



---

*HELIO Optoelectronics Corp.*

# Helixeon - Infrared Series

---

Helixeon infrared emitter, the most powerful solid-state lighting device, provides high radiometric power, excellent thermal management and high energy efficiency for infrared applications.

---

## Features

- | Low thermal resistance
- | Instant response
- | Fully dimmable
- | Superior ESD protection
- | Lead free reflow solder JEDEC  
020c compatible
- | RoHS compliant

## Application

- | CCTV
- | Wireless communication



HELIO Optoelectronics Corp.

# Product Nomenclature

HM HP - E 1 L M  
 X1 X2 X3 X4 X5 X6

X1		X2		X3		X4	
Item		Classification		Module		Power	
Code	Type	Code	Type	Code	Type	Code	Type
HM	Molding	HP	High Power	E	Emitter	1	1W
				S	Star		

X5		X6	
Lens		Color	
Code	Type	Code	Type
L	Lambertian	M	IR850nm
		N	IR940nm

## Circuit Diagram

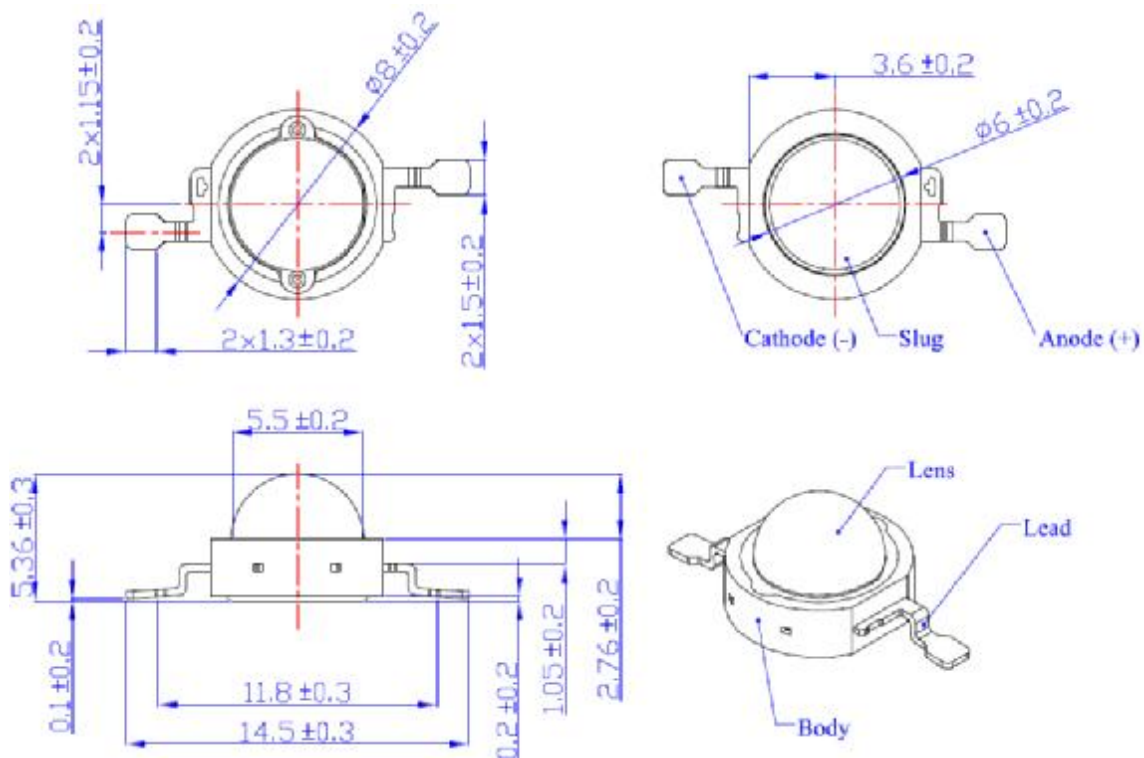
Color	Part number	Circuit diagram
Infrared-850nm	HMHP-E1LM	
Infrared-940nm	HMHP-E1LN	

The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

HELIO Optoelectronics Corp.

# Package Dimensions

## SMT Lead Form



### Note:

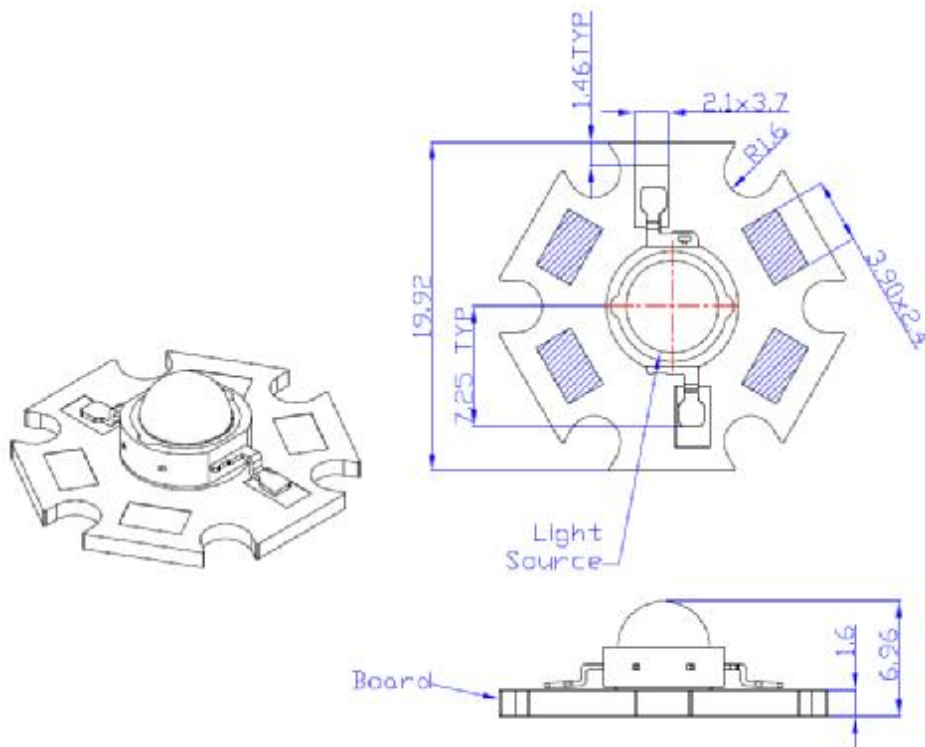
1. The anode side of the device is denoted by a hole in the lead frame.
2. Electrical insulation between the case and the board is required. The slug of the device is no electrically neutral.
3. Drawings are not to scale.
4. All dimensions are all in millimeter.
5. All dimensions without tolerance are for reference only.
6. Specifications are subject to change without notice.

The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

HELIO Optoelectronics Corp.

# 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

The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

*HELIO Optoelectronics Corp.***Characteristics for Helixeon Infrared emitter****HMHP-E1LM**Characteristics at  $I_F = 700\text{mA}$  ( $T_a = 25^\circ\text{C}$ ):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Radiometric power <sup>(1)</sup>	$P_O$	225	300	--	mW
Peak wavelength <sup>(3)</sup>	$\lambda_p$	835	850	855	nm
View angle	$2\Theta_{1/2}$	--	150	--	degree
Forward voltage <sup>(4)</sup>	$V_F$	1.4	--	2.4	V
Power dissipation	$P_D$	0.98	--	1.68	W
Junction temperature	$T_J$	--	--	120	Deg.
Operation temperature	$T_{OP}$	-40~+105			$^\circ\text{C}$
Storage temperature	$T_{ST}$	-40~+120			$^\circ\text{C}$
ESD sensitivity		>8000 HBM			V

**Bin code**

Radiometric power (mW)	Rank (BIN)
225	M0
275	N0
355	P0

**Note:**

1. The typical radiometric power of Helixeon will be upgraded per season.
2. Minimum radiometric power performance guaranteed within published operating conditions. HELIO maintains a tolerance of  $\pm 10\%$  on radiometric power measurements.
3. HELIO maintains a tolerance of  $\pm 1\text{nm}$  for peak wavelength measurement.
4. HELIO maintains a tolerance of  $\pm 0.06\text{V}$  on forward voltage measurement.

The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

*HELIO Optoelectronics Corp.***Characteristics for Helixeon Infrared emitter****HMHP-E1LN**Characteristics at  $I_F = 700\text{mA}$  ( $T_a = 25^\circ\text{C}$ ):

Parameter	Symbol	Value			Unit
		Min	Typical	Max	
Radiometric power <sup>(1)</sup>	$P_O$	55	70	--	mW
Peak wavelength <sup>(3)</sup>	$\lambda_p$	930	940	960	nm
View angle	$2\Theta_{1/2}$	--	150	--	degree
Forward voltage <sup>(4)</sup>	$V_F$	1.2	--	2.2	V
Power dissipation	$P_D$	0.84	--	1.54	W
Junction temperature	$T_J$	--	--	120	Deg.
Operation temperature	$T_{OP}$	-40~+105			$^\circ\text{C}$
Storage temperature	$T_{ST}$	-40~+120			$^\circ\text{C}$
ESD sensitivity		>8000 HBM			V

**Bin code**

Radiometric power (mW)	Rank (BIN)
55	F0
70	G0
85	H0

**Note:**

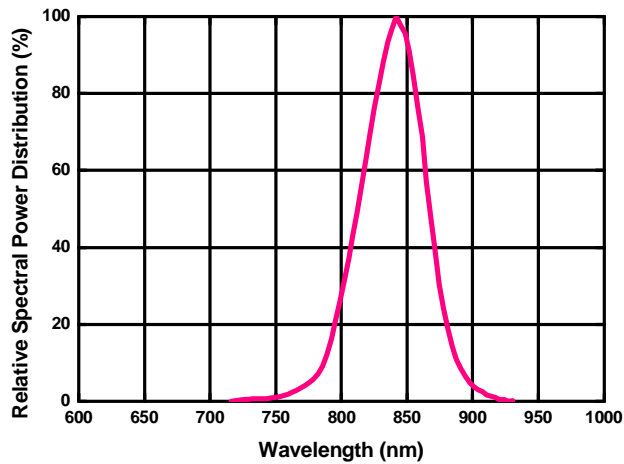
1. The typical radiometric power of Helixeon will be upgraded per season.
2. Minimum radiometric power performance guaranteed within published operating conditions. HELIO maintains a tolerance of  $\pm 10\%$  on radiometric power measurements.
3. HELIO maintains a tolerance of  $\pm 1\text{nm}$  for peak wavelength measurement.
4. HELIO maintains a tolerance of  $\pm 0.06\text{V}$  on forward voltage measurement.

The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

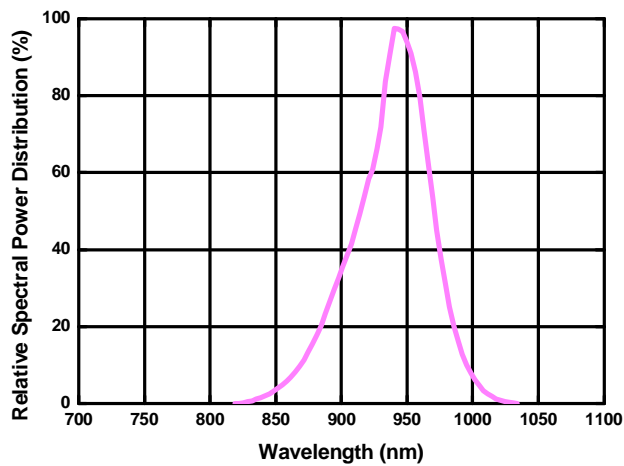


HELIO Optoelectronics Corp.

## Wavelength Characteristics



Infrared 850



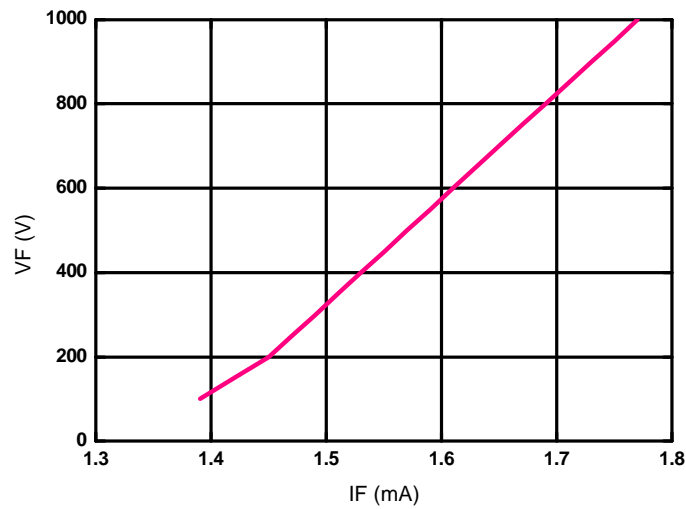
Infrared 940

The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

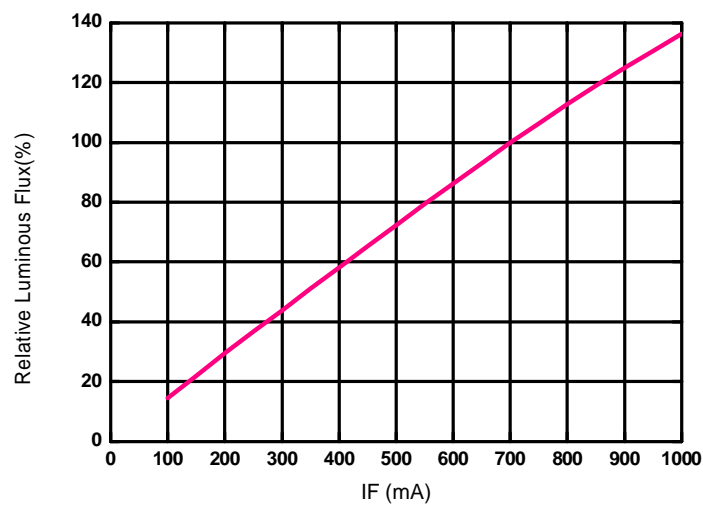


HELIO Optoelectronics Corp.

## Typical Forward Current Characteristics



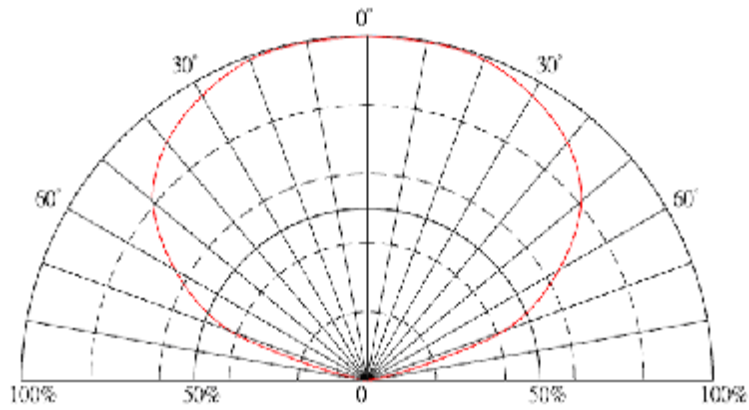
## Typical Light Output Characteristics over Forward Current



The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

*HELIO Optoelectronics Corp.*

## Typical Radiation Patterns



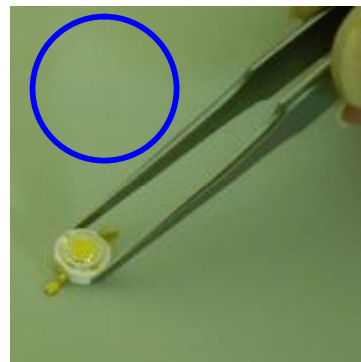
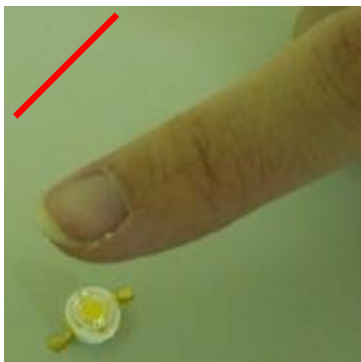
The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

*HELIO Optoelectronics Corp.*

## Handling Precaution

The softness and dust affinity of silicone molding lens constrain the handling of LED. Thus, some handling indications of HELIXEON emitters are presented for possible damage prevention and excellent reliability.

- l Avoid leaving fingerprints or scratches (by sharp tools) on the silicone resin parts.
- l Do not force over 2000gf impact or pressure on the silicone molding lens.
- l The LEDs should only be picked up by making contact with the sides of the LED body.
- l When populating in SMT production, the pick-and-place nozzle must not place excessive pressure on the silicone molding lens.





HELIO Optoelectronics Corp.

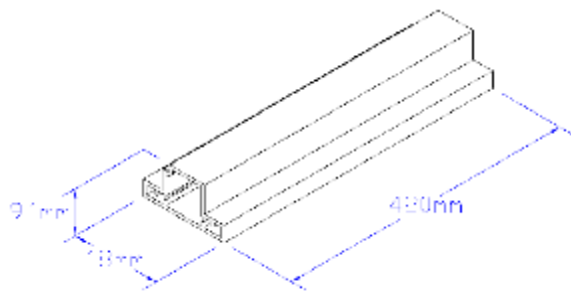
## Reliability Test List

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 <sub>F</sub> =700mA Tested with Helio standard circuit board	1000 hrs.	0/10
Steady state operating life of high humidity heat		85°C, RH=85%, I <sub>F</sub> =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

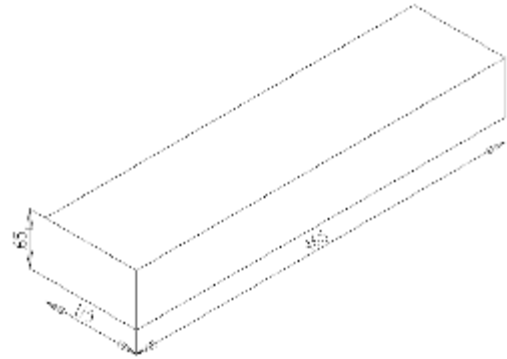
The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.

HELIO Optoelectronics Corp.

## Tube Package Specifications



Tube



Inner carton



Dry agent

### Note:

1. There are 50pcs emitters in a tube.
2. An antistatic bag contains 20 tubes and a drying agent.
3. There are 20 tubes in an inner carton.
4. All dimensions are all in millimeter.

The information contained herein is the exclusive property of HELIO and shall not be distributed reproduced, or disclosed in whole or in part without prior written permission of HELIO.