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# 2E-PVA detector series for gas analysis

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# 2E-PVA DETECTOR SERIES FOR GAS ANALYSIS

## Two-element, InAs and InAsSb, room temperature and one-stage thermoelectrically cooled photovoltaic infrared detectors with bandpass filters

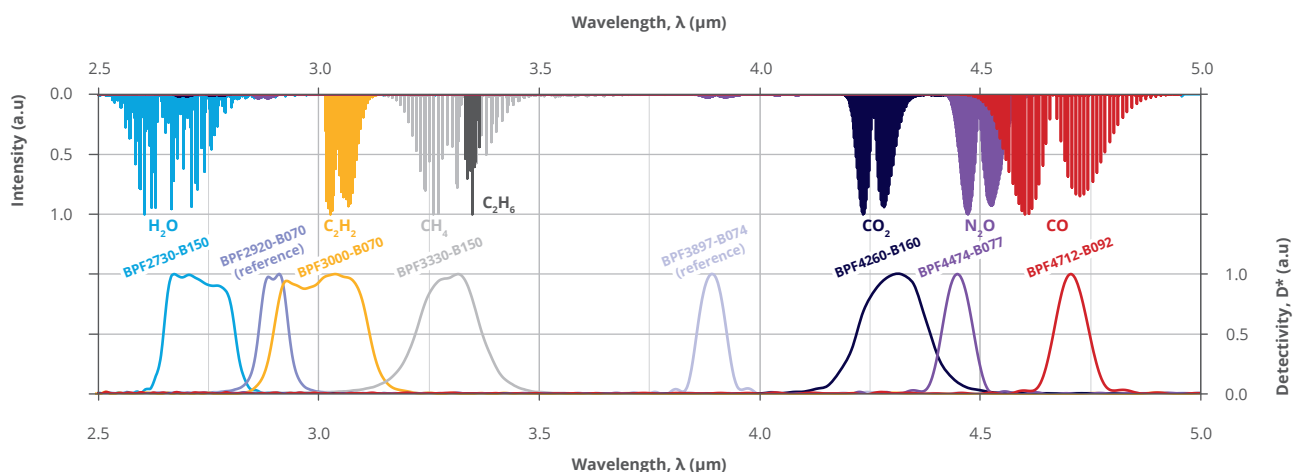
### FEATURES

- Affordable solution for gas sensing
- Room temperature and one-stage thermoelectrically cooled
- Possibility of selecting various configurations of bandpass filters (BPF1-BPF2)
- Small SMD and TO39 packages
- Low crosstalk
- One-element detectors with filters available with a standard lead time

### APPLICATIONS

- Gas detection
  - H<sub>2</sub>O (water vapour)
  - C<sub>2</sub>H<sub>2</sub> (acetylene)
  - CH<sub>4</sub> (methane)
  - C<sub>2</sub>H<sub>6</sub> (ethane)
  - CO<sub>2</sub> (carbon dioxide)
  - N<sub>2</sub>O (nitrous oxide)
  - CO (carbon oxide)

### SPECTRAL RESPONSE (Typ., T<sub>amb</sub> = 293 K)



# 2E-PVA-3 DETECTOR SERIES FOR GAS ANALYSIS

## DETECTOR SERIES CONFIGURATION

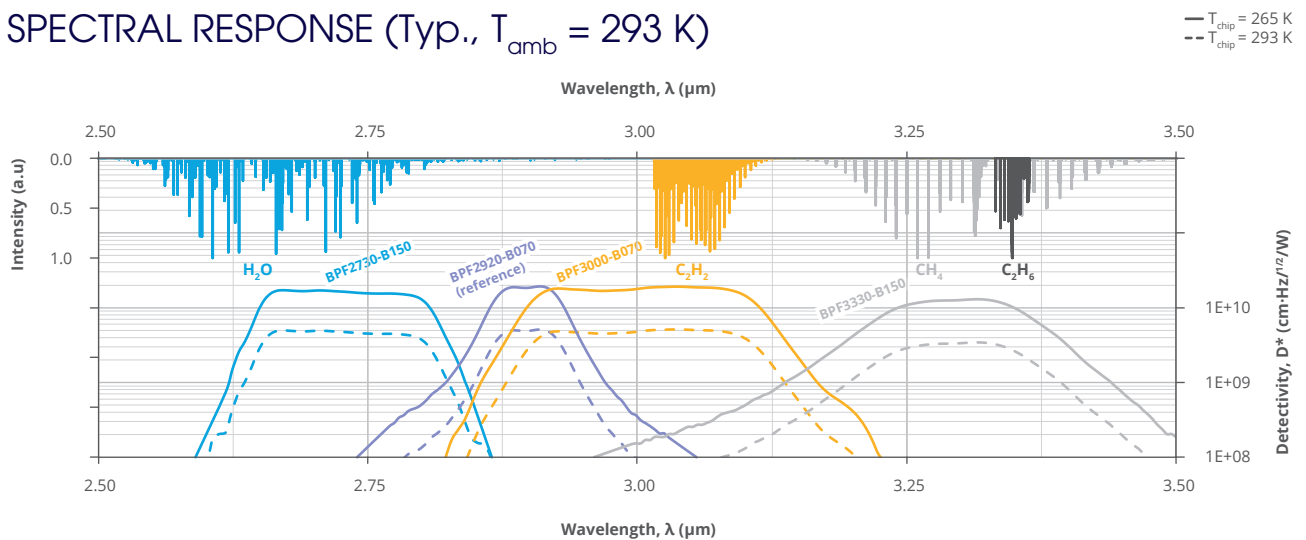
Detector symbol	2E-PVA-3-d1.2-SMD-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-115			2E-PVA-3-0.4×0.4-TO39-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-70		
Cooling	no			1TE (T <sub>chip</sub> ≈ 265 K)		
Temperature sensor	n/a			thermistor		
Number of elements	2			2		
Active area of single element	diameter 1.2 mm			0.4 mm × 0.4 mm		
Active area pitch	3.4 mm			2.0 mm		
Optical immersion	no			no		
Package	SMD			TO39 (8 pins)		
Acceptance angle Φ, deg.	≥115 deg.			~70 deg.		
Window	planar sapphire					
BPF1 <sup>*)</sup>	BPF2730-B150	BPF2920-B070	BPF3000-B200	BPF3330-B150		
BPF2 <sup>*)</sup>	BPF2730-B150	BPF2920-B070	BPF3000-B200	BPF3330-B150		
Detected gas	H <sub>2</sub> O	reference	C <sub>2</sub> H <sub>2</sub>	CH <sub>4</sub> , C <sub>2</sub> H <sub>6</sub>		

<sup>\*)</sup> Available options.

## SPECIFICATION (Typ., T<sub>amb</sub> = 293 K, V<sub>b</sub> = 0 V)

Detector symbol	2E-PVA-3-d1.2-SMD-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-115						2E-PVA-1TE-3-0.4×0.4-TO39-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-70				
Active element temperature	T <sub>chip</sub>	K	293				265				
Filter centre wavelength	λ <sub>cwl</sub>	nm	2730	2920	3000	3330	2730	2920	3000	3330	
Filter bandwidth		nm	150	70	200	150	150	70	200	150	
Detectivity	D*(λ <sub>peak</sub> , 20 kHz)	cm·Hz <sup>1/2</sup> /W	5.0×10 <sup>9</sup>		3.5×10 <sup>9</sup>		1.7×10 <sup>10</sup>		1.9×10 <sup>10</sup>		1.3×10 <sup>10</sup>
Current responsivity	R <sub>i</sub> (λ <sub>peak</sub> )	A/W	0.80		0.55		0.90		1.02		0.70
Dynamic resistance	R <sub>d</sub>	Ω	55				3 400				

## SPECTRAL RESPONSE (Typ., T<sub>amb</sub> = 293 K)



# 2E-PVA-5 DETECTOR SERIES FOR GAS ANALYSIS

## DETECTOR SERIES CONFIGURATION

<b>Detector symbol</b>	2E-PVA-5-d1-SMD-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-115				2E-PVA-1TE-5-0.4x0.4-TO39-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-70			
<b>Cooling</b>	no				1TE (T <sub>chip</sub> ≅ 265 K)			
<b>Temperature sensor</b>	n/a				thermistor			
<b>Number of elements</b>					2			
<b>Active area of single element</b>	diameter 1.0 mm				0.4 mm × 0.4 mm			
<b>Active area pitch</b>	3.4 mm				2.0 mm			
<b>Optical immersion</b>					no			
<b>Package</b>	SMD				TO39 (8 pins)			
<b>Acceptance angle Φ, deg.</b>	≥115 deg.				~70 deg			
<b>Window</b>	planar sapphire							
<b>BPF1<sup>*)</sup></b>	BPF2730-B150,	BPF3000-B070,	BPF3330-B150,	BPF3897-B074,	BPF4260-B160,	BPF4474-B077,	BPF4712-B092	
<b>BPF2<sup>*)</sup></b>	BPF2730-B150,	BPF3000-B070,	BPF3330-B150,	BPF3897-B074,	BPF4260-B160,	BPF4474-B077,	BPF4712-B092	
<b>Detected gas</b>	H <sub>2</sub> O,	C <sub>2</sub> H <sub>2</sub> ,	CH <sub>4</sub> , C <sub>2</sub> H <sub>6</sub> ,	reference	CO <sub>2</sub> ,	N <sub>2</sub> O,	CO	

<sup>\*)</sup> Available options.

## SPECIFICATION (Typ., T<sub>amb</sub> = 293 K, V<sub>b</sub> = 0 V)

<b>Detector symbol</b>	2E-PVA-5-d1-SMD-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-115									2E-PVA-1TE-5-0.4x0.4-TO39-pAl <sub>2</sub> O <sub>3</sub> -BPF1-BPF2-70								
<b>Active element temperature</b>	T <sub>chip</sub>	K	293									253						
<b>Filter centre wavelength</b>	λ <sub>cut</sub>	nm	2730	3000	3330	3897	4260	4474	4712	2730	3000	3330	3897	4260	4474	4712		
<b>Filter bandwidth</b>		nm	150	70	150	74	160	77	92	150	70	150	74	160	77	92		
<b>Detectivity</b>	D* (λ <sub>peak</sub> , 20 kHz)	cm·Hz <sup>1/2</sup> /W	7.0×10 <sup>8</sup>	9.0×10 <sup>8</sup>	1.1×10 <sup>9</sup>	1.2×10 <sup>9</sup>	9.5×10 <sup>8</sup>	8.5×10 <sup>8</sup>	8.0×10 <sup>8</sup>	6.1×10 <sup>9</sup>	7.7×10 <sup>9</sup>	8.0×10 <sup>9</sup>	8.2×10 <sup>9</sup>	7.7×10 <sup>9</sup>	7.2×10 <sup>9</sup>	6.1×10 <sup>9</sup>		
<b>Current responsivity</b>	R <sub>i</sub> (λ <sub>peak</sub> )	A/W	0.13	0.17	0.21	0.22	0.18	0.16	0.15	1.15	1.45	1.50	1.55	1.45	1.35	1.15		
<b>Dynamic resistance</b>	R <sub>d</sub>	Ω	65									250						

## SPECTRAL RESPONSE (Typ., T<sub>amb</sub> = 293 K)

