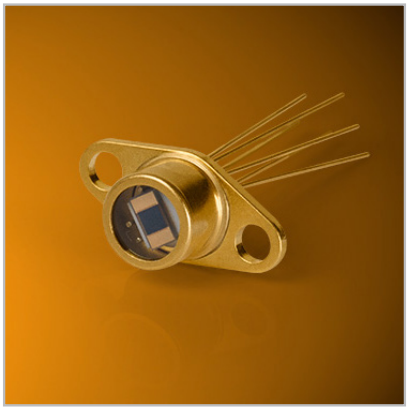
PbSe Detectors Cooled Standard PB50-Series

Description



The PB50 series is a collection of TE cooled polycrystalline biased single element PbSe detectors that operate at -20°C to -35°C with a 20% cut-off of 4.9 µm. This series has been designed for demanding analytic, medical and radiometric applications.

Features

- Spectral range from 1 to 4.9 µm
- State of the art performance
- 100% test data

Applications

- Non-dispersive infrared gas analysis
- Medical CO_2 detection
- Non-contact temperature measurement
- Flame detection
- Moisture monitoring

Versions

- TO-can (TO-37, TO-8 with flange (TO-66))
- Sapphire window as standard
- Custom versions available

Germany & Other Countries
Laser Components GmbH
Tel: +49 8142 2864 – 0
Fax: +49 8142 2864 – 11
info@lasercomponents.com
www.lasercomponents.com

France
Laser Components S.A.S.
Tel: +33 1 39 59 52 25
Fax: +33 1 39 59 53 50
info@lasercomponents.fr
www.lasercomponents.fr

United Kingdom
Laser Components (UK) Ltd.
Tel: +44 1245 491 499
Fax: +44 1245 491 801
info@lasercomponents.co.uk
www.lasercomponents.co.uk

Nordic Countries
Laser Components Nordic AB
Tel: +46 31 703 71 73
Fax: +46 31 703 71 01
info@lasercomponents.se
www.lasercomponents.se

USA
Laser Components USA, Inc.
Tel: +1 603 821 – 7040
Fax: +1 603 821 – 7041
info@laser-components.com
www.laser-components.com

PbSe Detectors Cooled Standard
PB50-Series

Basic Characteristics

Part Number	Element Size [mm]	Aperture Size [mm]	Features	20% Cut-off Wavelength [µm] [b]	Peak Wavelength [µm] [b]	Peak Responsivity [V/W] [ac]		Time Constant [µs] [b]	
		Min.		Typ.	Typ.	Min.	Typ.	Typ.	Max.
PB50S1010T17M	1.0 x 1.0	6.35	1 stage cooling (max. 1.6 W), TO-37, medium cap	4.8	4.2	48000	72000	8	20
PB50S2020T17M	2.0 x 2.0	6.35	1 stage cooling (max. 1.6 W), TO-37, medium cap	4.8	4.2	24000	36000	8	20
PB50S3030T17M	3.0 x 3.0	6.35	1 stage cooling (max. 1.6 W), TO-37, medium cap	4.8	4.2	16000	24000	8	20
PB50S1010T26L	1.0 x 1.0	9.53	2 stage cooling (max. 1.4 W), TO-8 flange, large cap	4.9	4.3	79000	120000	10	25
PB50S2020T26L	2.0 x 2.0	9.53	2 stage cooling (max. 1.4 W), TO-8 flange, large cap	4.9	4.3	39500	60000	10	25
PB50S3030T26L	3.0 x 3.0	9.53	2 stage cooling (max. 1.4 W), TO-8 flange, large cap	4.9	4.3	26300	40000	10	25

Further Versions in progress

Notes:

[a] Measured with 500 K blackbody. Bias is 30 V/mm with 1 MOhm load in series. Chopping frequency is 1 kHz.

[b] Parameter not 100% tested.

[C] Without filter/window

Germany & Other Countries
Laser Components GmbH
Tel: +49 8142 2864 – 0
Fax: +49 8142 2864 – 11
info@lasercomponents.com
www.lasercomponents.com

France
Laser Components S.A.S.
Tel: +33 1 39 59 52 25
Fax: +33 1 39 59 53 50
info@lasercomponents.fr
www.lasercomponents.fr

United Kingdom
Laser Components (UK) Ltd.
Tel: +44 1245 491 499
Fax: +44 1245 491 801
info@lasercomponents.co.uk
www.lasercomponents.co.uk

Nordic Countries
Laser Components Nordic AB
Tel: +46 31 703 71 73
Fax: +46 31 703 71 01
info@lasercomponents.se
www.lasercomponents.se

USA
Laser Components USA, Inc.
Tel: +1 603 821 – 7040
Fax: +1 603 821 – 7041
info@laser-components.com
www.laser-components.com

PbSe Detectors Cooled Standard
PB50-Series

Cooling Characteristics

Part Number	Element Size [mm]	Typ. Detector Operating Temperature [°C] [b]	Max. Cooling	Delta T @ max. Cool [°C] [a]		Optional Package Versions
			Typ.	Min.	Typ.	
PB50S1010T17M	1.0 x 1.0	-20	1.2 V @ 1.4 A	40	45	TO-8
PB50S2020T17M	2.0 x 2.0	-20	1.2 V @ 1.4 A	40	45	TO-8
PB50S3030T17M	3.0 x 3.0	-20	1.2 V @ 1.4 A	40	45	TO-8
PB50S1010T26L	1.0 x 1.0	-35	1.2 V @ 1.2 A	55	60	TO-8, TO-37
PB50S2020T26L	2.0 x 2.0	-35	1.2 V @ 1.2 A	55	60	TO-8, TO-37
PB50S3030T26L	3.0 x 3.0	-35	1.2 V @ 1.2 A	55	60	TO-8, TO-37

[a] Values are valid for TO-66 and TO-8 packages. Delta T is typically reduced by 5 K for TO-37 packages.

[b] Valid with sufficient heat sinking only!

Electro-Optical Characteristics

Part Number	Element Size [mm]	Noise Density (rms) [µV/Hz$^{1/2}$] [a]		Peak D* [cm Hz$^{1/2}$/W] [abc]		Peak D* [cm Hz$^{1/2}$/W] [ac]		Dark Resistance [MOhm/square]		
		@ 90 Hz [b]	@ 1 kHz	@ 90 Hz	@ 90 Hz	@ 1 kHz	@ 1 kHz			
		Typ.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Max.
PB50S1010T17M	1.0 x 1.0	TBD	TBD	5.3 E+9	1.1 E+10	1.6 E+10	3.2 E+10	0.5	4.0	10.0
PB50S2020T17M	2.0 x 2.0	TBD	TBD	5.3 E+9	1.1 E+10	1.6 E+10	3.2 E+10	0.5	4.0	10.0
PB50S3030T17M	3.0 x 3.0	TBD	TBD	5.3 E+9	1.1 E+10	1.6 E+10	3.2 E+10	0.5	4.0	10.0
PB50S1010T26L	1.0 x 1.0	TBD	TBD	5.5 E+9	1.1 E+10	1.7 E+10	3.2 E+10	1.0	5.0	15.0
PB50S2020T26L	2.0 x 2.0	TBD	TBD	5.5 E+9	1.1 E+10	1.7 E+10	3.2 E+10	1.0	5.0	15.0
PB50S3030T26L	3.0 x 3.0	TBD	TBD	5.5 E+9	1.1 E+10	1.7 E+10	3.2 E+10	1.0	5.0	15.0

Notes:

[a] Measured with 500 K blackbody. Bias is 30 V/mm with 1 MOhm load in series. Bandwidth of test setup is 1 Hz.

[b] Parameter not 100% tested.

[c] Without filter/window

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

Germany & Other Countries
Laser Components GmbH
Tel: +49 8142 2864 – 0
Fax: +49 8142 2864 – 11
info@lasercomponents.com
www.lasercomponents.com

France
Laser Components S.A.S.
Tel: +33 1 39 59 52 25
Fax: +33 1 39 59 53 50
info@lasercomponents.fr
www.lasercomponents.fr

United Kingdom
Laser Components (UK) Ltd.
Tel: +44 1245 491 499
Fax: +44 1245 491 801
info@lasercomponents.co.uk
www.lasercomponents.co.uk

Nordic Countries
Laser Components Nordic AB
Tel: +46 31 703 71 73
Fax: +46 31 703 71 01
info@lasercomponents.se
www.lasercomponents.se

USA
Laser Components USA, Inc.
Tel: +1 603 821 – 7040
Fax: +1 603 821 – 7041
info@laser-components.com
www.laser-components.com

PbSe Detectors Cooled Standard
PB50-Series

Absolute Maximum Ratings

		Min.	Max.	Units
Storage temperature		- 70	+ 95	°C
Operating temperature		- 65	+ 90	°C
Soldering temperature (for 5 sec)			+ 250 (at pins only)	°C
ESD damage threshold (Human Body Model Class 3B [a])		8000		V
TE-cooler voltage [b]	T1/T2	-	1.2	V
TE-cooler current [b]	T1	-	1.4	A
	T2	-	1.2	A

[a] ANSI/ESD STN5. 1-2007

[b] Valid with sufficient heat sinking only!

Part Number Designations

PB 50 □ □□□□ □□ □ □

Type
cooled PbSe detector

Window	
S	sapphire
G	glass
A	Si 1.5-5 µm
B	Si 1.2-3.5 µm
X	no window
Z	Specials

Element Size [1]	
1010	1.0 x 1.0 mm²
2020	2.0 x 2.0 mm²
3030	3.0 x 3.0 mm²
5050	5.0 x 5.0 mm²
6060	6.0 x 6.0 mm²

Cooling	
T1	1 stage
T1S	1 stage superior
T2	2 stage

Package	
4	TO-46
6	TO-8 [3] flange
7	TO-37
8	TO-8
9	TO-39

Cap size [2]	
S	short
M	medium
L	long
X	special

[1] For rectangular elements: space between electrodes first

[2] Please see supplementary dataseet "PbS/PbSe-Detectors Package Drawings" for details

[3] TO-8 with copper flange (equal TO-66)

01/20 / V06 / IF / lc-lead-salt/pbse-pb50-series

Germany & Other Countries
Laser Components GmbH
Tel: +49 8142 2864 – 0
Fax: +49 8142 2864 – 11
info@lasercomponents.com
www.lasercomponents.com

France
Laser Components S.A.S.
Tel: +33 1 39 59 52 25
Fax: +33 1 39 59 53 50
info@lasercomponents.fr
www.lasercomponents.fr

United Kingdom
Laser Components (UK) Ltd.
Tel: +44 1245 491 499
Fax: +44 1245 491 801
info@lasercomponents.co.uk
www.lasercomponents.co.uk

Nordic Countries
Laser Components Nordic AB
Tel: +46 31 703 71 73
Fax: +46 31 703 71 01
info@lasercomponents.se
www.lasercomponents.se

USA
Laser Components USA, Inc.
Tel: +1 603 821 – 7040
Fax: +1 603 821 – 7041
info@laser-components.com
www.laser-components.com

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.

Ordering Information

Products can be ordered directly from LASER COMPONENTS or its representatives. For a complete listing of representatives, visit our website at www.lasercomponents.com

Germany & Other Countries
Laser Components GmbH
Tel: +49 8142 2864 – 0
Fax: +49 8142 2864 – 11
info@lasercomponents.com
www.lasercomponents.com

France
Laser Components S.A.S.
Tel: +33 1 39 59 52 25
Fax: +33 1 39 59 53 50
info@lasercomponents.fr
www.lasercomponents.fr

United Kingdom
Laser Components (UK) Ltd.
Tel: +44 1245 491 499
Fax: +44 1245 491 801
info@lasercomponents.co.uk
www.lasercomponents.co.uk

Nordic Countries
Laser Components Nordic AB
Tel: +46 31 703 71 73
Fax: +46 31 703 71 01
info@lasercomponents.se
www.lasercomponents.se

USA
Laser Components USA, Inc.
Tel: +1 603 821 – 7040
Fax: +1 603 821 – 7041
info@laser-components.com
www.laser-components.com