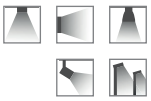


Module SLE G5 17mm R SNC

Module SLE ESSENCE

Product description

- For general lighting application
- Typ. luminous flux category: 2,000/3,000 lm
- High efficacy up to 151 lm/W for the LED module at tp = 25 °C
- Small LES (light emitting surface) diameter enables narrow beam angle for spotlights
- Excellent thermal management by COB technology
- Uniform radiation with Dam&Fill technology
- Cooling required
- Flexible operating modes

Standards, page 3

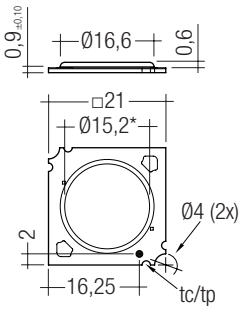
Colour temperatures and tolerances, page 7

CE RoHS

Module SLE G5 17mm R SNC
Module SLE ESSENCE

Technical data

Beam characteristic	115°
Ambient temperature range	-30 … +75 °C
tp rated	65 °C
tc①	Up to 100 °C
Max. allowed Silicontemperature / Tjunction_max	150 °C / 140 °C
Max. DC forward current for LES17 2,000 lm②	800 mA
Max. DC forward current for LES17 3,000 lm②	1,200 mA
Max. permissible LF current ripple for LES17 2,000 lm	960 mA
Max. permissible LF current ripple for LES17 3,000 lm	1,440 mA
Max. permissible peak current for LES17 2,000 lm	1,440 mA / max. 8.4 ms
Max. permissible peak current for LES17 3,000 lm	2,160 mA / max. 8.4 ms
Max. working voltage for insulation③	75 V (SELV)
Insulation test voltage	1.15 kV
ESD classification	Severity level 4
Risk group (EN 62471:2008)	1
Type of protection	IP00



Dimensions in mm, *optical LES

Ordering data

Type	Article number	Colour temperature	Connection cable	Packaging	Weight per pc.
SLE G5 17mm 2000lm 830 R SNC	**28001362**	3,000 K	no	25 pc(s).	0.001 kg
SLE G5 17mm 2000lm 840 R SNC	**28001363**	4,000 K	no	25 pc(s).	0.001 kg
SLE G5 17mm 3000lm 830 R SNC	**28001368**	3,000 K	no	25 pc(s).	0.001 kg
SLE G5 17mm 3000lm 840 R SNC	**28001369**	4,000 K	no	25 pc(s).	0.001 kg

Specific technical data

Type	Photo-metric code	Forward current	Luminous flux at tp = 25 °C④	Luminous flux at tp = 65 °C④	Power consumption④⑤	Min. forward voltage at tp = 65 °C	Max. forward voltage at tp = 25 °C	Luminous efficacy module at tp = 25 °C	Luminous efficacy module at tp = 65 °C	Colour rendering index CRI
SLE G5 17mm 2000lm 830 R SNC	830/349	500 mA	2,570 lm	2,310 lm	18.4 W	32.9 V	37.3 V	137 lm/W	126 lm/W	80
SLE G5 17mm 2000lm 840 R SNC	840/349	500 mA	2,720 lm	2,460 lm	18.4 W	32.9 V	37.3 V	145 lm/W	134 lm/W	80
SLE G5 17mm 3000lm 830 R SNC	830/349	900 mA	4,420 lm	3,940 lm	34.0 W	33.8 V	40.4 V	128 lm/W	116 lm/W	80
SLE G5 17mm 3000lm 840 R SNC	840/349	900 mA	4,660 lm	4,190 lm	34.0 W	33.8 V	40.4 V	135 lm/W	123 lm/W	80

① See derating curves in data sheet section 2.3.

② Max. DC forward current varies over the temperature of the LED module. See derating curves in data sheet section 2.3.

③ The detailed explanation, see data sheet section 3.1.

④ Tolerance range for optical and electrical data: ±10 %.

⑤ All values at tp = 65 °C.

1. Standards

EN 62031
EN 62471
EN 61547
EN 55015
IEC 62717

1.1 Photometric code

Key for photometric code, e. g. 830 / 349

1st digit		2nd + 3rd digit	4th digit	5th digit	6th digit	
Code	CRI	Colour temperature in Kelvin x 100	McAdam initial	McAdam after 25% of the life-time (max.6000h)	Luminous flux after 25% of the life-time (max.6000h)	
					Code	Luminous flux
7	70 – 79				7	≥ 70 %
8	80 – 89				8	≥ 80 %
9	≥90				9	≥ 90 %

2. Thermal details

2.1 tp point, ambient temperature and life-time

The temperature at tp reference point is crucial for the light output and life-time of a LED product.
The operating temperature of a LED product is crucial for the light output, the product life-time but also for the product safety.
The thermal limits can be checked at the tp/tc point and at tr.
In chapter 5.3 the lumen maintenance is shown in relation to the temperature at tp. tp,rated shows the temperature at which the rated values are reached.
tc shows the thermal limit for safety reason und must never be exceeded under normal conditions.
For the interchangeablity with other Zhaga products, $t_{r,max}$ is specified directly at the thermal interface to the heatsink of the luminaire.

For SLE G5 R SNC a tp temperature of 65 °C has to be complied in order to achieve an optimum between heat sink requirements, light output and life-time.

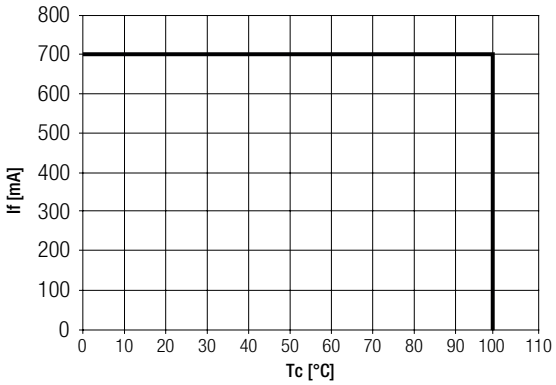
Compliance with the maximum permissible reference temperature at the tp point must be checked under operating conditions in a thermally stable state. The maximum value must be determined under worst-case conditions for the relevant application.

2.2 Thermal behaviour

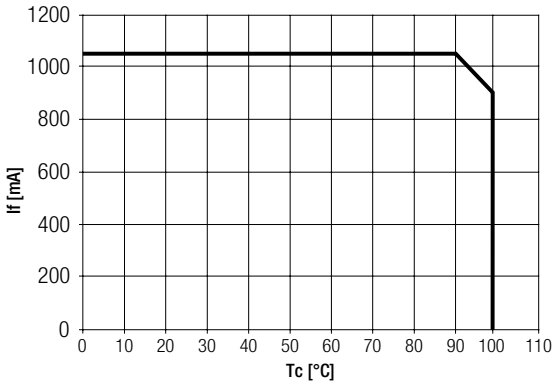
storage temperature	-30 … +80 °C
operating temperature ta	-30 … +75 °C
tp (at typ. current)	65 °C
tc temperature as a function of the current	acc. to the derating curves

2.3 Derating curves

SLE G5 17 mm 2000 lm



SLE G5 17 mm 3000 lm



2.4 Thermal design and heat sink

The rated life of LED products depends to a large extent on the temperature. If the permissible temperature limits are exceeded, the life of the SLE G5 R SNC will be greatly reduced or the SLE G5 R SNC may be destroyed.

Therefore the SLE G5 R SNC needs to be mounted onto a heat sink which does not exceed the value for $R_{th,max}$.

Tridonic's excellent thermal design for the SLE G5 R SNC products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life-time.

2.5 Heat sink values

SLE G5 17mm 2000lm

ta	tp	Operating current	$R_{th, hs-a}$	Cooling area
25 °C	65 °C	500 mA	3.34 K/W	200 cm²
30 °C	65 °C	500 mA	2.91 K/W	229 cm²
40 °C	65 °C	500 mA	2.04 K/W	326 cm²
50 °C	65 °C	500 mA	1.18 K/W	565 cm²

SLE G5 17mm 3000lm

ta	tp	Operating current	$R_{th, hs-a}$	Cooling area
25 °C	65 °C	900 mA	1.70 K/W	392 cm²
30 °C	65 °C	900 mA	1.47 K/W	453 cm²
40 °C	65 °C	900 mA	1.02 K/W	654 cm²
50 °C	65 °C	900 mA	0.57 K/W	1.177 cm²

Thermal resistance $R_{th, j-p}$	
Luminous flux	**$R_{th, j-p}$**
2,000 lm	1.10 K/W
3,000 lm	0.87 K/W

Notes
The actual cooling can differ because of the material, the structural shape, outside influences and the installation situation. A thermal connection between SLE G5 R SNC and heat sink with heat-conducting paste or heat conducting adhesive film is absolutely necessary.
Additionally the SLE G5 R SNC has to be fixed on the heat sink with M3 screws to optimise the thermal connection.
Use of thermal interface material with thermal conductivity of $\lambda > 1$ W/mK and layer thickness of interface material with max. 50 µm or a similar interface material where the quotient of layer thickness and thermal conductivity b < 50 µmmK/W.

3. Installation / wiring

3.1 Electrical supply/choice of LED Driver

SLE G5 R SNC from Tridonic are not protected against overvoltages, overcurrents, overloads or short-circuit currents. Safe and reliable operation can only be guaranteed in conjunction with a LED Driver which complies with the relevant standards. The use of LED Drivers from Tridonic in combination with SLE G5 R SNC guarantees the necessary protection for safe and reliable operation.

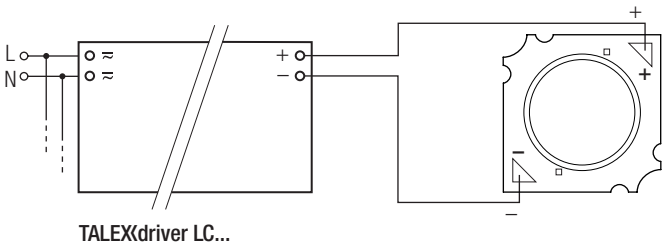
SLE G5 R SNC are basic isolated up to 75 V (SELV) against ground and can be mounted directly on earthed metal parts of the luminaire. If the max. output voltage of the LED Driver (also against earth) is above 75 V (SELV), an additional isolation between LED module and heat sink is required (for example by isolated thermal pads) or by a suitable luminaire construction.
At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

If a LED Driver other than Tridonic is used, it must provide the following protection:
- Short-circuit protection
- Overload protection
- Overtemperature protection

SLE G5 R SNC must be supplied by a constant current LED Driver. Operation with a constant voltage LED Driver will lead to an irreversible damage of the module.

Wrong polarity can damage the SLE G5 R SNC.

3.2 Wiring example



TALEXdriver LC...

3.3 Wiring type and cross section

The wiring has to be solid cable with a cross section of 0.5 to 0.75 mm² or with stranded wire with soldered ends with a cross section of 0.5 mm².

3.4 Mounting instruction

SLE G5 R SNC from Tridonic which have to be installed on a heat sink have to be connected with heat-conducting paste or heat conducting adhesive film and fixed with M3 screws.

The fixing/cooling surface must be cleaned by removing all dirt, dust and grease before installing the LED modules.

None of the components of the SLE G5 R SNC (substrate, LED, electronic components etc.) may be exposed to tensile or compressive stresses.

Max. torque for fixing: 0.5 Nm.

The SLE G5 R SNC modules are mounted with 2 screws per module. In order not to damage the modules only rounded head screws and an additional plastic flat washer should be used.

For further information please refer to to the brochure entitled “Technical Design-In-Guide SLE GEN4”.

Chemical substance may harm the LED module. Chemical reactions could lead to colour shift, reduced luminous flux or a total failure of the module caused by corrosion of electrical connections.

Materials which are used in LED applications (e.g. sealings, adhesives) must not produce dissolver gas. They must not be condensation curing based, acetate curing based or contain sulfur, chlorine or phthalate.
Avoid corrosive atmosphere during usage and storage.

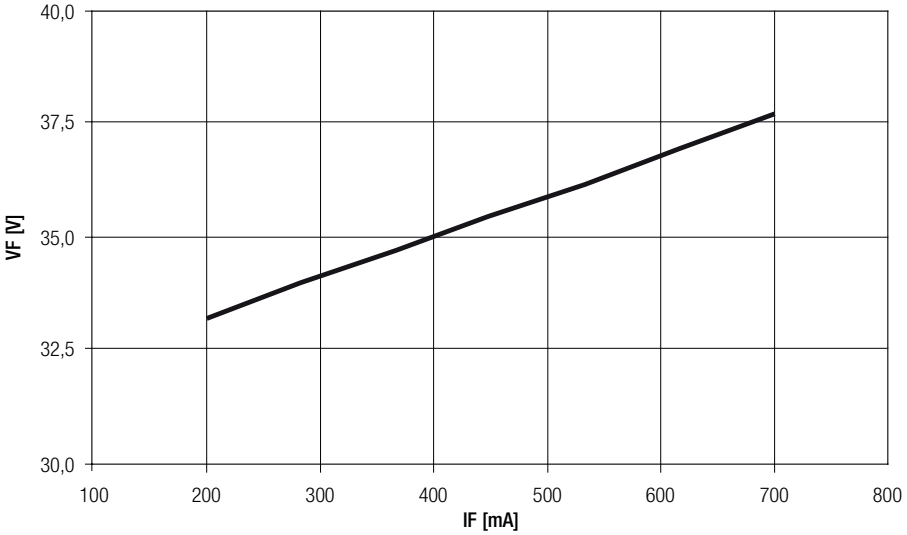
3.5 EOS/ESD safety guidelines

The device / module contains components that are sensitive to electrostatic discharge and may only be installed in the factory and on site if appropriate EOS/ESD protection measures have been taken. No special measures need be taken for devices/modules with enclosed casings (contact with the pc board not possible), just normal installation practice. Please note the requirements set out in the document EOS / ESD guidelines (Guideline_EOS_ESD.pdf) at:
http://www.tridonic.com/esd-protection

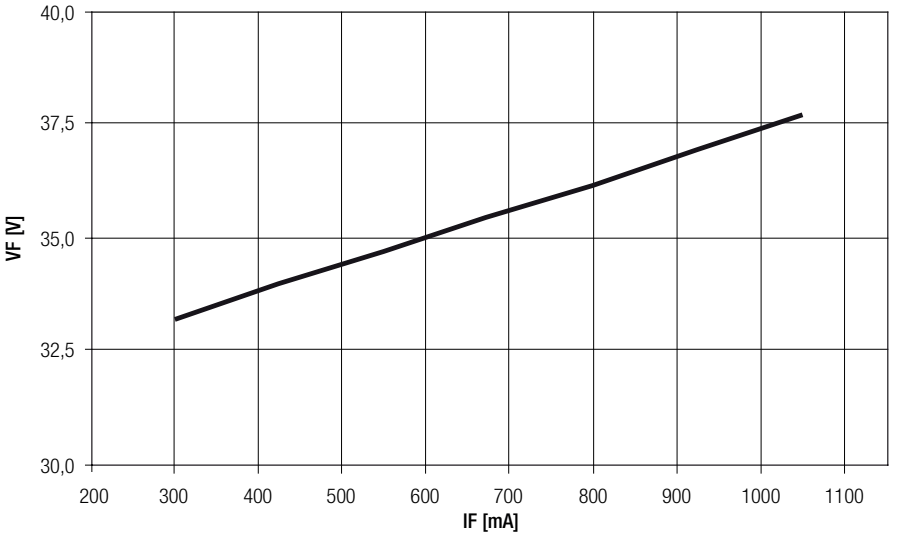
4. Electrical values

4.1 Forward voltage vs. forward current

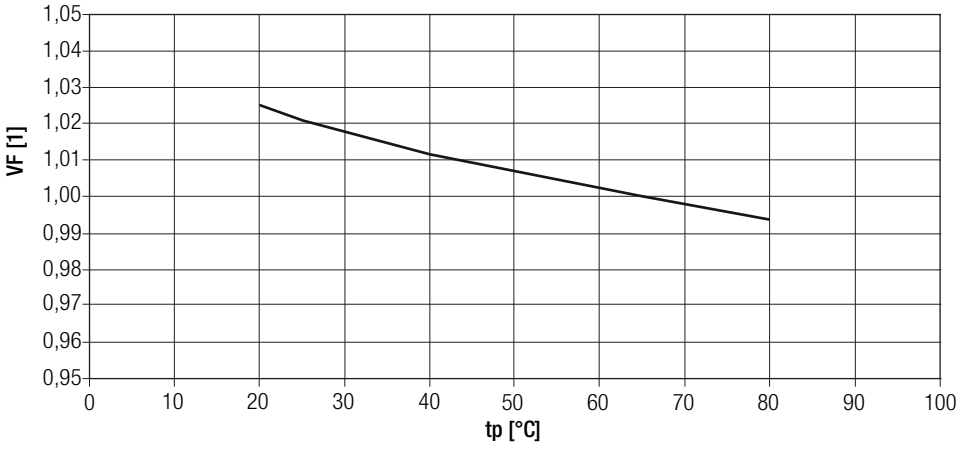
2000 lm:



3000 lm:



4.1 Forward voltage vs. tp temperature



The diagrams based on statistic values.
The real values can be different.

5. Photometric characteristics

Coordinates and tolerances according to CIE 1931

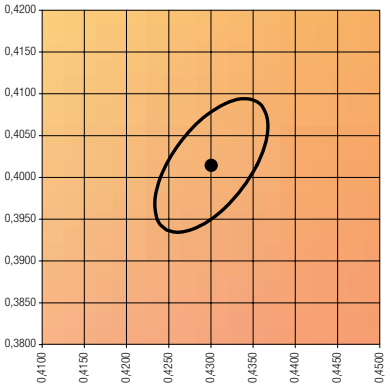
The specified colour coordinates are measured integral after a settling time of 100 ms. The current impuls depends on the module type.

Module type	Current impulse
SLE G5 17mm 2000lm xxx R SNC	500 mA
SLE G5 17mm 3000lm xxx R SNC	900 mA

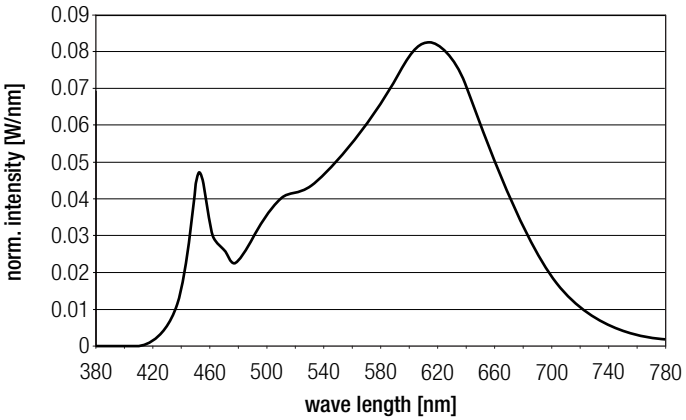
The ambient temperature of the measurement is ta = 25 °C.
The measurement tolerance of the colour coordinates are ± 0.01.

3,000 K

	x0	y0
Centre	0.4300	0.4016

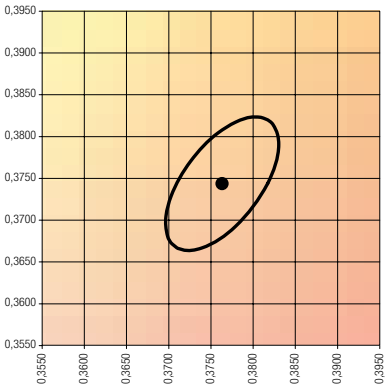


MacAdam ellipse: 3SDCM

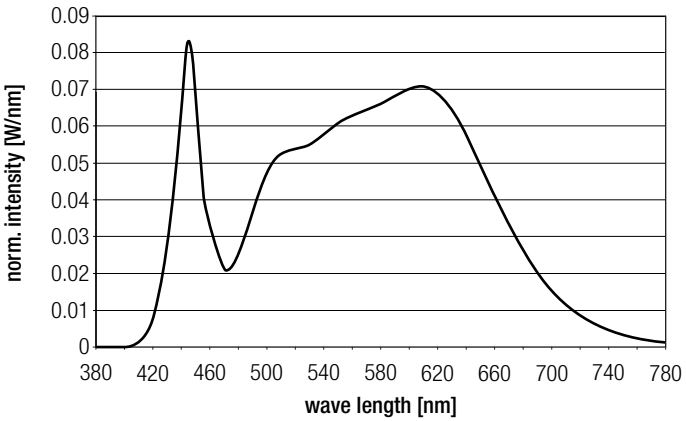


4,000 K

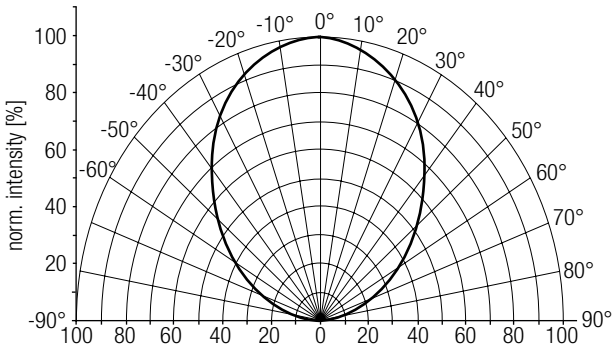
	x0	y0
Centre	0.3761	0.3740



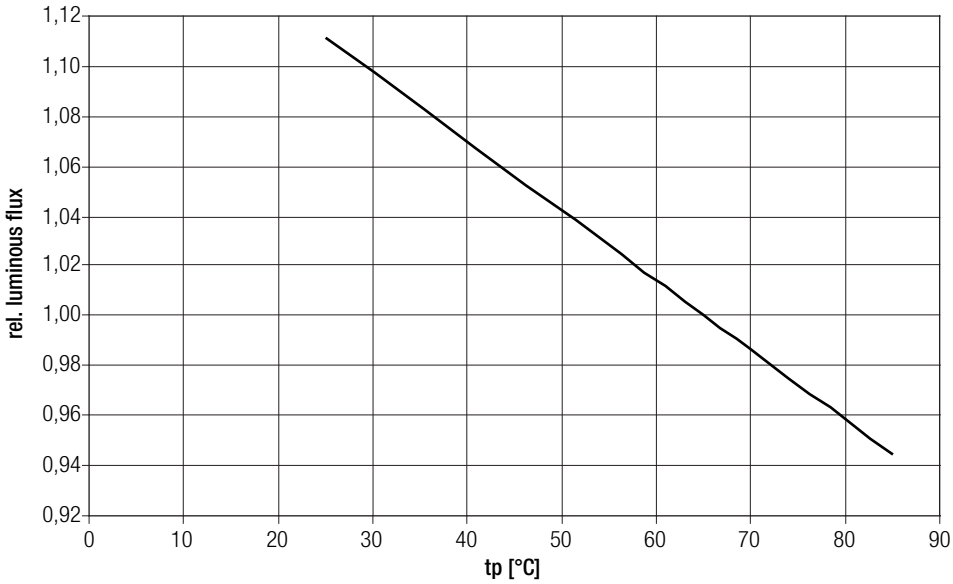
MacAdam ellipse: 3SDCM



5.2 Light distribution



5.3 Relative luminous flux vs. tp temperature



5.4 Relative luminous flux vs. forward current