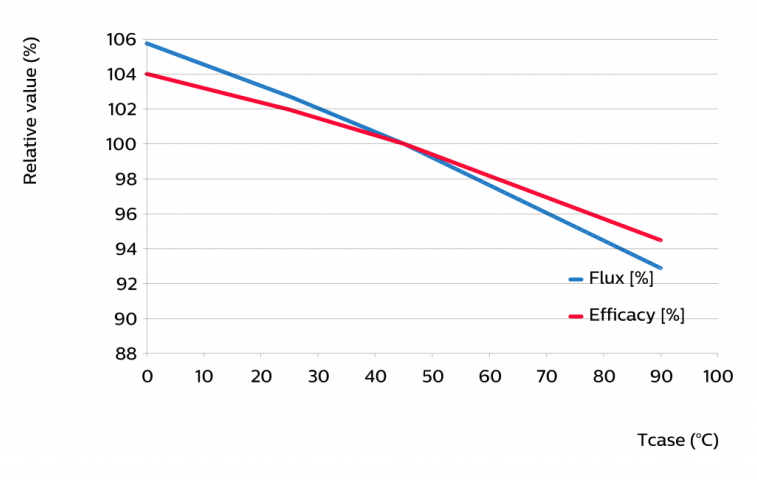
Flux and efficacy versus current (at Tc nominal)

I [mA]	Flux [%]	Efficacy [%]
1100	160	93
880	130	96
660	100	100
528	81	103
330	52	107



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

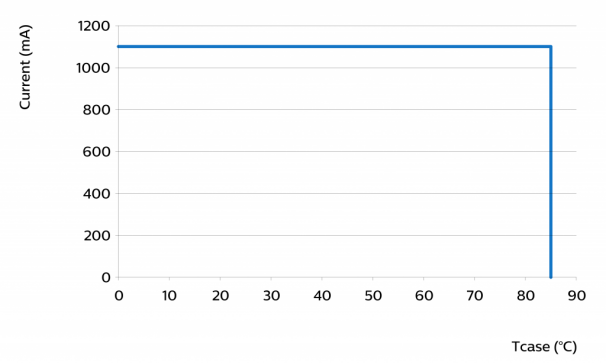
Tc [°C]	Flux [%]	Efficacy [%]
90	93	94
45	100	100
25	103	102
0	106	104



Lumen maintenance

Operation point	Lumen maintenance x 1000 hours	L70 B50	L80 B50	L90 B50
80% I-nom 528 mA	Ts nom 45°C	>60	>60	50
	Ts 75°C	>60	>60	50
	Ts-life 85°C	>60	>60	50
I-nom 660 mA	Ts nom 45°C	>60	>60	50
	Ts 75°C	>60	>60	50
	Ts-life 85°C	>60	>60	50
I-life 1100 mA	Ts nom 45°C	>60	>60	50
	Ts 75°C	>60	>60	50
	Ts-life 85°C	>60	>60	50

Performance Window



Thermal switching table

Warranted Number of Full Thermal Product Cycles at 25°C ambient temperature

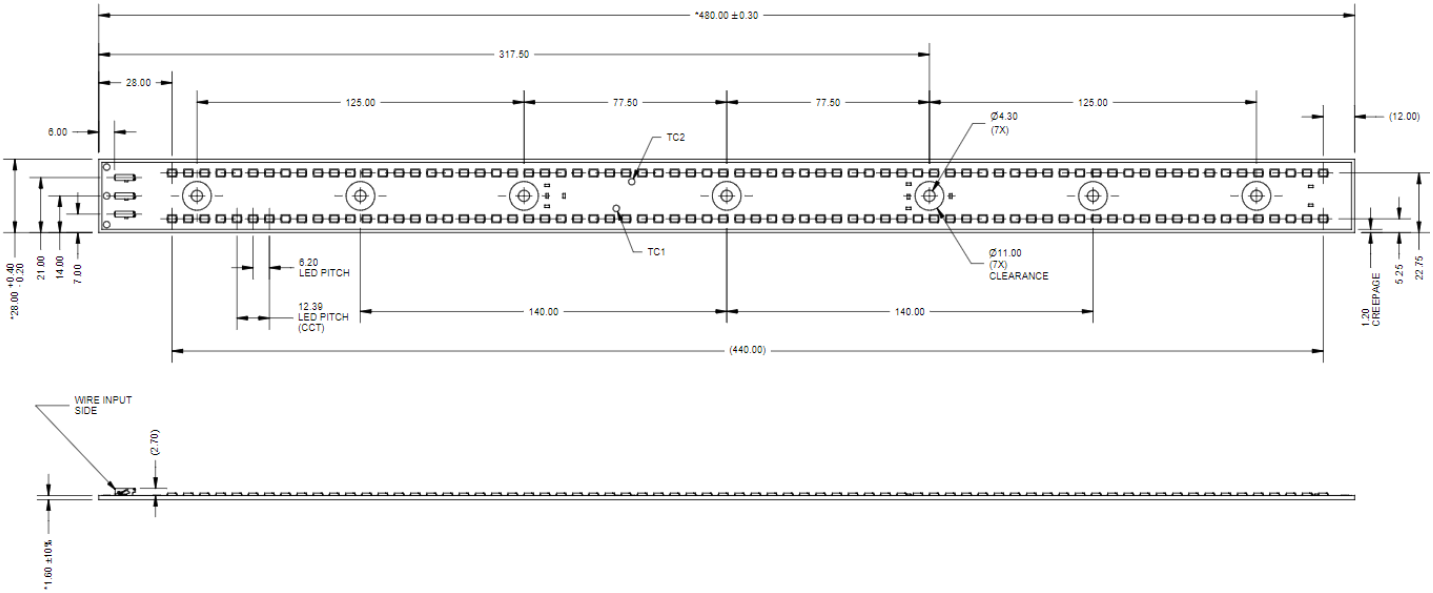
Case Temperature – Tc [°C]	Amount of Cycles
45 (or less)	>100,000
55	>100,000
65	>100,000
75	66,000
85	32,000
90	22,000

Wiring

Specification item	Value	Unit	Condition
Input wire cross-section	0.25...0.75	mm^2	solid, stranded
	18...24	AWG	solid, stranded
Input wire strip length	7.5...9.5	mm	

Mechanical characteristics

Parameter	Min	Typ	Max	Unit
Length	479.7	480	480.3	mm
Width	27.8	28	28.4	mm
Height PCB	1.4	1.6	1.8	mm
Height total		4.3		mm
Warpage (IPC-TM-650)			0.75	%



Absolute ratings

Parameter	Min	Max	Unit
Current through the LED module (I-max)		1400	mA
Case temperature (Tc-max)		90	°C
ESD (direct contact)	2		kV
Working voltage		60	V_{dc}
Ambient temperature	-40		°C

This LED module is an ESD sensitive device with ESD protection up to 2kV, tested according CAN/CSA-IEC 61000-4-2. Proper precautions to protect the product must be in place to maintain product reliability and warranty. These precautions are described in the design-in guide for the product and ANSI/ESD S20.20-2014. Precautions include, but are not limited to: ESD protection areas, equipment grounding, personal ESD protective measures and anti-static clothing, conductive flooring, ionizers, ESD packaging, etc. This product is not field replaceable.

Surge protection of the module must be provided by the driver or other components. Advance Xitanium and Certadrive drivers have built in protection circuitry and will protect the module up to the specified driver surge rating. When using third party drivers testing or confirmation from manufacturer is suggested to ensure adequate module protection.

Application information

Certificates and Standards
UL 8750

Environmental
RoHS/REACH

Application	
IP rating	No IP rating
Overheating protection	No protection
Luminaire class ANSI	Class 2
Dimming	Yes

There cannot be any ice/fog/mist on any part of the module surface during the application at -40°C.

Notes

View limited warranty at www.signify.com/warranties for details and restrictions.

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