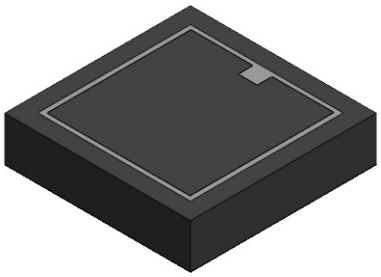
LA PD45HP1

Premium Edition Standard PIN photodiode 45 mil

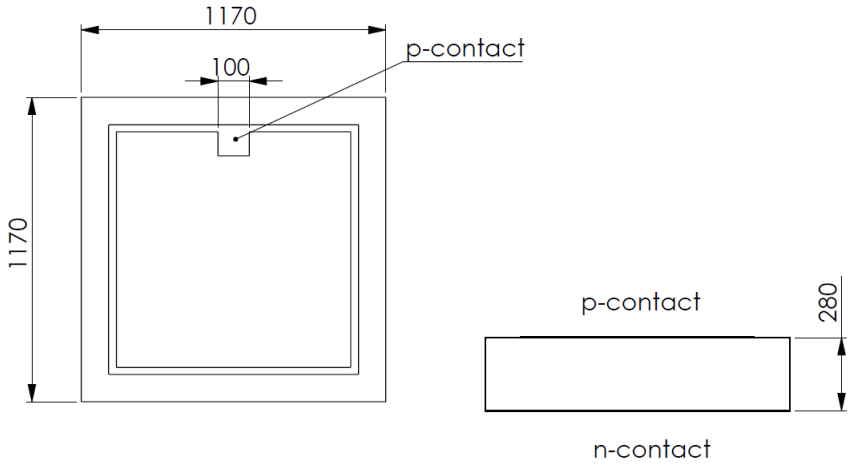
Light Avenue Premium Edition detector series is designed for high performance consumer applications. This chip is a high sensitive PIN photodiode chip with 0.88 mm^2 sensitive area detecting visible and near infrared radiation. Anode is the bond pad on top of the chip.

Features

- High sensitivity silicon PIN photodiode
- Suitable for visible and IR radiation
- Radiant sensitive area: 0.88 mm^2



Delineation



Mechanical characteristics

DESCRIPTION		MINIMUM	TYPICAL[1]	MAXIMUM
Chip size	(µm)	1120	1170	1220
Chip height	(µm)	250	280	310
Bond pad diameter	(µm)	80	100	120
Top contact		Anode (p), aluminum		
Bottom contact		Cathode (n), NiV-Ag		
Die attach		Epoxy bonding		

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Electro-optical characteristics ($T_A = 25°C$)[2]

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.[1]	MAX.	UNIT
Breakdown voltage	V_{BR}	$I_R = 100\,\mu A$ $E_e = 0\,mW/cm^2$	60			V
Reverse dark current	I_{r0}	$V_R = 10\,V$ $E_e = 0\,mW/cm^2$		<1	3	nA
Junction capacitance	C_D	$V_R = 0\,V$ $E_e = 0\,mW/cm^2$ $f = 1\,MHz$		12		pF
Reverse light current	I_{ra}	$V_R = 5\,V$ $\lambda = 950\,nm$ $E_e = 1\,mW/cm^2$		7		µA
Short circuit current	I_{sc}	$\lambda = 950\,nm$ $E_e = 1\,mW/cm^2$		7		µA
Open circuit voltage	V_{oc}	$\lambda = 950\,nm$ $E_e = 1\,mW/cm^2$		410		mV
Maximum sensitivity	λ_p			920		nm
Spectral bandwidth	$\lambda_{0.1}$			430 ... 1100		nm
Rise and fall time	t_r, t_f	$V_R =$ V $T =$ K $R_L = \Omega$		100		ns

Maximum ratings ($T_A = 25°C$)[3]

PARAMETER	SYMBOL	VALUE	UNIT
Operating temperature range	T_{op}	-40...100	°C
Junction temperature	T_j	100	°C

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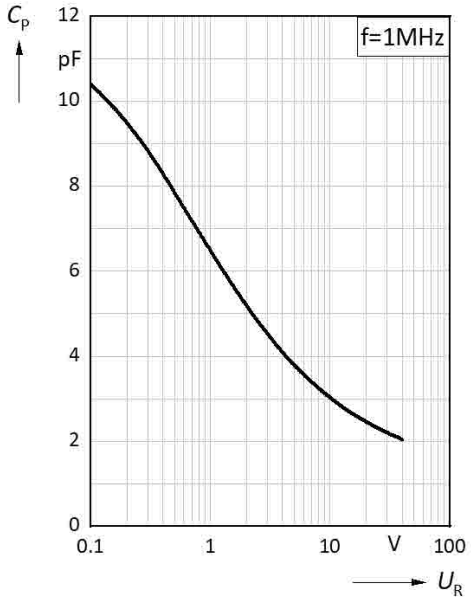
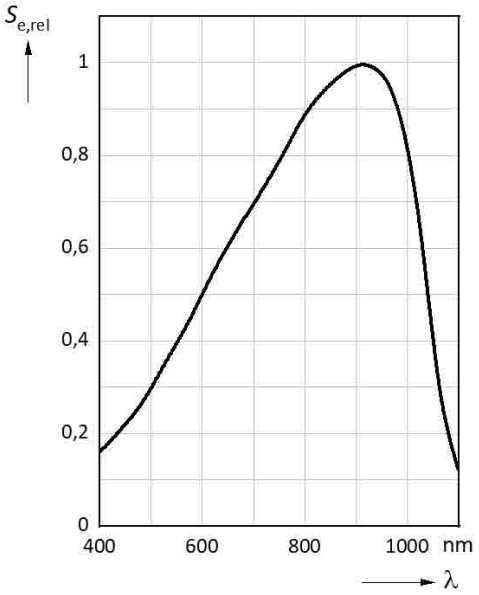
Typical characteristics graphs

Capacitance vs. Reverse Voltage



Relative Spectral Sensitivity vs. Wavelength



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Handling and Storage Conditions

Storage time for wafers in sealed condition is not limited by the die itself, but may be limited by the adhesion of the blue foil (storage ambient conditions: $T_a = 15 \ldots 30°C$; relative humidity: < 60%, vertical storage). Therefore we ship the dice without any limitation of shelf life. Customer has to make sure that there is no glue from the adhesive foil on the backside either by a die shear test or by visual inspection of the backside before production. The hermetically sealed shipment lot shall be opened under temperature and moisture controlled cleanroom environment only. Customers have to follow the according rules for desposition as the material can be hazardous for humans and the environment. Dice have to be handled ESD sensitive.

Packing

Chips are placed on a blue foil inside a 6 inch ring or alternatively on a blue foil (mylar) only. For shipment the wafers of a shipment lot are arranged to stacks. Please use the recycling operators familiar to you. If required you can ask for our help. Please get in touch with your nearest sales office. By agreement we will take packing material back, if sorted. Transport costs of any kind must be paid by customers. For packing material that is returned to us unsorted or which we are not obliged to accept, any costs incurred will be invoiced to you.

Design Objectives

The chip design was developed and released based on the producer's standard assembly procedures and packaging. Bond strength properties are in accordance to MIL-STD-750D, method 2037. Whether the chip fits to the customer's products with its according die and wire bond procedures and packaging must be evaluated by the customer himself. If workability problems arise after this release a mutually conducted problem solving procedure has to be set up, if the chips are suspected of contributing to the problems.The chips are produced with best effort, but on chip level a subset of the chip characteristics can be determined only. Performance of the chip in the customer's products can only be determined by the customer himself.

Returns and Complaints

For complaints and returns of material a RMA-number is necessary. Samples for analysis purposes can be sent to us without credit.

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[1] Due to the special conditions of the manufacturing processes of detectors, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

[2] Measurements are done on sample basis with an accuracy of $\pm$15%. Correlation to customer's equipment and products is required.

[3] Maximum ratings are package dependent and may differ from package to package.

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