

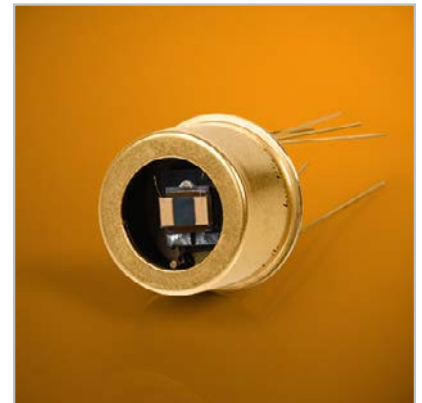
PbSe Detectors Cooled Ultimate PB55-Series

Description

The PB55 series is a collection of TE cooled photoconductive single element PbSe detectors that operate at -45°C to -55°C with a 20% cut-off of $5.2\ \mu\text{m}$. This series has been designed for demanding analytic, medical and radiometric applications.

Features

- Spectral range from 1 to $5.2\ \mu\text{m}$
- 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-8, TO-8 with flange (TO-66))
- Sapphire window as standard
- Custom versions available

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] ^{a,c}		Time Constant [μs] ^b	
				Typ.	Typ.	Min.	Typ.	Typ.	Max.
PB55S1010T2S6L	1.0 x 1.0	dia. 9.53	2 stage (max. 3.0 W) cooling, TO-8 flange, large cap	5.2	4.6	120000	180000	12	30
PB55S2020T2S6L	2.0 x 2.0	dia. 9.53	2 stage (max. 3.0 W) cooling, TO-8 flange, large cap	5.2	4.6	60000	90000	12	30
PB55S3030T2S6L	3.0 x 3.0	dia. 9.53	2 stage (max. 3.0 W) cooling, TO-8 flange, large cap	5.2	4.6	40000	60000	12	30
PB55S5050T2S6L	5.0 x 5.0	dia. 9.53	2 stage (max. 3.0 W) cooling, TO-8 flange, large cap	5.2	4.6	24000	36000	12	30
PB55S6060T2S6L	6.0 x 6.0	dia. 9.53	2 stage (max. 3.0 W) cooling, TO-8 flange, large cap	5.2	4.6	20000	30000	12	30

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

Cooling Characteristics

Part Number	Element Size [mm]	Typ. Detector Operating Temperature [°C] ^c	Delta T @ max. Cool [°C] ^{a,b}		Optional Package Versions
			Min.	Typ.	
PB55S1010T2S6L	1.0 x 1.0	-50	70	75	TO-8
PB55S2020T2S6L	2.0 x 2.0	-50	70	75	TO-8
PB55S3030T2S6L	3.0 x 3.0	-45	65	70	TO-8
PB55S5050T2S6L	5.0 x 5.0	-45	65	70	TO-8
PB55S6060T2S6L	6.0 x 6.0	-40	65	70	TO-8

^a Values are valid for TO-66 and TO-8 packages.

^b Max. cooling: 2.2 V @ 1.4 Amps (typical).

^c Valid with sufficient heat sinking only!

Electro-Optical Characteristics

Part Number	Element Size [mm]	Noise Density (rms) [$\mu\text{V}/\text{Hz}^{1/2}$] ^a		Peak D* [$\text{cm Hz}^{1/2}/\text{W}$] ^{a,b,c}		Peak D* [$\text{cm Hz}^{1/2}/\text{W}$] ^{a,c}		Dark Resistance [MOhm/square]		
		@ 90 Hz ^b	@ 1 kHz	@ 90 Hz	@ 90 Hz	@ 1 kHz	@ 1 kHz	Min.	Typ.	Max.
		Typ.	Typ.	Min.	Typ.	Min.	Typ.			
PB55S1010T2S6L	1.0 x 1.0	TBD	TBD	7.0 E+9	1.2 E+10	2.2 E+10	3.6 E+10	1.0	6.0	20
PB55S2020T2S6L	2.0 x 2.0	TBD	TBD	7.0 E+9	1.2 E+10	2.2 E+10	3.6 E+10	1.0	6.0	20
PB55S3030T2S6L	3.0 x 3.0	TBD	TBD	7.0 E+9	1.2 E+10	2.2 E+10	3.6 E+10	1.0	6.0	20
PB55S5050T2S6L	5.0 x 5.0	TBD	TBD	6.8 E+9	1.0 E+10	1.8 E+10	3.2 E+10	1.0	6.0	20
PB55S6060T2S6L	6.0 x 6.0	TBD	TBD	6.8 E+9	1.0 E+10	1.8 E+10	3.2 E+10	1.0	6.0	20

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.

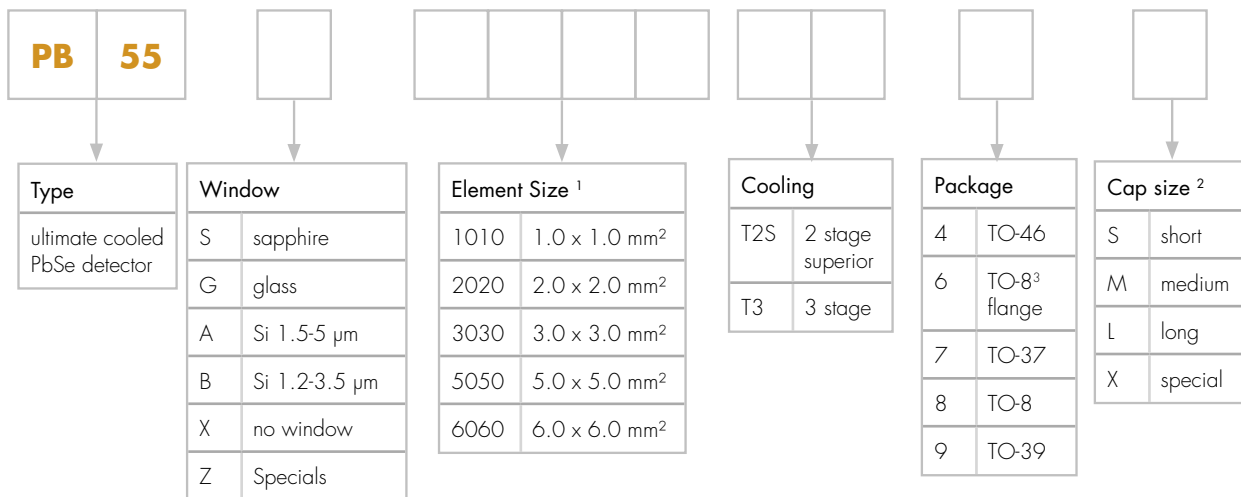
Absolute Maximum Ratings

	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	-	2.2	V
TE-Cooler Current ^b	-	1.4	A

^a ANSI/ESD STN5. 1-2007

^b Valid with sufficient heat sinking only!

Part Number Designations



¹ for rectangular elements: space between electrodes first

² see separate list for details

³ 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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