Dual Emitter / Matching Photodector 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 ratiometeric 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 photodectors' responses are optimized for maximum responsivity at 660nm as well as near IR wavelengths. They exhibit low capacitance and low dark currents and are avialable 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 0.6 0.5 0.4 Responsivity (A/W) 0.3 0.2 0.1 0 300 400 500 600 700 800 900 1000 1100 Wavelength (nm)



Typical Capacitance vs Reverse Voltage



Normalized LED Output vs Forward Current



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mber	Acti	ve Area	Spectral Range	Responsivity		Capcitance	Dark Current (nA)	Max. Reverse Voltage	Operating Temp.	Storage Temp.	
NU	Area Dimensions mm ² mm			A/ W		pF	-10 V	v	Ŷ	°C	Package Style
Mode		nm	660nm	900nm	-10V	min.	10µA				
Photodiode Characteristics											
PIN-0.81-LLS	0.81	0.81 1.02φ		0.33	0.55	2.0	2			-	62 / Leadless Cermic
PIN-0.81-CSL											60 / Molded Lead Frame
PIN-4.0-LLS	3.9	8.9 2.31 x 1.68	350 - 1100			0.55	10	10 5 20	+ 82	+1000	62 / Leadless Cermic
PIN-4.0-CSL							0	_0	- 25 ~	-40 ~	60 / Molded Lead Frame
PIN-8.0-LLS	8.4	8.4 2.9 Sq.				25	10				62 / Leadless Cermic
PIN-8.0-CSL											60 / Molded Lead Frame

For mechanical drawings and pin locations, please refer to pages 55 to 66.

lodel	LED's Used		Package Style	Pin Configuration	Operating Temperature	Storage Temperature	
≥ź	nm				°C	°C	
Dual Emitter Combinations							
DLED-660/880-LLS-2		880	58 / Leadless Ceramic	2 Leads / Back to Back*	-25 ~ + 85	-40 ~ +80	
DLED-660/895-LLS-2		895					
DLED-660/905-LLS-2		905					
DLED-660/905-LLS-3		905		2 Leads / Common			
DLED-660/940-LLS-3		940		Anode			
DLED-660/880-CSL-2		880	57 / Side Looker Plastic				
DLED-660/895-CSL-2	000	895		2 Leads / Back to Back*			
DLED-660/905-CSL-2		905					
DLED-660/905-CSL-3		905		3 Leads / Common			
DLED-660/935-CSL-2		935					
DLED-660/940-CSL-3		940		Anode			
DLED-660/905/905-LLS-3**		905	58 / Leadless Ceramic				

* In Back-to-Back configuration, the LED's are connected in parallel.
** In this configuration, two 905nm LED's are connected in series to increase the total radiant flux.

	Peak Wavelength	Radiant Flux	Spectral Bandwidth	Forward Voltage	Reverse Voltage	
LED	nm	mW	nm	v	ν	
	i _f =20mA	i _f =20mA	i _f =20mA FWHM	i _f =20mA	i _f =20mA	
	typ.	typ.	typ.	max.	max.	
LED Cha	aracteristic	S				
660nm	660	1.8	25	2.4		
880nm	880	1.5	80	2.0		
895nm	895	2.0		17	5	
905nm	905	2.0	50		0	
935nm	935	1.5		1.5		
940nm	940					

For mechanical drawings, Please see pages 55 thru 66.

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 UDT Sensors, your photodiodes are packaged in opague, 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 UDT Sensors 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

UDT Sensors 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 le Temperature at tip o	ess of iron 300°C or lower.
Dip Soldering:	Bath Temperature: Immersion Time: Soldering Time:	260±5°C. within 5 Sec. 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 UDT Sensors Applications group at (310)978-0516 before forming a product's leads. Product warranties could be voided.

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. = Filed 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 ±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 \pm 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.





Mechanical Specifications and Die Topography

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

310-978-0516

- Or -On the Internet at WWW.Udt.COM

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Mechanical Specifications

All units in inches.



Mechanical Specifications

All units in inches.



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