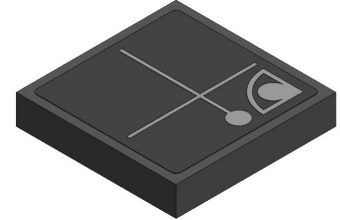


LA PT40HP1

Standard phototransistor 40 mil

Light Avenue Premium Edition detector series is designed for high performance consumer applications. This device is a silicon NPN phototransistor chip with high radiant sensitivity and ability to drive high currents even under saturation. It is sensitive to visible and infrared light. Emitter and base is on top of the chip.



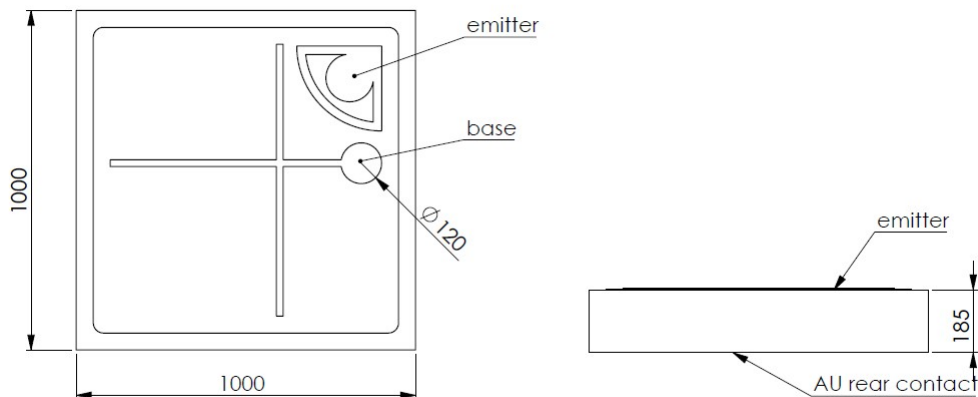
Features

- High sensitivity silicon NPN phototransistor
- anti reflexion layer for 950 nm
- Substrate: 20 mOhmcm
- Sensitive area: 0.55 mm²

Applications

- Electronic controls
- Optocouplers
- Sensors

Delineation



Mechanical characteristics

DESCRIPTION		MINIMUM	TYPICAL ¹	MAXIMUM
Chip length	(µm)	950	1000	1050
Chip height	(µm)	160	185	210
Frontside contacts, emitter, base		Al		
Backside contact, collector		AuAs		
Die attach		Epoxy bonding		

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Electro-optical characteristics ($T_A = 25^\circ\text{C}$)²

PARAMETER	SYMBOL	CONDITION	MIN.	TYP. ¹	MAX.	UNIT
Breakdown voltage	V_{CE0}	$I_C = 10 \mu\text{A}$	75			V
Dark current	I_{CE0}	$V_{CE} = 50 \text{V}$			100	nA
Maximum of sensitivity	λ_p			850		nm
Spectral bandwidth	$\lambda_{0.1}$			400 - 1070		nm
Saturation voltage	U_{CESAT}	$I_C = 1000 \mu\text{A},$ $I_B = 5 \mu\text{A}$			190	mV
Linearity	Q_{IB}	$I_C = 2 \text{mA}/20\mu\text{A}$			1.4	
Current gain	H_{FE}	$I_C = 2000 \mu\text{A},$ $U_{CE} = 5 \text{V}$		380		
Photosensitivity	I_{CB}	$U_{CB} = 5 \text{V}, 1000 \text{Lx}$		5		μA
Capacitance	C_{CE}	$U_{CE} = 0 \text{V}, f = 1 \text{MHz}$		16		pF
Leakage current	I_{CE0}	$U_{CE} = 25 \text{V}$		3		nA

Maximum ratings ($T_A = 25^\circ\text{C}$)³

PARAMETER	SYMBOL	VALUE	UNIT
Collector current	I_C	50	mA
Operating temperature range	T_{op}	-40...+125	$^\circ\text{C}$
Storage temperature range	T_{st}	-40...+125	$^\circ\text{C}$
Detector junction temperature	T_j	125	$^\circ\text{C}$

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: $T_a = 15 \dots 30^\circ\text{C}$; 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 or 8 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 send to us without credit.

Shipping Conditions

If not otherwise arranged, the "General Terms of Business of Chips 4 Light GmbH" apply for any shipment. If this document is not familiar to you, please request it at our nearest sales office.

Disclaimer

Attention please!

- **Components used in life-support devices or systems must be expressly authorized for such purpose!**

Critical components⁴ may only be used in life-support devices⁵ or systems with the express written approval by us.

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- The information describes the type of component and shall not be considered as assured characteristics. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
- Lead free product - RoHS compliant.
- The quality level of the final visual inspection shall comply to an AQL of 1.0 (according to MIL-STD-105E, level II), if the customer performs an incoming visual inspection of a shipment.

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- All chips are checked according to the producer's specification of the visual inspection. If this document is not familiar to you, please request it at our nearest sales office.

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¹Due to the special conditions of the manufacturing processes of the device, 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.

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

³Maximum ratings are package dependent and may differ between packages.

⁴A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

⁵Life support devices or systems are intended(a) to be implanted in the human body, or(b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered..