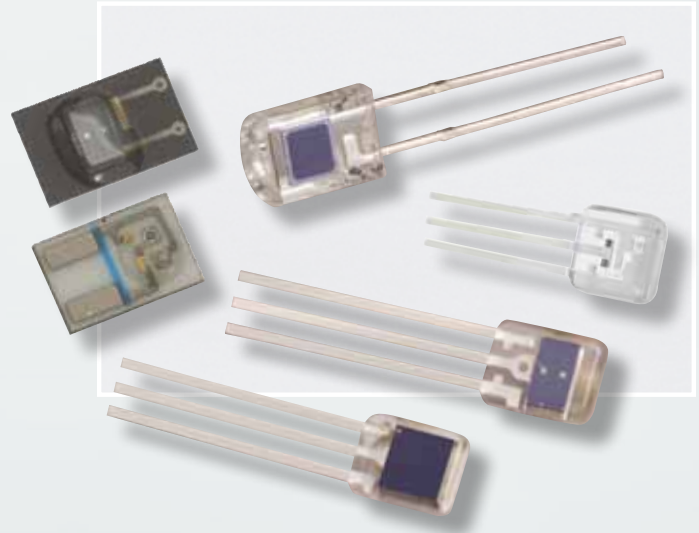


Dual Emitter / Matching Photodetector Series

Molded Lead Frame and Leadless Ceramic Substrate

The **Dual LED series** consists of a 660nm (red) LED and a companion IR LED such as 880/ 895, 905, or 940nm. They are widely used for radiometric measurements such as medical analytical and monitoring devices. They can also be used in applications requiring a low cost Bi-Wavelength light source. Two types of pin configurations are available: 1.) three leads with one common anode or cathode, or 2.) two leads parallel back-to-back connection. They are available in two types of packaging. Clear lead frame molded side looker, and leadless ceramic substrate.

The matching Photodetector' responses are optimized for maximum responsivity at 66nm as well as near IR wavelengths. They exhibit low capacitance and low dark currents and are available in three different active area sizes in the same two types of packaging as the dual emitters: Clear lead frame molded side looker and leadless ceramic substrate.



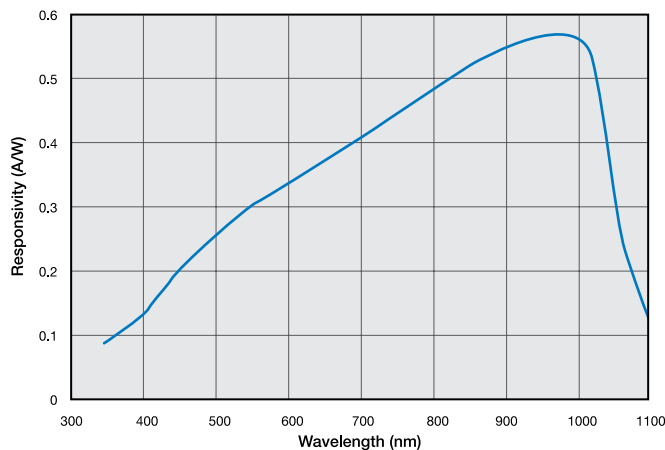
APPLICATIONS

- SpO₂
- Blood analysis
- Medical Instrumentation
- Ratiometric Instruments

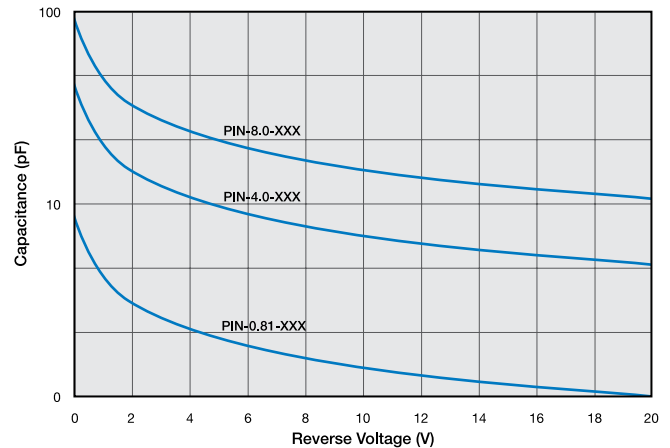
FEATURES

- Leadless ceramic Substrate
- Lead Frame Molded Packages
- Two and Three Lead Designs
- Bi-Wavelengths LEDs
- Matching Detector Response

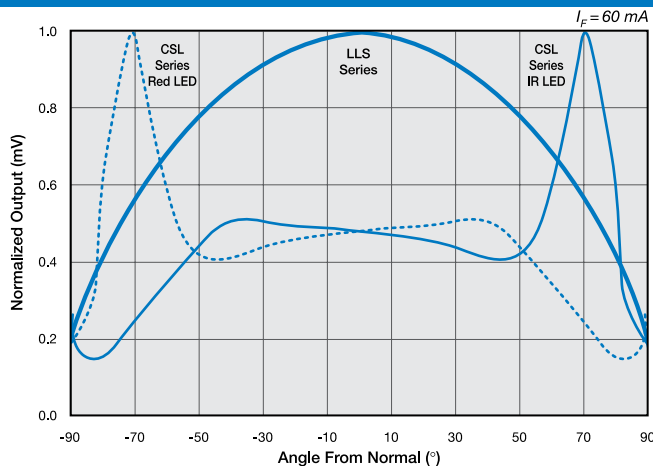
Typical Spectral Response



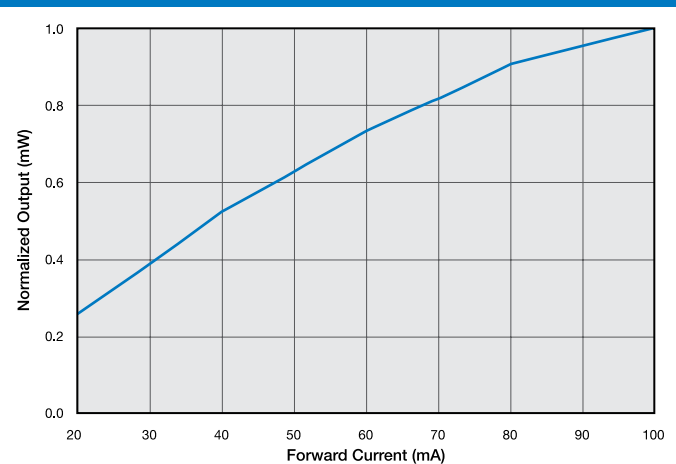
Typical Capacitance vs. Reverse Voltage



Normalized LED Output vs. Angular Distribution



Normalized LED Output vs. Forward Current



Dual Emitter / Matching Photodetector Series

Molded Lead Frame and Leadless Ceramic Substrate

Model Number	Active Area		Spectral Range	Responsivity		Capacitance	Dark Current (nA)	Max. Reverse Voltage	Operating Temp.	Storage Temp.	Package
	Area mm ²	Dimensions mm	nm	A / W		pF	-10 V	V	°C	°C	
				660nm	900nm	-10 V	typ.	10μA			

Photodiode Characteristics «

PIN-0.81-LLS	0.81	1.02 ϕ	350 - 1100	0.33	0.55	2.0	2	20	-25 ~ +85	-40 ~ +100C	62 /Leadless Ceramic
PIN-0.81-CSL											60 / Molded Lead Frame
PIN-4.0-LLS	3.9	2.31 x 1.68				10	5				62 /Leadless Ceramic
PIN-4.0-CSL											60 / Molded Lead Frame
PIN-8.0-LLS	8.4	2.9 Sq.				25	10				62 /Leadless Ceramic
PIN-8.0-CSL											60 / Molded Lead Frame

For mechanical drawings and pin locations, please refer to pages 61 to 77.

« Minimum order quantities apply

Model Number	LED's Used	Package Style ¶	Pin Configuration	Operating Temperature	Storage Temperature
	nm			°C	°C

Dual Emitter Combinations «

DLED-660/880-LLS-2	660	880	64 / Leadless Ceramic	2 Leads / Back to Back*	-25 ~ +85	-40 ~ +80		
DLED-660/895-LLS-2		895		3 Leads / Common Anode				
DLED-660/905-LLS-2		905						
DLED-660/905-LLS-3		905		2 Leads / Back to Back*				
DLED-660/940-LLS-3		940	63 / Side Looker Plastic					
DLED-660/880-CSL-2		880	3 Leads / Common Anode					
DLED-660/895-CSL-2		895						
DLED-660/905-CSL-2		905	3 Leads / Common Anode					
DLED-660/905-CSL-3		905						
DLED-660/940-CSL-3		940						

* In Back-to-Back configuration, the LED's are connected in parallel.

« Minimum order quantities apply

LED	Peak Wavelength	Radiant Flux	Spectral Bandwidth	Forward Voltage	Reverse Voltage
	nm	nW	nm	V	V
	i _f =20mA	i _f =20mA	i _f =20mA FWHN	i _f =20mA	i _r =20mA
	typ.	typ.	typ.	max.	max.

LED Characteristics

660nm	660	1.8	25	2.4	5
880nm	880	1.5	80	2.0	
895nm	895	2.0	50	1.7	
905nm	905				
935nm	935	1.5		1.5	
940nm	940				

For mechanical drawings, please refer to pages 61 thru 73.

AVOID DIRECT LIGHT

Since the spectral response of silicon photodiode includes the visible light region, care must be taken to avoid photodiode exposure to high ambient light levels, particularly from tungsten sources or sunlight. During shipment from OSI Optoelectronics, your photodiodes are packaged in opaque, padded containers to avoid ambient light exposure and damage due to shock from dropping or jarring.

AVOID SHARP PHYSICAL SHOCK

Photodiodes can be rendered inoperable if dropped or sharply jarred. The wire bonds are delicate and can become separated from the photodiode's bonding pads when the detector is dropped or otherwise receives a sharp physical blow.

CLEAN WINDOWS WITH OPTICAL GRADE CLOTH / TISSUE

Most windows on OSI Optoelectronics photodiodes are either silicon or quartz. They should be cleaned with isopropyl alcohol and a soft (optical grade) pad.

OBSERVE STORAGE TEMPERATURES AND HUMIDITY LEVELS

Photodiode exposure to extreme high or low storage temperatures can affect the subsequent performance of a silicon photodiode. Storage temperature guidelines are presented in the photodiode performance specifications of this catalog. Please maintain a non-condensing environment for optimum performance and lifetime.

OBSERVE ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS

OSI Optoelectronics photodiodes, especially with IC devices (e.g. Photops) are considered ESD sensitive. The photodiodes are shipped in ESD protective packaging. When unpacking and using these products, anti-ESD precautions should be observed.

DO NOT EXPOSE PHOTODIODES TO HARSH CHEMICALS

Photodiode packages and/or operation may be impaired if exposed to CHLOROTHENE, THINNER, ACETONE, or TRICHLOROETHYLENE.

INSTALL WITH CARE

Most photodiodes in this catalog are provided with wire or pin leads for installation in circuit boards or sockets. Observe the soldering temperatures and conditions specified below:

Soldering Iron:	Soldering 30 W or less Temperature at tip of iron 300°C or lower.	
Dip Soldering:	Bath Temperature:	260±5°C.
	Immersion Time:	within 5 Sec.
	Soldering Time:	within 3 Sec.
Vapor Phase Soldering:	DO NOT USE	
Reflow Soldering:	DO NOT USE	

Photodiodes in plastic packages should be given special care. Clear plastic packages are more sensitive to environmental stress than those of black plastic. Storing devices in high humidity can present problems when soldering. Since the rapid heating during soldering stresses the wire bonds and can cause wire to bonding pad separation, it is recommended that devices in plastic packages to be baked for 24 hours at 85°C.

The leads on the photodiode **SHOULD NOT BE FORMED**. If your application requires lead spacing modification, please contact OSI Optoelectronics Applications group at (310)978-0516 before forming a product's leads. Product warranties could be voided.



*Most of our standard catalog products are RoHS Compliant. Please contact us for details

Mechanical Drawings

Mechanical Specifications and Die Topography

1. Parameter Definitions:

A = Distance from top of chip to top of glass.

a = Photodiode Anode.

B = Distance from top of glass to bottom of case.

c = Photodiode Cathode

(Note: cathode is common to case in metal package products unless otherwise noted).

W = Window Diameter.

F.O.V. = Field of View (see definition below).

2. Dimensions are in inches (1 inch = 25.4 mm).

3. Pin diameters are 0.018 ± 0.002 " unless otherwise specified.

4. Tolerances (unless otherwise noted)

General: $0.XX \pm 0.01$ "

0.XXX ± 0.005 "

Chip Centering: ± 0.010 "

Dimension 'A': ± 0.015 "

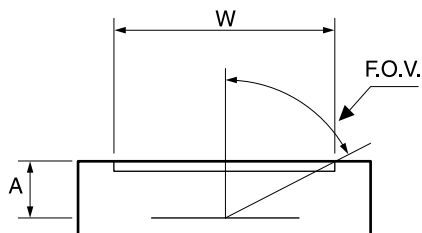
5. Windows

All '**UV**' Enhanced products are provided with QUARTZ glass windows, 0.027 ± 0.002 " thick.

All '**XUV**' products are provided with removable windows.

All '**DLS**' PSD products are provided with A/R coated glass windows.

All '**FIL**' photoconductive and photovoltaic products are epoxy filled instead of glass windows.



$$F.O.V. = \tan^{-1} \left(\frac{W}{2A} \right)$$

OSI Optoelectronics
An OSI Systems Company

For Further Assistance
Please Call One of Our Experienced
Sales and Applications Engineers

310-978-0516

- Or -

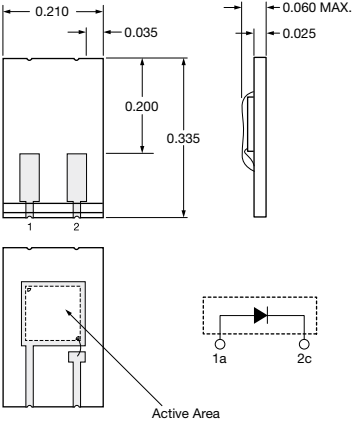
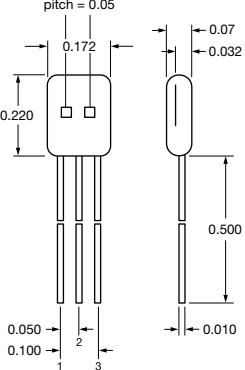
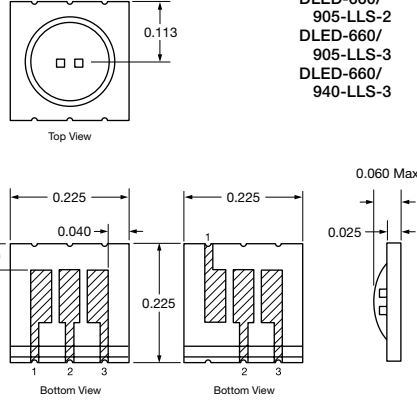
visit our website at

www.osioptoelectronics.com

All units in inches.

Mechanical Specifications

All units in inches.

62 Leadless Ceramic	63 Lead Frame Molded	64 Leadless Ceramic
<p>Products:</p> <p>PIN-0.81-LLS PIN-4.0-LLS PIN-8.0-LLS</p>  <p>Active Area</p>	<p>Products:</p> <p>DLED-660/ 880-CSL-2 DLED-660/ 895-CSL-2 DLED-660/ 905-CSL-2 DLED-660/ 905-CSL-3 DLED-660/ 940-CSL-3</p>  <p>pitch = 0.05</p> <p>DLED-XXX/XXX-CSL-2 Back-to-Back Parallel Connections</p> <p>DLED-XXX/XXX-CSL-3 Common Anode Connection</p> <p>DLED-660/905-CSL-2 Back-to-Back Parallel Connections</p>	<p>Products:</p> <p>DLED-660/ 880-LLS-2 DLED-660/ 895-LLS-2 DLED-660/ 905-LLS-2 DLED-660/ 905-LLS-3 DLED-660/ 940-LLS-3</p>  <p>Top View</p> <p>Bottom View</p> <p>DLED-XXX/XXX-LLS-2 Back-to-Back Parallel Connections</p> <p>DLED-XXX/XXX-LLS-3 Common Anode Connection</p>