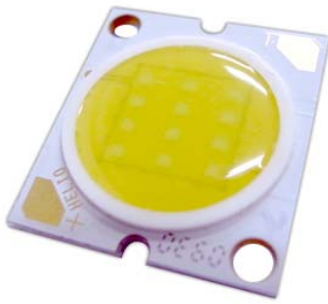


Heli-Array Series --- 13W



Heli-Array, a chip-on-board based solid-state lighting device, provides high luminous flux output with high efficiency for the illumination applications. Heli-Array has characteristics of excellent thermal management capacity, long operating life, optimized CRI and cost.

Features

- Compact high flux density light source
- Energy Star / ANSI compliant bin
- Low voltage DC operation
- Instant light
- Long operating life
- Superior thermal performance
- RoHS compliant and Pb free

Application

- Down light
- Spot light
- Par light
- General lighting
- Architectural lighting
- Stage lighting



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Product Nomenclature

HA UP - Q B N V 8
X1 X2 X3 X4 X5 X6 X7

X1 Item		X2 Classification		X3 Module		X4 Power	
Code	Type	Code	Type	Code	Type	Code	Type
HA	Heli-Array	UP	Ultra High Power	Q	Square	A	10W, 3x3 LEDs
						B	13W, 4x3 LEDs
						C	17W, 4x4 LEDs

X5 Lens		X6 Color		X7 CRI	
Code	Type	Code	Type	Code	Type
N	Flat	W	Cool White	8	CRI > 80
		S	Neutral White		
		V	Warm White		

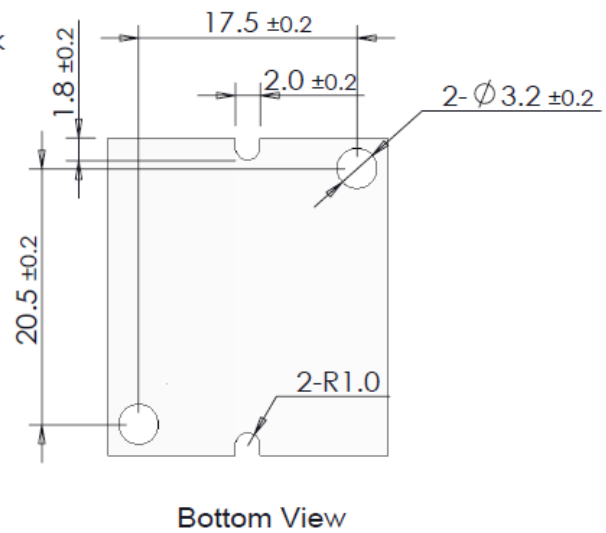
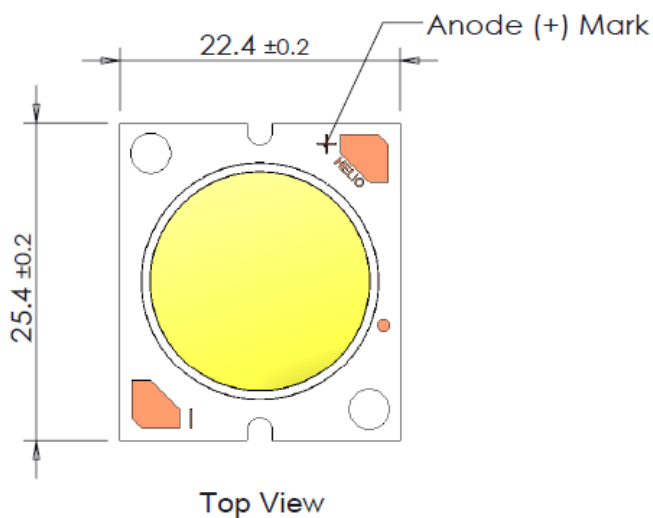
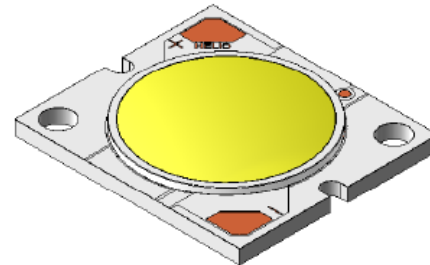
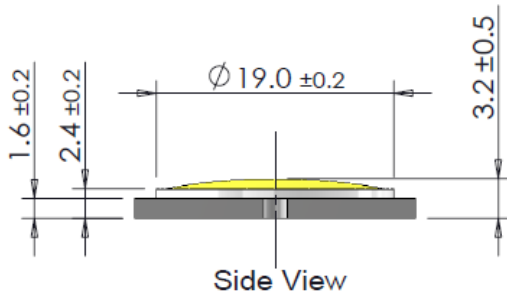
Product Selection Guide

Color	Part Number	CRI	Lumen Performance
Cool White (ANSI 5700K)	HAUP-QBNW	70	900lm @ 1000mA
Warm White (ANSI 3000K)	HAUP-QBNV8	80	650lm @ 1000mA

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Package Dimensions



Note:

1. Mounting holes are for M2.5 or #4 screws.
2. Solder pads are labeled "+" and "-" to denote positive and negative, respectively.
3. Drawings are not to scale.
4. All dimensions are all in millimeter.
5. All dimensions without tolerance are for reference only.
6. Specifications are subject to change without notice

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Absolute Maximum Ratings

Parameter	HAUP-QBNW HAUP-QBNV8
Peak Forward Current (1/10 Duty Cycle at 1KHz)	2100mA
Continuous Forward Current ⁽¹⁾	1050mA
LED Junction Temperature	150°C
Operation Temperature	-40°C ~+105°C
Storage Temperature	-40°C ~+105°C
Soldering Temperature	JEDEC 020c 260°C

Note:

1. Strongly recommend the case temperature shall not exceed 70°C

Luminous Flux Characteristics

Luminous Flux Characteristics at Test Current, Junction Temperature at 25°C

Color	Part Number	Luminous Flux ⁽¹⁾ (lm)			Remark
		Min	Type	Max	
Cool White (ANSI 5700K)	HAUP-QBNW	--	900	--	(1000mA)
Warm White (ANSI 3000K)	HAUP-QBNV8	--	650	--	(1000mA)

Note:

1. Minimum luminous flux performance guaranteed within published operating conditions. HELIO maintains a tolerance of ±10% on luminous flux measurements.

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Optical Characteristics

Optical Characteristics at Test Current, Junction Temperature at 25°C

Color	Color Temperature ⁽¹⁾			Color Rendering Index	Typical View Angle (Degrees)
	Min	Type	Max	CRI	$2\Theta_{1/2}$ ⁽²⁾
Cool White (ANSI 5700K)	5310	--	6020	70	120
Warm White (ANSI 3000K)	2870	--	3220	80	120

Note:

1. The tester tolerance of CCT is $\pm 5\%$.
2. $\Theta_{1/2}$ is the off axis angle from emitter centerline where the radiometric intensity is 1/2 of the peak value.

Electrical Characteristics

Electrical Characteristics at Test Current, Junction Temperature at 25°C

Part Number	Forward Voltage V_F ⁽¹⁾ (V)			Typical Temperature Coefficient of Forward Voltage (mV/°C)	Typical Thermal Resistance Junction to Case (°C/W)
	Min	Type	Max	$\Delta V_F / \Delta T$ ⁽²⁾	$R\theta_{J-C}$
HAUP-QBNW HAUP-QBNV8	12.0	--	16.0	-4 ~ -12	< 1

Note:

1. HELIO maintains a tolerance of $\pm 0.1V$ on forward voltage measurements.
2. The temperature coefficients of forward voltage are measured between $T_j=30^\circ C$ and $T_j=120^\circ C$.

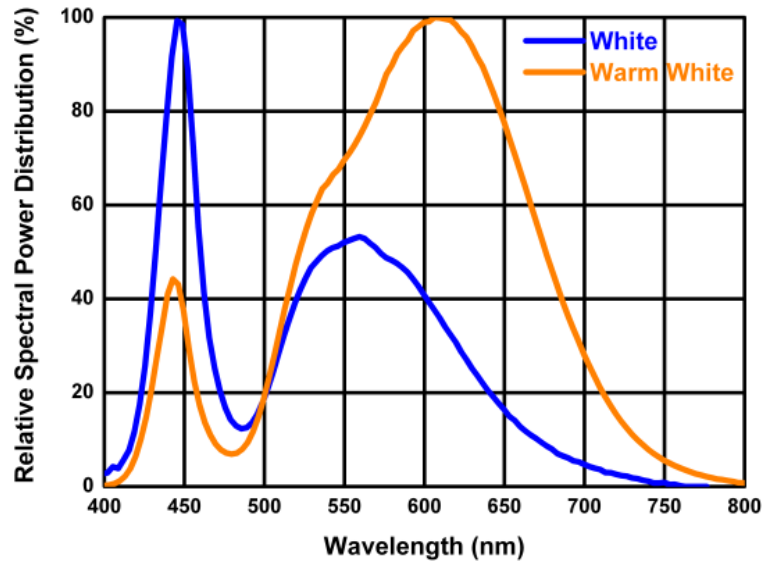
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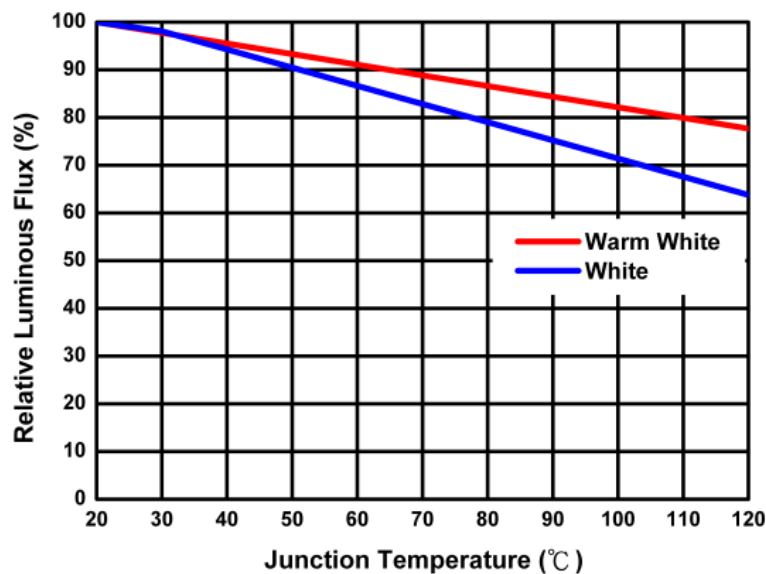
Wavelength Characteristics

White and Warm White Color Spectrum, Junction Temperature at 25°C



Typical Light Output Characteristics over Temperature

White and Warm White at Test Current



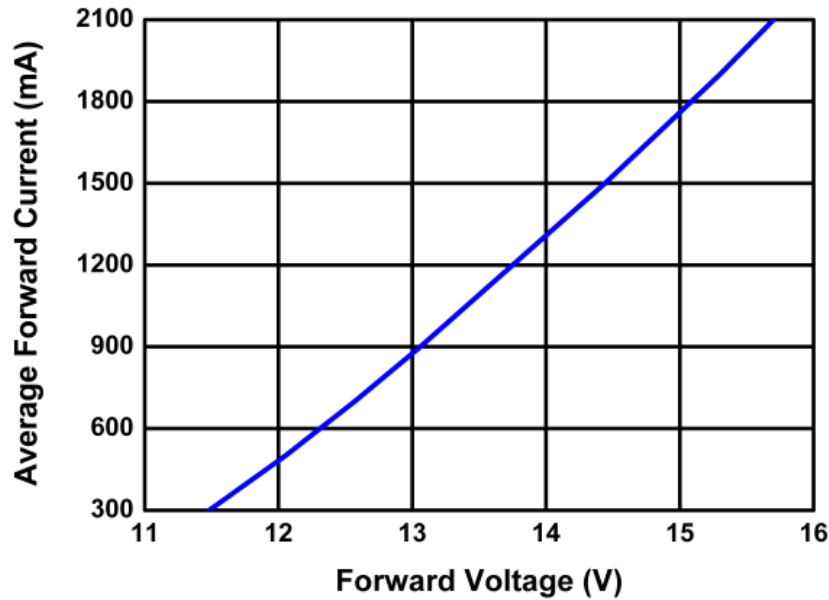
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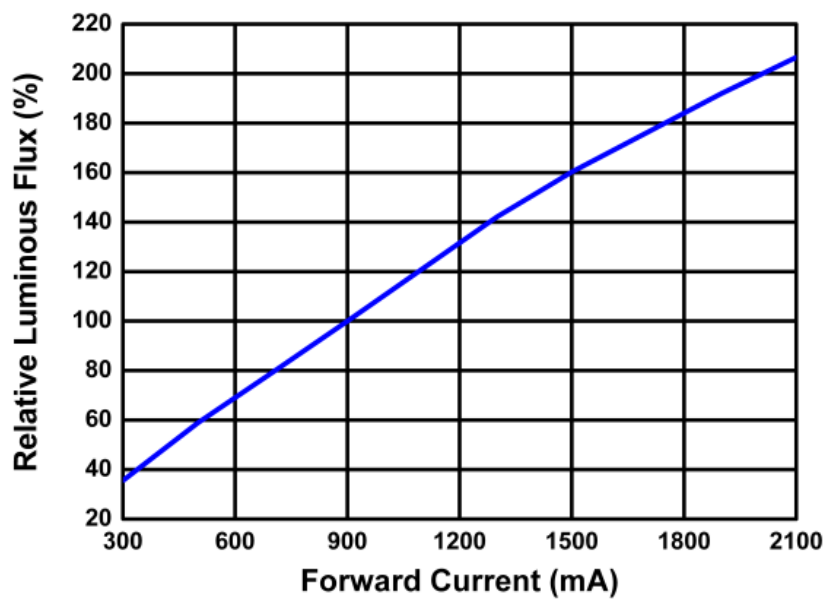
Typical Forward Current Characteristics

White and Warm White, Junction Temperature at 25°C



Typical Light Output Characteristics over Forward Current

White and Warm White, Junction Temperature at 25°C

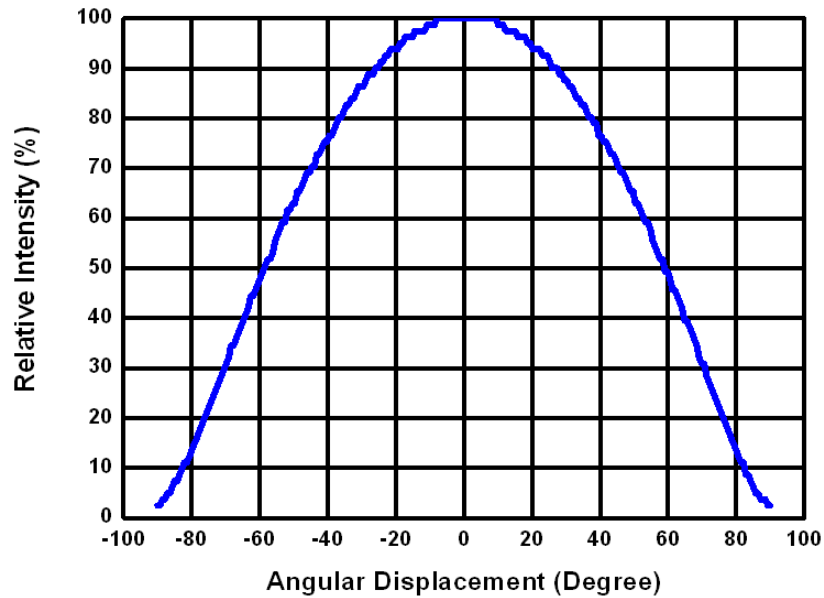


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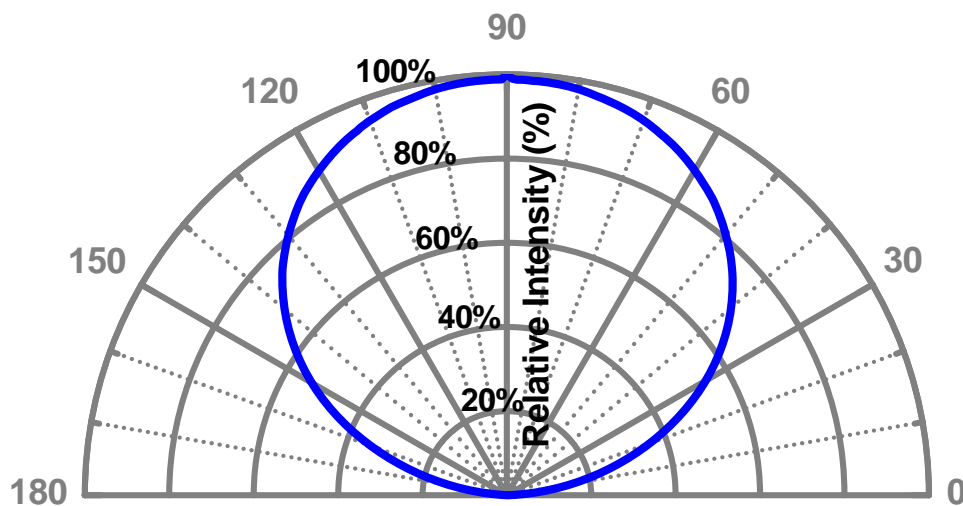
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Typical Radiation Patterns

Typical Representative Spatial Radiation Pattern



Typical Polar Radiation Pattern



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Product Binning

Heli-Array series are labeled with four alphanumeric codes. The formats are explained as follows:

AB CD

AB = Luminous flux bin (K0, M0 etc.)

CD = CCT bin (2A, 7C etc.)

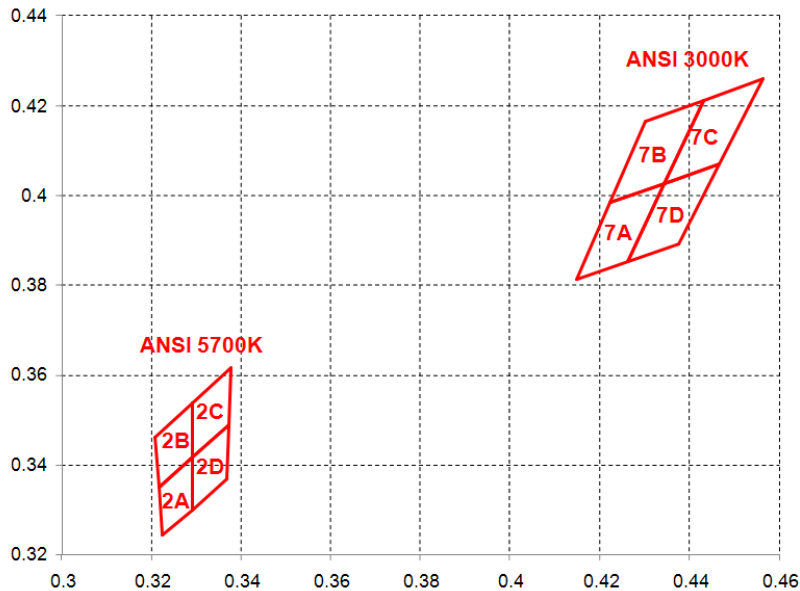
Luminous Flux Bin Structure (Code: AB)

Bin Code	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)
F0	500	600
G0	600	700
H0	700	800
J0	800	900
K0	900	1000
L0	1000	1200
M0	1200	1400
N0	1400	1600



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ANSI Bin Structure (Code: CD)



Bin Code	x	y	Bin Code	x	y		
2X	2A	0.3215	0.335	7X	7A	0.4147	0.3814
		0.329	0.3417			0.4221	0.3984
		0.329	0.33			0.4342	0.4028
		0.3222	0.3243			0.4259	0.3853
	2B	0.3207	0.3462		7B	0.4221	0.3984
		0.329	0.3538			0.4299	0.4165
		0.329	0.3417			0.443	0.4212
		0.3215	0.335			0.4342	0.4028
	2C	0.329	0.3538		7C	0.4342	0.4028
		0.3376	0.3616			0.443	0.4212
		0.3371	0.349			0.4562	0.426
		0.329	0.3417			0.4465	0.4071
	2D	0.329	0.3417		7D	0.4259	0.3853
		0.3371	0.349			0.4342	0.4028
		0.3366	0.3369			0.4465	0.4071
		0.329	0.33			0.4373	0.3893

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Reliability Test List

Test Item	Standard Test Method	Test Description	Failure Criteria	Result
Room Temperature Operating Life (RTOL)		Case temperature $\geq 55^{\circ}\text{C}$, $I_F = \text{max DC}^{(1)}$, 1000hr	Failure criteria ⁽²⁾⁽³⁾	0 failures
Wet High Temperature Operating Life (WHTOL)	JEITA ED-4701 100 301	60°C / 90%RH, $I_F = \text{max DC}^{(1)}$, 500hr	Failure criteria ⁽²⁾⁽³⁾	0 failures
High Temperature Storage Life (HTSL)	JEITA ED-4701 100 201	100°C , non-operating, 1000hr	Failure criteria ⁽²⁾⁽³⁾	0 failures
Low Temperature Storage Life (LTSL)	JEITA ED-4701 100 202	-40°C , non-operating, 1000hr	Failure criteria ⁽²⁾⁽³⁾	0 failures
Wet High Temperature Storage Life (WHTSL)	JEITA ED-4701 100 103	60°C / 90%RH, non-operating, 1000hr	Failure criteria ⁽²⁾⁽³⁾	0 failures
Non-Operating Temperature Cycle Life (TMCL)	JEITA ED-4701 100 105	-40°C to 100°C , 30 min dwell, 5 min transfer, non-operating, 100 cycles	Failure criteria ⁽²⁾⁽³⁾	0 failures

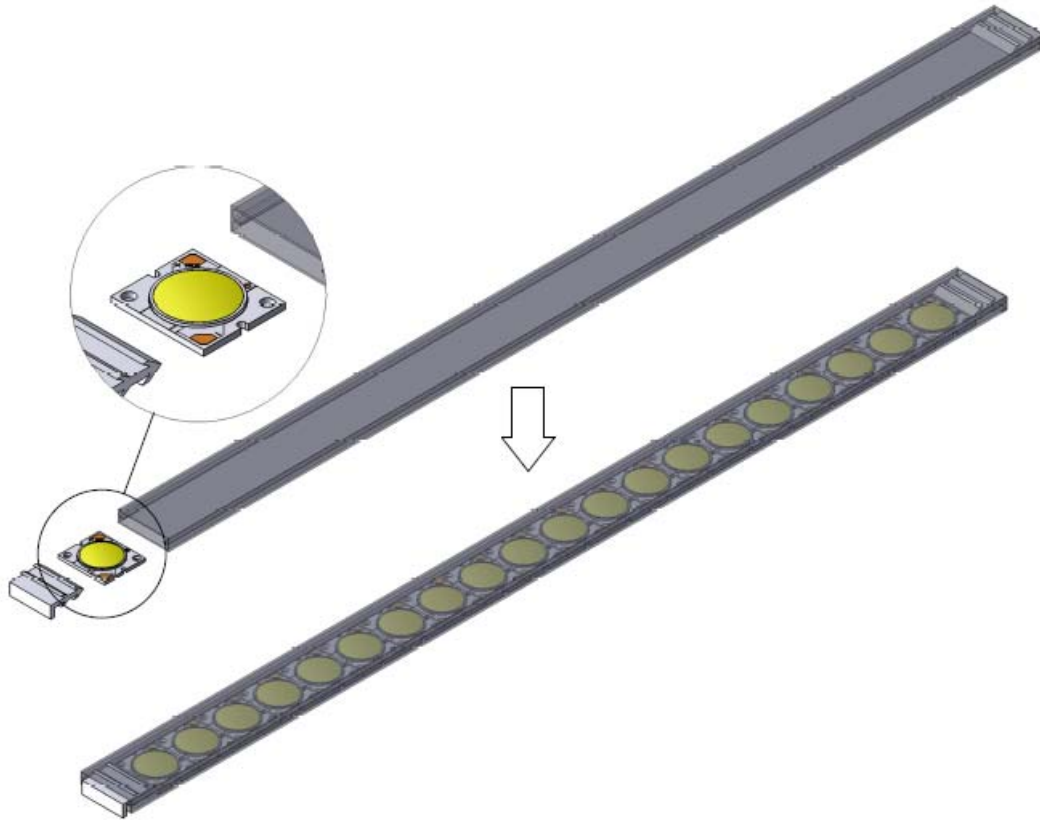
Note.

1. Depending on the maximum derating curve.
2. Failure Criteria:
 - Forward voltage shift > 10%
 - Forward or reverse leakage above maximum values specified in product data sheet.
 - Luminous flux or radiometric power degradation > 30%
 - White color point shift, $\Delta x, \Delta y > \pm 0.01$
3. Catastrophic failures causing the emitter to become non-functional

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Package Tube Design



Note:

1. Tube Dimensions: L:480.0±1.0mm, W:27.7±0.2mm, H:6.2±0.2mm
2. There are 20pcs Heli-Arrays in a tube.
3. An antistatic bag contains tubes and a drying agent.

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