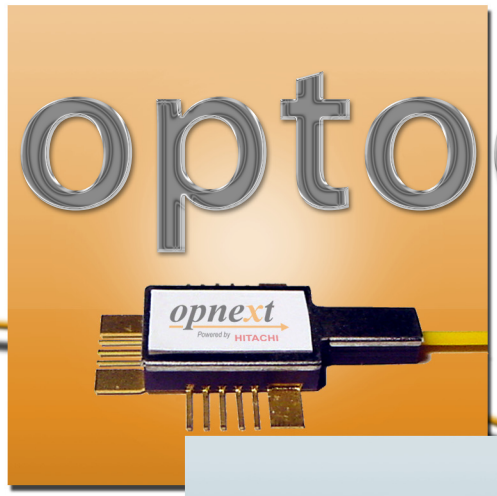
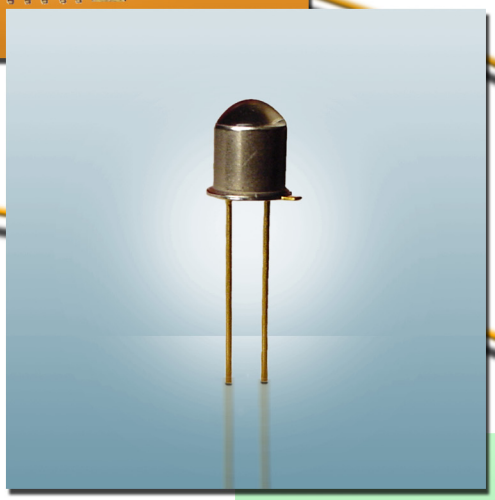
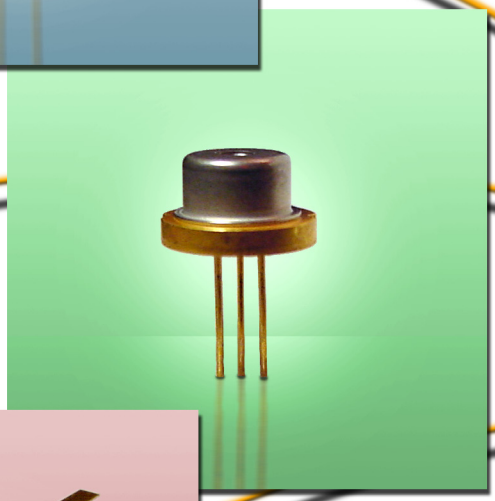
optodevices









2003 / 2004

opnext
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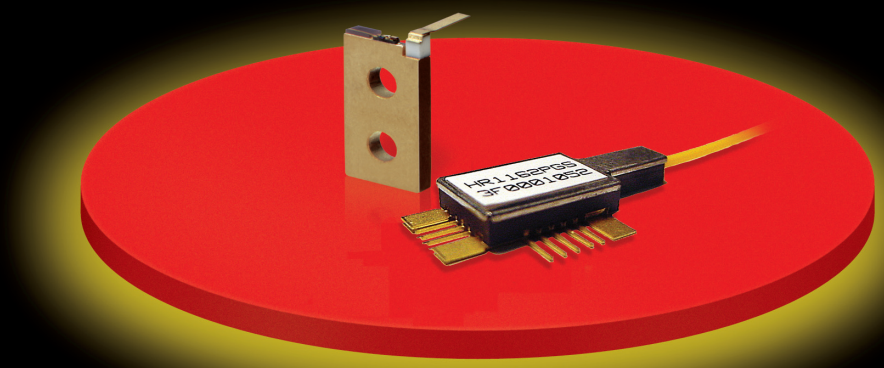
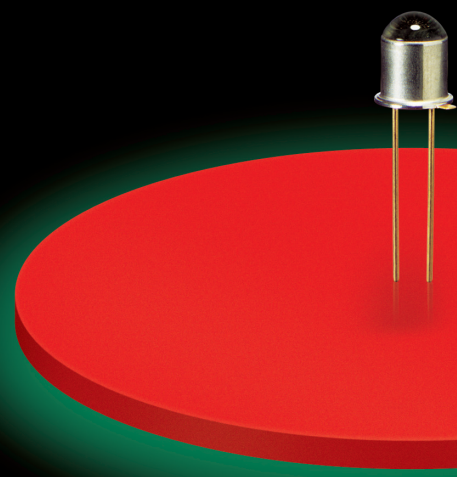
Opnext leads the way in the growing field of optics, with a combination of experience and vision.

In this new era of light, with a focus on quality optical technologies, Opnext offers unique leading edge optodevices in such areas as fiber-optic communications, optical storage, and measuring instruments and encoders. Constant refinement of established technologies offers cutting-edge solutions to a wide variety of needs, providing the power to reshape our world and lifestyles.
With a sound vision of the marketplace, Opnext is dedicated to offering valuable solutions to our customers.



A power player in communications

High performance for short reach to long reach communications.
Opnext supports both Lasers and Photos with chip on carrier, bare chip, small packaged module.

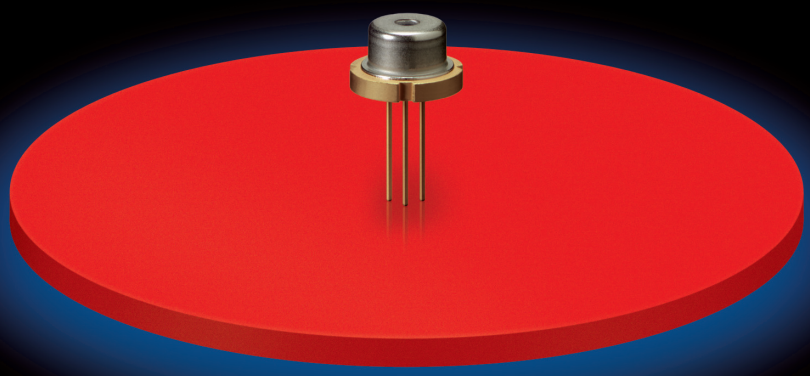


A power player in industrial applications

Devices include outstanding features such as optical output, and excellent beam characteris

A power player in information industry applications!

Opnext is adopting a high-optical-output, low-power-consumption approach to the ongoing development of products for information industry applications such as laser markers, measuring instruments, and optical disc drives.



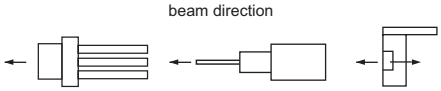
DANGER

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

PEAK POWER 200mW
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

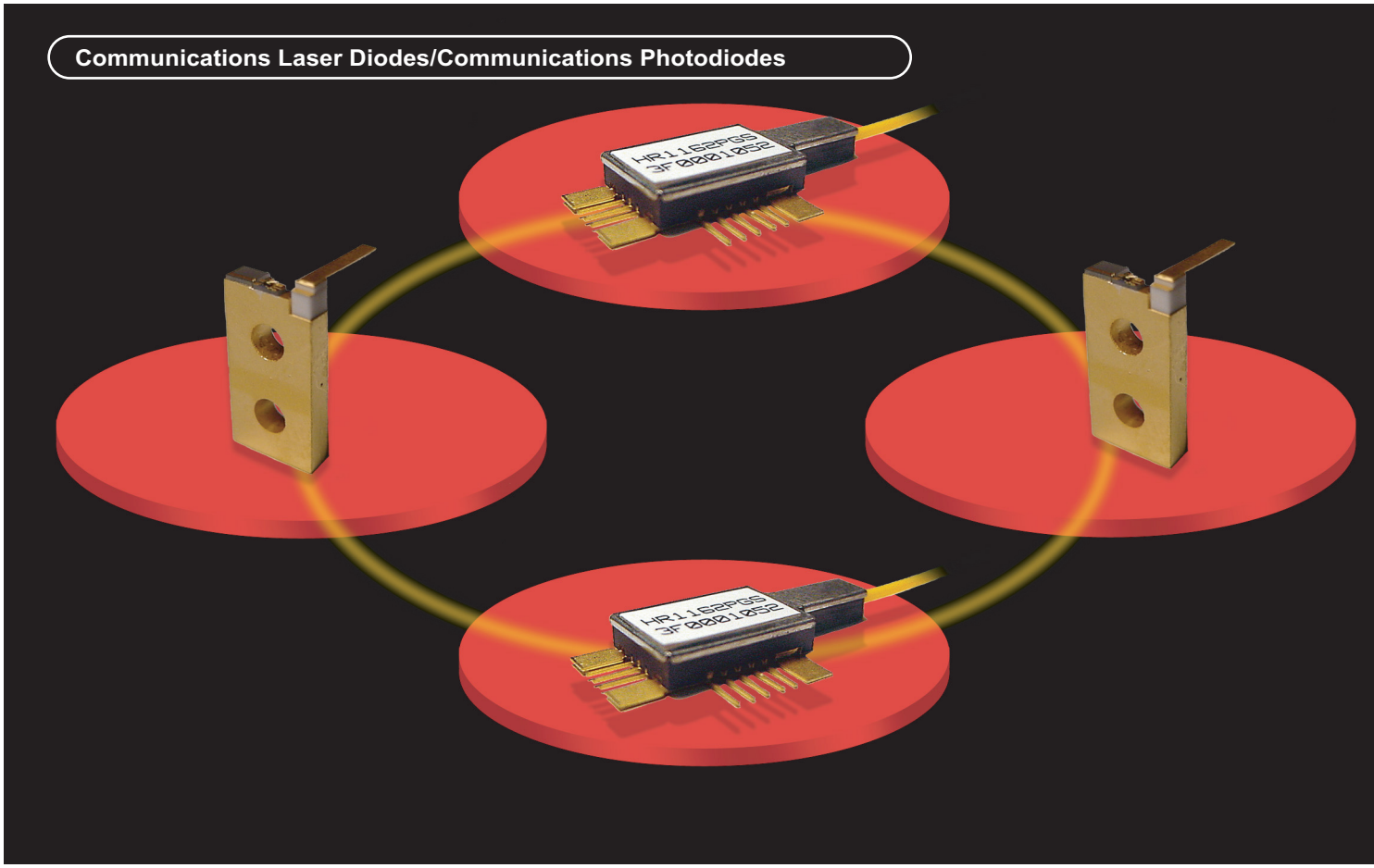


Manufactured by: Opnext Japan, Inc.
190 Kashiwagi, Komoro-shi,
Nagano-ken, 384-8511, Japan.
Tel: +81-267-26-1816

USER INSTRUCTIONS:
This laser device in operation produces visible and/or invisible laser radiation.Be sure to avoide direct exposure of human eyes to beams emitted from laser diode.Even though they are barely visible and/or invisible to the human eye,they can be quite harmful.In particular,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.



Optodevices covering high-end to low-end communications.

Communications laser diodes are in demand in a wide range of applications. Currently established in 2.5 G and 10G trunk line communications systems, Opnext also provides products for the rapidly growing area of subscriber system technologies.

Access Communications Laser Diodes

● Uncooled laser diodes for 10 Gbps

1.3 µm FP type and DFB type uncooled laser diodes are under development for 10 Gbps. These are made of InGaAlAs and have small temperature dependence and excellent high frequency performance. These are to be supplied as die form.

Access Communications Photodiodes

● 10 Gbps receiver

The receiver in a industrial standard MSA package is coming soon. It is in small package and will cover up to 40 km span.

Long-Distance communication Laser Diodes (for Trunk Line Use)

● DFB with EA modulator

Laser diodes with an integrated EA (electroabsorption) type modulator achieve a stable communication perfomance at 10 Gbps. In addition, they cover the wideband wavelength ranges (C- and L-bands) for DWDM communications.

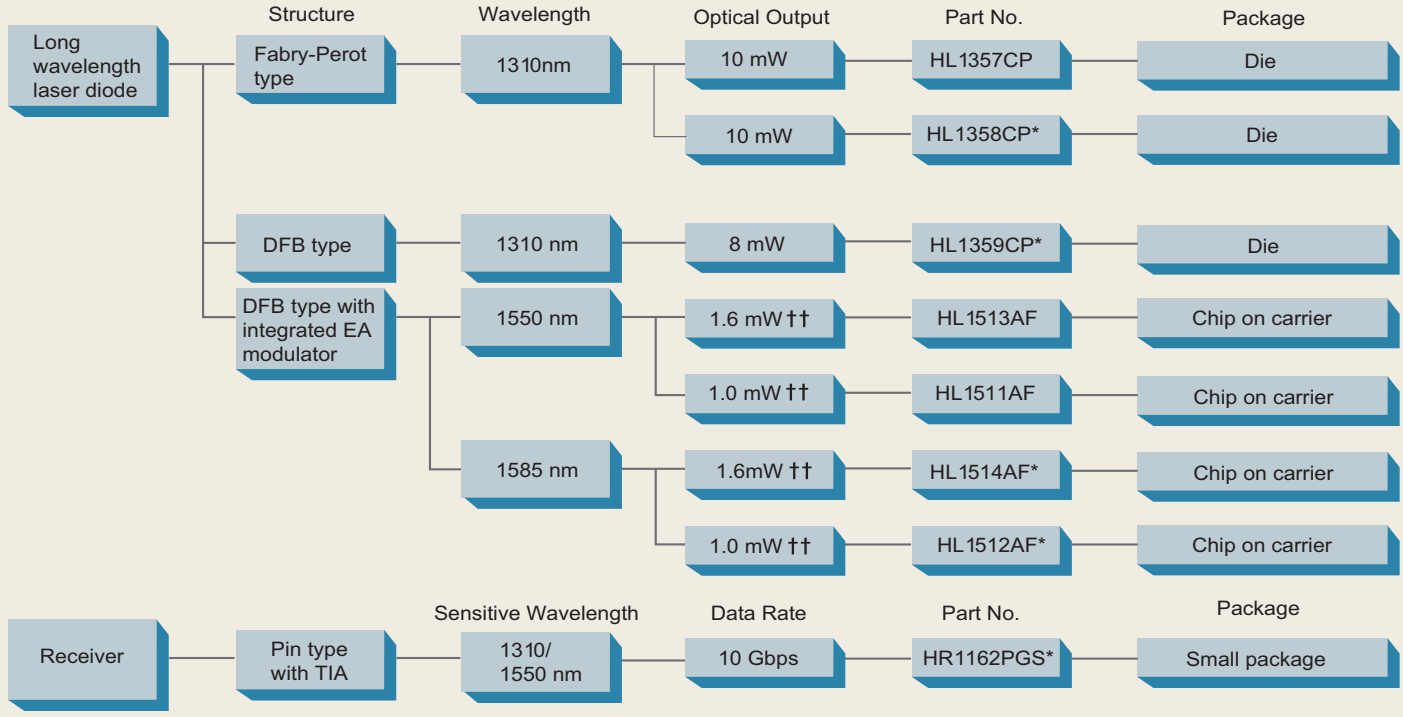


AF Type
Integrated EA modulator
1.55µmDFB, 1.6µmDFB
HL1513AF, HL1511AF, HL1514AF, HL1512AF



HR1162PGS

Communications Laser Diode and Receiver Product Lineup



†† Optical output under modulation
*Under development

Communications Laser Diode Major Characteristics

Part No.	Absolute Maximum Ratings		Optical & Electrical Characteristics				
	Optical Output Po (mW)	Operating Temperature Topr (°C)	Lasing Wavelengh λp (nm)			Test Conditions Po (mW)	Remarks
			min	typ	max		
HL1357CP	10	-10 to +85	1270	1310	1355	5	For 2.5 Gbps
HL1358CP*	10	0 to +80	1260	1310	1355	5	For 10 Gbps
HL1359CP*	8	0 to +85	1292	1310	1328	5	For 10 Gbps

* Under development

Major Characteristics of 1.55 µm/1.6 µm DFBs with EA Modulator

Part No.	Absolute Maximum Ratings		Lasing Vavelengh λp (nm)			Dynamic Extinction Ratio ER (dB)	Side Mode Surpression Ratio Sr (dB)		Remarks
	Optical Output Po (mW)	Operating Temp. Topr (°C)	min	typ	max	min	min	typ	
HL1513AF	1.6 ††	15 to 35	1527	1550	1565	10	35	40	C-band for 10 Gbps & 40 km
HL1511AF	1.0 ††	15 to 35	1527	1550	1565	9	35	40	C-band for 10 Gbps & 80 km
HL1514AF*	1.6 ††	15 to 35	1565	1585	1600	10	35	40	L-band for 10 Gbps & 40 km
HL1512AF*	1.0 ††	15 to 35	1565	1585	1600	9	35	40	L-band for 10 Gbps & 80 km

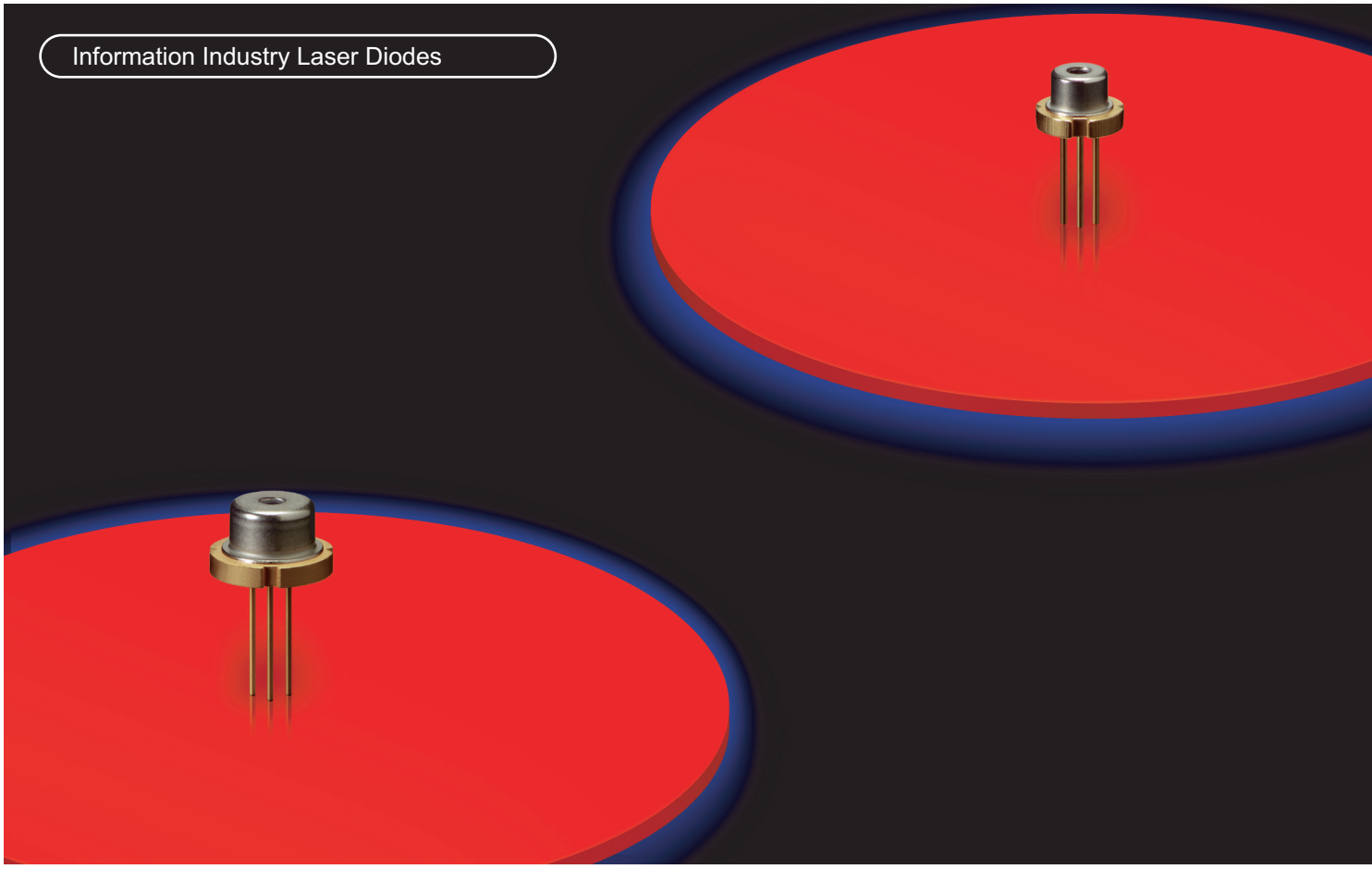
†† Optical output under modulation
* Under development

Communications Photo Diode Major Characteristics

Part No.	Absolute Maximum Ratings				Responsivity Resp (A/W) λp = 1310 nm	Band Width BW (MHz)		Sensitivity Pr (dBm)	Remarks
	IC Supply Voltage Vcc (V)	PD Bias Voltage Vpd (V)	Optical Input Power Pin (mW)	Operating Temperature Topr (°C)	min	min	max	typ	
HR1162PGS*	–6 to +0	–0.5 to +15	2	0 to +85	0.7	7500	—	–18	Diffrential ended for 10 Gbps

*Under development

Information Industry Laser Diodes



Opnext offers a wide range of optodevice variations for use in the information industry.

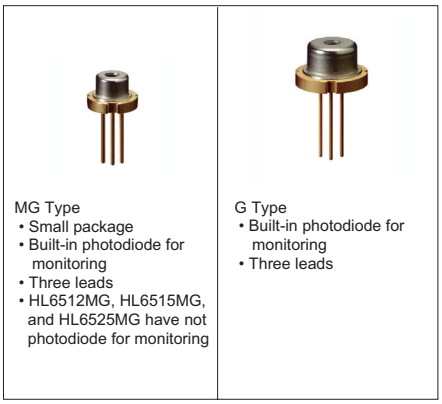
Opnext products are constantly being developed to meet the latest market needs.
These products include the world's first 660nm laser diode achieving a high 140 mW output, and a 635nm laser diode with a low aspect ratio of $\theta\perp/\theta// = 1.2$ typ.
Our laser diode products provide low power consumption with high output.

Industrial Red Laser Diodes

Industrial Models : These devices are suitable for use as high-reliability laser diodes in a wide range of industrial applications. The product lineup offers a wide range of variations, including low aspect ratio models (HL6335/43 Series) for collimator applications, suitable for levelers, bar code readers, and similar systems that require high performance.



Consumer Models: A comprehensive lineup is available, including small-package models, for use in consumer applications such as laser pointers, amusement products, and optical experimentation.

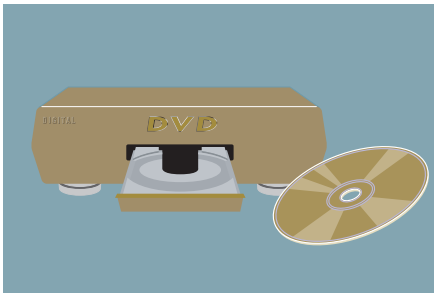


MG Type
- Small package
- Built-in photodiode for monitoring
- Three leads
- HL6512MG, HL6515MG, and HL6525MG have not photodiode for monitoring

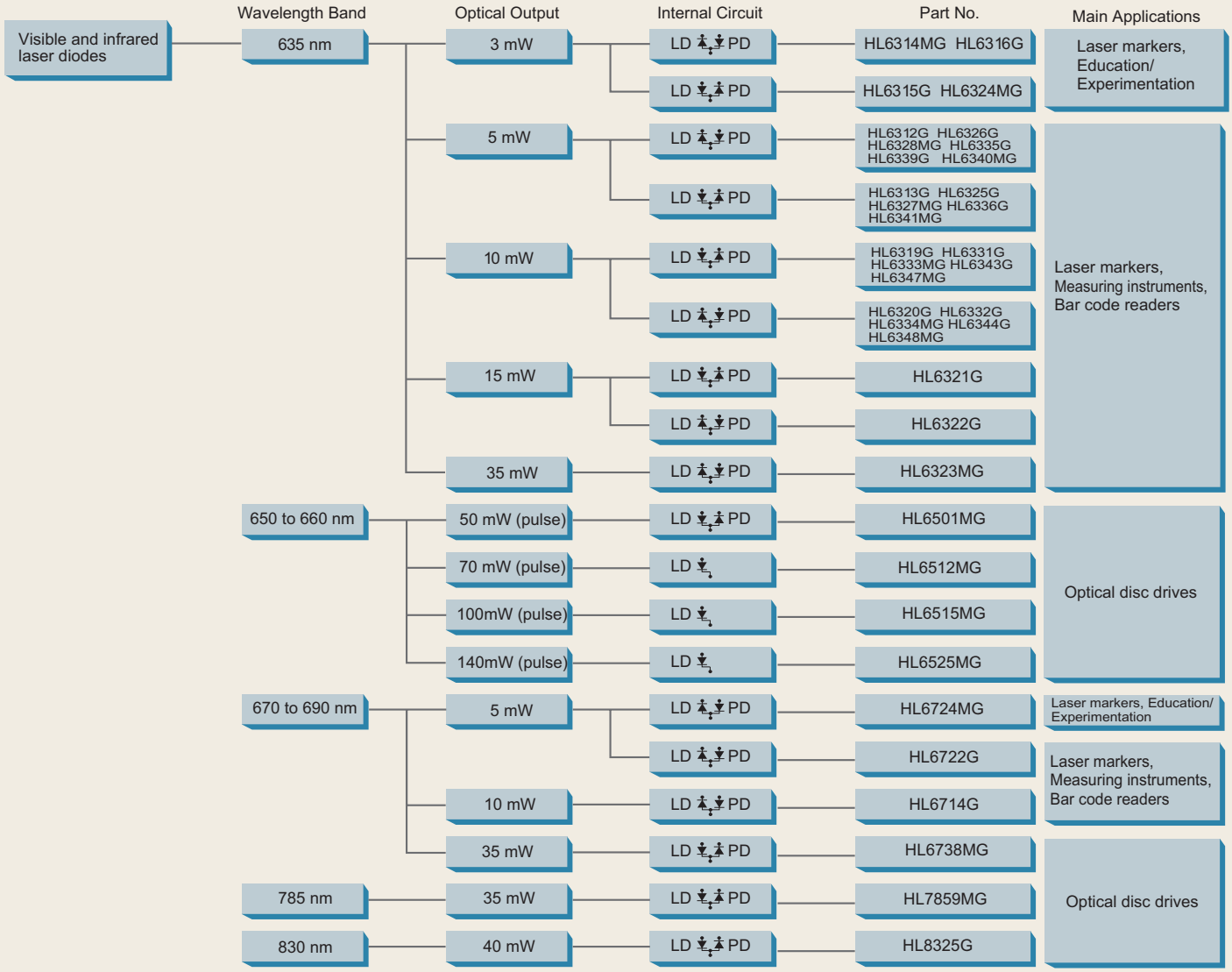
G Type
- Built-in photodiode for monitoring
- Three leads

Optical Storage Laser Diodes

● 660nm band (HL6512MG/HL6525MG)
With optical output of Po=140mW (pulse) achieved in the red visible light band (HL6525MG), these devices support faster, higher-density optical disc systems. The lineup includes 660 nm band models for DVD-R



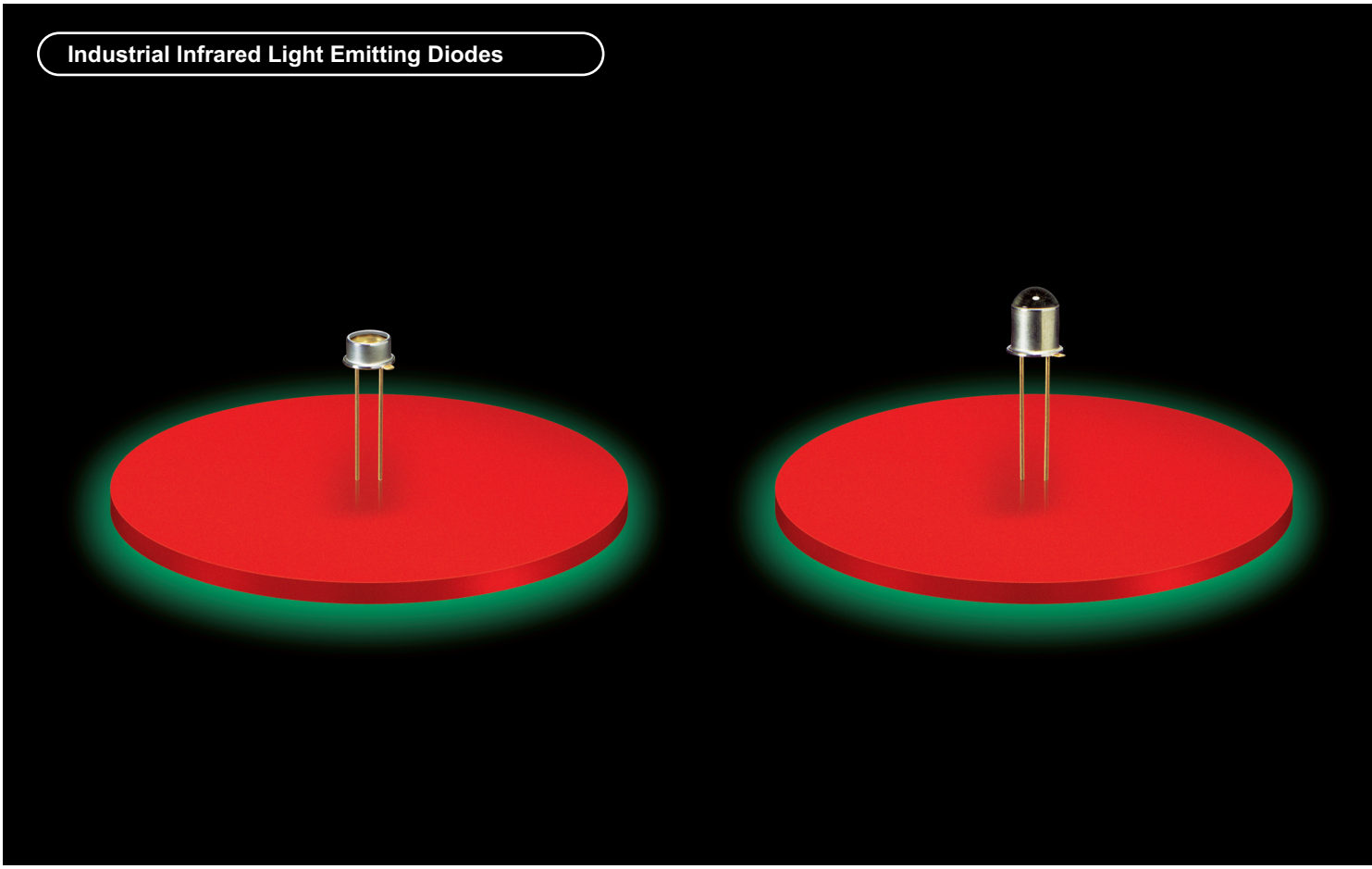
Information Industry Laser Diode Product Lineup



Information Industry Laser Diode Major Characteristics

Part No.	Absolute Maximum Ratings		Optical & Electrical Characteristics				
	Optical Output Po (mW)	Operating Temperature Topr (°C)	Threshold Current Ith (mA)	Operating Current Iop (mA)	Lasing Wavelength λp (nm)	Beam Divergence θ// × θ⊥ (deg)	Test Conditions Po (mW)
HL6312G/HL6313G	5	–10 to +50	45	55	635	8 × 31	5
HL6314MG/HL6324MG	3	–10 to +50	25	30	635	8 × 30	3
HL6315G/HL6316G	3	–10 to +50	25	30	635	8 × 30	3
HL6319G/HL6320G	10	–10 to +50	50	70	635	8 × 31	10
HL6321G/HL6322G	15	–10 to +50	55	85	635	8 × 30	15
HL6323MG	35	–10 to +50	45	95	639	8.5 × 30	30
HL6325G/HL6326G	5	–10 to +50	30	40	635	8 × 31	5
HL6327MG/HL6328MG	5	–10 to +50	30	40	635	8 × 31	5
HL6331G/HL6332G	10	–10 to +60	40	55	635	8 × 31	10
HL6333MG/HL6334MG	10	–10 to +50	40	55	635	8 × 31	10
HL6335G/HL6336G	5	–10 to +50	20	25	635	17 × 20	5
HL6339G	5	–10 to +40	45	55	633	8 × 30	5
HL6340MG/HL6341MG	5	–10 to +50	20	25	635	17 × 20	5
HL6343G/HL6344G	10	–10 to +50	20	35	635	17 × 20	10
HL6347MG/HL6348MG	10	–10 to +50	20	35	635	17 × 20	10
HL6501MG	50 (pulse)	–10 to +60	45	85	658	8.5 × 22	30
HL6512MG	70 (pulse)	–10 to +60	45	115	658	8.5 × 21	50
HL6515MG	100 (pulse)	–10 to +75	40	90	658	9.5 × 17	50
HL6525MG	140 (pulse)	–10 to +75	40	100	658	10 × 17	60
HL6714G	10	–10 to +50	10	35	670	8 × 22	10
HL6722G	5	–10 to +50	32	42	670	8 × 30	5
HL6724MG	5	–10 to +50	25	35	670	8 × 30	5
HL6738MG	35	–10 to +70	45	90	690	8.5 × 19	30
HL7859MG	35	–10 to +60	35	90	785	9.5 × 23	35
HL8325G	40	–10 to +60	40	120	830	10 × 22	40

Industrial Infrared Light Emitting Diodes



Unique technologies make our infrared light emitting diodes front-runners in the industrial field.

Opnext provides a high performance line-up based on a wealth of tried and tested technologies, such as high 40 mW output and collimated optical output

Industrial Infrared Light Emitting Diodes

High output is achieved through the use of the unique domed-chip formation technology, and an excellent beam shape is provided by precision lens (package) design technology.
There is a selection of suitable products for use as the encoder light source in NC machine tools and robots, and the light source for ophthalmoscopes and position detection equipment.

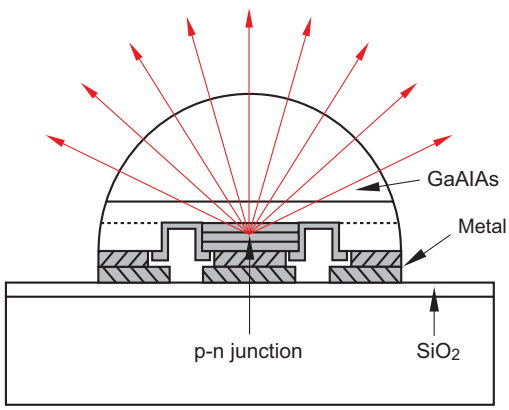


SG Type
- Flat glass window
  HE7601SG, HE8404SG, HE8807SG, HE8811, HE8812SG

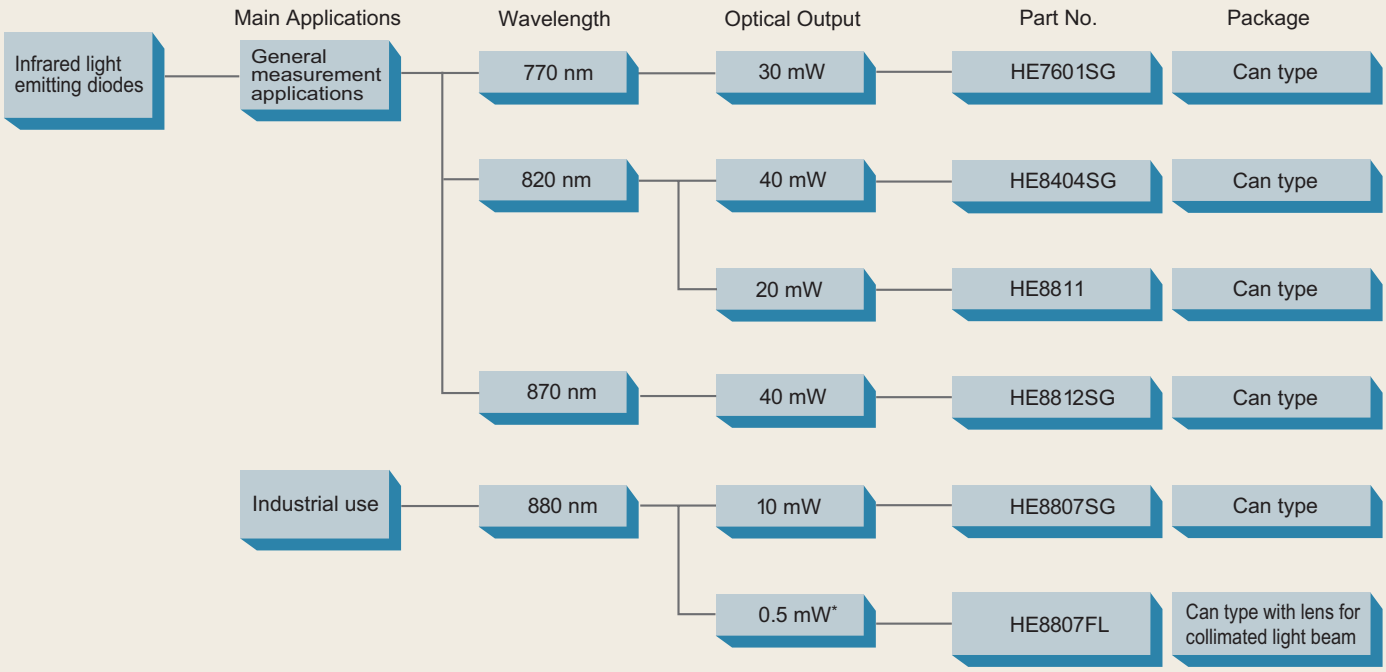
FL Type
- With lens for collimated light beam
  HE8807FL

Unique Domed Chip

Giving the chip a domed shape means that the output light strikes the surface virtually orthogonally at any angle, ensuring that almost all of the generated light is emitted from the chip.



Infrared Light Emitting Diode Product Lineup for industrial use



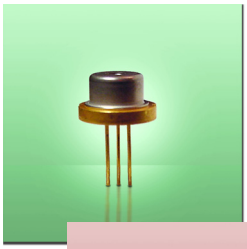
*Optical output at N.A. = 0.16 (I_F = 20 mA)

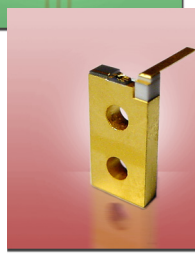
Infrared Light Emitting Diode Major Characteristics for industrial use

Part No.	Absolute Maximum Ratings		Optical & Electrical Characteristics			
	Forward Current I_F (mA)	Operating Temperature Topr (°C)	Optical Output Po (mW)	Peak Wavelength lp (nm)	Spectral Width Dl (nm)	Test Conditions I_F (mA)
			min	typ	typ	
HE7601SG	250	–20 to +60	30	770	50	200
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

*Optical output at N.A. = 0.16 (I_F = 20 mA)

Notes:





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www.opnext.com/optodevice

Note:
1. All specifications described herein are subject to change without prior notice.
2. To ensure safety and normal operation, be sure to read the instruction manual carefully before using the products
3. Safety Considerations: Invisible laser radiation is emitted from the end of laser products and will be harmful to the human eye. Avoid looking directly into the beam during operation