



Optodevices

*opnext* →



WE *light* IT UP

# Opnext Lights It Up

Opnext is paving the way to a future of exciting laser developments and ground breaking applications. Our industry heritage, future-focused thinking and deep commitment to research and development help us anticipate and meet the needs of a diverse range of markets, from telecom and datacom to medical, information and industry applications, to defense and security.

Established in 2001, Opnext was created from the resources of the Fiber Optic Components Business Unit at Hitachi. We have continued to build on three decades of advanced Hitachi technology, establishing our own broad portfolio of solutions.

## Technology

Opnext technologies represent the leading edge of product development in the marketplace today. Opnext serves the diverse and expanding markets where lasers and infrared emitting diodes are used such as medical and dental, displays, printers, logistics, security and defense including ITAR regulated programs, industrial robotics, and construction tools. Our solutions are backed by a strong and dedicated R&D program and the confidence that comes with proven experience and application success.

## Research and Development

Opnext technology leads the industry and is well regarded in our many markets because we anticipate and meet our customer's needs for best-quality components and innovative applications at economical prices. We continue to expand our existing product line and develop new breakthrough products with the full support of Hitachi's R&D efforts, including the Central Research Laboratory (CRL), Mechanical Engineering Research Laboratory (MERL), and Production Engineering Research Laboratory (PERL).

## Dedicated Support

Opnext provides comprehensive applications engineering support worldwide. Our long history in innovating visible and infrared lasers and LEDs gives you access to engineers with some of the greatest depth and understanding in the industry. Our engineers work hand-in-hand with customers to tailor our solutions to your requirements. Our operations team and global network of distributors ensure consistent delivery and smooth integration into your supply chain. Our focus on service extends from the first meeting through each delivery and post-sales support.

## Opnext Quality

The Hitachi name has always been associated with the highest quality lasers available in the industry. With Opnext, the commitment to quality remains as strong as ever. This quality is rooted in our tremendous laser design and manufacturing expertise which has another benefit – highly competitive prices. We design for high volume manufacturing so that our laser innovations achieve both high quality and low cost. Combined with superior support, Opnext is your best choice for long term laser supplier and partner.

Let Opnext bring new light to your applications. Visit [www.opnext.com](http://www.opnext.com) or contact us by calling 510-580-8828.

## Featured Products

A comprehensive line up of newly structured **5mW through 250mW red laser diodes, as well as blue and violet** are available for use in applications requiring low power consumption and low aspect ratio.

Opnext's latest red laser diode, the **HL63603TG**, has a **638nm** wavelength with **120mW** of output power. It is available in a 3.8mm package with single transverse mode and is suitable as the red light source of RGB laser pico projectors.

Introducing our new **445nm, 80mW single transverse mode blue laser diode**, the HL45023TG is ideal as the blue light source for RGB laser pico projectors. Additionally our new **404nm, 500mW multi transverse mode violet laser**, the HL40023MG is suitable for direct imaging for printed circuit boards and medical analysis equipment.

## The Opnext Advantage

Opnext's 30 years of laser leadership is evident through our products, technology, service and support.

### Technology

- Multi-beam lasers for higher speed applications
- High efficiency design for longer battery life
- Leader at 635nm
- Advanced design for blue and violet
- Continuous innovation

### Products

- Wavelength selection available
- Visible high power (red, blue, and violet)
- High temperature tolerance for greater design flexibility

### Service and Support

- Renowned quality
- Dedicated application support
- Fast response times
- Consistent, reliable delivery

## How to Buy

Opnext has distributors and sales offices world-wide. Use the list below to contact the nearest distributor or please see the back cover for the nearest Opnext sales office.

<b>North America</b>			
Avnet Electronics Marketing	United States	1-800-332-8638	www.avnetexpress.com
WPG Americas	United States	1-800-669-5030	www.wpgamericas.com
ProPhotonix Limited	United States	1-800-472-4633	www.prophotonix.com
<b>Europe / Middle East</b>			
MSC	Locations throughout Europe	+49 (0) 711 783360	www.msc-ge.com
ProPhotonix Limited	UK & Germany	+44 (0) 1279 717178	www.prophotonix.com
Arrow Central Europe	Locations throughout Europe	+49 6103 304-0	www.arrowce.com
Silverstar	Italy	+39 2 66125 521	www.arrowitaly.com
Optomark	Germany & UK	+49 203 6 08 67 34	www.optomark.com
<b>Africa</b>			
Hi-Q Electronics (Pty) Ltd.	South Africa	+27-11-894-8083	www.hi-q.co.za
<b>Asia</b>			
Litrax Technology Co. Ltd.	Taiwan	+866-4-25346560	www.litrax.com.tw
Nextech	India	See website for details	www.nextechelectronics.net
Panoptics	South Korea	+82-502-702-9999	www.panoptics.net
Phontonteck Co. Ltd.	Hong Kong	+86-755-861-70157	www.phontonteck.com
Vertex	Beijing	+86-10-82675308	www.vertex-ic.com

# Laser Diodes



Wavelength	Optical Power	Part Number		
		AC Connection	CC Connection	Other Connection
404nm	500mW			HL40023MG (FN)
445nm	80mW			HL45023TG (FN)
635nm	5mW	HL6312G		
	7mW	HL6354MG	HL6355MG	
	10mW	HL6320G	HL6319G	
637nm	7mW	HL63102MG	HL63101MG	
	120mW	HL63142DG		
	170mW			HL63133DG (FN)
	250mW			HL6388MG (LN)
638nm	120mW			HL63603TG (FN)
639nm	12mW	HL6358MG HL6396MG	HL6359MG HL6395MG	
	15mW	HL6322G	HL6321G	
	25mW	HL6360MG HL6398MG	HL6361MG HL6397MG	
	35mW	HL6323MG		
640nm	45mW	HL6362MG	HL6363MG	

**AC Connection:** LD: Anode Common PD: Cathode Common  
**BC Connection:** LD: Cathode Common PD: Cathode Common

**CC Connection:** LD: Cathode Common PD: Anode Common  
**FC-Connection:** LD electrode is isolated from stem (common) PD: cathode is flange connection

**FN Connection:** LD electrode is isolated from stem (common) PD: none  
**LN Connection:** LD: Cathode common PD: none

Wavelength	Optical Power	Part Number		
		AC Connection	CC Connection	Other Connection
642nm	65mW	HL6364DG	HL6365DG	HL6376DG (BC) HL6387TG (FN)
	90mW	HL6366DG	HL6367DG	HL6378DG (BC)
	150mW			HL6385DG (LN)
650 - 660nm	100mW			HL6548FG (FC)
	50mW (pulse)		HL6501MG	
	300mW (pulse)			HL6545MG (LN)
670 - 690nm	5mW	HL6724MG		
	10mW	HL6714G HL6748MG		
	15mW	HL6756MG		
	35mW		HL6738MG	
	55mW		HL6750MG	
705nm	50mW	HL7002MG	HL7001MG	
730nm	50mW	HL7302MG	HL7301MG	
830nm	50mW	HL8337MG	HL8338MG	
852nm (±10)	50mW	HL8340MG	HL8341MG	
852nm (±4)	50mW	HL8342MG	HL8343MG	

**AC Connection:** LD: Anode Common PD: Cathode Common  
**BC Connection:** LD: Cathode Common PD: Cathode Common

**CC Connection:** LD: Cathode Common PD: Anode Common  
**FC-Connection:** LD electrode is isolated from stem (common) PD: cathode is flange connection

**FN Connection:** LD electrode is isolated from stem (common) PD: none  
**LN Connection:** LD: Cathode common PD: none

# Product Line Up

Tc=25°C

Part Number	Internal Circuit	Maximum Ratings		Optical and Electrical Characteristics (Typical)						
		Po (mW)	Topr (°C)	Po (mW)	Ith (mA)	Iop (mA)	Is (mA)	λp (nm)	θ// (deg.)	θ⊥ (deg.)
HL40023MG	FN	500	0 to 30	400	105	390	-	404	10***	45***
HL45023TG (UD)	FN	80	-10 to 70	60	30	100	-	445	8.5	18
HL6312G	AC	5	-10 to 50	5	45	55	0.4	635	8	31
HL6319G	CC	10	-10 to 50	10	50	70	0.17	635	8	31
HL6320G	AC	10	-10 to 50	10	50	70	0.17	635	8	31
HL6321G	CC	15	-10 to 50	15	55	85	0.2	635	8	30
HL6322G	AC	15	-10 to 50	15	55	85	0.2	635	8	30
HL6323MG	AC	35	-10 to 50	30	45	95	0.15	639	8.5	30
HL6354MG	AC	7	-10 to 50	5	20	27	0.4	635	8	25
HL6355MG	CC	7	-10 to 50	5	20	27	0.4	635	8	25
HL6358MG	AC	12	-10 to 50	10	30	40	1.0	639	8	21
HL6359MG	CC	12	-10 to 50	10	30	40	1.0	639	8	21
HL6360MG	AC	25	-10 to 50	20	45	65	0.2	639	9	21
HL6361MG	CC	25	-10 to 50	20	45	65	0.2	639	9	21
HL6362MG	AC	45	-10 to 50	40	45	90	0.3	640	10	21
HL6363MG	CC	45	-10 to 50	40	45	90	0.3	640	10	21
HL6364DG	AC	65	-10 to 50	60	65	125	0.4	642	10	21
HL6365DG	CC	65	-10 to 50	60	65	125	0.4	642	10	21
HL6376DG	BC	65	-10 to 50	60	65	125	0.4	642	10	21
HL6366DG	AC	90	-10 to 50	80	80	155	0.3	642	10	21
HL6367DG	CC	90	-10 to 50	80	80	155	0.3	642	10	21
HL6378DG	BC	90	-10 to 50	80	80	155	0.3	642	10	21
HL6385DG	LN	150	-10 to 40	150	110	280	-	642	9	17
HL6387TG	FN	65	-10 to 50	60	80	135	-	642	9	20
HL63603TG	FN	120	-10 to 60	120	50	165	-	638	8.5	18
HL63133DG	FN	170	-10 to 40	170	60	250	-	637	9	17
HL63142DG	AC	120	-10 to 50	100	50	140	0.3	637	8	18
HL6388MG	LN	250	-10 to 50	250	100	340	-	637	11	40
HL6395MG	CC	12	-10 to 60	10	45	55	0.07	639	9	21
HL6396MG	AC	12	-10 to 60	10	45	55	0.07	639	9	21
HL6397MG	CC	25	-10 to 60	20	45	65	0.2	639	9	21
HL6398MG	AC	25	-10 to 60	20	45	65	0.2	639	9	21
HL63101MG	CC	7	-10 to 60	5	15	20	0.2	637	8	34
HL63102MG	AC	7	-10 to 60	5	15	20	0.2	637	8	34
HL6501MG	CC	50*	-10 to 60	30	45	85	0.2	658	8.5	22
HL6545MG	LN	300*	-10 to 75*	120	60	175	-	660	10	17
HL6548FG	FC	100	-10 to 60	90	55	140	0.6	660	10	17
HL6714G	AC	10	-10 to 50	10	35	50	0.8	670	8	22
HL6724MG	AC	5	-10 to 50	5	25	35	0.9	670	8	30
HL6748MG	AC	10	-10 to 60	10	20	30	1.0	670	8	25
HL6756MG	AC	15	-10 to 60	15	20	35	1.5	670	8	24
HL6738MG	CC	35	-10 to 70	30	45	90	0.1	690	8.5	19
HL6750MG	CC	55	-10 to 70	50	30	75	0.15	685	9	21
HL7001MG	CC	50	-10 to 60	40	30	75	0.15	705	9	18
HL7002MG	AC	50	-10 to 60	40	30	75	0.15	705	9	18
HL7301MG	CC	50	-10 to 60	40	30	75	0.3	730	9	18
HL7302MG	AC	50	-10 to 60	40	30	75	0.3	730	9	18
HL8337MG	AC	50	-10 to 60	50	20	75	0.25	830	9	22
HL8338MG	CC	50	-10 to 60	50	20	75	0.25	830	9	22
HL8340MG	AC	50	-10 to 60	50	20	75	0.25	852 (±10)	9	22
HL8341MG	CC	50	-10 to 60	50	20	75	0.25	852 (±10)	9	22
HL8342MG	AC	50	-10 to 60	50	20	75	0.25	852 (±4)	9	22
HL8343MG	CC	50	-10 to 60	50	20	75	0.25	852 (±4)	9	22

Note:

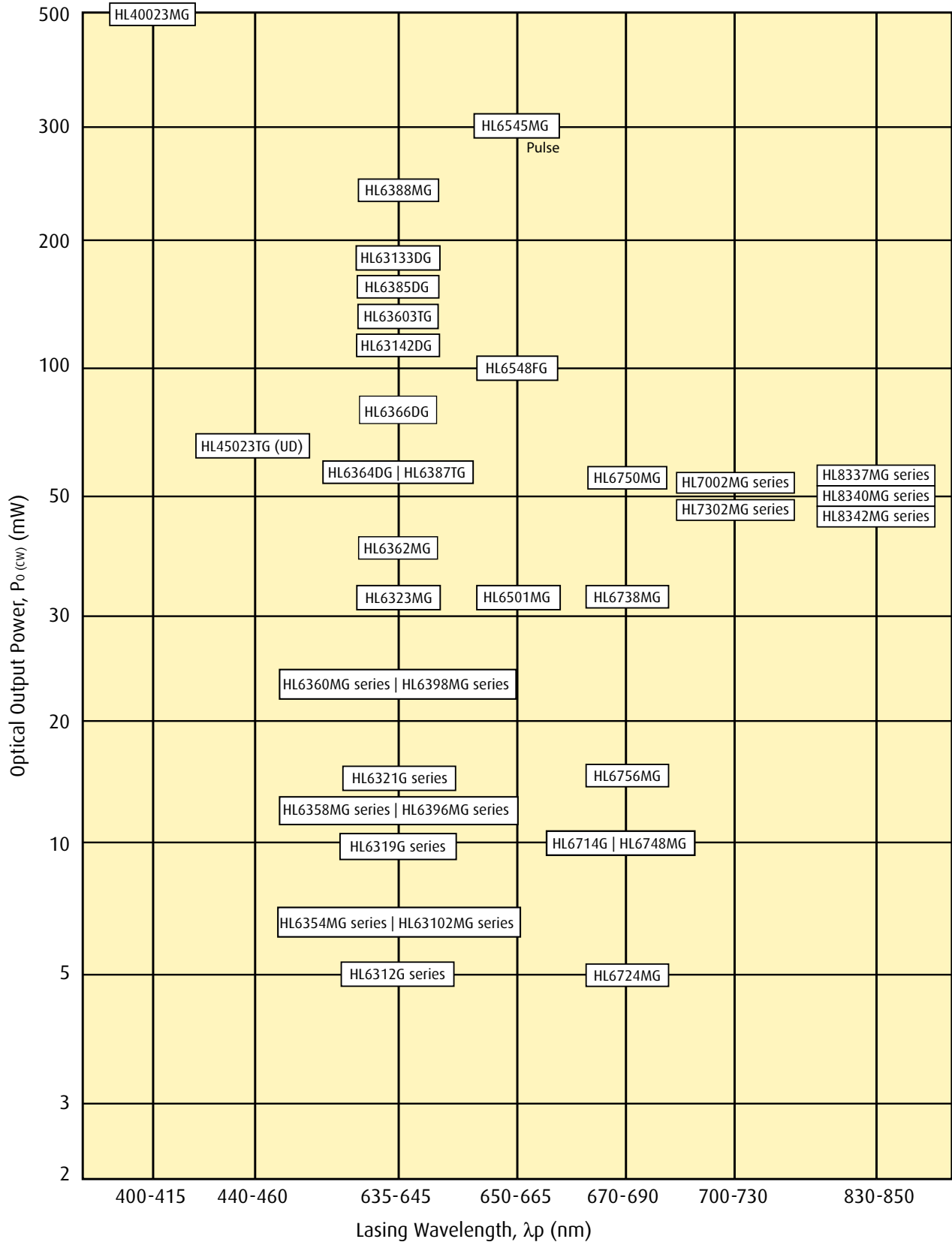
AC-connection: LD: anode common PD: cathode common  
 BC-connection: LD: cathode common PD: cathode common  
 CC-connection: LD: cathode common PD: anode common  
 FC-connection: LD electrode is isolated from stem (common) PD: cathode is flange connection  
 FN-connection: LD electrode is isolated from stem (common) PD: none  
 LN-connection: LD: cathode common PD: none

\*pulse optical power and pulse operation  
 \*\*exceptional cathode common  
 \*\*\*full angle, 1/e<sup>2</sup>  
 (UD): Under Development

## Part Number by Application

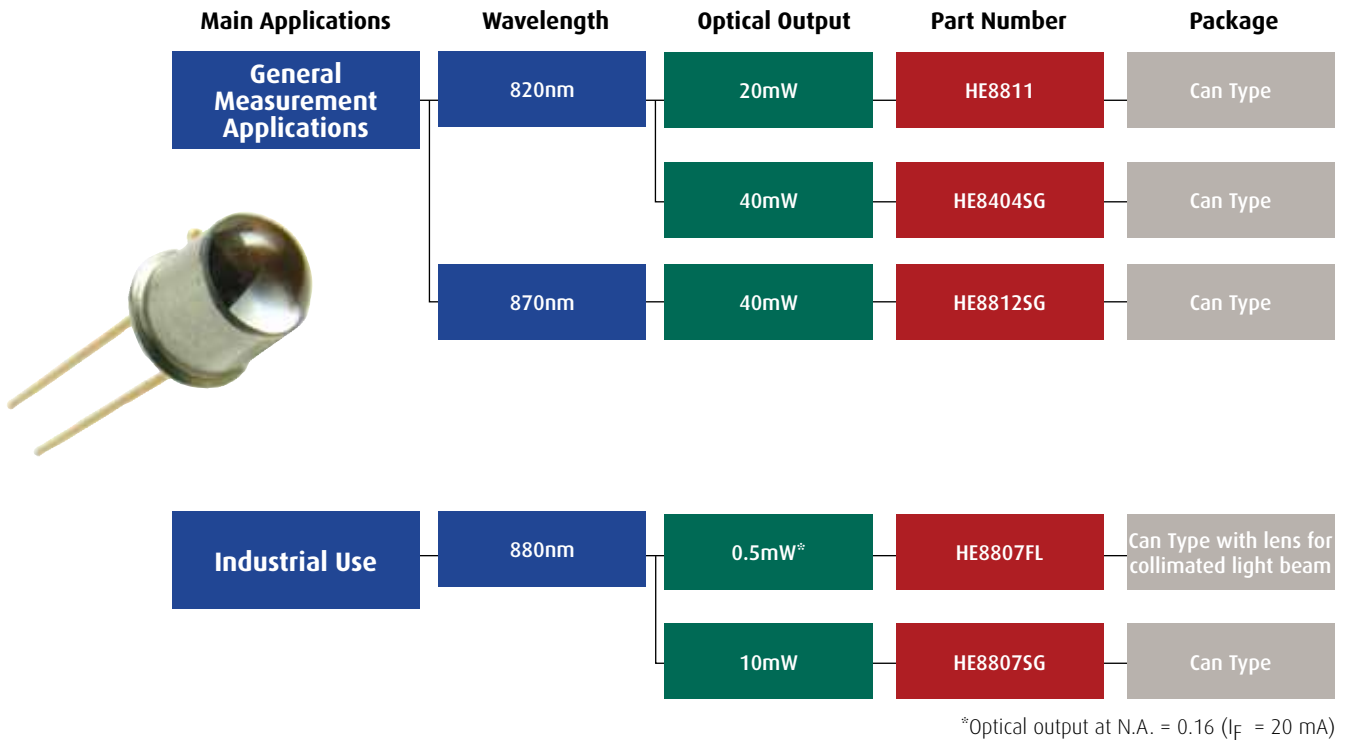
Main Applications										Maximum Rating Optical Power Po (mW)	Wavelength $\lambda$ P(nm)	$\Phi$ 9mm Package (G/FG-type)	$\Phi$ 5.6mm Package (MG/DG)  $\Phi$ 3.8mm Package (TG-type)	
Pointer / Aiming	Line / Pattern Generator	Distance Meter	Medical (Bio, Analysis)	Barcode Scanner / Laser Printing	Display	Optical Storage	Direct Imaging	Automotive	Defense & Security					Experimental Uses
			•				•		•	•	500	404		HL40023MG
	•		•		•					•	80	445		HL45023TG
•	•	•	•							•	5	635	HL6312G series	
			•	•								670		HL6724MG
•	•	•		•					•	•	7	637		HL63101MG series
•	•		•						•	•		635		HL6354MG series
•	•	•	•								10	670	HL6319G series	
		•	•	•									HL6714G	
•	•	•		•					•	•	12	639		HL6395MG series
•	•	•	•						•					
	•	•	•								15	635	HL6321G series	
			•	•								670		HL6756MG
•	•	•		•					•	•	25	639		HL6397MG series
	•	•	•	•										
			•	•							35	690		HL6323MG
			•	•		•								
			•	•				•			45	640		HL6362MG series
			•							•	50*	705		HL7001MG series
			•	•		•						830		HL8337MG series
			•	•		•						852 ( $\pm$ 10)		HL8340MG series
			•	•		•						852 ( $\pm$ 4)		HL8342MG series
		•	•	•								658		HL6501MG
		•	•	•						•		730		HL7301MG series
		•	•	•							55	685		HL6750MG
			•	•					•	•	65	642		HL6387TG
			•	•				•						
			•	•				•			90	642		HL6366DG series
			•								100	660	HL6548FG	
•			•						•	•	120	637		HL63142DG
			•	•					•	•	120	638		HL63603TG
			•	•							150	642		HL6385DG
			•	•					•	•	170	637		HL63133DG
			•	•					•	•	250	637		HL6388MG
			•	•		•					300*	660		HL6545MG

# Red and Infrared Laser Diodes Product Map



Po : Maximum Ratings UD : Under Development (CW) : Constant Wave

# Infrared Light Emitting Diodes



## Infrared Light Emitting Diodes - Major Characteristics

Part Numer	Absolute Maximum Ratings		Optical and Electrical Characteristics (Typical)			
	Forward Current $I_F$ (mA)	Operating Temperature $T_{opr}$ (°C)	Optical Output $P_o$ (mW)	Peak Wavelength $\lambda_p$ (nm)	Spectral Width $\Delta\lambda$ (nm)	Test Conditions $I_F$ (mA)
			min	typ	typ	
HE8404SG	250	-20 to 60	40	820	50	200
HE8807SG	200	-20 to 85	10	880	30	150
HE8807FL	200	-20 to 85	0.5*	880	30	150
HE8811	200	-20 to 60	20	820	50	150
HE8812SG	250	-20 to 60	40	870	50	200

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## Safety Considerations

Avoid direct eye exposure to high power laser beams emitted from laser diodes. Even though laser light is barely visible and/or invisible to the human eye, it can be quite harmful. As a result, avoid looking directly into a laser diode or collimated beam along its optical axis when the diode is activated. Use a phosphor plate or infrared sensitive camera to determine the optical path.

Opnext certifies compliance with US Safety Regulations (21 CFR 1040.10) on laser products as stipulated by the U.S. Department of Health and Human Services.

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4. This product is not designed to be radiation resistant.
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## Cautions

1. Laser light, direct or indirect, can be harmful to the human body, especially to the eye.
2. The laser beam should be observed or adjusted through infrared cameras or similar equipment.
3. These products (excluding violet laser diodes) contain gallium arsenide (GaAs), which may seriously endanger your health, even at very low doses. Please avoid any activities which may create GaAs powder or gas, such as disassembly or performing chemical experiments.
4. When disposing of the product, please follow all applicable local laws and regulations.
5. Terms used but not defined in this document have the meanings assigned to them in the Opto Device Databook issued by Opnext, unless otherwise specified.

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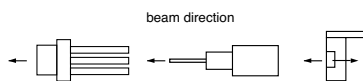
VISIBLE AND/OR INVISIBLE LASER RADIATION-  
AVOID DIRECT EXPOSURE TO BEAM



**PEAK POWER** 300mW  
**WAVELENGTH** 620 to 1610 nm  
**CLASS IIIb LASER PRODUCT**

This product conforms to FDA regulations 21 CFR Chapter 1, Subchapter 3.

**AVOID EXPOSURE**-Visible and/or invisible laser radiation is emitted from glass window, fiber pigtail end, laser chip mounted on top of header or bare chip. Before use, consult appropriate catalogs or manuals



Manufactured by: Opnext Japan, Inc.  
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Nagano-ken, 384-8511, Japan.  
Tel: +81-267-26-1816

**USER INSTRUCTIONS:**

These laser devices produce visible and/or invisible laser radiation. Avoid direct exposure to eyes. Avoid looking directly into a laser diode or collimated beam along its optical axis when it is in operation. One simple way to determine the optical path is to use a phosphor plate or infrared sensitive camera.

These devices are components to be used in producing complete laser systems. They do not emit radiation unless combined by the end user with other components. Please consult the Opnext Optodevice Databook for some of the possible uses of these devices.

Because of the small size of the device, the required labels and these instructions are provided on this label rather than printed on the device.