

## PbS Detectors Cooled Ultimate PB30-Series

### Description

The PB30 series is a collection of TE cooled photoconductive single element PbS detectors that operate at  $-45^{\circ}\text{C}$  to  $-55^{\circ}\text{C}$  with a 20% cut-off of  $3.4\ \mu\text{m}$ . This series is widely used in analytic, safety and radiometric applications.

### Features

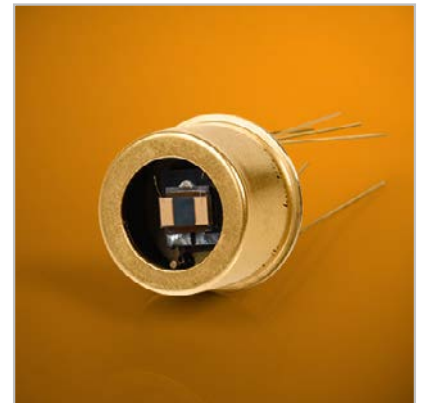
- Spectral range from 1 to  $3.4\ \mu\text{m}$
- State of the art performance
- 100% test data

### Applications

- Pulp and paper industry
- Non-contact temperature measurement
- Spark detection
- Flame control
- Moisture monitoring
- FTNIR

### Versions

- TO-can (TO-8, TO-8 with flange)
- Sapphire window as standard
- Custom versions available



## Basic Characteristics

Part Number	Element Size [mm]	Aperture Size [mm]	Features	20% Cut-off Wavelength [μm] <sup>b</sup>	Peak Wavelength [μm] <sup>b</sup>	Peak Responsivity [V/W] <sup>a,c</sup>		Time Constant [μs] <sup>b</sup>	
				Typ.	Typ.	Min.	Typ.	Typ.	Max.
PB30S1010T2S6L	1.0 x 1.0	dia. 9.5	2 stage cooling (max 3.0 W), TO-8 flange, large cap	3.4	2.7	1500000	2200000	1750	3500
PB30S2020T2S6L	2.0 x 2.0	dia. 9.5		3.4	2.7	750000	1100000	1750	3500
PB30S3030T2S6L	3.0 x 3.0	dia. 9.5		3.4	2.7	500000	730000	1750	3500
PB30S6060T2S6L	6.0 x 6.0	dia. 9.5		3.3	2.6	240000	3600000	1750	3500

Further Versions in progress

### Notes:

<sup>a</sup> Measured with 500 K blackbody. Bias is 50 V/mm with 1 MOhm load in series.

Chopping frequency is 650 Hz.

<sup>b</sup> Parameter not 100% tested.

<sup>c</sup> Without filter/window

## Cooling Characteristics

Part Number	Element Size [mm]	Typ. Detector Operating Temperature [°C] <sup>c</sup>	Max. Cooler Power	Delta T @ max. Cool [°C] <sup>a</sup>		Optional Package Versions
			Typ.	Min.	Typ.	
PB30S1010T2S6L	1.0 x 1.0	-50	2.2 V @ 1.4 A	70	75	TO-8
PB30S2020T2S6L	2.0 x 2.0	-50	2.2 V @ 1.4 A	70	75	TO-8
PB30S3030T2S6L	3.0 x 3.0	-45	2.2 V @ 1.4 A	65	65	TO-8
PB30S6060T2S6L	6.0 x 6.0	-40	2.2 V @ 1.4 A	60	65	TO-8

<sup>a</sup> Values are valid for TO-66 and TO-8 packages.

<sup>c</sup> Valid with sufficient heat sinking only!

## Electro-Optical Characteristics

Part Number	Element Size [mm]	Noise Density (rms) [ $\mu\text{V}/\text{Hz}^{1/2}$ ] <sup>a</sup>		Peak D* [ $\text{cm Hz}^{1/2}/\text{W}$ ] <sup>a,b,c</sup>		Peak D* [ $\text{cm Hz}^{1/2}/\text{W}$ ] <sup>a,c</sup>		Dark Resistance [MOhm/square]		
		@ 90 Hz <sup>b</sup>	@ 650 Hz	@ 90 Hz	@ 90 Hz	@ 650 Hz	@ 650 Hz	Min.	Typ.	Max.
		Typ.	Typ.	Min.	Typ.	Min.	Typ.			
PB30S1010T2S6L	1.0 x 1.0	TBD		7.0 E+10	1.6 E+11	2.2 E+11	3.2 E+11	3.0	6.0	20
PB30S2020T2S6L	2.0 x 2.0			7.0 E+10	1.6 E+11	2.2 E+11	3.2 E+11	3.0	6.0	20
PB30S3030T2S6L	3.0 x 3.0			7.0 E+10	1.6 E+11	2.2 E+11	3.2 E+11	3.0	6.0	20
PB30S6060T2S6L	6.0 x 6.0			3.5 E+10	8.0 E+10	1.0 E+11	2.5 E+11	3.0	6.0	20

## Notes:

<sup>a</sup> Measured with 500 K blackbody. Bias is 50 V/mm with 1 MOhm load in series.

Bandwidth of test setup is 1 Hz.

<sup>b</sup> Parameter not 100% tested.

<sup>c</sup> Without filter/window

All specifications apply at or near max. cooling temp. with heat sink at +25°C.

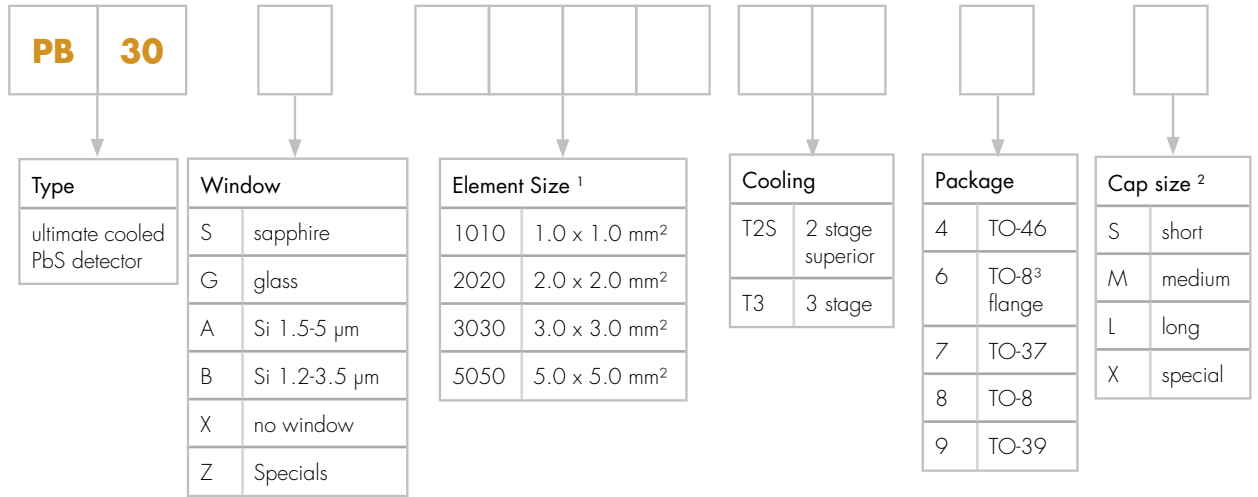
## Absolute Maximum Ratings

	Min	Max	Units
Storage Temperature	- 70	+ 80	°C
Operating Temperature	- 65	+ 75	°C
Soldering Temperature (for 5 sec)		+ 250 (at pins only)	°C
ESD Damage Threshold (Human Body Model Class 3B <sup>a</sup> )	8000		V
TE-Cooler Voltage <sup>b</sup>	-	2.2	V
TE-Cooler Current <sup>b</sup>	-	1.4	A

<sup>a</sup> ANSI/ESD STN5. 1-2007

<sup>b</sup> Valid with sufficient heat sinking only!

### Part Number Designations



<sup>1</sup> for rectangular elements: space between electrodes first

<sup>2</sup> see separate list for details

<sup>3</sup> TO-8 with copper flange (equal TO-66)

### Package Drawings

All standard packages, dimensions and tolerances are shown in our supplementary datasheet „PbS- / PbSe Detectors - Package Drawings & Cooling Specifications“.

### Product Changes

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