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## PbS Detectors Cooled Standard PB27-Series

### Description

The PB27 series is a collection of TE cooled photoconductive single element PbS detectors that operate at -20 °C to -35 °C with a 20% cut-off of 3.3 μm. This series is widely used in analytic, safety and radiometric applications especially when large active areas are requested.

### Features

- Spectral range from 1 to 3.3 μm
- 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-37, 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>ac</sup>		Time Constant [μs] <sup>b</sup>	
				Typ.	Typ.	Min.	Typ.	Typ.	Max.
PB27S1010T17M	1.0 x 1.0	dia. 6.35	1 stage cooling (max 1.6 W), TO-37, medium cap	3.3	2.6	1300000	1950000	800	1600
PB27S2020T17M	2.0 x 2.0	dia. 6.35	1 stage cooling (max 1.6 W), TO-37, medium cap	3.3	2.6	650000	975000	800	1600
PB27S3030T17M	3.0 x 3.0	dia. 6.35	1 stage cooling (1 max 1.6 W), TO-37, medium cap	3.3	2.6	430000	650000	800	1600
PB27S5050T1S6M	5.0 x 5.0	dia. 9.5	1 stage cooling superior, TO-8 flange, medium cap	3.3	2.6	260000	390000	800	1600
PB27S6060T1S6M	6.0 x 6.0	dia. 9.5	1 stage cooling superior, TO-8 flange, medium cap	3.3	2.6	215000	325000	800	1600
PB27S2020T26L	2.0 x 2.0	dia. 9.5	2 stage cooling (max 1.4 W), TO-8 flange, large cap	3.3	2.6	660000	1000000	1250	2500
PB27S3030T26L	3.0 x 3.0	dia. 9.5		3.3	2.6	440000	660000	1250	2500

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>b</sup>	Max. Cooler Power	Delta T @ max. Cool [°C]		Optional Package Versions
			Typ.	Min.	Typ.	
PB27S1010T17M	1.0 x 1.0	-20	1.2 V @ 1.4 A	40	45	TO-8
PB27S2020T17M	2.0 x 2.0	-20	1.2 V @ 1.4 A	40	45	TO-8
PB27S3030T17M	3.0 x 3.0	-20	1.2 V @ 1.4 A	40	45	TO-8
PB27S5050T1S6M	5.0 x 5.0	-25	2.2 V @ 1.4 A	45	50	TO-8
PB27S6060T1S6M	6.0 x 6.0	-25	2.2 V @ 1.4 A	45	50	TO-8
PB27S2020T26L	2.0 x 2.0	-35	1.2 V @ 1.2 A	55	60	TO-8
PB27S3030T26L	3.0 x 3.0	-35	1.2 V @ 1.2 A	55	60	TO-8

<sup>b</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>abc</sup>		Peak D* [ $\text{cm Hz}^{1/2}/\text{W}$ ] <sup>ac</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.			
PB27S1010T17M	1.0 x 1.0	TBD	TBD	3.5 E+10	6.0 E+10	1.0 E+11	1.65 E+11	1.5	3.0	10
PB27S2020T17M	2.0 x 2.0	TBD	TBD	3.5 E+10	6.0 E+10	1.0 E+11	1.65 E+11	1.5	3.0	10
PB27S3030T17M	3.0 x 3.0	TBD	TBD	3.5 E+10	6.0 E+10	1.0 E+11	1.65 E+11	1.5	3.0	10
PB27S5050T1S6M	5.0 x 5.0	TBD	TBD	2.5 E+10	5.0 E+10	8.0 E+10	1.5 E+11	1.5	3.0	10
PB27S6060T1S6M	6.0 x 6.0	TBD	TBD	2.5 E+10	5.0 E+10	8.0 E+10	1.5 E+11	1.5	3.0	10
PB27S2020T26L	2.0 x 2.0	TBD	TBD	5.0 E+10	9.0 E+10	1.5 E+11	2.75 E+11	2.5	5.0	15
PB27S3030T26L	3.0 x 3.0	TBD	TBD	5.0 E+10	9.0 E+10	1.5 E+11	2.75 E+11	2.5	5.0	15

### 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.



## Package Drawings

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

## Product Changes

LASER COMPONENTS reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

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