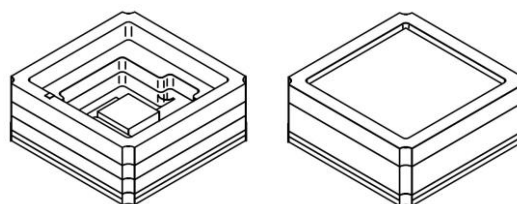


# PVA-3-SMD SERIES

# PRELIMINARY DATASHEET

## InAs room-temperature photovoltaic infrared detectors



### FEATURES

- Spectral range: 1.3 to 3.6  $\mu\text{m}$  (without filter)
- RoHS-compliant III-V material
- Front-side illuminated
- High ambient operating and storage temperature
- Compact, surface mount type ceramic package (size 4x4 mm<sup>2</sup>)
- Compatible with lead-free solder reflow
- No minimum order quantity required

### APPLICATIONS

- Gas detection, monitoring and analysis: H<sub>2</sub>O, HF, CH<sub>4</sub>, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, NH<sub>3</sub>
- Combustion process control
- Green energy
- Medical laser control

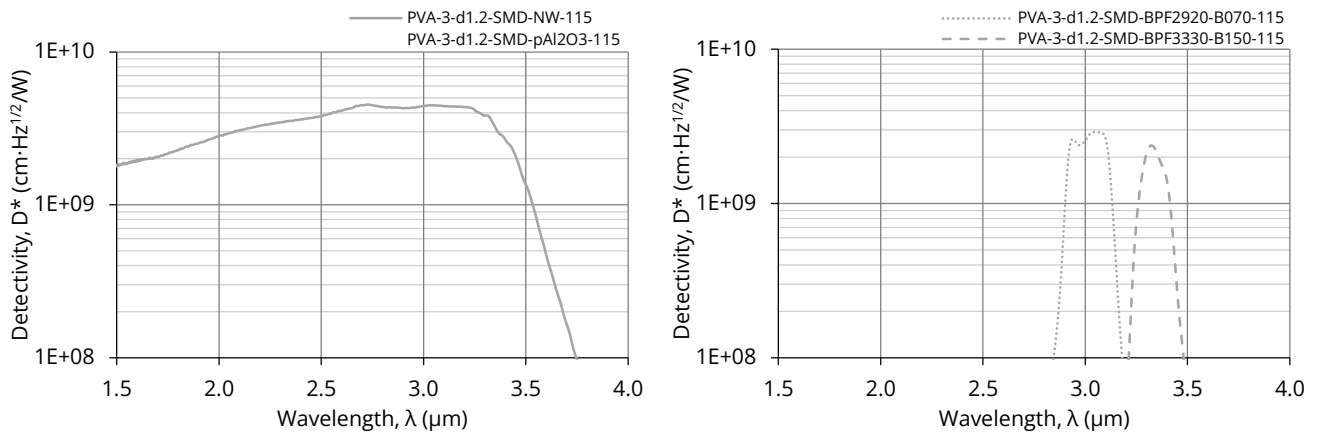
### SERIES DESCRIPTION

Detector symbol	Cooling	Temperature sensor	Active area diameter, d <sub>a</sub> , mm	Optical immersion	Package	Acceptance angle $\Phi$ , deg.	Window
PVA-3-d1.2-SMD-NW-115	no	n/a	1.2	no	SMD	$\geq 115$ deg.	no
PVA-3-d1.2-SMD-pAl <sub>2</sub> O <sub>3</sub> -115							pAl <sub>2</sub> O <sub>3</sub> (planar sapphire)
PVA-3-d1.2-SMD-BPF2920-B070-115							planar with filter ( $\lambda_{\text{cwl}} = 2920$ nm, bandwidth = 70 nm)
PVA-3-d1.2-SMD-BPF3330-B150-115							planar with filter ( $\lambda_{\text{cwl}} = 3330$ nm, bandwidth = 150 nm)

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

Detector symbol	Cut-on wavelength (10%)	Peak wavelength	Cut-off wavelength (10%)	Detectivity		Current responsivity		Time constant		Dynamic resistance	
	$\lambda_{\text{cut-on}}$	$\lambda_{\text{peak}}$	$\lambda_{\text{cut-off}}$	$D^*(\lambda_{\text{peak}}, 20 \text{ kHz})$		$R(\lambda_{\text{peak}})$		$\tau$		$R_d$	
	$\mu\text{m}$	$\mu\text{m}$	$\mu\text{m}$	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$		$\text{A}/\text{W}$		$\text{ns}$		$\Omega$	
	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Typ.	Max.	Min.	Typ.
PVA-3-d1.2-SMD-NW-115	1.30	2.90	3.60	$3.0 \times 10^9$	$5.0 \times 10^9$	0.45	0.55	35	45	55	75
PVA-3-d1.2-SMD-pAl <sub>2</sub> O <sub>3</sub> -115	-	2.92	-	$2.5 \times 10^9$	$3.5 \times 10^9$	0.40	0.48				
PVA-3-d1.2-SMD-BPF2920-B070-115	-	2.92	-	$2.5 \times 10^9$	$3.5 \times 10^9$	0.40	0.48				
PVA-3-d1.2-SMD-BPF3330-B150-115	-	3.33	-	$1.6 \times 10^9$	$2.4 \times 10^9$	0.28	0.36				

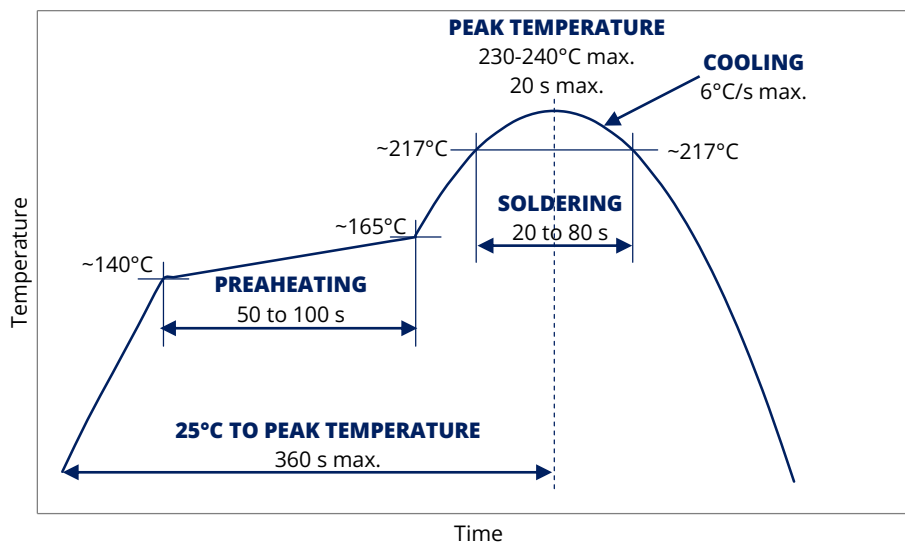
### SPECTRAL RESPONSE (Typ., $T_{amb} = 293\text{ K}$ )



### MECHANICAL LAYOUT AND SIGNAL OUTPUT

- [SMD-pW, PV detector technical drawing](#)
- [SMD-NW, PV detector technical drawing](#)

### RECOMMENDED REFLOW SOLDERING CONDITIONS



Desoldering and re-soldering the component may cause degradation of the detector.

### ABSOLUTE MAXIMUM RATINGS

Parameter	Test conditions, remarks	Value	Unit
Ambient operating temperature, $T_{amb}$	Detector parameters depend on $T_{amb}$	-20 to 70	°C
Storage temperature, $T_{stg}$		-20 to 70	°C
Soldering temperature	See "Recommended reflow soldering conditions"	-	-
Storage humidity	No dew condensation	10 to 90	%
Maximum incident optical power density	Continuous wave (CW) or single pulses >1 $\mu\text{s}$ duration	100	W/cm <sup>2</sup>
	Single pulses <1 $\mu\text{s}$ duration	1	MW/cm <sup>2</sup>
Maximum bias voltage, $V_{b,max}$		-1	V

Stresses beyond those listed under absolute maximum ratings may cause permanent damage to the device. Constant or repeated exposure to absolute maximum rating conditions may affect the quality and reliability of the device.