
HELIO Optoelectronics Corp.

Helinova Series



solution ultra high power LED applications. With high luminous flux, ultra high power handling capability and excellent thermal management, Helinova emitter enables you to make the general lighting possible.

Based on ceramic with low thermal resistance, Helinova emitter provides a breakthrough

Features

- | LED light engine
- | High power operation
- | Long life operation
- | Superior thermal performance

Application

- | Decorative lighting
- | Architectural lighting
- | General lighting



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Product Nomenclature

HN HP - E A L W
X1 X2 X3 X4 X5 X6

X1 LED Item		X2 Power Classification		X3 Module		X4 Power	
Code	Type	Code	Type	Code	Type	Code	Type
HN	Ceramic-AlN	HP	High Power	E	Emitter	A	10W
				S	Star		
				Q	Square		

X5 Lens Item		X6 Color	
Code	Type	Code	Type
L	Lambertian	W	White
		R	Red
		A	Amber
		G	Green
		B	Blue



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Part Number Matrix of Helinova Series

Color	Part Number	Radiation Pattern
White	HNHP-EALW	Lambertian
Red	HNHP-EALR	Lambertian
Amber	HNHP-EALA	Lambertian
Green	HNHP-EALG	Lambertian
Blue	HNHP-EALB	Lambertian

Circuit Diagram

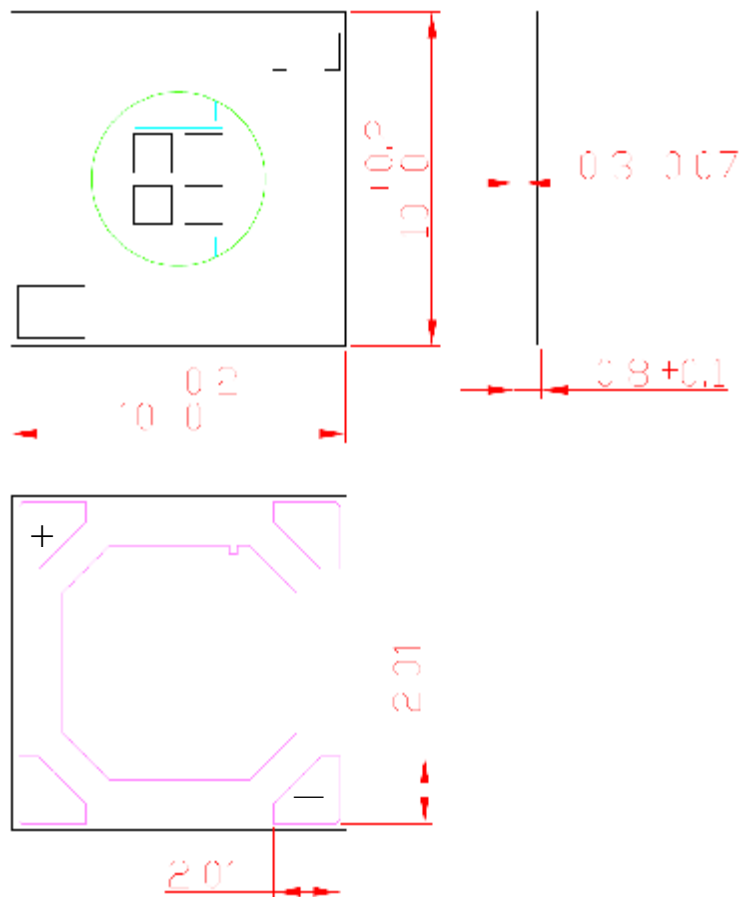
Color	Part Number	Circuit Diagram
White	HNHP-EALW	
Red	HNHP-EALR	
Amber	HNHP-EALA	
Green	HNHP-EALG	
Blue	HNHP-EALB	

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Package Dimensions

SMT Form



Note:

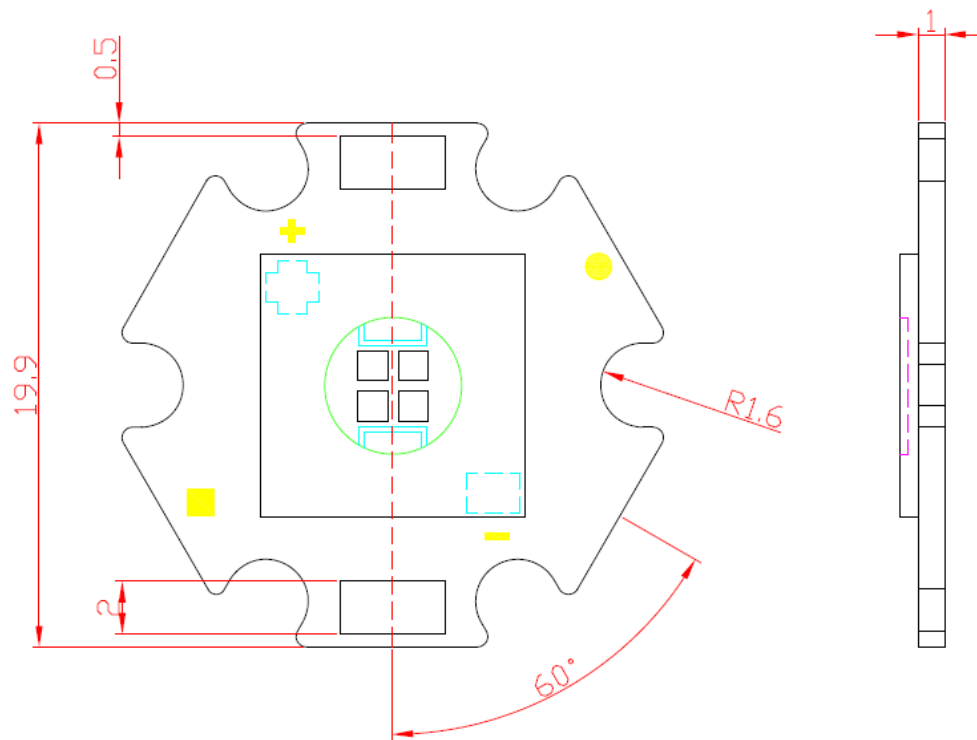
1. Drawings are not to scale.
2. All dimensions are all in millimeter.
3. All dimensions without tolerance are for reference only.
4. Specifications are subject to change without notice.

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Package Dimensions

Star MCPCB Form



Note:

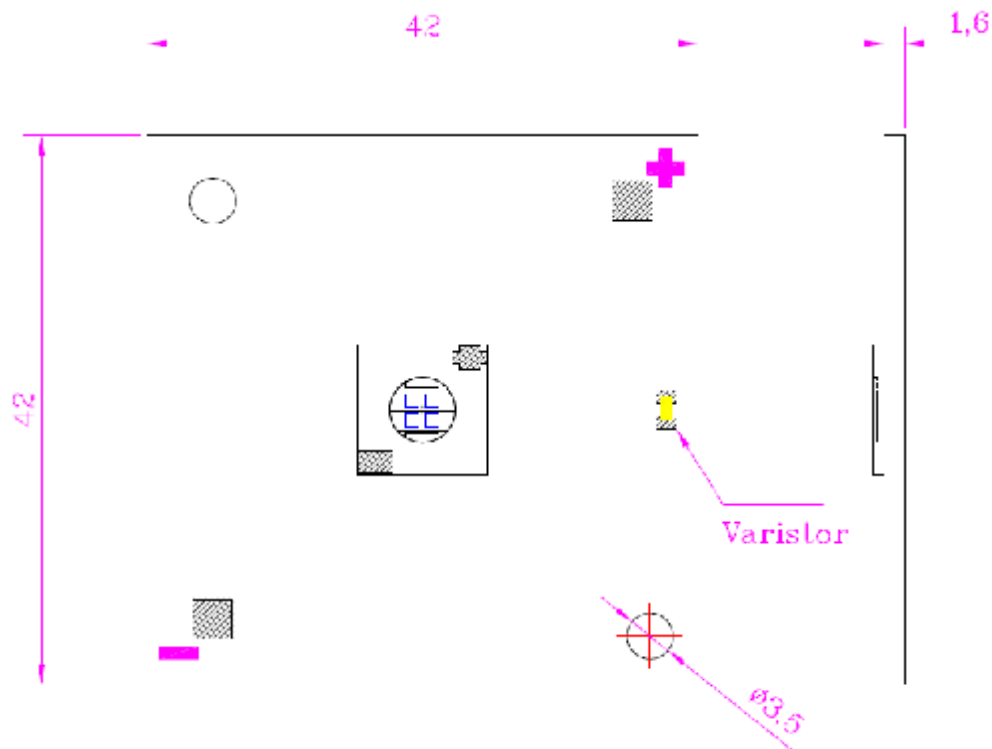
1. Slots in aluminum-core PCB for M3 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-PCB with “+” and “-“ to denote positive and negative, respectively.
3. Drawings are not to scale.
4. All dimensions are in millimeters.

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Package Dimensions

Square MCPCB Form



Note:

1. Slots in aluminum-core PCB for M3 mounting screw.
2. Electrical interconnection pads labeled on the aluminum-PCB with "+" and "-" to denote positive and negative, respectively.
3. Drawings are not to scale.
4. All dimensions are in millimeters.

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Characteristics for Helinova emitter

HNHP-EALW

Characteristics at $I_F = 1.4A$ ($T_a = 25^\circ C$):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Luminous flux ⁽¹⁾	Φ_v ⁽²⁾	--	500	--	lm
CRI	R_a	--	75	--	
View angle	$2\theta_{1/2}$	--	120	--	degree
Correlated color temperature ⁽³⁾	CCT	5000	--	7000	K
Forward voltage ⁽⁴⁾	V_F	6.0	--	8.0	V
Power dissipation	P_D	--	10	--	W
Junction temperature	T_J	--	--	120	Deg.
Operation temperature	T_{OP}	-40~+105			$^\circ C$
Storage temperature	T_{ST}	-40~+120			$^\circ C$

Note:

1. The typical luminous flux of Helinova will be upgraded per season.
2. Φ_v , total luminous flux output, is measured within an integrated sphere.
3. The correlated color temperature of Helinova is divided into three main bins. In case of customized CCT, this detail information will be discussed in meeting.
4. HELIO maintains a tolerance of $\pm 0.06V$ on forward voltage measurements.



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Characteristics for Helinova emitter

HNHP-EALR

Characteristics at $I_F = 1.4A$ ($T_a = 25^\circ C$):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Luminous flux ⁽¹⁾	Φ_v ⁽²⁾	--	200	--	lm
Spectral Half-width	$\Delta \lambda_{1/2}$	--	20	--	nm
View angle	$2\theta_{1/2}$	--	120	--	degree
Dominant Wavelength	Wd	620	--	630	nm
Forward voltage ⁽⁴⁾	V_F	4.0	--	6.0	V
Power dissipation	P_D	--	6.5	--	W
Junction temperature	T_J	--	--	120	Deg.
Operation temperature	T_{OP}	-40~+105			$^\circ C$
Storage temperature	T_{ST}	-40~+120			$^\circ C$

Note:

1. The typical luminous flux of Helinova will be upgraded per season.
2. Φ_v , total luminous flux output, is measured within an integrated sphere.
3. Dominant wavelength is derived from the CIE1931 chromaticity diagram and represents the perceived color. The tester tolerance of dominant wavelength is $\pm 0.5nm$.
4. HELIO maintains a tolerance of $\pm 0.06V$ on forward voltage measurements

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Characteristics for Helinova emitter

HNHP-EALA

Characteristics at $I_F = 1.4A$ ($T_a = 25^\circ C$):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Luminous flux ⁽¹⁾	Φ_v ⁽²⁾	--	250	--	lm
Spectral Half-width	$\Delta \lambda_{1/2}$	--	18	--	nm
View angle	$2\theta_{1/2}$	--	120	--	degree
Dominant Wavelength	Wd	585	--	595	nm
Forward voltage ⁽⁴⁾	V_F	4.0	--	6.0	V
Power dissipation	P_D	--	6.5	--	W
Junction temperature	T_J	--	--	120	Deg.
Operation temperature	T_{OP}	-40~+1.5			$^\circ C$
Storage temperature	T_{ST}	-40~+120			$^\circ C$

Note:

1. The typical luminous flux of Helinova will be upgraded per season.
2. Φ_v , total luminous flux output, is measured within an integrated sphere.
3. Dominant wavelength is derived from the CIE1931 chromaticity diagram and represents the perceived color. The tester tolerance of dominant wavelength is $\pm 0.5nm$.
4. HELIO maintains a tolerance of $\pm 0.06V$ on forward voltage measurements

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Characteristics for Helinova emitter

HNHP-EALG

Characteristics at $I_F = 1.4A$ ($T_a = 25^\circ C$):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Luminous flux ⁽¹⁾	Φ_v ⁽²⁾	--	420	--	lm
Spectral Half-width	$\Delta \lambda_{1/2}$	--	37	--	nm
View angle	$2\theta_{1/2}$	--	120	--	degree
Dominant Wavelength	Wd	520	--	535	nm
Forward voltage ⁽⁴⁾	V_F	6.0	--	8.0	V
Power dissipation	P_D	--	10	--	W
Junction temperature	T_J	--	--	120	Deg.
Operation temperature	T_{OP}	-40~+105			$^\circ C$
Storage temperature	T_{ST}	-40~+120			$^\circ C$

Note:

1. The typical luminous flux of Helinova will be upgraded per season.
2. Φ_v , total luminous flux output, is measured within an integrated sphere.
3. Dominant wavelength is derived from the CIE1931 chromaticity diagram and represents the perceived color. The tester tolerance of dominant wavelength is $\pm 0.5nm$.
4. HELIO maintains a tolerance of $\pm 0.06V$ on forward voltage measurements

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Characteristics for Helinova emitter

HNHP-EALB

Characteristics at $V_F = 10.5V$ ($T_a=25^\circ C$):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Luminous flux ⁽¹⁾	$\Phi_v^{(2)}$	--	110	--	lm
Spectral Half-width	$\Delta \lambda_{1/2}$	--	25	--	Nm
View angle	$2\theta_{1/2}$	--	120	--	degree
Dominant Wavelength	Wd	460	--	475	nm
Forward voltage ⁽⁴⁾	V_F	6.0	--	8.0	V
Power dissipation	P_D	--	10	--	W
Junction temperature	T_J	--	--	120	Deg.
Operation temperature	T_{OP}	-40~+105			$^\circ C$
Storage temperature	T_{ST}	-40~+120			$^\circ C$

Note:

1. The typical luminous flux of Helinova will be upgraded per season.
2. Φ_v , total luminous flux output, is measured within an integrated sphere.
3. Dominant wavelength is derived from the CIE1931 chromaticity diagram and represents the perceived color. The tester tolerance of dominant wavelength is $\pm 0.5nm$.
4. HELIO maintains a tolerance of $\pm 0.06V$ on forward voltage measurements

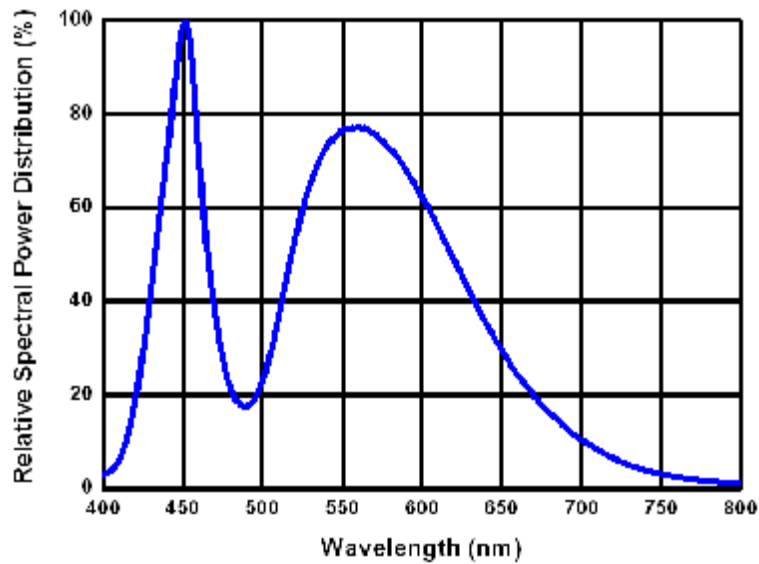
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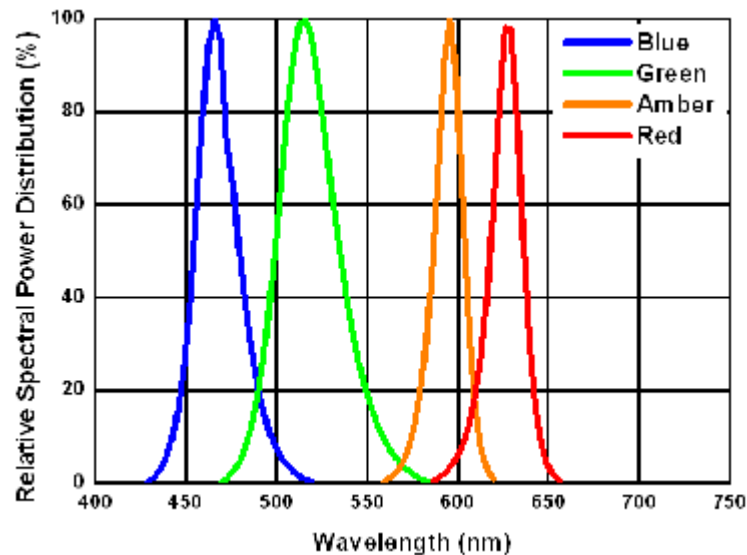
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Wavelength Characteristics

White Color Spectrum of Typical CCT, Junction Temperature at 25°C



Color Spectrum of Red, Amber, Green and Blue, Junction Temperature at 25°C



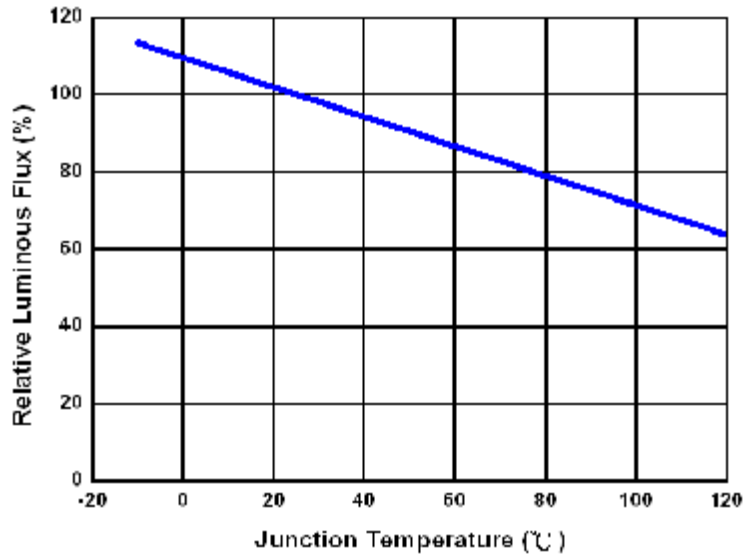
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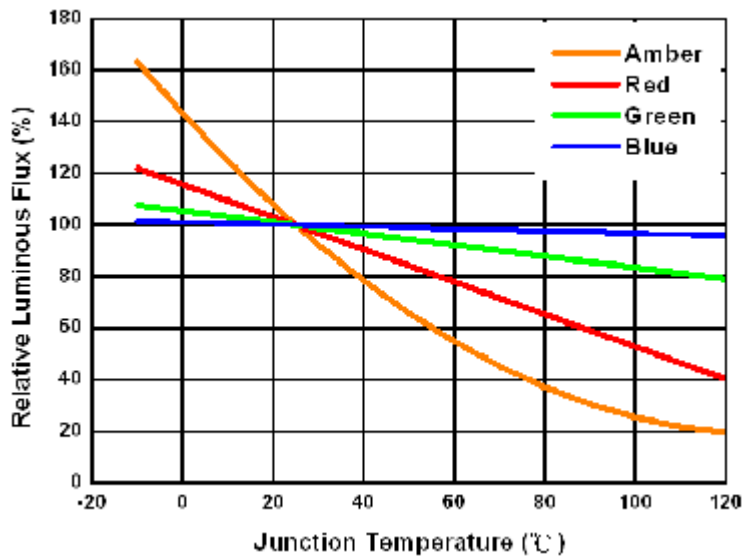
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Typical Light Output Characteristics over Temperature

White at Test Current



Red, Amber, Green and Blue at Test Current



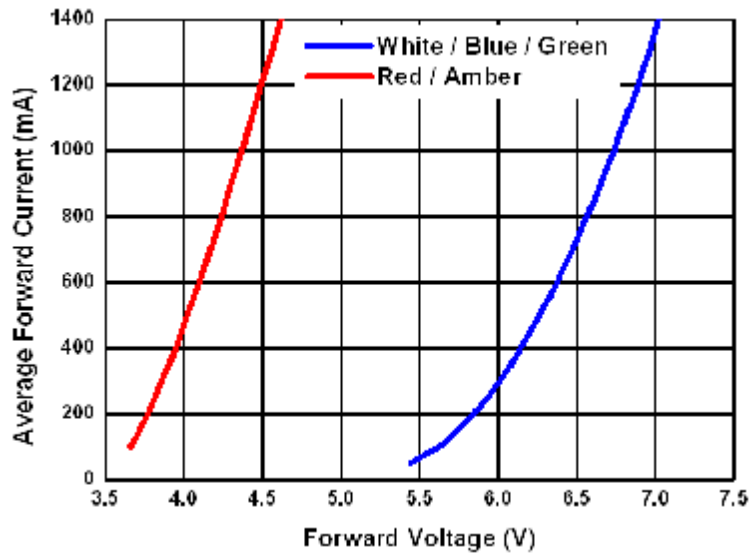
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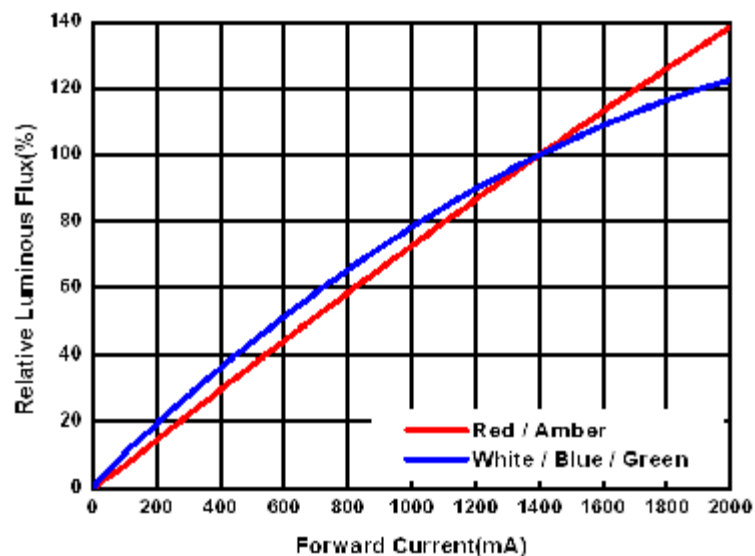
Typical Forward Current Characteristics

Red, Amber, Green, Blue and White, Junction Temperature at 25°C



Typical Light Output Characteristics over Forward Current

Red, Amber, Green, Blue and White, Junction Temperature at 25°C



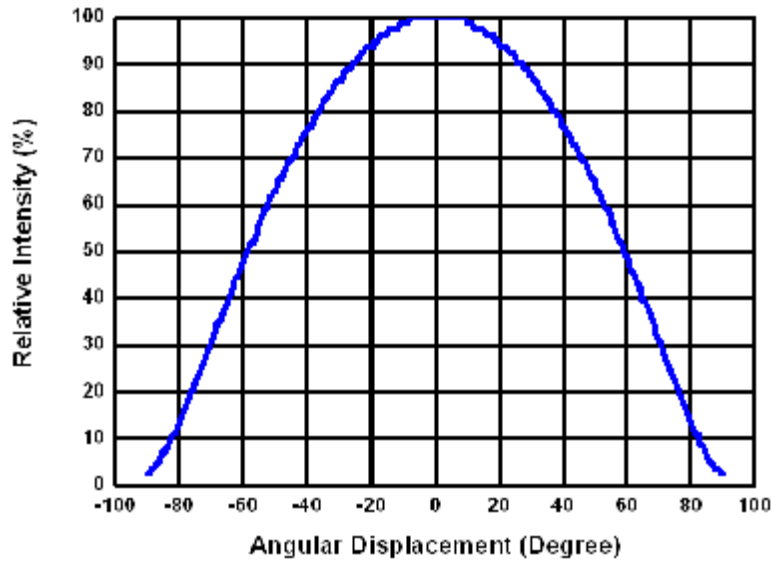
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Typical Radiation Patterns

Typical Representative Spatial Radiation Pattern for Red, Amber, Green, Blue and White



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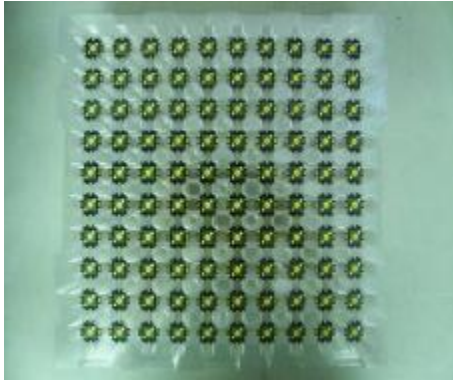
Reliability Test List

Test Item	Standard Test Method	Test Conditions	Note	Number of Damaged
Resistance to soldering heat (reflow soldering)	JEITA ED-4701 300 301	Ta=260°C, 10sec. (Pre treatment 25°C,70%,168hrs.)	2 times	0/10
Solderability (reflow soldering)	JEITA ED-4701 300 303	Tsld=215±5°C, 3sec. (Lead Solder)	1 time over 95%	0/10
Steady state operating life		Ta=25°C, I _F = 1.4A Tested with Helio standard circuit board	1000 hrs.	0/10
Steady state operating life of high humidity heat		85°C, RH=85%, I _F = 700mA Tested with Helio standard circuit board	1000 hrs.	0/10
Temperature cycle	JEITA ED-4701 100 105	-40°C ~ 25°C ~ 100°C ~ 25°C 30min. 5min. 30min. 5min.	100 cycles	0/10
Thermal shock	JEITA ED-4701 300 307	0°C ~ 100°C 15sec. 15sec.	20 cycles	0/10
High temperature storage	JEITA ED-4701 200 201	Ta=100°C	1000 hrs.	0/10
Low temperature storage	JEITA ED-4701 200 202	Ta=-40°C	1000 hrs.	0/10
Vibration		2000 Hz, 2directions	60min.	0/10

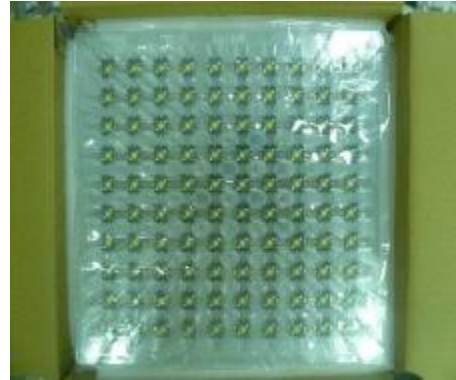
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Package Specifications



Tray



Antistatic Bag



35mm*35mm*47.5mm

Box

Note:

1. There are 100pcs emitters or stars in a tray.
2. There are 40 trays in an inner box.