VIGO PHOTONICS

PRODUCTS

CONTENTS

Infrared detectors and detection modules

How to choose an infrared detector?

SELECTING THE RIGHT INFRARED DETECTOR INVOLVES CONSIDERING THE FOLLOWING FACTORS:

Wavelength λ (or wavelength range)

- Determine the specific wavelength or wavelength range of interest for the application.
- Choose the infrared detector with the spectral range closest to your needs.

Detectivity D* / Responsivity R_i

- Detectivity D* is a figure of merit for infrared detectors that attempts to allow comparison between types.
- Detectivity is defined as: **$D^*=(A\cdot\Delta f)^{1/2}/NEP$**
  A – active area (cm^2)
  Δf – signal bandwidth (Hz)
  NEP – Noise Equivalent Power, the optical input power to the active element that produces a signal-to-noise ratio of unity (S/N=1).
- Detector cooling reduces noise and increases responsivity.

Time constant τ

- Time constant τ is the time it takes for the detector to reach 1/e≈37% of the initial signal value.
- Time constant is related to the 3dB high cut-off frequency f_{hi}: **$\tau=1/(2\pi\cdot fhi)$.**
- The time constant is related to the 10-90% rise time tr: **$t_r=2.2\,\tau$.**

Active area A / Optical area A_o

- Active area A – the physical area of an active element
- Optical area A_O – it is equal to the physical area of the active element unless an optical concentrator (i.e. immersion microlens) is used
- Optical immersion increases the optical area by ~120x and the detectivity D* by ~11x

How to choose an amplifier?

SELECTING THE RIGHT AMPLIFIER INVOLVES CONSIDERING THE FOLLOWING FACTORS:

Infrared detector

- Choose the right detector for the application. Take into account:
  - Detector type (photoconductive, photovoltaic),
  - Operating temperature,
  - Detector package.

Operating bandwidth

- Determine the highest frequency expected to be observed or the system frequency.
- Multiply the highest frequency or chopping frequency by 10 (for clean waveform resolution).
- In general, select a DC-coupled amplifier for photovoltaic detectors and an AC-coupled amplifier for photoconductive and biased photovoltaic detectors.
- The bandwidth of the detection module is not equal to the bandwidth of the amplifier.

Appropriate amplifier

- Refer to VIGO's available amplifiers. Take into account:
  - Amplifier package,
  - Configurability.

Accessories

- Some detection modules require additional accessories i.e.:
  - TEC controller,
  - Power supply,
  - Heatsink.

Detector code description

A detector code combines various information including:

Detector type and active element material

- Indication of whether the detector is a photovoltaic (PV), photovoltaic multi-junction (PVM), photoconductive (PC) or photoelectromagnetic (PEM) type.

Optical immersion

- Information about whether the detector has optical immersion technology applied.

Additional information

- Information about active element material (i.e. III-V) or active elements geometry (i.e. quadrant)

Number of thermoelectric cooler stages

- If the detector incorporates a thermoelectric cooler, the number of cooling stages (1TE, 2TE, 3TE, 4TE) may be a part of the code.

Specific wavelength

- The wavelength (in μm) for which the detector is optimized.

Size of the active (or optical) area

- The dimensions of the detector's active or optical sensing area (in mm×mm)

Package type

- The type of package used to encase the detector (i.e. TO39, TO8, TO66, PEM-SMA)

Window type

- Information about the window material (Si, Al_2O_3, ZnSe), window shape (wedged or planar) and the presence of any anti-reflection coating.

Acceptance angle

- The angular range (in deg.) within which the detector can effectively capture incident radiation.

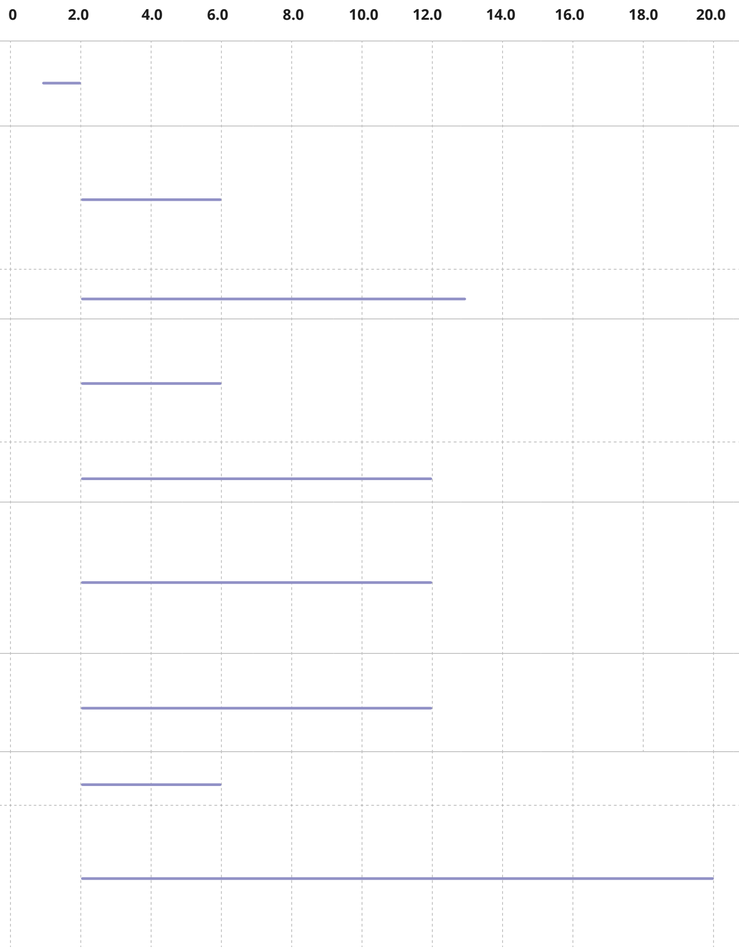
Detector type	Immersion	Active element material, Active elements geometry	—	Cooling	—	Specific wavelength	—	Actiave (or optical) area	—	Package	—	Window	—	Acceptance angle

Features

Active element material	Detector type	Product		Spectral range (µm)	Features
InGaAs	photovoltaic	PVA-1.7 detector series	SWIR		• Spectral range 0.9 to 1.7 µm • Temperature stable up to 300°C • Complying with the RoHS Directive • Large active areas available
InAs, InAsSb	photovoltaic	PVA-3 detector PVA-3-SMD detector series PVIA-4 detector PVA-5-SMD detector series PVIA-5 detector	MWIR		• Broad 2.0 to 13.6µm spectral range • Temperature stable up to 300°C • Mechanically durable • Complying with the RoHS Directive • No bias required • No 1/f noise • Uncooled and TE-cooled • Optical immersion lens technology available
	photovoltaic multi-junction	PVMA-5 detector PVMA-6 detector			
	photovoltaic	PVIA-10 detector series PVIA-13 detector	LWIR		

HgCdTe	photovoltaic	PVI-3 detector series
		PV-4 detector series
		PVI-4 detector series
		PV-5 detector series
		PVI-5 detector series
		PV-6 detector series
		PVI-6 detector series
			MWIR		• Near BLIP detection in 3.0 to 6.0 µm range
					• No bias required
					• No 1/f noise
					• Bandwidth:
					  ◦ tens of MHz (without reverse bias)
					  ◦ ≥ 1GHz (with reverse bias)
					• Uncooled and TE-cooled
					• Optical immersion lens technology available

		PV-8 detector series PVI-8 detector series PVI-10.6 detector series	LWIR		
	photovoltaic multi-junction	PVM-8 detector series PVMI-8 detector series PVM-10.6 detector series PVMI-10.6 detector series PVMQ-10.6 detector	LWIR		• Broad 2.0 to 12.0 µm spectral range • Large active areas available • No bias required • No 1/f noise • Short time constant ≤1.5 ns • Operation from DC to high frequency • Uncooled and TE-cooled • Optical immersion lens technology available
	photoelectromagnetic	PEM-10.6 detector	LWIR		• Broad 2.0 to 12.0 µm spectral range • No bias required • No 1/f noise • Short time constant ≤1.2 ns • Operation from DC to high frequency
	photoconductive	PC-5 detector series PCI-5 detector series	MWIR		• Broad 2.0 to 16.0 µm spectral range • High detectivity • Long lifetime and MTBF • Stability and reliability • 1/f noise • Uncooled, TE-cooled or LN2-cooled • Optical immersion lens technology available
		PC-9 detector series PCI-9 detector series PC-10.6 detector series PCI-10.6 detector series PCI-12 detector series PCI-13 detector series PCI-14 detector series PC-LN2 detector series	LWIR		



Applications

Spectral range	Specific wavelength (µm)	Active element material	Detector type	Product or product series	Applications
SWIR	1.7	InGaAs	photovoltaic	PVA-1.7 detector series	• Gas detection, monitoring and analysis: CH_4 • Telecommunication • LIDAR • Laser range finder, laser warning system • Lasers and diodes life tests • Food analysis • Pharmaceutical analysis
MWIR	3.0	InAs	photovoltaic	PVA-3 detector PVA-3-SMD detector series	• Gas detection, monitoring and analysis: H_2O, HF, CH_4, C_2H_2, C_2H_4, C_2H_6, NH_3 • Combustion process control • Green energy • Medical laser control
		HgCdTe	photovoltaic	PVI-3 detector series	
	4.0	InAsSb	photovoltaic	PVIA-4 detector	• Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO_2 • Breath analysis: C_2H_6, CH_2O, NH_3 • Explosion prevention • Exhaust gas denitrification • Emission control (exhaust fumes, greenhouse gases) • Contactless temperature measurements (metal industry)
		HgCdTe	photovoltaic	PV-4 detector series PVI-4 detector series LabM-I-4 detection module	
	5.0	InAsSb	photovoltaic	PVA-5-SMD detector series PVIA-5 detector	• Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring • Flame and explosion detection • Threat warning systems • Heat-seeking, thermal signature detection • Dentistry • Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x • Breath analysis (C_2H_6, CH_2O, NH_3, NO, OCS) • Gas leak detection • Combustion process control • Non-destructive material testing
			photovoltaic multi-junction	PVMA-5 detector AM03100-02 detection module AMS3140-01 detection module	
		HgCdTe	photovoltaic	PV-5 detector series PVI-5 detector series LabM-I-5 detection module series	
			photoconductive	PC-5 detector series PCI-5 detector series	
	6.0	InAsSb	photovoltaic multi-junction	PVMA-6 detector AMS6140-01 detection module	• Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x, SO_x, HNO_3 • Exhaust gas denitrification • Combustion process control • Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring • Heat-seeking, thermal signature detection • Non-destructive material testing • Biochemical analysis • Laser calibration
		HgCdTe	photovoltaic	PV-6 detector series PVI-6 detector series LabM-I-6-01 detection module	

Applications

Spectral range	Specific wavelength (µm)	Active element material	Detector type	Product or product series	Applications
LWIR	8.0	HgCdTe	photovoltaic	PV-8 detector series PVI-8 detector series	• Gas detection, monitoring and analysis: CH_4, H_2S, NO_2, SO_x • FTIR spectroscopy
			photovoltaic multi-junction	PVM-8 detector series PVMI-8 detector series	
	9.0	HgCdTe	photoconductive	PC-9 detector series PCI-9 detector series	• Gas detection, monitoring and analysis: SO_2, NH_3 • FTIR spectroscopy
	10.0	InAsSb	photovoltaic	PVIA-10 detector series AMIS8140-01 detection module	• Gas detection, monitoring and analysis: SO_2, NH_3, SF_6 • CBRN threats detection • CO_2 laser measurements (power monitoring and control, beam profiling and positioning, calibration) • Free-space optical communication • FTIR spectroscopy • Medical bacteria identification • Dentistry • Glucose sensing
	10.6	HgCdTe	photovoltaic	UHSM-10.6 detection module	
				PVI-10.6 detector series UHSM-I-10.6 detection module	
			photovoltaic multi-junction	PVM-10.6 detector series PVMI-10.6 detector series PVMQ-10.6 detector microM-10.6 detection module UM-I-10.6 detection module LabM-I-10.6 detection module	
			photoelectromagnetic	PEM-10.6 detector	
			photoconductive	PC-10.6 detector series PCI-10.6 detector series	
	12.0	HgCdTe	photoconductive	PCI-12 detector series SM-I-12 detection module	• FTIR spectroscopy • Gas detection, monitoring and analysis: C_2H_6, NH_3 • Laser measurements: power monitoring and control, beam profiling and positioning, calibration
	13.0	InAs/InAsSb	photovoltaic	PVIA-13 detector	• FTIR spectroscopy • Gas detection, monitoring and analysis: C_2H_6 • Toxic gas detection • Gas leak detection
		HgCdTe	photoconductive	PCI-13 detector series	
	14.0	HgCdTe	photoconductive	PCI-14 detector series PC-LN2-14 detector	• FTIR spectroscopy • Gas detection, monitoring and analysis: CH_3Cl, C_2H_2 • Toxic gas detection
	16.6	HgCdTe	photoconductive	PC-LN2-16.6	• FTIR spectroscopy
	19.0	HgCdTe	photoconductive	PC-LN2-19	• FTIR spectroscopy

Selected products

Selected infrared detectors and detection modules are excellent options for a range of purposes, such as laboratory research, prototyping, R&D stage and various MWIR and LWIR industrial applications.

INFRARED DETECTORS

InAs

- PVA-3-1×1-TO39-NW-90
- PVA-3-d1.2-SMD-NW-115
- PVA-3-d1.2-SMD-pAl2O3-115
- PVA-3-d1.2-SMD-BPF2920-B070-115
- PVA-3-d1.2-SMD-BPF3330-B150-115

InAsSb

- PVIA-4TE-4-1x1-TO8-wAl_2O_3-36
- PVA-5-d1-SMD-NW-115
- PVA-5-d1-SMD-pAl_2O_3-115
- PVA-5-d1-SMD-BPF3900-B090-115
- PVA-5-d1-SMD-BPF4260-B090-115
- PVIA-5-1×1-TO39-NW-36
- PVMA-1TE-5-1×1-TO39-pSiAR-70
- PVMA-1TE-6-1×1-TO39-pSiAR-70
- PVIA-10-1×1-TO39-NW-36
- PVIA-4TE-10-1×1-TO8-wZnSeAR-36
- PVIA-4TE-13-1×1-TO8-wZnSeAR-36

HgCdTe

- PVI-4-1×1-TO39-NW-36
- PVI-5-1×1-TO39-NW-36
- PVI-2TE-6-1×1-TO8-wZnSeAR-36
- PVM-10.6-1×1-TO39-NW-90
- PCI-3TE-12-1×1-TO8-wZnSeAR-36

INFRARED DETECTION MODULES

InAsSb

- AM03100-02
- AMS3140-01
- AMS6140-01
- AMIS8140-01

HgCdTe

- LabM-I-4
- LabM-I-5
- LabM-I-6-01
- LabM-I-10.6
- microM-10.6
- UM-I-10.6
- UHSM-10.6
- UHSM-I-10.6
- SM-I-12

KEY FEATURES

- Detection modules tailored for specific applications
- Exceptional performance and reliability
- Swift delivery with a maximum 2-week lead time
- Low-cost options available even for low-quantity orders (no minimum order quantity)

Custom engineering

With over 35 years of experience in infrared technology, we have developed an extensive portfolio of standard products suitable for the majority of applications.

VIGO products and services are backed by a team of highly skilled and educated engineers proficient in semiconductor materials engineering, optoelectronics, signal processing electronics, and electro-mechanical design. This allows us to offer services in the engineering of custom products complementary to our standard devices. At VIGO Photonics, our mission is to assist industrial manufacturers and scientific teams alike in meeting the most demanding expectations and addressing complex challenges related to infrared radiation and its measurements.

Our offer includes:

SELECTED PRODUCTS

- 20 types of infrared detectors
- 13 types of infrared detection modules

STANDARD PRODUCTS

- 84 types of infrared detectors
- 6 types of amplifiers and other accessories

MODIFICATIONS

- Infrared detectors and detection modules featuring diverse active or optical areas and formats, packages, windows (or filters), connectors, electronic circuitry etc.
- Multielement infrared detectors and detection modules (up to 32 elements)
- Multiband infrared detectors and detection modules (equipped with filters)

CUSTOM DESIGNS

- Epi-wafers re-engineering
- Infrared detector chips
- Photovoltaic infrared detectors engineered to achieve ultra-high-speed response under a reverse bias
- Ultra-high-speed infrared detection modules (exceeding 3 GHz frequency bandwidth)
- Balanced/auto-balanced infrared detection modules
- ASIC-type infrared detection modules

PVA-1.7 detector series

InGaAs | InAs | InAsSb | HgCdTe

InGaAs room-temperature photovoltaic infrared detectors

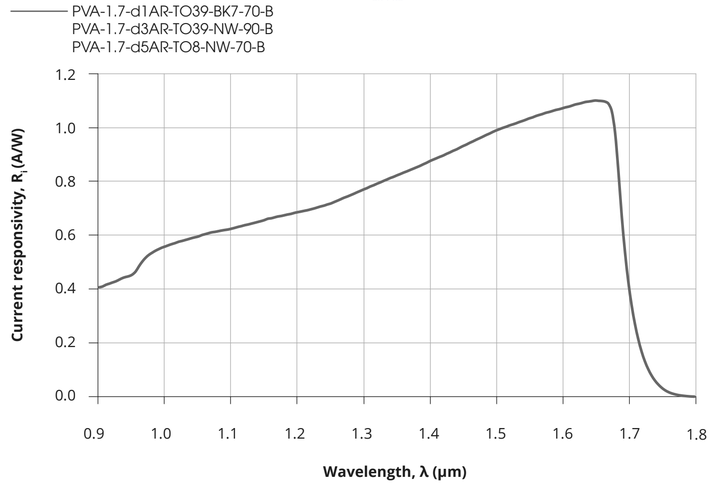
FEATURES

- Cut-off wavelength: 1.7 µm
- Anti-reflection coating on the active element
- Large active area
- RoHS-compliant III-V material
- High ambient operating and storage temperature
- Long-term stability and reliability
- Front-side illuminated
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4
- Telecommunication
- LIDARs
- Laser range finder, laser warning system
- Lasers and diodes life tests
- Food analysis
- Pharmaceutical analysis

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = -5 V, unless otherwise noted)

Image	Detector symbol	Cooling	Active area diameter, d_A, mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ=1.55µm, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ=1.55µm), A/W	Dark current, I_{dark}, nA	3db bandwidth, MHz	Package	Recommended amplifier
	PVA-1.7-d1AR-TO39-BK7-70-B	no $T_{chip} \cong T_{amb}$	1	1.62±0.03	1.71	1.0×10^{12}	1.02	25	150	TO39 (3 pin)	SIP-TO39
	PVA-1.7-d3AR-TO39-NW-90-B		3			min. 4.5×10^{11}		200	25	TO39 (3 pin)	
	PVA-1.7-d5AR-TO8-NW-70-B		5			min. 3.0×10^{11}		250	3	TO8	AIP, PIP, MIP, SIP-TO8

PVA-3-1×1-TO39-NW-90 detector

InGaAs | **InAs** | InAsSb | HgCdTe

InAs room temperature photovoltaic infrared detector

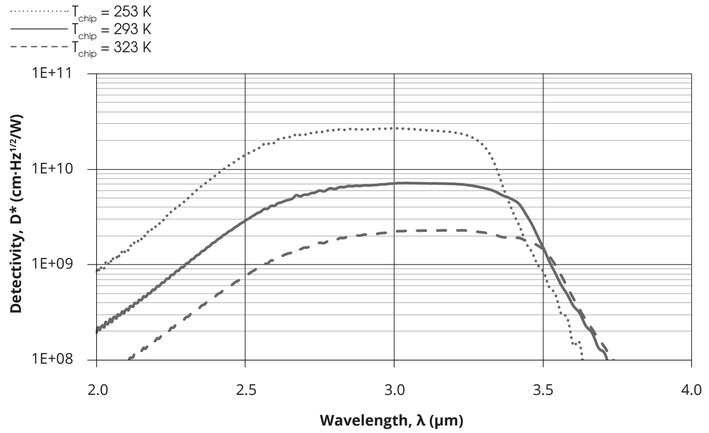
FEATURES

- Spectral range: 2.3 to 3.5 µm
- RoHS-compliant III-V material
- Large active area
- High ambient operating and storage temperature
- Back-side illuminated
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: H_2O, HF, CH_4, C_2H_2, C_2H_4, C_2H_6, NH_3
- Combustion process control
- Green energy
- Medical laser control

SPECTRAL RESPONSE (Typ.)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVA-3-1×1-TO39-NW-90	no $T_{chip} \cong T_{amb}$	1×1	2.3	3.1	3.5	7.0×10^9	0.9	35	TO39 (3 pin)	SIP-TO39

PVA-3-SMD detector series

InGaAs | **InAs** | InAsSb | HgCdTe

InAs room temperature photovoltaic infrared detectors

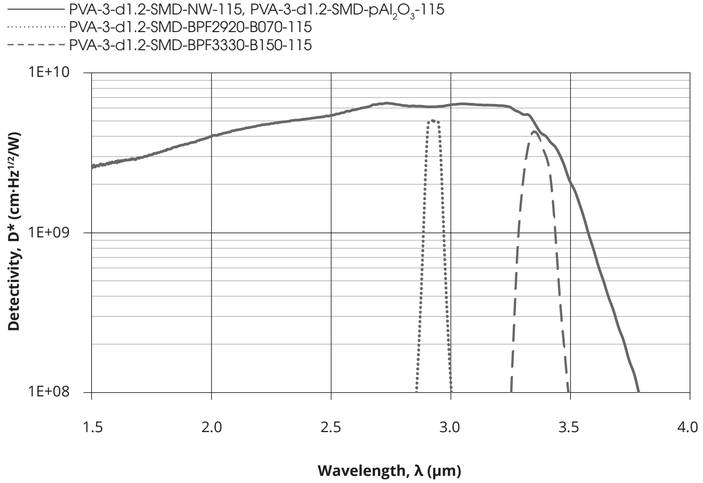
FEATURES

- Spectral range: 1.3 to 3.6 µm (without filter)
- RoHS-compliant III-V material
- Large active area
- Front-side illuminated
- High ambient operating and storage temperature
- Compact, surface mount type ceramic package (size 4x4 mm^2)
- Compatible with lead-free solder reflow
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: H_2O, HF, CH_4, C_2H_2, C_{2H4}, C_2H_6, NH_3
- Combustion process control
- Green energy
- Medical laser control

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area diameter, d_A, mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Window	Recommended amplifier
	PVA-3-d1.2-SMD-NW-115	no $T_{chip} \cong T_{amb}$	1.2	1.30	2.90	3.60	6.4×10^9	0.88	35	SMD	no	SMD-3.6k-AMP
	PVA-3-d1.2-SMD-pAl$_2$O$_3$-115										pAl$_2$O$_3$ (planar sapphire)	
	PVA-3-d1.2-SMD-BPF2920-B070-115			-	2.92	-	5.3×10^9	0.73			planar with filter (λ_{cwl} = 2920 nm, bandwidth = 70 nm)	
	PVA-3-d1.2-SMD-BPF3330-B150-115			-	3.33	-	4.5×10^9	0.62			planar with filter (λ_{cwl} = 3330 nm, bandwidth = 150 nm)	

PVIA-4TE-4-1x1-TO8-wAl$_2$O$_3$-36 detector

InGaAs | InAs | **InAsSb** | HgCdTe

InAsSb four-stage thermoelectrically-cooled optically immersed photovoltaic infrared detector

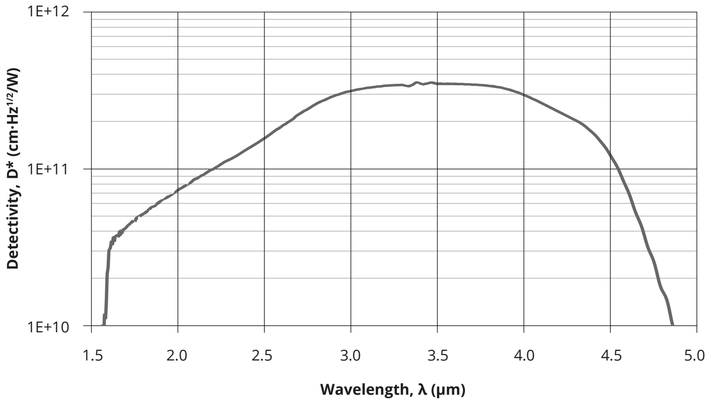
FEATURES

- Spectral range: 2.0 to 4.7 µm
- RoHS-compliant III-V material
- High ambient operating and storage temperature
- Unique optical immersion technology applied
- Back-side illuminated
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO_2
- Breath analysis: C_2H_6, CH_2O, NH_3
- Explosion prevention
- Exhaust gas denitrification
- Emission control (exhaust fumes, greenhouse gases)
- Contactless temperature measurements (metal industry)

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVIA-4TE-4-1x1-TO8-wAl2O3-36	4TE T_{chip} ≅ 200K	1×1	≤2.0	3.5	4.7	3.7×10^{11}	1.7	30	4TE-TO8	AIP, PIP, MIP, SIP-TO8

PVA-5-SMD detector series

InGaAs | InAs | **InAsSb** | HgCdTe

InAsSb room temperature photovoltaic infrared detectors

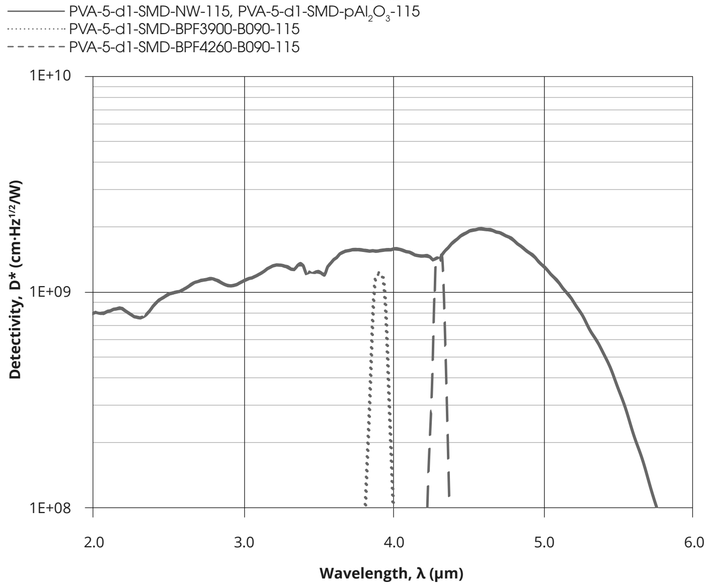
FEATURES

- Spectral range: 2.0 to 5.6 µm (without filter)
- RoHS-compliant III-V material
- Large active area
- Front-side illuminated
- High ambient operating and storage temperature
- Compact, surface mount type ceramic package (size 4x4 mm^2)
- Compatible with lead-free solder reflow
- No minimum order quantity required

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area diameter, d_A, mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Window	Recommended amplifier
	PVA-5-d1-SMD-NW-115	no $T_{chip} \cong T_{amb}$	1	2.0	4.5	5.6	2.0×10^9	0.35	35	SMD	no	SMD-3.6k-AMP
	PVA-5-d1-SMD-pAl$_2$O$_3$-115										pAl_2O_3 (planar sapphire)	
	PVA-5-d1-SMD-BPF3900-B090-115			-	3.9	-	1.2×10^9	0.22			planar with filter (λ_{cwl} = 3900 nm, bandwidth = 90 nm)	
	PVA-5-d1-SMD-BPF4260-B090-115			-	4.26	-	1.3×10^9	0.24			planar with filter (λ_{cwl} = 4260 nm, bandwidth = 90 nm)	

PVIA-5-1×1-TO39-NW-36 detector

InGaAs | InAs | **InAsSb** | HgCdTe

InAsSb room temperature optically immersed photovoltaic infrared detector

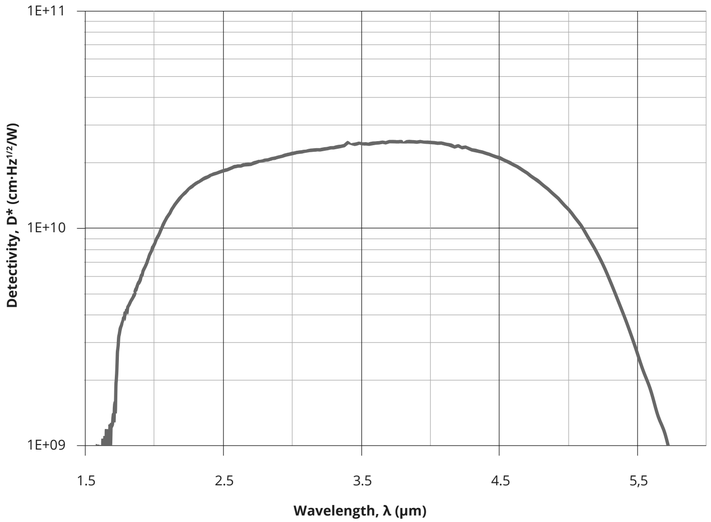
FEATURES

- Spectral range: 2.0 to 5.6 µm
- RoHS-compliant III-V material
- High ambient operating and storage temperature
- Unique optical immersion technology applied
- Back-side illuminated
- No minimum order quantity required

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVIA-5-1×1-TO39-NW-36	no $T_{chip} \cong T_{amb}$	1×1	≤2.0	3.9	5.6	2.8×10^{10}	1.8	30	TO39 (3 pin)	SIP-TO39

PVMA-1TE-5-1×1-TO39-pSiAR-70 detector

InGaAs | InAs | **InAsSb** | HgCdTe

InAsSb one-stage thermoelectrically cooled photovoltaic multi-junction infrared detector

FEATURES

- Spectral range: 2.2 to 5.5 µm
- RoHS-compliant III-V material
- Large active area
- Back-side illuminated
- No minimum order quantity required

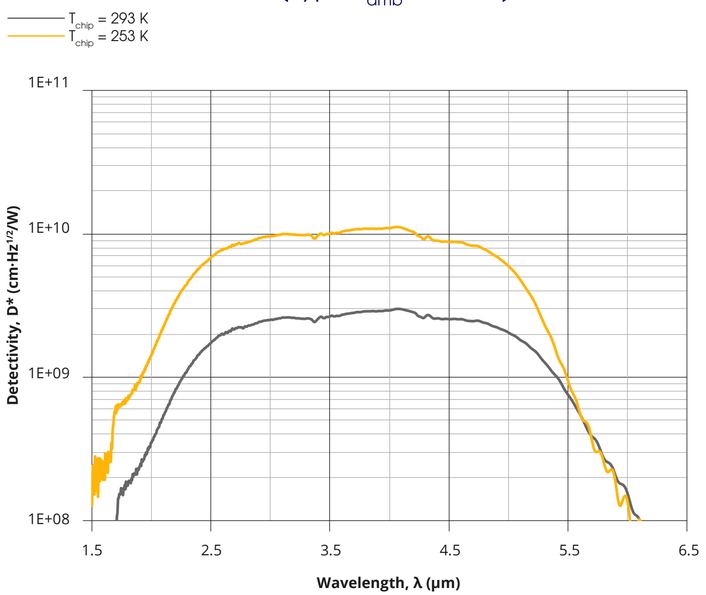
RELATED PRODUCT

- **AMS3140-01** RoHS-compliant detection module

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package
	PVMA-1TE-5-1×1-TO39-pSiAR-70	1TE $T_{chip} \cong$ 253 K	1×1	2.0	4.0	5.5	1.0×10^{10}	0.18	20	1TE-TO39 (8 pin)

PVMA-1TE-6-1×1-TO39-pSiAR-70 detector

InGaAs | InAs | **InAsSb** | HgCdTe

InAsSb one-stage thermoelectrically cooled photovoltaic multi-junction infrared detector

FEATURES

- Spectral range: 2.2 to 6.8 µm
- RoHS-compliant III-V material
- Large active area
- Back-side illuminated
- No minimum order quantity required

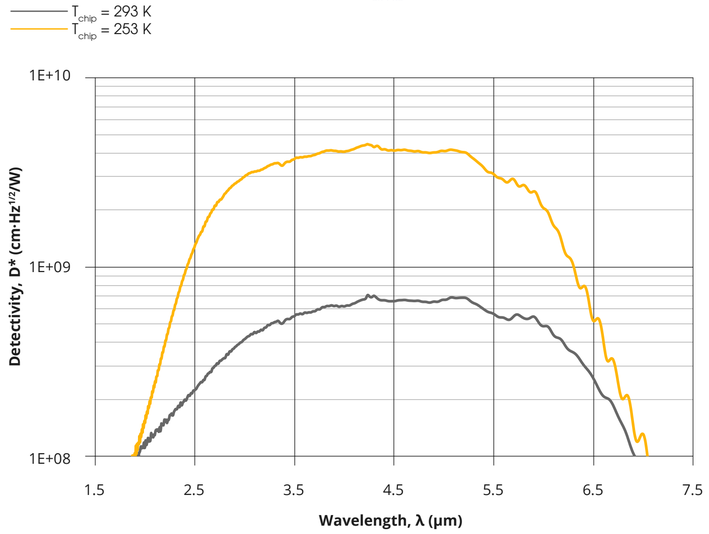
RELATED PRODUCT

- **AMS6140-01** RoHS-compliant detection module

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x, SO_x, HNO_3
- Exhaust gas denitrification
- Combustion process control
- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Heat-seeking, thermal signature detection
- Non-destructive material testing
- Biochemical analysis
- Laser calibration

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package
	PVMA-1TE-6-1×1-TO39-pSiAR-70	1TE $T_{chip} \cong$ 253 K	1×1	2.2	4.2	6.8	4.3×10^9	0.18	40	1TE-TO39 (8 pin)

PVIA-10 detector series

InGaAs | InAs | **InAsSb** | HgCdTe

InAsSb room temperature and thermoelectrically cooled optically immersed photovoltaic infrared detectors

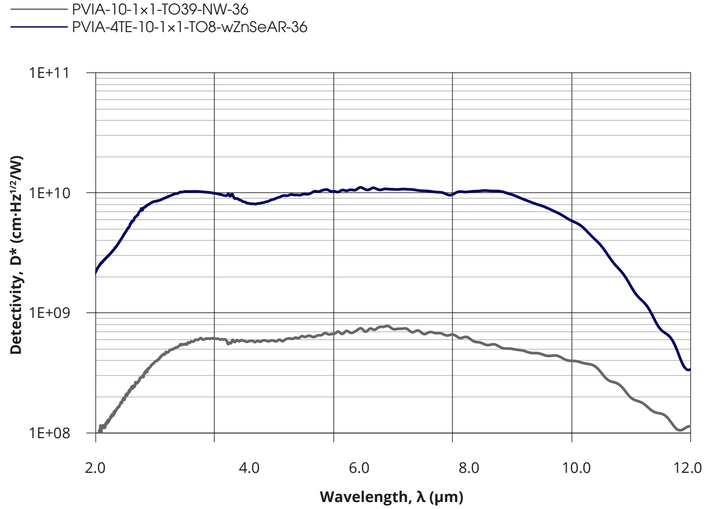
FEATURES

- Spectral range: 1.8 to 12.0 µm
- RoHS-compliant III-V material
- Unique optical immersion technology applied
- Back-side illuminated
- Long term stability
- Fast response
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements (power monitoring and control, beam profiling and positioning, calibration)
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVIA-10-1×1-TO39-NW-36	no $T_{chip} \cong T_{amb}$	1×1	1.8	7.1	12.0	7.7×10^8	0.14	1.65	TO39 (3 pin)	SIP-TO39
	PVIA-4TE-10-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong$ 200 K			6.7	11.3	1.0×10^{10}	0.55	3	4TE-TO8	AIP, PIP, MIP, SIP-TO8

PVIA-4TE-13-1×1-TO8-wZnSeAR-36 detector

InGaAs | InAs | **InAsSb** | HgCdTe

InAsSb superlattice four-stage thermoelectrically cooled optically immersed photovoltaic infrared detector

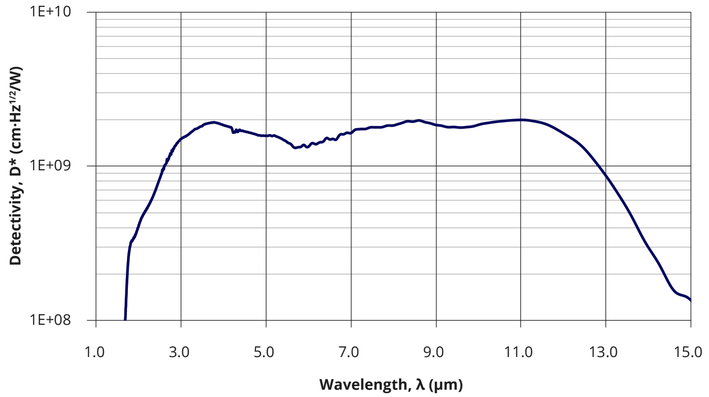
FEATURES

- Spectral range: 2.0 to 13.6 µm
- RoHS-compliant III-V material
- Unique optical immersion technology applied
- Back-side illuminated
- Long term stability
- Fast response
- No minimum order quantity required

APPLICATIONS

- FTIR spectroscopy
- Gas detection, monitoring and analysis: C_2H_6
- Toxic gas detection
- Gas leak detection

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVIA-4TE-13-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong 200$ K	1×1	2.0	10.5	13.6	3.0×10^9	0.38	3	4TE-TO8	AIP, PIP, MIP, SIP-TO8

PVI-3 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

FEATURES

- Spectral range: 2.2 to 3.35 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

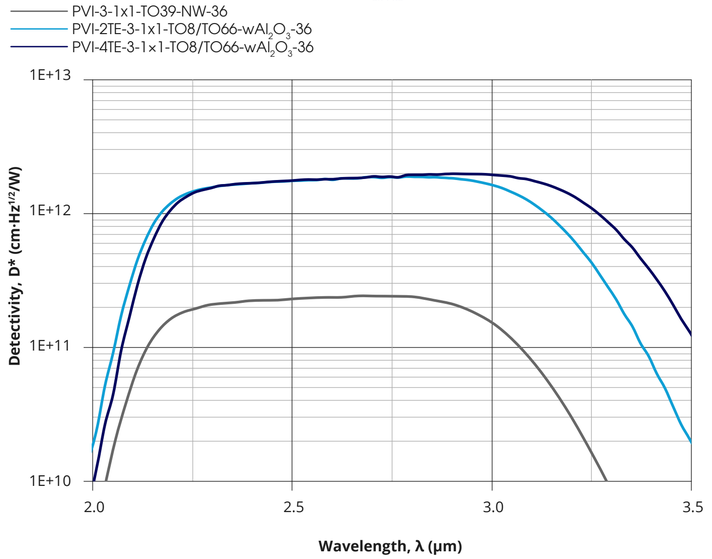
APPLICATIONS

- Gas detection, monitoring and analysis: H_2O, HF, CH_4, C_2H_2, C_2H_4, C_2H_6, NH_3
- Combustion process control
- Green energy
- Medical laser control

RELATED PRODUCTS

- **PVA-3-1×1-TO39-NW-90** RoHS-compliant detector
- **PVA-3-SMD** RoHS-compliant detector series

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVI-3 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVI-3-1×1-TO39-NW-36	no $T_{chip} \cong T_{amb}$	1×1	2.2	2.7±0.2	3.15	2.0×10^{11}	1.4	350	TO39 (3 pin)	SIP-TO39
	PVI-2TE-3-1×1-TO8-wAl$_2$O$_3$-36	2TE $T_{chip} \cong$ 230 K			2.8±0.2	3.25	1.5×10^{12}		280	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-2TE-3-1×1-TO66-wAl$_2$O$_3$-36									2TE-TO66	-
	PVI-4TE-3-1×1-TO8-wAl$_2$O$_3$-36	4TE $T_{chip} \cong$ 198 K				3.35	2.0×10^{12}			4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-4TE-3-1×1-TO66-wAl$_2$O$_3$-36									4TE-TO66	-

*) Only for biased detectors

PV-4 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors

FEATURES

- Spectral range: 2.3 to 4.4 µm
- Back-side illuminated
- No minimum order quantity required

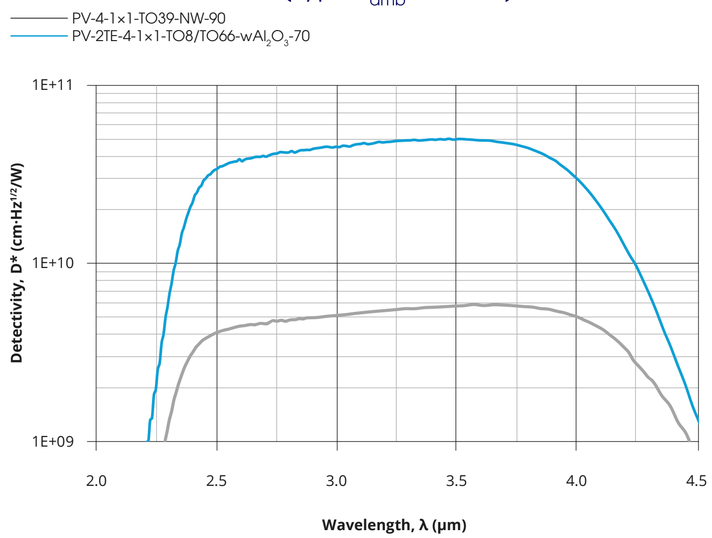
RELATED PRODUCTS

- **LabM-I-4** detection module
- **PVIA-4TE-4-1x1-TO8-wAl$_2$O$_3$-36** RoHS-compliant detector

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO_2
- Breath analysis: C_2H_6, CH_2O, NH_3
- Explosion prevention
- Exhaust gas denitrification
- Emission control (exhaust fumes, greenhouse gases)
- Contactless temperature measurements (metal industry)

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PV-4-0.1×0.1-TO39-NW-90	no $T_{chip} \cong T_{amb}$	0.1×0.1	2.3	3.5±0.1	4.3	6.0×10^9	1.8	150	TO39 (3 pin)	SIP-TO39
	PV-2TE-4-0.1×0.1-TO8-wAl$_2$O$_3$-70	2TE $T_{chip} \cong$ 230 K				4.4	5.0×10^{10}		100	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PV-2TE-4-0.1×0.1-TO66-wAl$_2$O$_3$-70									2TE-TO66	-

*) Only for biased detectors

PVI-4 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

FEATURES

- Spectral range: 2.3 to 4.4 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required
- Detector **PVI-4-1×1-TO39-NW-36** is a **Selected product**

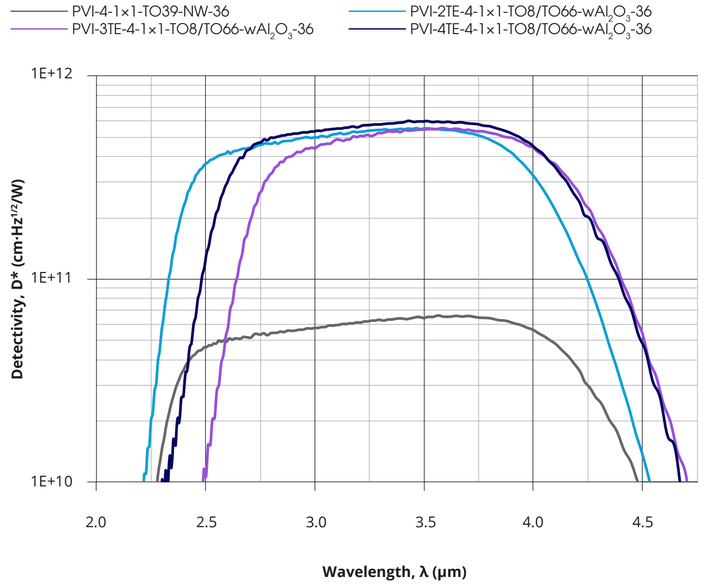
APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO_2
- Breath analysis: C_2H_6, CH_2O, NH_3
- Explosion prevention
- Exhaust gas denitrification
- Emission control (exhaust fumes, greenhouse gases)
- Contactless temperature measurements (metal industry)

RELATED PRODUCTS

- **LabM-I-4** detection module
- **PVIA-4TE-4-1x1-TO8-wAl$_2$O$_3$-36** RoHS-compliant detector

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVI-4 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVI-4-1×1-TO39-NW-36	no $T_{chip} \cong T_{amb}$	1×1	2.3	3.5±0.1	4.4	6.0×10^{10}	1.8	150	TO39 (3 pin)	SIP-TO39
	PVI-2TE-4-1×1-TO8-wAl$_2$O$_3$-36	2TE $T_{chip} \cong$ 230 K					5.0×10^{11}		100	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-2TE-4-1×1-TO66-wAl$_2$O$_3$-36									2TE-TO66	-
	PVI-3TE-4-1×1-TO8-wAl$_2$O$_3$-36	3TE $T_{chip} \cong$ 210 K			3.6±0.1		5.5×10^{11}			3TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-3TE-4-1×1-TO66- wAl$_2$O$_3$-36									3TE-TO66	-
	PVI-4TE-4-1×1-TO8- wAl$_2$O$_3$-36	4TE $T_{chip} \cong$ 198 K			3.6±0.15		6.0×10^{11}			4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-4TE-4-1×1-TO66- wAl$_2$O$_3$-36									4TE-TO66	-

*) Only for biased detectors

PV-5 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors

FEATURES

- Spectral range: 2.0 to 5.6 µm
- Back-side illuminated
- No minimum order quantity required

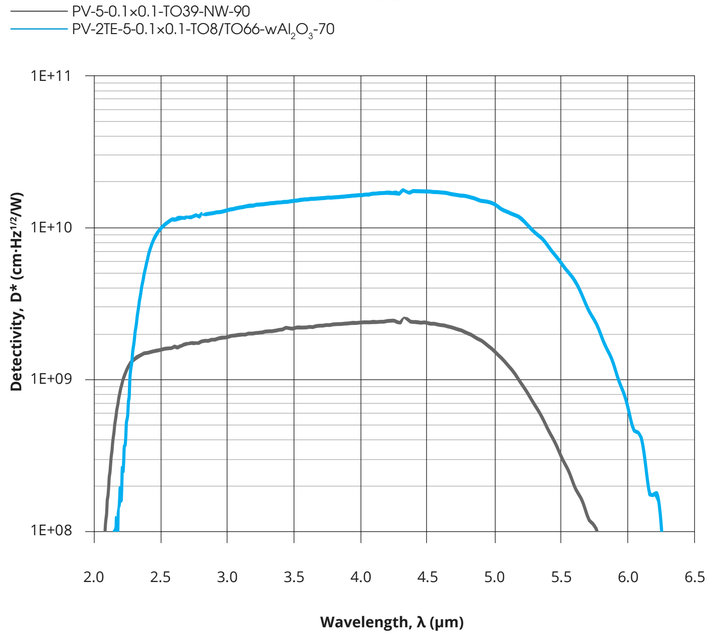
RELATED PRODUCTS

- **LabM-I-5** detection module
- **PVA-5-SMD** RoHS-compliant detector series
- **PVIA-5-1×1-TO39-NW-36** RoHS-compliant detector
- **PVMA-1TE-5-1×1-TO39-pSiAR-70** RoHS-compliant detector
- **AM03100-02** RoHS-compliant detection module
- **AMS3140-01** RoHS-compliant detection module

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PV-5 detector series

InGaAs | InAs | InAsSb | HgCdTe

HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, $R_I(\lambda_{peak})$, A/W	Time constant, τ, ns	Package	Recommended amplifier
	PV-5-0.1×0.1-TO39-NW-90	no $T_{chip} \cong T_{amb}$	0.1×0.1	2.0	4.4±0.2	5.4	2.5×10^9	2.0	120	TO39 (3 pin)	SIP-TO39
	PV-2TE-5-0.1x0.1-TO8-wAl$_2$O$_3$-70	2TE $T_{chip} \cong$ 230 K		2.3		5.6	1.7×10^{10}	2.1	80	2TE-TO8	AIP, PIP, MIP SIP-TO8, FIP*)
	PV-2TE-5-0.1x0.1-TO66-wAl$_2$O$_3$-70									2TE-TO66	-

*) Only for biased detectors

PVI-5 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

FEATURES

- Spectral range: 2.7 to 5.6 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required
- Detector **PVI-5-1×1-TO39-NW-36** is a **Selected product**

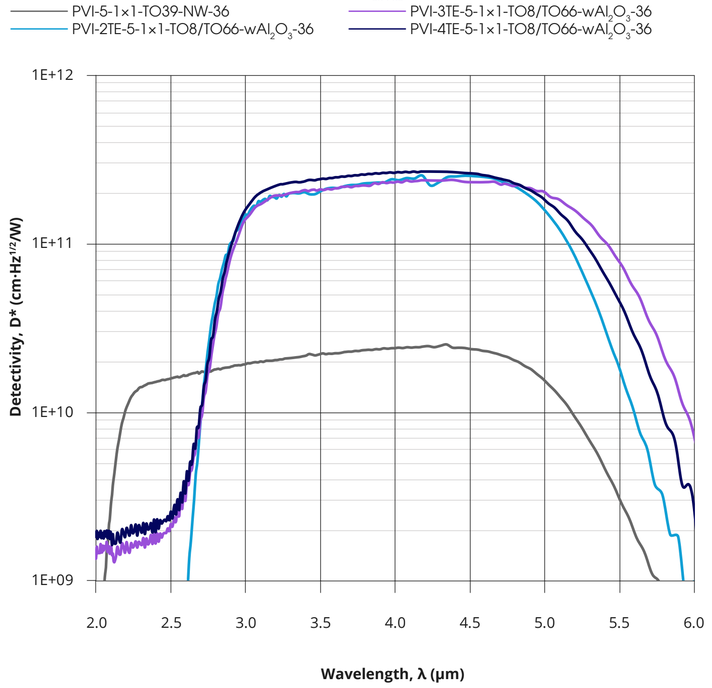
RELATED PRODUCTS

- **LabM-I-5** detection module
- **PVA-5-SMD** RoHS-compliant detector series
- **PVIA-5-1×1-TO39-NW-36** RoHS-compliant detector
- **PVMA-1TE-5-1×1-TO39-pSiAR-70** RoHS-compliant detector
- **AM03100-02** RoHS-compliant detection module
- **AMS3140-01** RoHS-compliant detection module

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVI-5 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVI-5-1×1-TO39-NW-36	no $T_{chip} \cong T_{amb}$	1×1	2.0	4.4±0.2	5.4	2.5×10^{10}	2.0	120	TO39 (3 pin)	SIP-TO39
	PVI-2TE-5-1×1-TO8-wAl$_2$O$_3$-36	2TE $T_{chip} \cong$ 230 K		2.7		5.6	1.8×10^{11}	2.1	80	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-2TE-5-1×1-TO66-wAl$_2$O$_3$-36									2TE-TO66	-
	PVI-3TE-5-1×1-TO8-wAl$_2$O$_3$-36	3TE $T_{chip} \cong$ 210 K				5.5	2.3×10^{11}			3TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-3TE-5-1×1-TO66-wAl$_2$O$_3$-36									3TE-TO66	-
	PVI-4TE-5-1×1-TO8-wAl$_2$O$_3$-36	4TE $T_{chip} \cong$ 198 K				5.2	2.5×10^{11}			4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-4TE-5-1×1-TO66-wAl$_2$O$_3$-36									4TE-TO66	-

PC-5 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photoconductive infrared detectors

FEATURES

- Spectral range: over 5.5 µm
- Large active area
- Front-side illuminated
- No minimum order quantity required

RELATED PRODUCTS

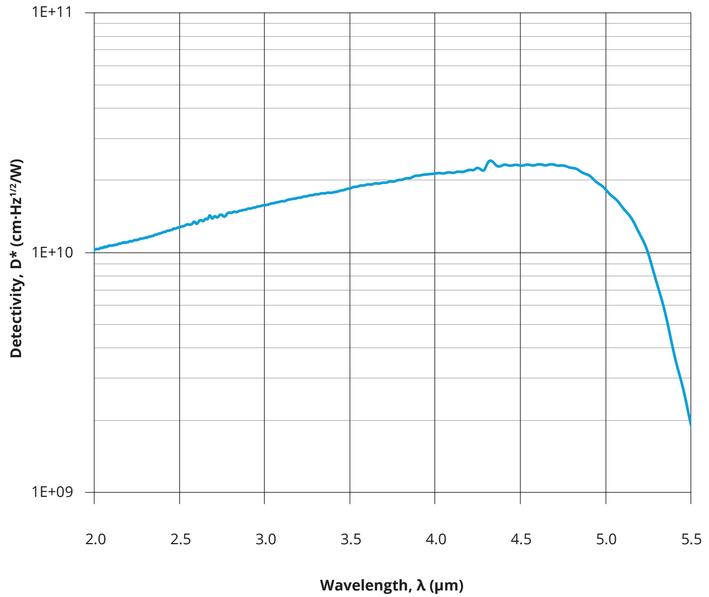
- **LabM-I-5** detection module
- **PVA-5-SMD** RoHS-compliant detector series
- **PVIA-5-1×1-TO39-NW-36** RoHS-compliant detector
- **PVMA-1TE-5-1×1-TO39-pSiAR-70** RoHS-compliant detector
- **AM03100-02** RoHS-compliant detection module
- **AMS3140-01** RoHS-compliant detection module

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PC-2TE-5-1×1-TO8/T66-wAl_2O_3-70



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 2.0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PC-2TE-5-1×1-TO8-wAl_2O_3-70	2TE $T_{chip} \cong$ 230 K	1×1	4.5±0.3	5.5	2.0×10^{10}	4.0	20	2TE-TO8	AIP, PIP, MIP SIP-TO8, FIP*)
	PC-2TE-5-1×1-TO66-wAl_2O_3-70								2TE-TO66	-

*) Only for biased detectors

PCI-5 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors

FEATURES

- Spectral range: over 5.5 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

RELATED PRODUCTS

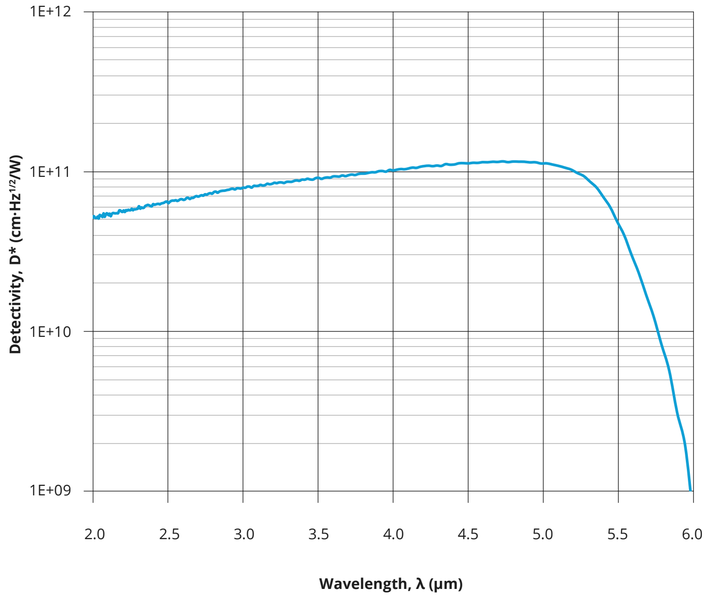
- **LabM-I-5** detection module
- **PVA-5-SMD** RoHS-compliant detector series
- **PVIA-5-1×1-TO39-NW-36** RoHS-compliant detector
- **PVMA-1TE-5-1×1-TO39-pSiAR-70** RoHS-compliant detector
- **AM03100-02** RoHS-compliant detection module
- **AMS3140-01** RoHS-compliant detection module

APPLICATIONS

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PCI-2TE-5-1×1-TO8/T66-wAl_2O_3-36



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0.5 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PCI-2TE-5-1×1-TO8-wAl_2O_3-36	2TE $T_{chip} \cong$ 230 K	1×1	4.6±0.3	5.5	4.0×10^{10}	90	20	2TE-TO8	AIP, PIP, MIP SIP-TO8, FIP*)
	PCI-2TE-5-1×1-TO66-wAl_2O_3-36								2TE-TO66	-

*) Only for biased detectors

PV-6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors

FEATURES

- Spectral range: 2.6 to 6.8 µm
- Back-side illuminated
- No minimum order quantity required

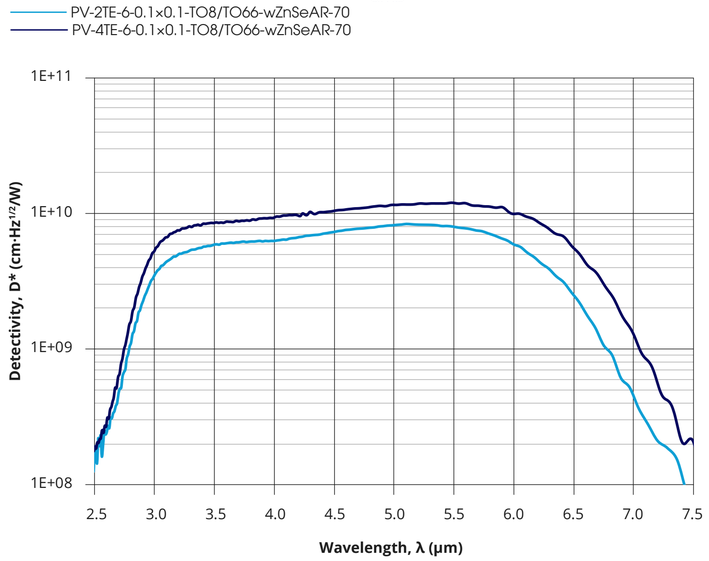
RELATED PRODUCTS

- **LabM-I-6-01** detection module
- **PVMA-1TE-6-1×1-TO39-pSiAR-70** RoHS-compliant detector
- **AMS6140-01** RoHS-compliant detection module

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x, SO_x, HNO_3
- Exhaust gas denitrification
- Combustion process control
- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Heat-seeking, thermal signature detection
- Non-destructive material testing
- Biochemical analysis
- Laser calibration

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PV-6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PV-2TE-6-0.1×0.1-TO8-wZnSeAR-70	2TE T_{chip} ≅ 230 K	0.1×0.1	2.6	5.2±0.2	6.8	8.0×10^9	2.5	50	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PV-2TE-6-0.1×0.1-TO66-wZnSeAR-70									2TE-TO66	-
	PV-4TE-6-0.1×0.1-TO8-wZnSeAR-70	4TE T_{chip} ≅ 198 K			5.4±0.2		1.2×10^{10}			4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PV-4TE-6-0.1×0.1-TO66-wZnSeAR-70									4TE-TO66	-

*) Only for biased detectors

PVI-6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

FEATURES

- Spectral range: 2.5 to 7.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required
- Detector **PVI-2TE-6-1×1-TO66-wZnSeAR-36** is a **Selected product**

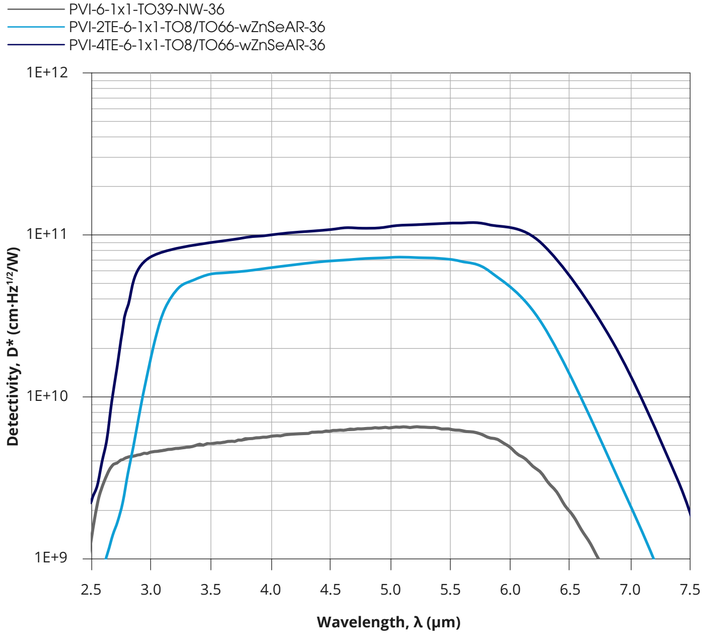
RELATED PRODUCTS

- **LabM-I-6-01** detection module
- **PVMA-1TE-6-1×1-TO39-pSiAR-70** RoHS-compliant detector
- **AMS6140-01** RoHS-compliant detection module

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x, SO_x, HNO_3
- Exhaust gas denitrification
- Combustion process control
- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Heat-seeking, thermal signature detection
- Non-destructive material testing
- Biochemical analysis
- Laser calibration

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVI-6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVI-6-1×1-TO39-NW-36	no $T_{chip} \cong T_{amb}$	1×1	2.5	5.1±0.2	6.5	8.0×10^9	2.0	80	TO39 (3 pin)	SIP-TO39
	PVI-2TE-6-1×1-TO8-wZnSeAR-36	2TE $T_{chip} \cong$ 230 K		2.6	5.2±0.2	7.0	8.0×10^{10}	2.5	50	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-2TE-6-1×1-TO66-wZnSeAR-36									2TE-TO66	-
	PVI-4TE-6-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong$ 198 K			5.4±0.2		1.2×10^{11}			4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-4TE-6-1×1-TO66-wZnSeAR-36									4TE-TO66	-

*) Only for biased detectors

PV-8 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photovoltaic infrared detectors

FEATURES

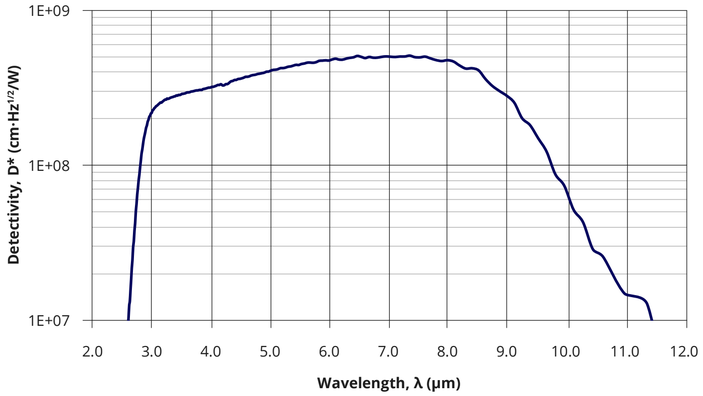
- Spectral range: 3.0 to 10.0 µm
- Back-side illuminated
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, H_2S, NO_2, SO_x
- FTIR spectroscopy

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PV-4TE-8-0.1×0.1-TO8/TO66-wZnSeAR-70



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PV-4TE-8-0.1×0.1-TO8-wZnSeAR-70	4TE $T_{chip} \cong$ 197 K	0.1×0.1	3.0	6.5±1.0	10.0	5.0×10^8	1.9	45	4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PV-4TE-8-0.1×0.1-TO66-wZnSeAR-70									4TE-TO66	-

*) Only for biased detectors

PVI-8 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic optically immersed infrared detectors

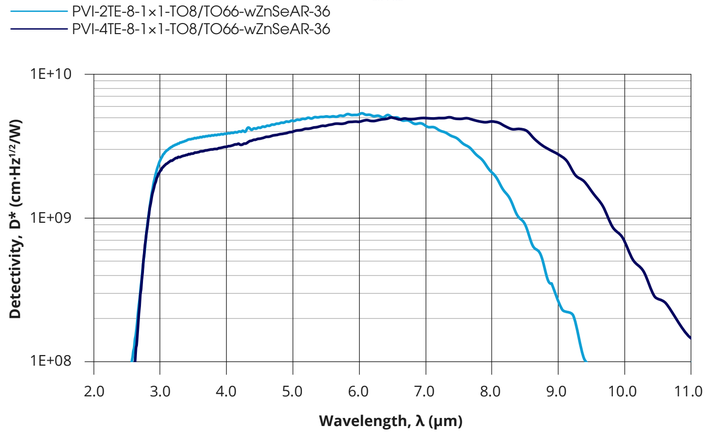
FEATURES

- Spectral range: 3.0 to 10.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, H_2S, NO_2, SO_x
- FTIR spectroscopy

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVI-2TE-8-1×1-TO8-wZnSeAR-36	2TE T_{chip} ≅ 230 K	1×1	3.0	6.0±1.0	8.9	4.0×10^9	1.6	45	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-2TE-8-1×1-TO66-wZnSeAR-36									2TE-TO66	-
	PVI-4TE-8-1×1-TO8-wZnSeAR-36	4TE T_{chip} ≅ 197 K			6.5±1.0	10.0	5.0×10^9	3.0		4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-4TE-8-1×1-TO66-wZnSeAR-36									4TE-TO66	-

*) Only for biased detectors

PVM-8 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photovoltaic multi-junction infrared detectors

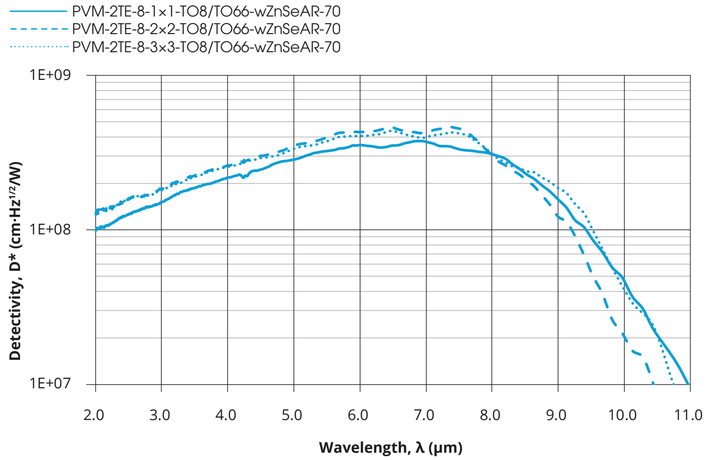
FEATURES

- Spectral range: 2.0 to 10.0 µm
- Back-side illuminated
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, H_2S, NO_2, SO_x
- FTIR spectroscopy

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVM-8 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photovoltaic multi-junction infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVM-2TE-8-1×1-TO8-wZnSeAR-70	2TE T_{chip} ≅ 230 K	1×1	2.0	7.0±1.0	10.0	4.0×10^8	0.02	4	2TE-TO8	AIP, PIP, MIP, SIP-TO8
	PVM-2TE-8-1×1-TO66-wZnSeAR-70									2TE-TO66	-
	PVM-2TE-8-2×2-TO8-wZnSeAR-70		2×2					0.01		2TE-TO8	AIP, PIP, MIP, SIP-TO8
	PVM-2TE-8-2×2-TO66-wZnSeAR-70									2TE-TO66	-
	PVM-2TE-8-3×3-TO8-wZnSeAR-70		3×3					0.007		2TE-TO8	AIP, PIP, MIP, SIP-TO8
	PVM-2TE-8-3×3-TO66-wZnSeAR-70									2TE-TO66	-

PVMI-8 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photovoltaic multi-junction optically immersed infrared detectors

FEATURES

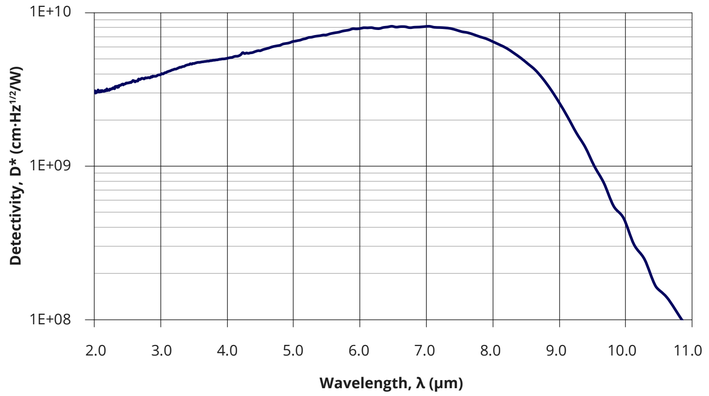
- Spectral range: 2.0 to 9.8 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: CH_4, H_2S, NO_2, SO_x
- FTIR spectroscopy

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PVMI-4TE-8-1×1-TO8/TO66-wZnSeAR-36



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVMI-4TE-8-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong 197$ K	1×1	2.0	7.0±1.0	9.8	8.0×10^9	0.4	4	4TE-TO8	AIP, PIP, MIP, SIP-TO8
	PVMI-4TE-8-1×1-TO66-wZnSeAR-36									4TE-TO66	-

PC-9 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photoconductive infrared detectors

FEATURES

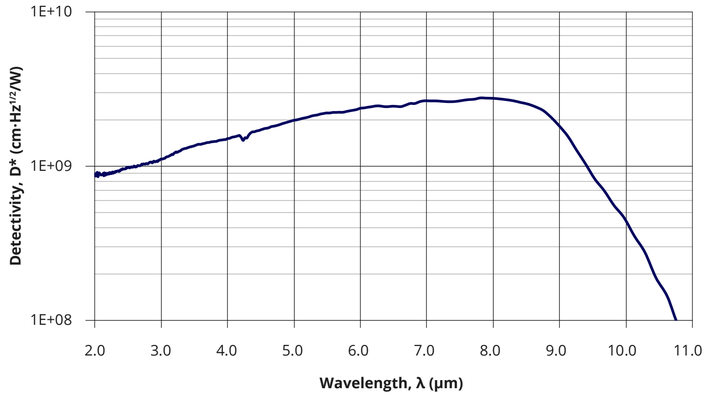
- Spectral range: over 10.3 µm
- Front-side illuminated
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3
- FTIR spectroscopy

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PC-4TE-9-1×1-TO8/TO66-wZnSeAR-70



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0.3 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PC-4TE-9-1×1-TO8-wZnSeAR-70	4TE $T_{chip} \cong$ 200 K	1×1	7.6±0.5	10.3	1.9×10^9	0.6	80	4TE-TO8	AIP, PIP, MIP SIP-TO8
	PC-4TE-9-1×1-TO66-wZnSeAR-70								4TE-TO66	-

PCI-9 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors

FEATURES

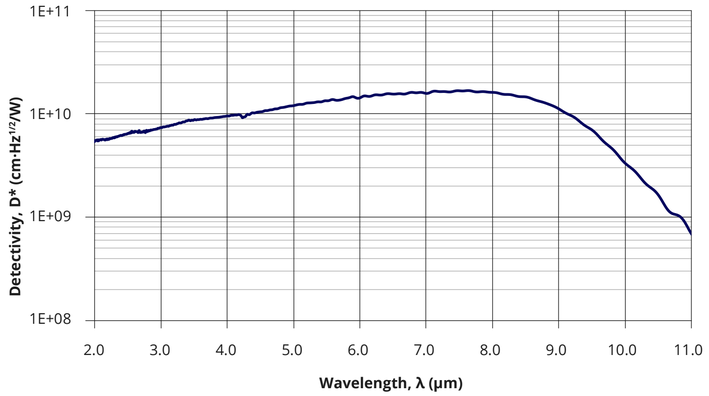
- Spectral range: over 10.4 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3
- FTIR spectroscopy

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PCI-4TE-9-1x1-TO8/TO66-wZnSeAR-36



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0.3 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PCI-4TE-9-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong$ 200 K	1×1	7.6±0.5	10.4	1.25×10^{10}	4.0	80	4TE-TO8	AIP, PIP, MIP SIP-TO8
	PCI-4TE-9-1×1-TO66-wZnSeAR-36								4TE-TO66	-

PVI-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photovoltaic optically immersed infrared detectors

FEATURES

- Spectral range: 3.0 to 12.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

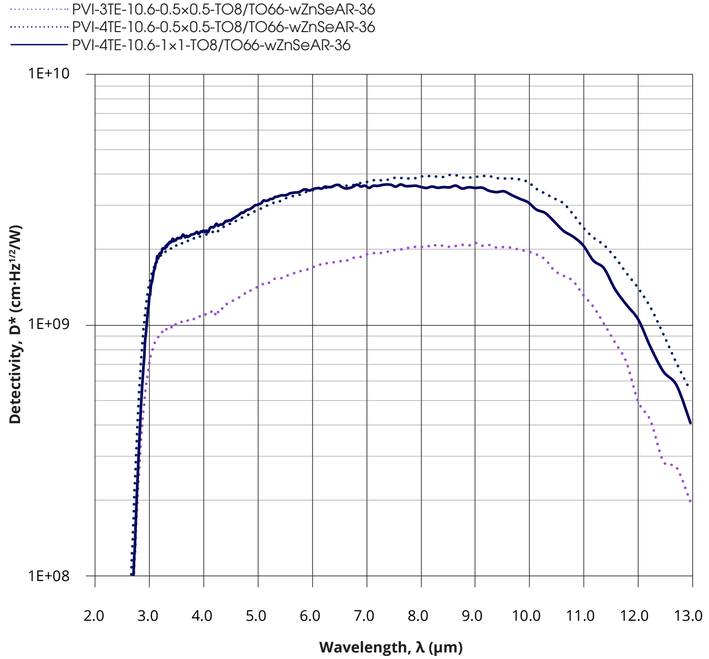
RELATED PRODUCTS

- **LabM-I-10.6** detection module
- **UM-I-10.6** detection module
- **microM-10.6** detection module
- **PVIA-10-1×1-TO39-NW-36** RoHS-compliant detector
- **AMIS8140-01** RoHS-compliant detection module
- **PVIA-4TE-10-1×1-TO8-wZnSeAR-36** RoHS-compliant detector

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVI-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photovoltaic optically immersed infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVI-3TE-10.6-0.5×0.5-TO8-wZnSeAR-36	3TE T_{chip} ≅ 210K	0.5×0.5	3.0	8.0±1.0	12.0	2.0×10^9	0.9	10	3TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-3TE-10.6-0.5×0.5-TO66-wZnSeAR-36									3TE-TO66	-
	PVI-4TE-10.6-0.5×0.5-TO8-wZnSeAR-36	4TE T_{chip} ≅ 198K					4.0×10^9	1.0	25	4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-4TE-10.6-0.5×0.5-TO66-wZnSeAR-36									4TE-TO66	-
	PVI-4TE-10.6-1×1-TO8-wZnSeAR-36		1×1							4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVI-4TE-10.6-1×1-TO66-wZnSeAR-36									4TE-TO66	-

*) Only for biased detectors

PVM-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic multi-junction infrared detectors

FEATURES

- Spectral range: 2.0 to 13.0 µm
- Back-side illuminated
- No minimum order quantity required
- Detector **PVM-10.6-1×1-TO39-NW-90** is a **Selected product**

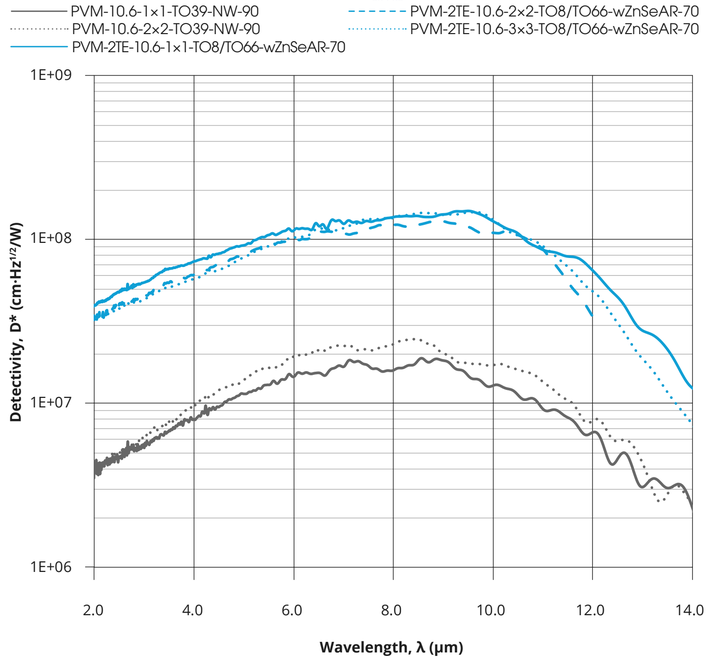
RELATED PRODUCTS

- **LabM-I-10.6** detection module
- **UM-I-10.6** detection module
- **microM-10.6** detection module
- **PVIA-10-1×1-TO39-NW-36** RoHS-compliant detector
- **AMIS8140-01** RoHS-compliant detection module
- **PVIA-4TE-10-1×1-TO8-wZnSeAR-36** RoHS-compliant detector

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVM-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic multi-junction infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVM-10.6-1×1-TO39-NW-90	no $T_{chip} \cong T_{amb}$	1×1	2.0	8.5±1.0	12.0	2.0×10^7	0.004	1.5	TO39 (3 pin)	SIP-TO39
	PVM-10.6-2×2-TO39-NW-90		2×2					0.002			
	PVM-2TE-10.6-1×1-TO8-wZnSeAR-70	2TE $T_{chip} \cong$ 230 K	1×1		9.0±1.0	13.0	1.5×10^8	0.015	4	2TE-TO8	AIP, PIP, MIP SIP-TO8
	PVM-2TE-10.6-1×1-TO66-wZnSeAR-70									2TE-TO66	-
	PVM-2TE-10.6-2×2-TO8-wZnSeAR-70		2×2					0.007		2TE-TO8	AIP, PIP, MIP SIP-TO8
	PVM-2TE-10.6-2×2-TO66-wZnSeAR-70									2TE-TO66	-
	PVM-2TE-10.6-3×3-TO8-wZnSeAR-70		3×3					0.0045		2TE-TO8	AIP, PIP, MIP SIP-TO8
	PVM-2TE-10.6-3×3-TO66-wZnSeAR-70									2TE-TO66	-

PVMI-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic multi-junction optically immersed infrared detectors

FEATURES

- Spectral range: 2.0 to 13.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

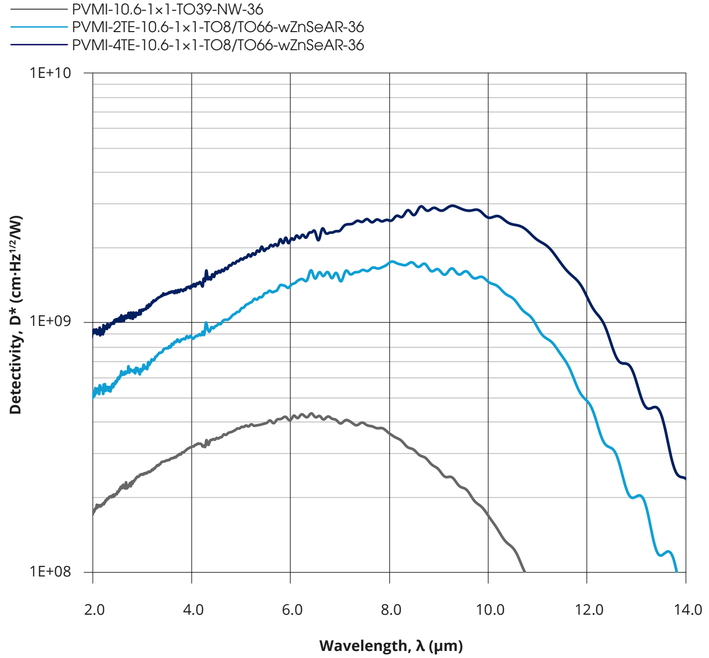
RELATED PRODUCTS

- **LabM-I-10.6** detection module
- **UM-I-10.6** detection module
- **microM-10.6** detection module
- **PVIA-10-1×1-TO39-NW-36** RoHS-compliant detector
- **AMIS8140-01** RoHS-compliant detection module
- **PVIA-4TE-10-1×1-TO8-wZnSeAR-36** RoHS-compliant detector

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PVMI-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature and thermoelectrically cooled photovoltaic multi-junction optically immersed infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PVMI-10.6-1×1-TO39-NW-36	no $T_{chip} \cong T_{amb}$	1×1	2.0	8.5±1.0	12.0	2.0×10^8	0.02	1.5	TO39 (3 pin)	SIP-TO39
	PVMI-2TE-10.6-1×1-TO8-wZnSeAR-36	2TE $T_{chip} \cong$ 230K			8.0±1.0	13.0	2.0×10^9	0.2	3	2TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVMI-2TE-10.6-1×1-TO66-wZnSeAR-36									2TE-TO66	-
	PVMI-4TE-10.6-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong$ 197K			9.0±1.0	12.0	3.0×10^9	0.36		4TE-TO8	AIP, PIP, MIP, SIP-TO8, FIP*)
	PVMI-4TE-10.6-1x1-TO66-wZnSeAR-36									2TE-TO66	-

*) Only for biased detectors

PEM-10.6-1×1-PEM-SMA-wZnSeAR-48 detector

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature photoelectromagnetic infrared detector

FEATURES

- Spectral range: 2.0 to 12.0 µm
- Back-side illuminated
- No minimum order quantity required

RELATED PRODUCTS

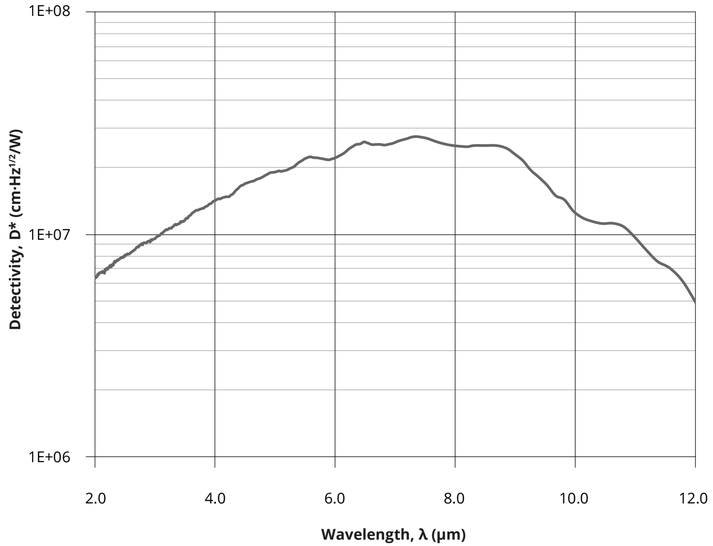
- **LabM-I-10.6** detection module
- **UM-I-10.6** detection module
- **microM-10.6** detection module
- **PVIA-10-1×1-TO39-NW-36** RoHS-compliant detector
- **AMIS8140-01** RoHS-compliant detection module
- **PVIA-4TE-10-1×1-TO8-wZnSeAR-36** RoHS-compliant detector

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

——— PEM-10.6-1×1-PEM-SMA-wZnSeAR-48



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_I (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PEM-10.6-1×1-PEM-SMA-wZnSeAR-48	no $T_{chip} \cong T_{amb}$	1×1	2.0	8.5±1.0	12.0	2.0×10^7	0.004	1.2	PEM-SMA	-

PVMQ-10.6-1×1-TO8-NW-70 detector

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe room temperature photovoltaic multi-junction quadrant infrared detector

FEATURES

- Spectral range: 2.0 to 12.0 µm
- 4 elements (2 rows, 2 columns)
- Back-side illuminated
- No minimum order quantity required

APPLICATIONS

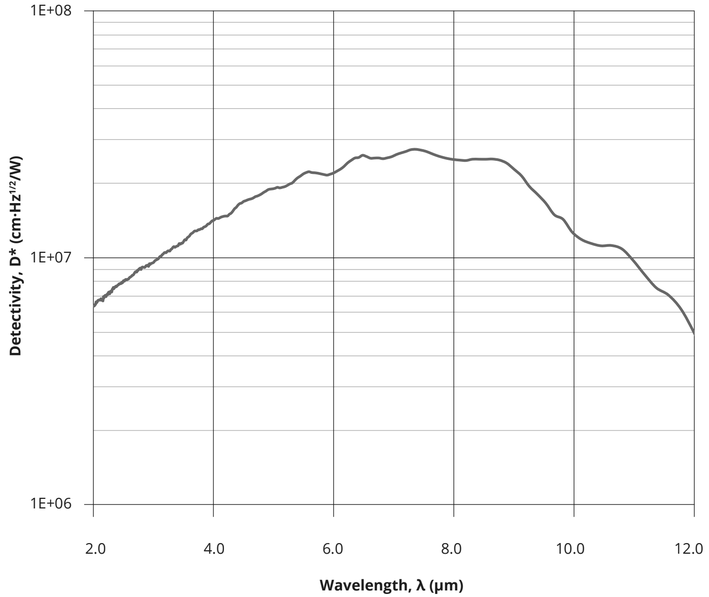
- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

RELATED PRODUCTS

- **LabM-I-10.6** detection module
- **UM-I-10.6** detection module
- **microM-10.6** detection module
- **PVIA-10-1×1-TO39-NW-36** RoHS-compliant detector
- **AMIS8140-01** RoHS-compliant detection module
- **PVIA-4TE-10-1×1-TO8-wZnSeAR-36** RoHS-compliant detector

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PVMQ-10.6-1×1-TO8-NW-70



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0 V)

Image	Detector symbol	Cooling	Active area of single element, A, mm×mm	Active area pitch, mm	Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%), µm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package
	PVMQ-10.6-1×1-TO8-NW-70	no $T_{chip} \cong T_{amb}$	1×1	1.15 (horizontally) 1.20 (vertically)	2.0	8.5±1.0	12.0	2.0×10^7	0.004	1.5	TO8

PC-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled photoconductive infrared detectors

FEATURES

- Spectral range: over 10.3 µm
- Front-side illuminated
- No minimum order quantity required

RELATED PRODUCTS

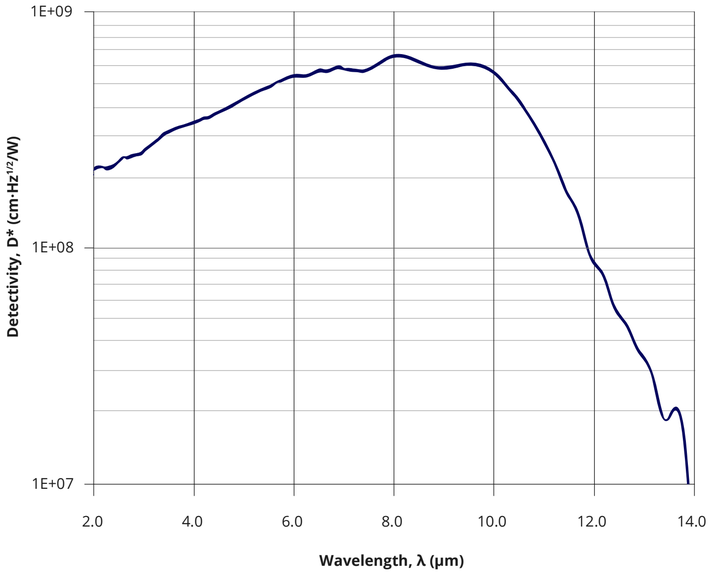
- **LabM-I-10.6** detection module
- **UM-I-10.6** detection module
- **microM-10.6** detection module
- **PVIA-10-1×1-TO39-NW-36** RoHS-compliant detector
- **AMIS8140-01** RoHS-compliant detection module
- **PVIA-4TE-10-1×1-TO8-wZnSeAR-36** RoHS-compliant detector

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PC-4TE-10.6-1×1-TO8/T66-wZnSeAR-70



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0.4 V)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PC-4TE-10.6-1×1-TO8-wZnSeAR-70	4TE $T_{chip} \cong$ 200 K	1×1	8.5±0.6	13.0	6.5×10^8	0.06	30	4TE-TO8	AIP, PIP, MIP SIP-TO8
	PC-4TE-10.6-1×1-TO66-wZnSeAR-70								4TE-TO66	-

PCI-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors

FEATURES

- Spectral range: over 12.8 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

RELATED PRODUCTS

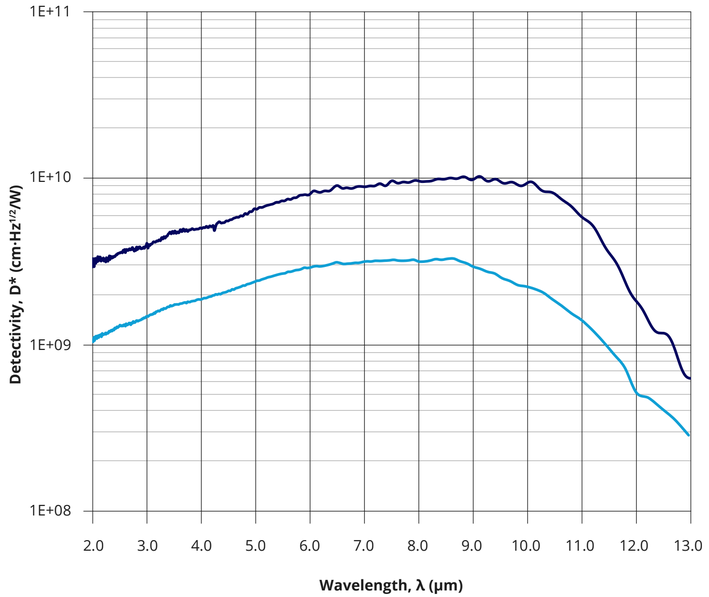
- **LabM-I-10.6** detection module
- **UM-I-10.6** detection module
- **microM-10.6** detection module
- **PVIA-10-1×1-TO39-NW-36** RoHS-compliant detector
- **AMIS8140-01** RoHS-compliant detection module
- **PVIA-4TE-10-1×1-TO8-wZnSeAR-36** RoHS-compliant detector

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PCI-2TE-10.6-1×1-TO8/TO66-wZnSeAR-36
PCI-4TE-10.6-1×1-TO8/TO66-wZnSeAR-36



PCI-10.6 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors

PARAMETERS (Typ., T_{amb} = 293 K)

Image	Detector symbol	Cooling	Optical area, A_O, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PCI-2TE-10.6-1×1-TO8-wZnSeAR-36	2TE T_{chip} ≅ 230K	1×1	8.2±0.8	12.8	1.0×10^9	0.6	10	2TE-TO8	AIP, PIP, MIP SIP-TO8
	PCI-2TE-10.6-1×1-TO66-wZnSeAR-36								2TE-TO66	-
	PCI-4TE-10.6-1×1-TO8-wZnSeAR-36	4TE T_{chip} ≅ 200K		9.5±0.6	12.5	3.0×10^9	0.7	30	4TE-TO8	AIP, PIP, MIP SIP-TO8
	PCI-4TE-10.6-1×1-TO66-wZnSeAR-36								4TE-TO66	-

PCI-12 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors

FEATURES

- Spectral range: over 14.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required
- Detector **PCI-3TE-12-1×1-TO8-wZnSeAR-36** is a **Selected product**

APPLICATIONS

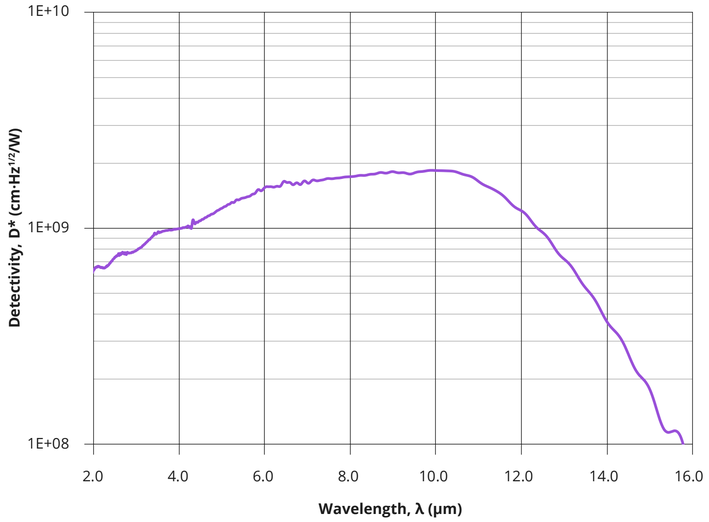
- FTIR spectroscopy
- Gas detection, monitoring and analysis: C_2H_6, NH_3
- Laser measurements: power monitoring and control, beam profiling and positioning, calibration

RELATED PRODUCT

- **SM-I-12** detection module

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PCI-3TE-12-1×1-TO8/T66-wZnSeAR-36



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0.9 V)

Image	Detector symbol	Cooling	Optical area, A_O, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PCI-3TE-12-1×1-TO8-wZnSeAR-36	3TE $T_{chip} \cong$ 210K	1×1	10.0±0.5	14.0	1.6×10^9	1.0	5	3TE-TO8	AIP, PIP, MIP SIP-TO8
	PCI-3TE-12-1×1-TO66-wZnSeAR-36								3TE-TO66	-

PCI-13 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors

FEATURES

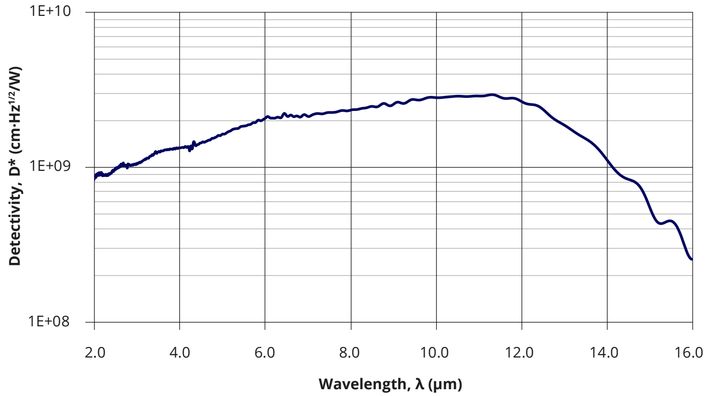
- Spectral range: over 14.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- FTIR spectroscopy
- Gas detection, monitoring and analysis: C_2H_6
- Toxic gas detection
- Gas leak detection

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PCI-4TE-13-1×1-TO8/TO66-wZnSeAR-36



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0.8 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PCI-4TE-13-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong$ 200K	1×1	10.4±0.6	14.0	2.4×10^9	0.5	6	4TE-TO8	AIP, PIP, MIP SIP-TO8
	PCI-4TE-13-1×1-TO66-wZnSeAR-36								4TE-TO66	-

PCI-14 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe thermoelectrically cooled optically immersed photoconductive infrared detectors

FEATURES

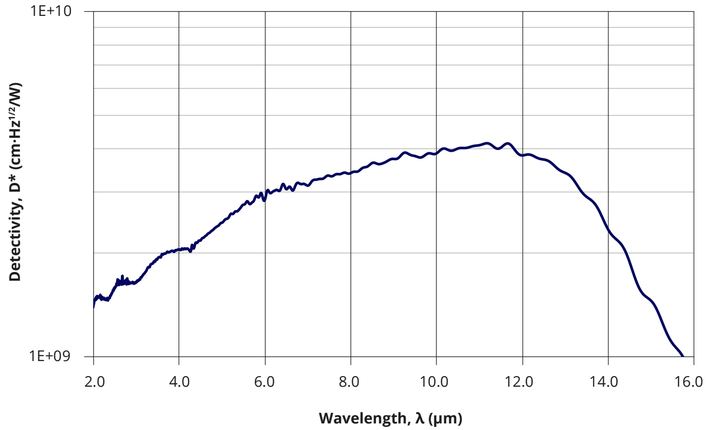
- Spectral range: over 15.0 µm
- Back-side illuminated
- Unique immersion lens technology applied
- No minimum order quantity required

APPLICATIONS

- FTIR spectroscopy
- Gas detection, monitoring and analysis: CH_3Cl, C_2H_2
- Toxic gas detection

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)

PCI-4TE-14-1×1-TO8/TO66-wZnSeAR-36



PARAMETERS (Typ., T_{amb} = 293 K, V_b = 0.5 V)

Image	Detector symbol	Cooling	Optical area, A_o, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Current responsivity, R_i (λ_{peak}), A/W	Time constant, τ, ns	Package	Recommended amplifier
	PCI-4TE-14-1×1-TO8-wZnSeAR-36	4TE $T_{chip} \cong$ 200K	1×1	11.2±0.6	15.0	1.7×10^9	0.8	5	4TE-TO8	AIP, PIP, MIP SIP-TO8
	PCI-4TE-14-1×1-TO66-wZnSeAR-36								4TE-TO66	-

PC-LN2 detector series

InGaAs | InAs | InAsSb | **HgCdTe**

HgCdTe photoconductive infrared detectors optimized for operation at 77 K

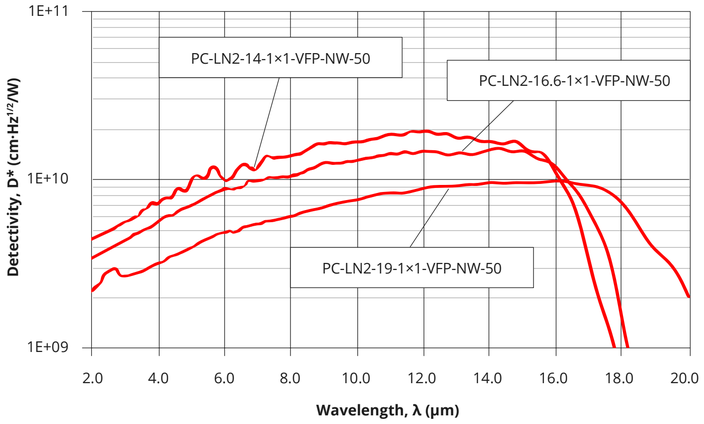
FEATURES

- Active element material optimized for operation at 77 K
- Especially designed flatpack package (without window) for easy self-assembly in LN2 metal dewars
- Possible assembly in LN2 metal dewars (Kadel KR163-FSMA2, Kadel KR-323) by VIGO Photonics (on request)
- Possible assembly of temperature sensor (on request)
- Active area dimension 0.25 mm × 0.25 mm available
- Other acceptance angle values available

APPLICATIONS

- FTIR spectroscopy

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (T_{amb} = 293 K, T_{chip} = 77 K, I_b = 15 mA)

Image	Detector symbol	Cooling	Active area, A, mm×mm	Peak wavelength, λ_{peak}, µm	Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%), µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Volatge responsivity, Rv (λ_{peak}), V/W	Package
	PC-LN2-14-1×1-VFP-NW-50	LN2 (for operation in 77 K)	1×1	12.1	17.4	1.9×10^{10}	500	VFP (flatpack)
	PC-LN2-16.6-1×1-VFP-NW-50			14.3	18.1	1.5×10^{10}		
	PC-LN2-19-1×1-VFP-NW-50			16.0	≥20	1.0×10^{10}	170	

AM0 detection module

IInAsSb room temperature infrared detection module with an integrated differential amplifier

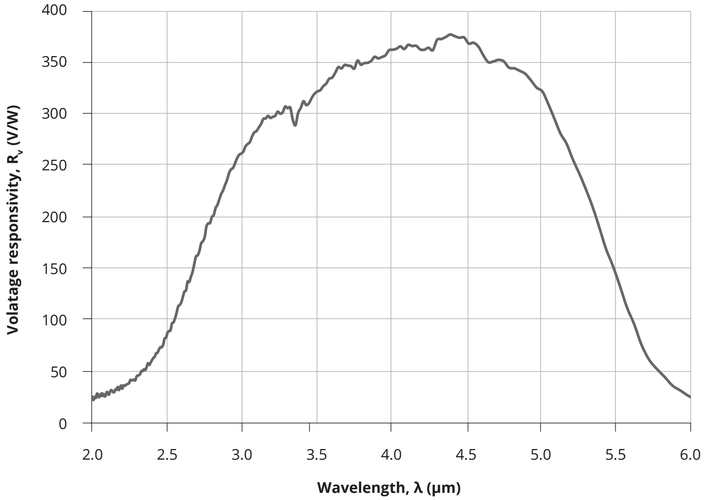
FEATURES

- RoHS-compliant III-V material
- Spectral range: 1.7 to 5.9 µm
- Active area: 1 mm × 1 mm
- Bandwidth: DC up to 3.0 MHz
- Single, low-voltage power supply: 3.0 V
- Differential output
- Small dimensions: 10 mm × 10 mm
- Low weight: 0.3 g

APPLICATIONS

- Gas detectors with MEMS, LED, or laser sources
- Temperature sensors
- Embedded systems
- Portable devices

SPECTRAL RESPONSE (Typ., T_{amb} = 20°C)



PARAMETERS (Typ., T_{amb} = 20°C, R_{load} = 1 MΩ)

Image	Detection module symbol	Cooling	Active area, A, mm×mm	Spectral range, µm	Peak wavelength, λ_{peak}, µm	Detectivity, D* (λ_{peak}, 20kHz), cm·Hz$^{1/2}$/W	Voltage responsivity, R_v (λ_{peak}) V/W	-3dB bandwidth, MHz
	AM03100-02	no $T_{chip} \cong T_{amb}$	1×1	1.7-5.9	4.0	5.0×10^8	260	DC-3.0

AMS detection module series

InAsSb temperature-stabilized infrared detection module with an integrated amplifier and temperature controller

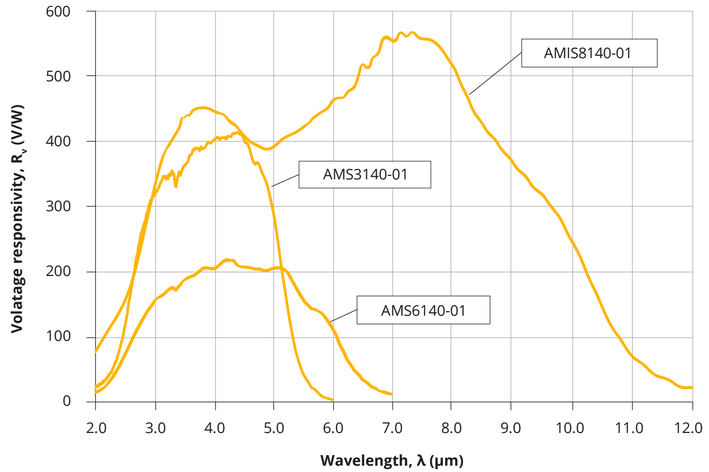
FEATURES

- RoHS-compliant III-V material
- Built-in temperature controller
- Pin configurable chip temperature
- Low 1/f noise corner
- Single, low-voltage power supply: 3.3 V
- Differential output
- Small dimensions: 30 mm × 19 mm × 10 mm
- Evaluation kit and additional accessories available
- Low power consumption
- Unique immersion lens technology applied (AMIS8140-01)

APPLICATIONS

- Gas detectors with MEMS, LED, or laser sources
- Temperature sensors
- Embedded systems
- Portable devices

SPECTRAL RESPONSE (Typ., T_{amb} = 20°C, T_{chip} = -20°C)



PARAMETERS (Typ., T_{amb} = 20°C, R_{load} = 1 MΩ)

Image	Detection module symbol	Cooling	Active area, A, mm×mm	Spectral range, µm	Peak wavelength, λ_{peak}, µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Voltage responsivity, R_v (λ_{peak}) V/W	-3dB bandwidth, MHz
	AMS3140-01	1TE $T_{chip} \cong 253$ K	1×1	2.0-5.5	4.0	2.0×10^9	400	DC – 4.0
	AMS6140-01	1TE $T_{chip} \cong 253$ K		2.2-6.8	4.2	1.0×10^9	220	DC – 2.6
Image	**Detection module symbol**	**Cooling**	**Optical area, A_o, mm×mm**	**Spectral range, µm**	**Peak wavelength, λ_{peak}, µm**	**Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W**	**Voltage responsivity, R_v (λ_{peak}) V/W**	**-3dB bandwidth, MHz**
	AMIS8140-01	1TE $T_{chip} \cong 253$ K	1×1	1.9-11.0	7.4	2.4×10^9	550	DC-3.0

LabM detection module series

Programmable infrared detection modules based on HgCdTe thermoelectrically cooled optically immersed photovoltaic detectors

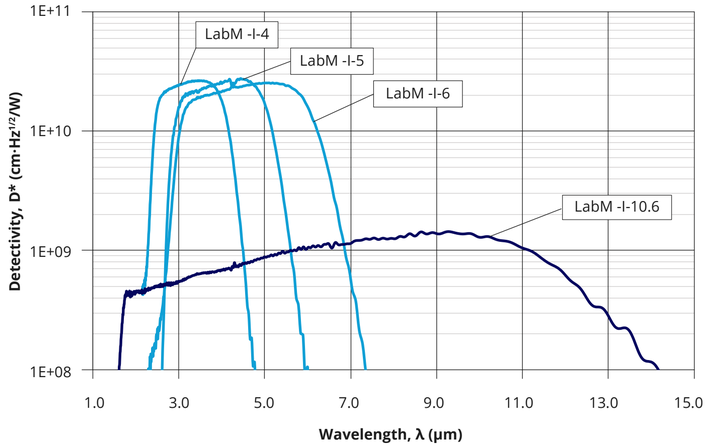
FEATURES

- High performance and reliability
- DC offset compensation
- Built-in fan
- M4 mounting hole
- Compatible with optical accessories
- Versatile and flexible
- Quantity discounted price
- Fast delivery
- No minimum order quantity required

PROGRAMMABLE PARAMETERS

- Gain: in the 40 dB range
- Bandwidth
- Coupling: AC/DC
- Detector temperature
- Output voltage offset

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K)



PARAMETERS (Typ., T_{amb} = 293 K, R_{load} = 50 Ω)

Image	Detection module symbol	Detector symbol	Optical area, A_o, mm×mm	Spectral range, μm	Peak wavelength, λ_{peak}, μm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Voltage responsivity, R_v (λ_{peak}) V/W	-3dB bandwidth, MHz
	LabM-I-4	PVI-2TE-4-1×1-TO8-wAl_2O_3-36	1×1	2.3 – 4.4	3.5	2.7×10^{10}	5.0×10^{4}	DC – 7.5
	LabM-I-5	PVI-2TE-5-1×1-TO8-wAl_2O_3--36		2.7 – 5.6	4.4	2.8×10^{10}	7.9×10^{4}	DC – 18
	LabM-I-6-01	PVI-2TE-6-1×1-TO8-wZnSeAR-36		2.6 – 7.0	5.2	2.5×10^{10}	8.2×10^{4}	DC-4.0
	LabM-I-10.6	PVMI-4TE-10.6-1×1-TO8-wZnSeAR-36		2.0 – 12.0	9.0	1.4×10^{9}	3.2×10^{3}	DC - 120

LabM detection module series

Programmable infrared detection modules based on HgCdTe thermoelectrically cooled optically immersed photovoltaic detectors

APPLICATIONS

LabM-I-4

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO_2
- Breath analysis: C_2H_6, CH_2O, NH_3
- Explosion prevention
- Exhaust gas denitrification
- Emission control (exhaust fumes, greenhouse gases)
- Contactless temperature measurements (metal industry)
- Research and prototyping

APPLICATIONS

LabM-I-5

- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Flame and explosion detection
- Threat warning systems
- Heat-seeking, thermal signature detection
- Dentistry
- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x
- Breath analysis: C_2H_6, CH_2O, NH_3, NO, OCS
- Gas leak detection
- Combustion process control
- Non-destructive material testing
- Research and prototyping

APPLICATIONS

LabM-I-6-01

- Gas detection, monitoring and analysis: CH_4, C_2H_2, CH_2O, HCl, NH_3, SO_2, C_2H_6, CO, CO_2, NO_x, SO_x, HNO_3
- Exhaust gas denitrification
- Combustion process control
- Contactless temperature measurement: railway transport, industrial and laboratory processes monitoring
- Heat-seeking, thermal signature detection
- Non-destructive material testing
- Biochemical analysis
- Laser calibration
- Research and prototyping

APPLICATIONS

LabM-I-10.6

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry
- Glucose sensing
- Research and prototyping

microM-10.6 detection module

Micro-size infrared detection module based on HgCdTe room temperature photovoltaic multi-junction detector

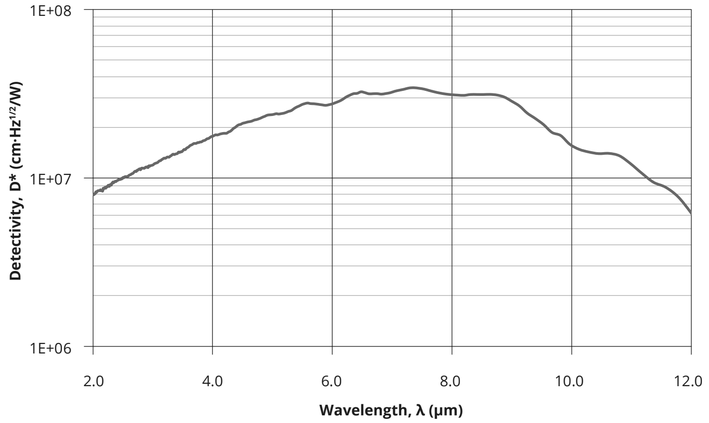
FEATURES

- Very small size
- Convenient to use
- Versatile
- Cost-effective OEM version available
- Quantity discounted price
- Fast delivery

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry

SPECTRAL RESPONSE (Typ., $T_{amb} = T_{chip} = 293K$)



PARAMETERS (Typ., $T_{amb} = T_{chip} = 293$ K, $R_{load} = 50\ \Omega$)

Image	Detection module symbol	Detector symbol	Active area, A, mm×mm	Spectral range, μm	Peak wavelength, λ_{peak}, μm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Voltage responsivity, R_v (λ_{peak}) V/W	-3dB bandwidth, MHz
	microM-10.6	PVM-10.6-1×1-TO39-NW-90	1×1	2.0 – 12.0	8.5	3.4×10^7	2.1×10^2	DC – 10

UM-I-10.6 detection module

“All-in-one” infrared detection module based on HgCdTe thermoelectrically cooled photovoltaic multi-junction optically immersed detector

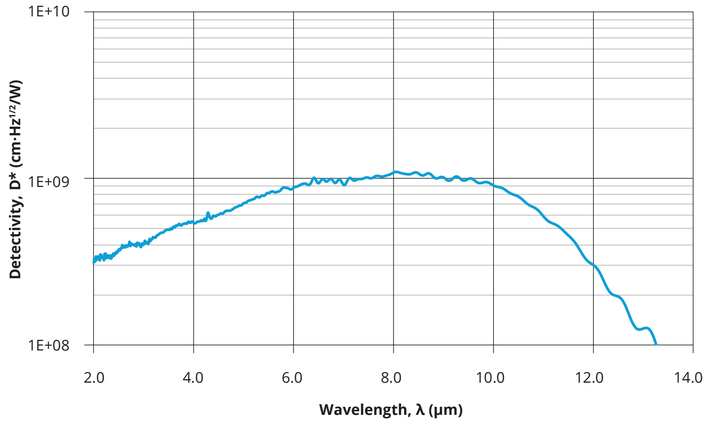
FEATURES

- Integrated TEC controller and fan
- M4 mounting hole
- DC monitor
- Optimized for effective heat dissipation
- Compatible with optical accessories
- Quantity discounted price
- Fast delivery
- No minimum order quantity required

APPLICATIONS

- Gas detection, monitoring and analysis: SO_2, NH_3, SF_6
- CBRN threats detection
- CO_2 laser measurements: power monitoring and control, beam profiling and positioning, calibration
- Free-space optical communication
- FTIR spectroscopy
- Medical bacteria identification
- Dentistry

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K, T_{chip} = 230 K)



PARAMETERS (Typ., T_{amb} = 293 K, T_{chip} = 230 K, R_{load} = 50 Ω)

Image	Detection module symbol	Detector symbol	Optical area, A_o, mm×mm	Spectral range, μm	Peak wavelength, λ_{peak}, μm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Voltage responsivity, R_v (λ_{peak}) V/W	-3dB bandwidth, MHz
	UM-I-10.6	PVMI-2TE-10.6-1×1-TO8-wZnSeAR-36	1×1	2.0 – 13.0	8.0	1.1×10^9	2.5×10^3	DC – 100

UHSM detection module series

Ultra-high-speed infrared detection modules based on HgCdTe thermoelectrically cooled photovoltaic optically immersed either non-optically immersed detectors

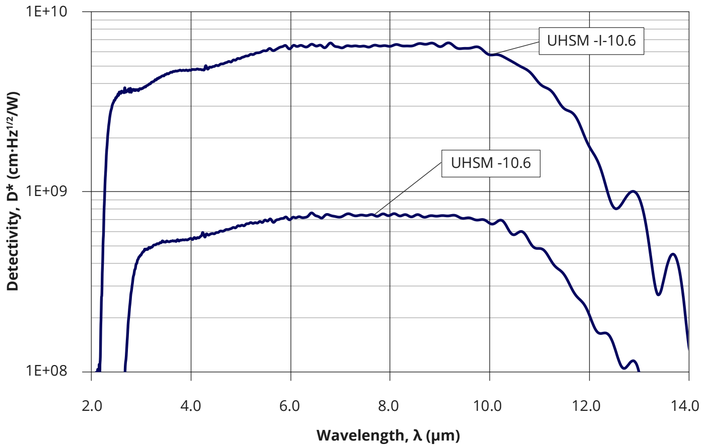
FEATURES

- High performance and reliability
- DC monitor
- Single power supply
- Integrated TEC controller and fan
- M4 mounting hole
- Compatible with optical accessories
- Quantity discounted price
- Fast delivery
- No minimum order quantity required

APPLICATIONS

- Dual-comb spectroscopy
- Heterodyne detection
- Characterization of pulsed laser sources
- LIDARs
- Object scanners
- Time-resolved fluorescence spectroscopy systems
- Free-space optical communication
- Telemetry

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K, T_{chip} = 215 K)



PARAMETERS (Typ., T_{amb} = 293 K, T_{chip} = 215 K, R_{load} = 50 Ω)

Image	Detection module symbol	Optical immersion	Active area, A, mm×mm	Spectral range, µm	Peak wavelength, λ_{peak}, µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Voltage responsivity, R_v (λ_{peak}) V/W	-3dB bandwidth
	UHSM-10.6	no	0.05×0.05	2.0 – 13.0	8.0	7.6×10^{8}	6.4×10^{3}	300 Hz– 1.25 GHz
Image	**Detection module symbol**	**Optical immersion**	**Optical area, A_o, mm×mm**	**Spectral range, µm**	**Peak wavelength, λ_{peak}, µm**	**Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W**	**Voltage responsivity, R_v (λ_{peak}) V/W**	**-3dB bandwidth**
	UHSM-I-10.6	hyperhemisphere	1×1	3.0 – 12.0	8.0	6.7×10^{9}	2.7×10^{3}	300 Hz – 0.9 GHz

SM-I-12 detection module

Small-size infrared detection module based on HgCdTe thermoelectrically cooled optically immersed photoconductive detector

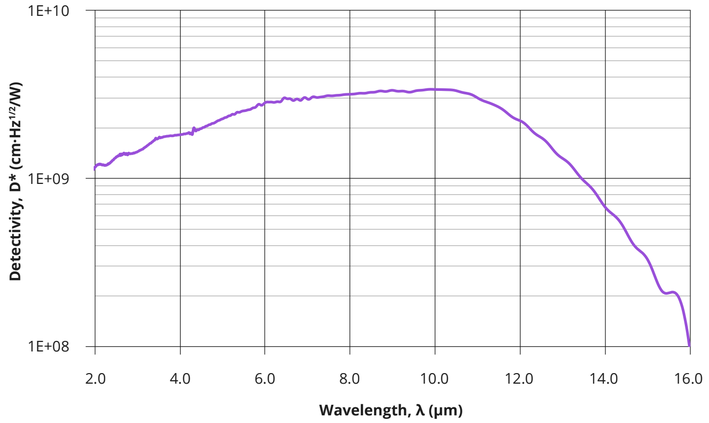
FEATURES

- Adjustable gain
- Small size
- Compatible with optical accessories
- External heatsink required
- External TEC controller required
- Quantity discounted price
- Fast delivery
- No minimum order quantity required

APPLICATIONS

- FTIR spectroscopy
- Gas detection, monitoring and analysis: C_2H_6, NH_3
- Laser measurements: power monitoring and control, beam profiling and positioning, calibration

SPECTRAL RESPONSE (Typ., T_{amb} = 293 K, T_{chip} = 210 K)



PARAMETERS (Typ., T_{amb} = 293 K, T_{chip} = 210 K, R_{load} = 1 MΩ)

Image	Detection module symbol	Detector symbol	Optical area, A_o, mm×mm	Spectral range, µm	Peak wavelength, λ_{peak}, µm	Detectivity, D* (λ_{peak}, 20 kHz), cm·Hz$^{1/2}$/W	Voltage responsivity, R_v (λ_{peak}) V/W	-3dB bandwidth, MHz
	SM-I-12	PCI-3TE-12-1×1-TO8-wZnSeAR-36	1×1	over 14.0	10.0	3.4×10^9	1.5×10^5	10 Hz – 1 MHz

Accessories for the infrared detectors

AMPLIFIERS

Image	Amplifier symbol	Main feature	Low cut-off frequency, f_{lo}, Hz	High cut-off frequency, f_{hi}, Hz	Transimpedance, K_I, V/A	Heatsink, fan	TEC controller	Mounting hole
	AIP	"all-in-one"	DC, 10, 100, 1k, 10k	100k, 1M, 10M, 100M, 250M	up to 200k (fixed)	on board	on board	M4
	PIP	programmable	DC/10	150k/1.5M/20M 1.5M/15M/200M	2.5k – 150k 0.5k – 30k (digitally adjustable)	on board	PTCC-01 obligatory	M4
	MIP	medium-size	DC, 10, 100, 1k, 10k	100k, 1M, 10M, 100M, 250M	up to 200k (fixed)	on board	PTCC-01 needed	M4
	SIP-TO8	small-size (for TE-cooled detectors)	DC, 10, 100, 1k, 10k	100k, 1M, 10M, 100M, 250M	up to 100k (fixed or tunable)	MHS-2 needed	PTCC-01 needed	none
	SIP-TO39	small-size (for uncooled detectors)	DC, 10, 100, 1k, 10k	100k, 1M, 10M, 100M, 250M	up to 100k (fixed or tunable)	not needed	not needed	none
	FIP	fast	1k, 10k	1G	up to 8.5k (fixed)	on board	PTCC-01 needed	M4

MECHANICAL ACCESSORIES

Detector holder

DH-2

AMPLIFIER FOR SMD DETECTORS

Differential amplifier for the SMD detectors

SMD-3.6k-AMP

Accessories for the infrared detection modules

TEC CONTROLLERS

Image	TEC controller symbol	Description
	PTCC-01-OEM (oem)	• TEC controller and power supply without package. • Configurable by PC software available on VIGO website. • Status LED indicator and status/data connector.
	PTCC-01-BAS (basic)	• TEC controller and power supply encapsulated in a small size package. • Configurable by PC software available on VIGO website. • Status LED indicator.
	PTCC-01-ADV (advanced)	• TEC controller and power supply encapsulated in a small size package. • Configurable by built-in function keys or PC software available on VIGO website. • Status LCD indicator.

POWER SUPPLIES

Image	Power supply symbol	Description
	PPS-03-09	• Recommended for IR modules with high cut-off frequency $f_{hi} \leq 1$ MHz. • IR module power supply output voltage: ±9 V. • IR module power supply output current: ±100 mA.
	PPS-03-15	• Recommended for IR modules with high cut-off frequency $f_{hi} \geq 1$ MHz. • IR module power supply output voltage: ±15 V. • IR module power supply output current: ±100 mA.

Accessories for the infrared detection modules

AC ADAPTOR AND CABLES

AC adaptor	Cable for PC connection	Power supply cables	
			
GEM18I05-P1J/GE24I07-PJ/ GE18I09-P1J/SYS1541-2412 Set of sockets (EU, UK, US)	USB: TypeA-MicroB (1.8 m)	KK2-POWER (0.5 m)	JWPF-DB9 (1.8 m)

Power supply, TE cooler, thermistor and fan cables

			
LEMO-DB9 (1.8 m)	AMP2×4-DB9 (1.8 m)	AMP2×4-DUBOX2×5 (1.8 m)	LEMO-DUBOX2×5 (1.8 m)

Signal output cables

			
SMA-SMA (1.0 m)	SMA-BNC (1.0 m)	MMCX-SMA (1.0 m)	MMCX-BNC (1.0 m)

MECHANICAL ACCESSORIES

Module holder	Base mounting system	Heatsink	Optical threaded adapter
			
MH-1	DRB-2	MHS-2	OTA

Accessories for the AM0 and AMS infrared detection module series

ANALOG ACCESSORIES

Amplifier x10, DC to 10 MHz	Amplifier x10, 0.1 to 10 MHz	100 kHz low pass filter	Converter to single-ended SMA output
			
AMS-x10-AMP	AMS-x10-ACAMP	AMS-100k-LPF	AMS-x1-SMA

ELECTRO-MECHANICAL ACCESSORIES

Electrical adapter to a 1.27 mm socket	Flexible extender	Heatsink	AM0 adapter for the AMS accessories
			
AMS-1.27-EA	AMS-90-FLEX	AMS-HS	AM0-AMS-EA

DIGITAL ACCESSORIES

Digital signal processing with 32bit onboard processing	Communication and power supply over a single microUSB cable
	
AMS-DIG-PROC	AMS-DIG-USB

AMPLIFIER FOR SMD DETECTORS

Differential amplifier for the SMD detectors

SMD-3.6k-AMP

Technical information and technical drawings

TECHNICAL INFORMATION

TECHNICAL DRAWINGS

Detectors

Accessories for the detectors

Detection modules

Accessories for the detection modules

Accessories for the AM0 and AMS detection module series

PHOTONICS

VIGO
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VIGOPHOTONICS.COM
INFO@VIGOPHOTONICS.COM