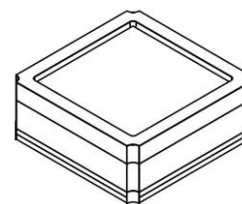


# PVA-3-d1.2-SMD-pAl<sub>2</sub>O<sub>3</sub>-115

## PRELIMINARY DATASHEET

### InAs room temperature photovoltaic infrared detector



#### FEATURES

- Spectral range: 1.3 to 3.6  $\mu\text{m}$
- III-V material
- No minimum order quantity required

#### APPLICATIONS

Gas detection (CO, HF, NH<sub>3</sub>, C<sub>2</sub>H<sub>2</sub>, CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, HCl)

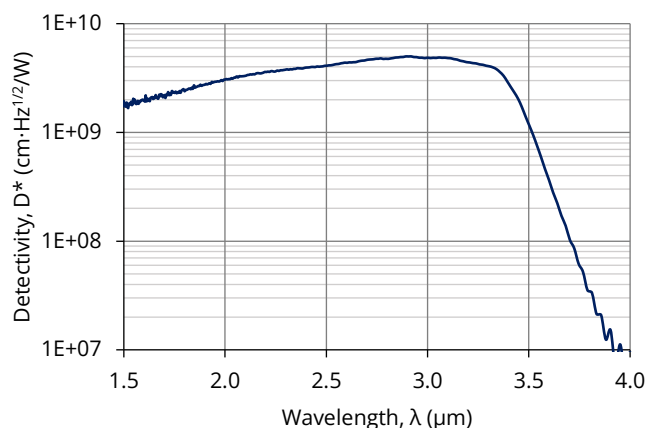
#### DETECTOR CONFIGURATION

Detector symbol	PVA-3-d1.2-SMD-pAl <sub>2</sub> O <sub>3</sub> -115
Detector type	photovoltaic
Active element material	epitaxial InAs heterostructure
Active area diameter, $\varphi_A$	1.2 mm
Immersion	no
Cooling	no
Detector package	SMD
Acceptance angle, $\Phi$	$\geq 115$ deg.
Window	pAl <sub>2</sub> O <sub>3</sub> (planar sapphire)

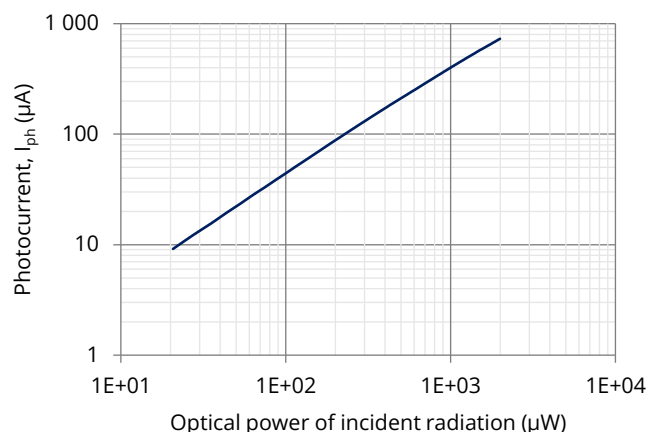
#### SPECIFICATION ( $T_{\text{chip}} = 293$ K, $V_b = 0$ V, unless otherwise noted)

Parameter	Test conditions / remarks	Value			Unit
		Min.	Typ.	Max.	
Active element temperature, $T_{\text{chip}}$	$T_{\text{amb}}$	-	293	-	K
Cut-on wavelength, $\lambda_{\text{cut-on}}$ (10%)	At 10% percent of peak responsivity	-	1.3	-	$\mu\text{m}$
Peak wavelength, $\lambda_{\text{peak}}$		-	2.9	-	$\mu\text{m}$
Cut-off wavelength, $\lambda_{\text{cut-off}}$ (10%)	At 10% percent of peak responsivity	-	3.6	-	$\mu\text{m}$
Detectivity, $D^*$	At $\lambda_{\text{peak}}$ , $f = 20$ kHz	$3.0 \times 10^9$	$5.0 \times 10^9$	-	$\text{cm}\cdot\text{Hz}^{0.5}/\text{W}$
Current responsivity, $R_i$	At $\lambda_{\text{peak}}$	0.5	0.6	-	A/W
Time constant, $\tau$		-	35	45	ns
Resistance, $R$		60	85	-	$\Omega$

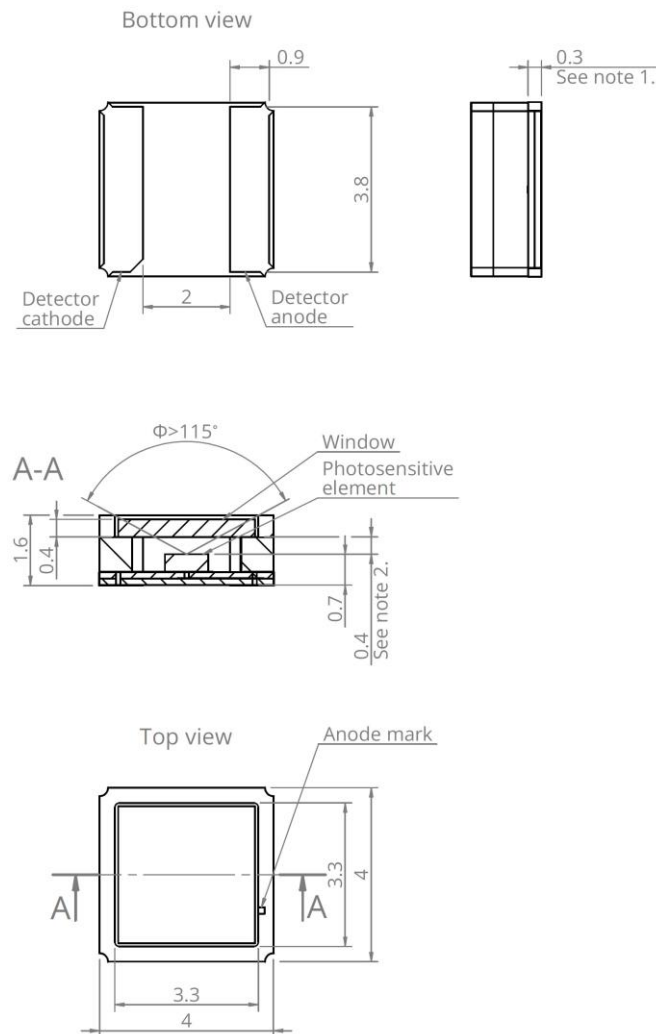
#### SPECTRAL RESPONSE (Typ., $T_{\text{chip}} = 293$ K)



#### LINEARITY (Typ., $T_{\text{chip}} = 293$ K, $\lambda = 3.06$ $\mu\text{m}$ )



## MECHANICAL LAYOUT (Unit: mm)



**Notes:**

1. Metallization height, only in the corners.
2. Distance between the photosensitive element and the window.

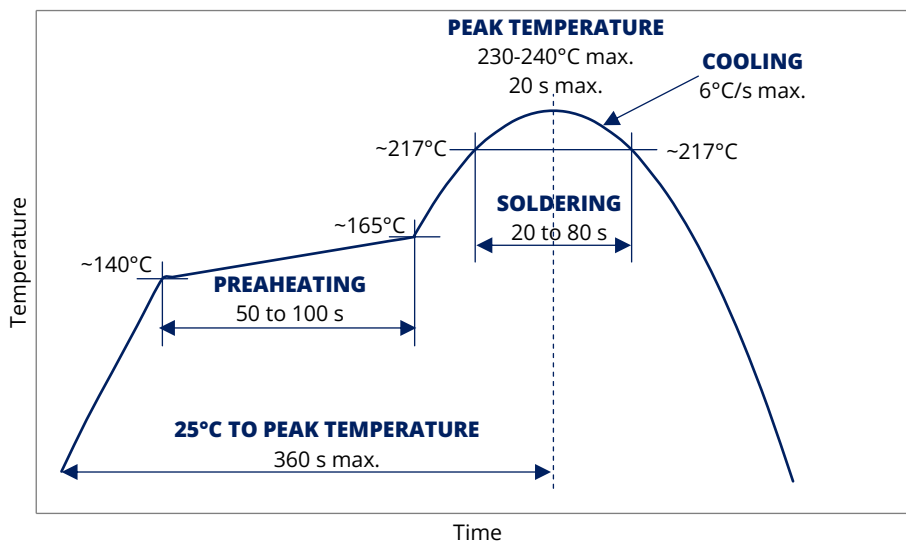
## ABSOLUTE MAXIMUM RATINGS

Parameter	Test conditions / remarks	Value	Unit
Maximum incident optical power density	Continuous wave (CW) or single pulses >1 μs duration	100	W/cm <sup>2</sup>
	Single pulses <1 μs duration	1	MW/cm <sup>2</sup>
Maximum bias voltage V <sub>b max</sub>		-1	V
Soldering temperature	Within 5 s or less	≤300	°C
Ambient operating temperature T <sub>amb</sub>		-20 to 70	°C
Storage temperature T <sub>stg</sub>		-20 to 85	°C
Storage humidity	No dew condensation	10 to 90	%

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.

## RECOMMENDED REFLOW SOLDERING CONDITIONS



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

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