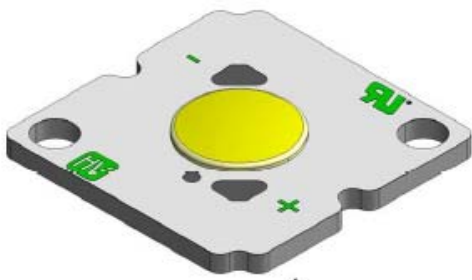


High Voltage Series -- HVMA-13506



HELIO high voltage series LED delivers superior color performance and reliability in a high voltage architecture that minimizes driver requirements making it an ideal solution for space constrained and cost sensitive retrofit bulbs and luminaires. With exceptional color stability over temperature and current, HELIO high voltage series LED simplifies design while providing superior quality of light.

Features

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

Application

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



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Product Nomenclature

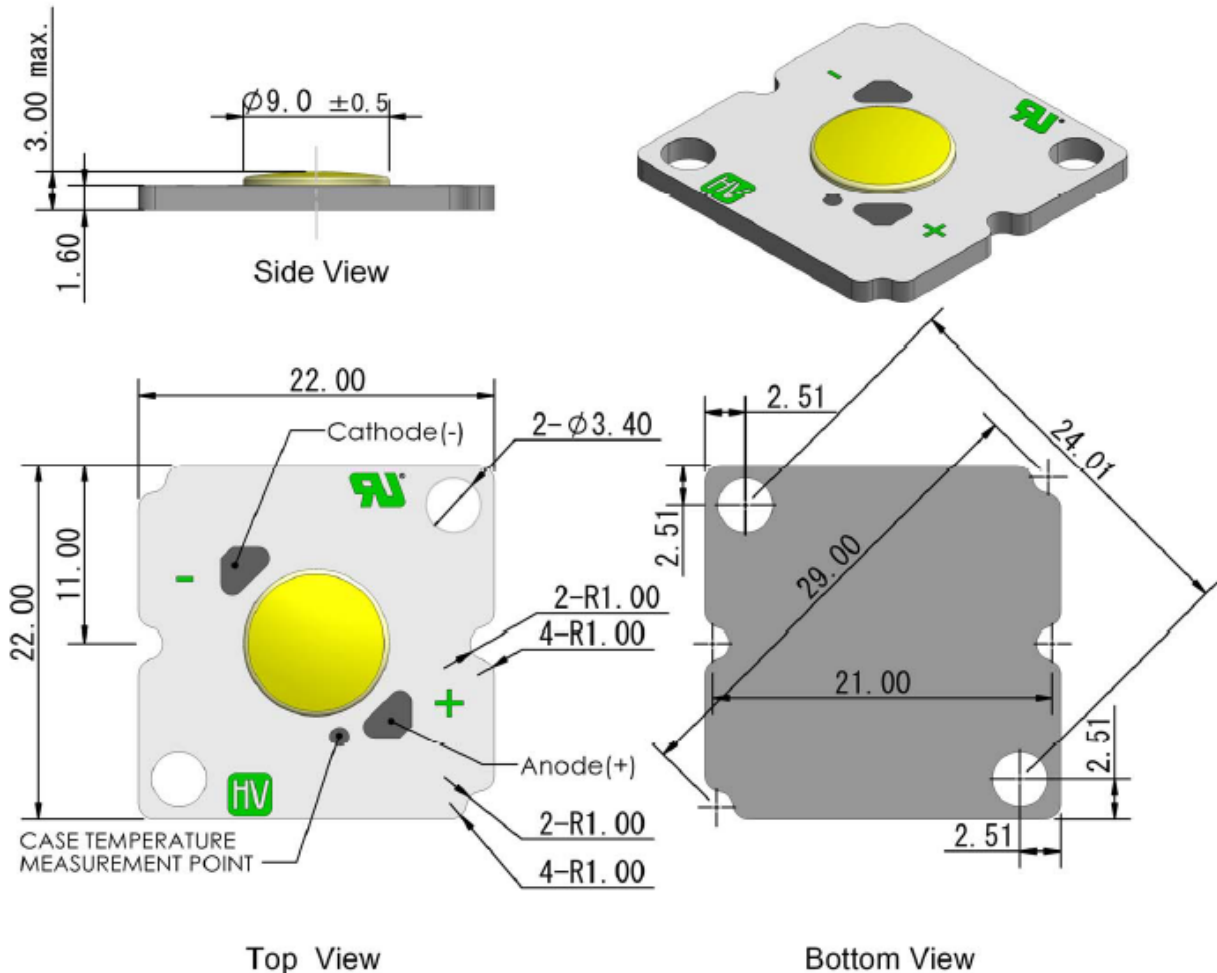
HV MA - 135 06
X1 **X2** **X3** **X4**

X1		X2		X3		X4	
Item		Mode		Voltage		Internal code	
Code	Type	Code	Type	Code	Type	Code	Type
HV	High Voltage Series	MA	MPCPB	135	135V	06	6 chips

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Mechanical Dimensions



Note:

1. Mounting holes are for M2.5 or #3 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



Luminous Flux Characteristics

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

Color	Luminous Flux ⁽¹⁾ (lm)			Remark
	Min	Type	Max	
Warm White	550	600	--	(40mA)

Note:

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

Electrical Characteristics

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

Color	Forward Voltage $V_F^{(1)}$ (V)		
	Min	Type	Max
Warm White	135	140	--

Note:

1. HELIO maintains a tolerance of $\pm 0.1V$ on forward voltage measurements.

Optical Characteristics

Optical Characteristics at Test Current, Junction Temperature at 80°C

Color	Color Temperature ⁽¹⁾			Color Rendering Index
	Min	Type	Max	CRI
Warm White	2650	3000	3650	85

Note:

1. The tester tolerance of CCT is $\pm 5\%$.



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Absolute Maximum Ratings

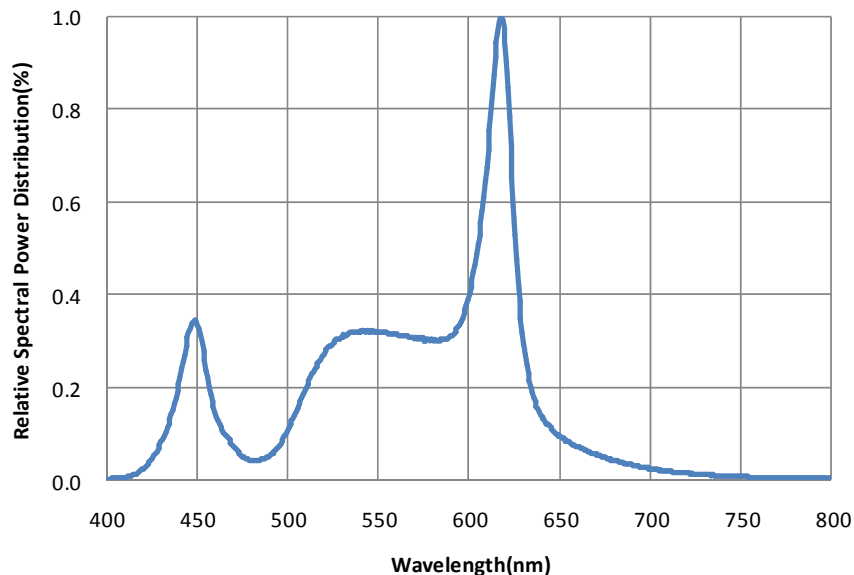
Parameters	HVMA-13506
Advised DC Forward Current (mA)	60mA
LED Junction Temperature (°C)	< 120
Thermal Resistance (°C/W)	< 1.5
Operating Temperature (°C)	-20°C ~+85°C
Storage Temperature (°C)	-20°C ~+105°C

Note:

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

Wavelength Characteristics

White Color Spectrum, Junction Temperature at 25°C



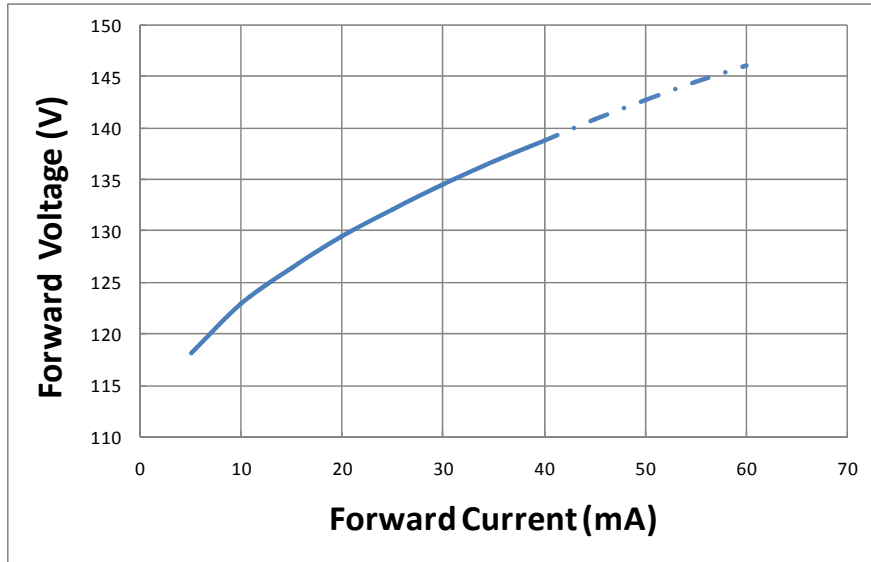
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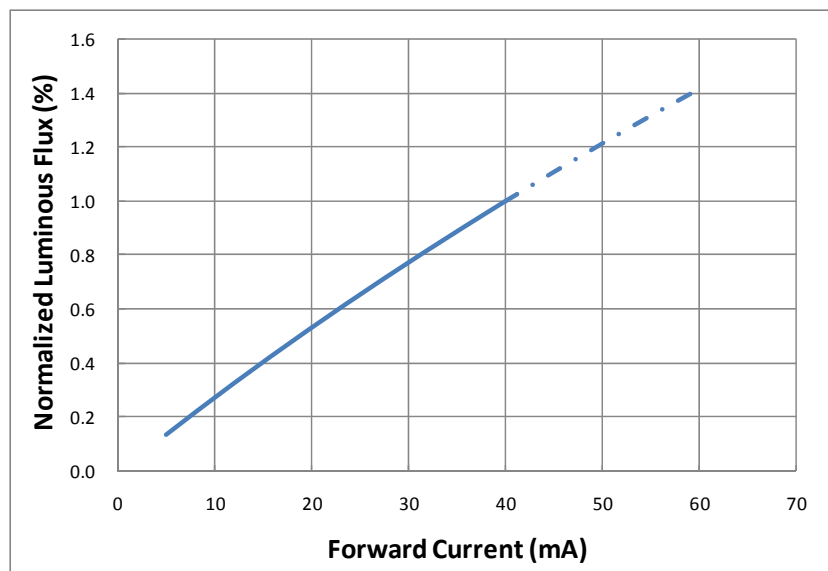
Typical Forward Current Characteristics

White, Junction Temperature at 25°C



Typical Light Output Characteristics over Forward Current

White, Junction Temperature at 25°C



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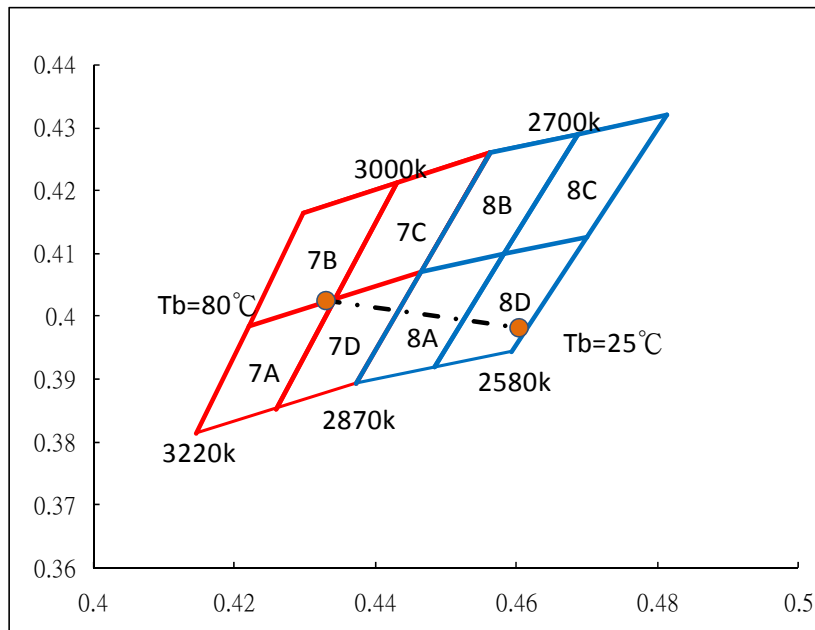
HELIO Optoelectronics Corp.

Initial Chromaticity to Stable Chromaticity

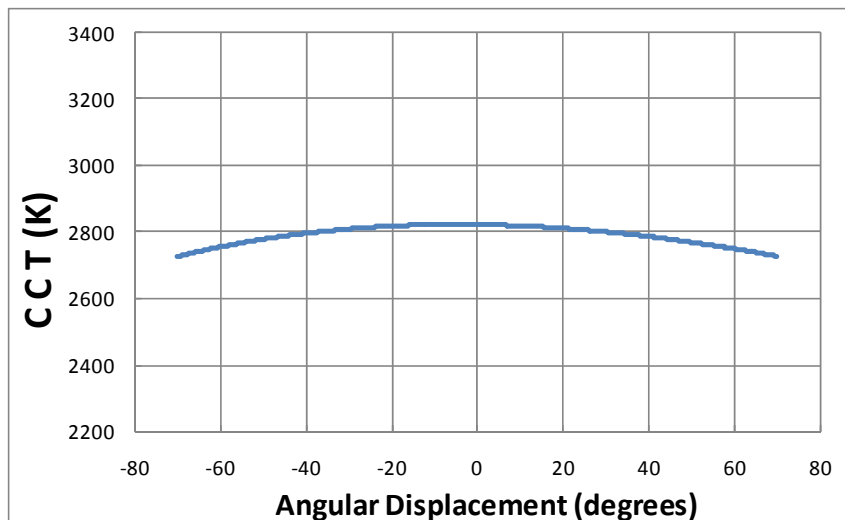
The color initial location is based on 4 Color Bins (8A,8B,8C,8D) and is specified at $T_b=25\text{ }^\circ\text{C}$

Due to the temperature behavior the color will shift typical to the (7A,7B,7C,7D) at $T_b=80\text{ }^\circ\text{C}$

ANSI Bin Table (2580k~3220k)



Angular CCT Distribution

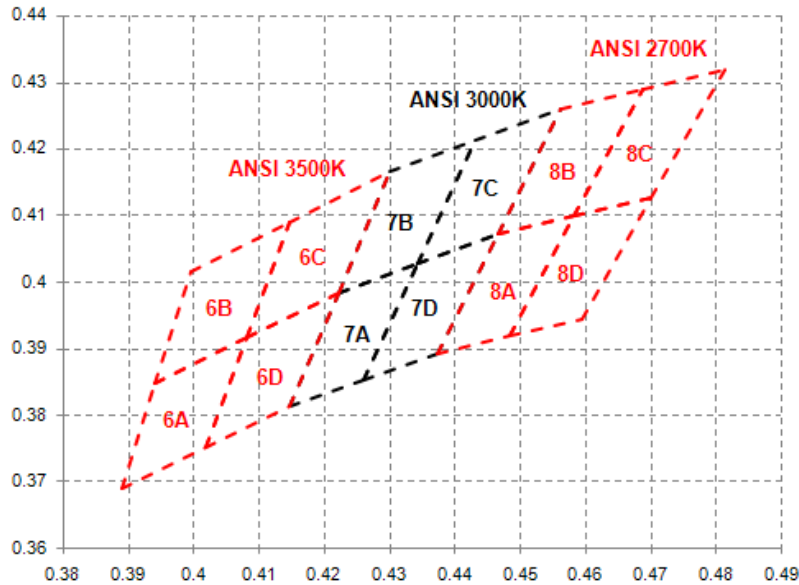


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ANSI Bin Structure (Code: CD)



Bin Code	x	y	Bin Code	x	y	Bin Code	x	y			
6X	6A	0.3889	0.369	7X	7A	0.4147	0.3814	8X	8A	0.4373	0.3893
		0.3941	0.3848			0.4221	0.3984			0.4465	0.4071
		0.408	0.3916			0.4342	0.4028			0.4582	0.4099
		0.4017	0.3751			0.4259	0.3853			0.4483	0.3919
	6B	0.3941	0.3848		7B	0.4221	0.3984		8B	0.4465	0.4071
		0.3996	0.4015			0.4299	0.4165			0.4562	0.426
		0.4146	0.4089			0.443	0.4212			0.4687	0.4289
		0.408	0.3916			0.4342	0.4028			0.4582	0.4099
	6C	0.408	0.3916		7C	0.4342	0.4028		8C	0.4582	0.4099
		0.4146	0.4089			0.443	0.4212			0.4687	0.4289
		0.4299	0.4165			0.4562	0.426			0.4813	0.4319
		0.4221	0.3984			0.4465	0.4071			0.47	0.4126
6D	0.4017	0.3751	7D	0.4259	0.3853	8D	0.4483	0.3919			
	0.408	0.3916		0.4342	0.4028		0.4582	0.4099			
	0.4221	0.3984		0.4465	0.4071		0.47	0.4126			
	0.4147	0.3814		0.4373	0.3893		0.4593	0.3944			

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Reliability Test List

Test Item	Standard Test Method	Test Description	Failure Criteria	Result
Room Temperature Operating Life (RTOL)	JESD22-A108	Case temperature= 55°C, I _F = 60mA DC ⁽¹⁾ , 1000hr	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	85°C / 85%RH, non-operating, 500hr	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%
 - Warm 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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