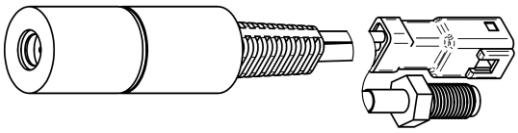
microM-I-5

DATASHEET

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



FEATURES

- Spectral range: 2.0 to 5.6 µm
- RoHS-compliant III-V material
- Frequency bandwidth: DC to 10 MHz
- Very small size
- Convenient to use
- Versatile
- Cost-effective OEM version available
- Quantity discounted price
- 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

INCLUDED ACCESSORIES

- 1 pc of SMA-BNC cable
- 1 pc of JWPF-DB9 cable

DEDICATED ACCESSORIES

- PPS-03-09 power supply
- MH-1 module holder
- DRB-2 base mounting system

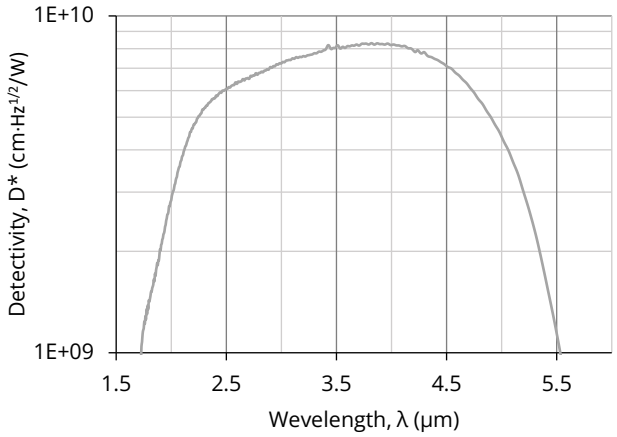
DETECTION MODULE CONFIGURATION

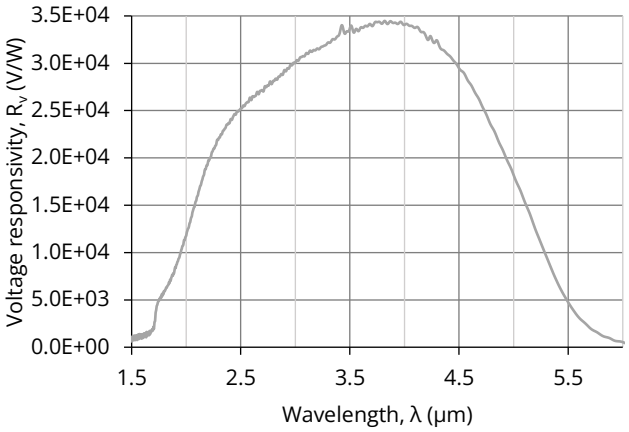
Detection module symbol	microM-I-5
Detector symbol	PVIA-5-1x1-TO39-NW-36
Detector type	photovoltaic
Active element material	epitaxial InAsSb heterostructure
Optical area, A_o	1 mm × 1 mm
Optical immersion	hyperhemisphere
Cooling	no
Temperature sensor	n/a
Acceptance angle, Φ	~36 deg.
Window	no
Amplifier type	micro-size, transimpedance
Signal output plug	SMA
Power supply plug	03T-JWPF-VSLE-S (male)

SPECIFICATION (T_{amb} = T_{chip} = 293 K, R_{load} = 50 Ω, unless otherwise noted)

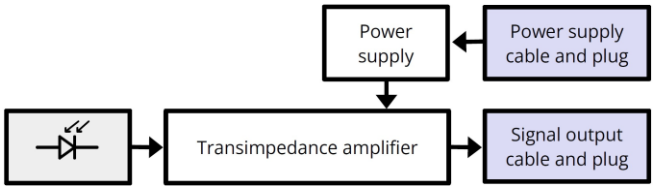
Parameter	Test conditions, remarks	Value			Unit
		Min.	Typ.	Max.	
Active element temperature, T_{chip}	T_{chip} = T_{amb}	-	293	-	K
Cut-on wavelength, $\lambda_{cut\text{-}on}$ (10%)	At 10% of peak responsivity	-	-	2.0	µm
Peak wavelength, λ_{peak}		-	3.9	-	µm
Cut-off wavelength, $\lambda_{cut\text{-}off}$ (10%)	At 10% of peak responsivity	-	5.6	-	µm
Detectivity, D*	At $\lambda = \lambda_{peak}$, f = 100 kHz	-	8.5×10^{9}	-	cm·Hz$^{1/2}$/W
Output noise voltage density, v_n	At f = 100 kHz	-	400	-	nV/Hz$^{1/2}$
Voltage responsivity, R_v	At $\lambda = \lambda_{peak}$	-	3.4×10^{4}	-	V/W
Low cut-off frequency, f_{lo}	DC coupling	-	0	-	Hz
High cut-off frequency, f_{hi}		-	10	-	MHz
Output impedance, R_{out}		-	50	-	Ω
Output voltage swing, V_{out}		-	-	±1	V
Output voltage offset, V_{off}		-	-	±20	mV
Power supply voltage (positive), $+V_{sup}$		-	+9	-	V
Power supply voltage (negative), $-V_{sup}$		-	-9	-	V
Power supply current consumption (positive), $+I_{sup}$		-	-	+50	mA
Power supply current consumption (negative), $-I_{sup}$		-	-	-30	mA
Weight		-	40	-	g

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

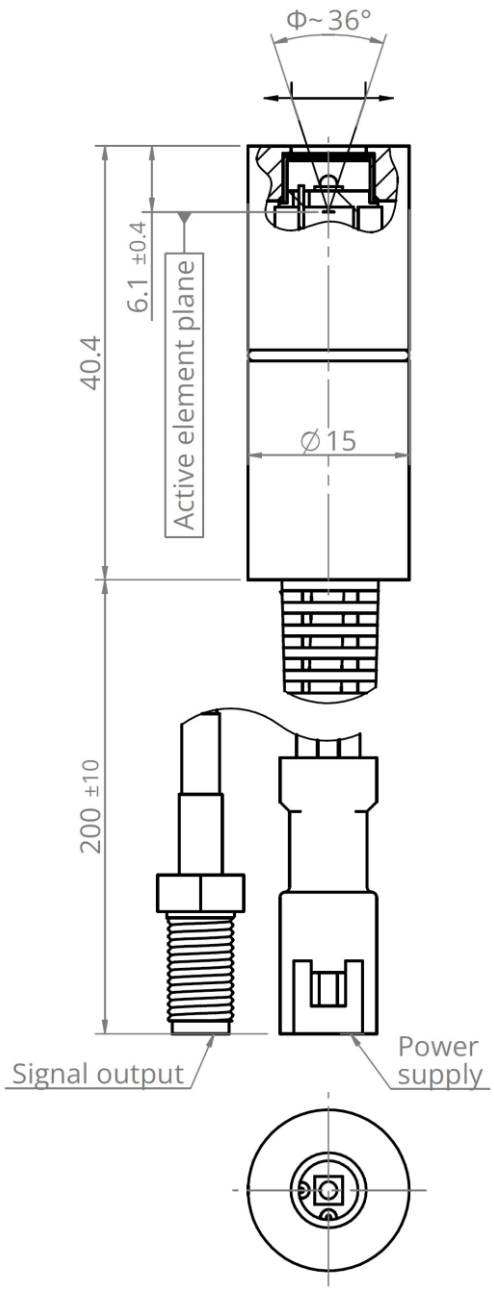




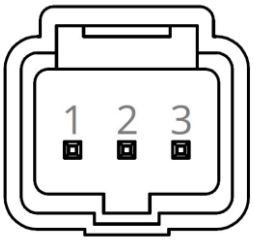
SCHEMATIC DIAGRAM



MECHANICAL LAYOUT AND PINOUT (Unit: mm)



Power supply plug 03T-JWPF-VSLE-S (male)



Pin number	Symbol	Function
1	$-V_{sup}$	Power supply input (–)
2	GND	Ground
3	$+V_{sup}$	Power supply input (+)

ABSOLUTE MAXIMUM RATINGS

Parameter	Test conditions, remarks	Value	Unit
Ambient operating temperature, T_{amb}	Detection module parameters depend on T_{amb}	10 to 30	°C
Storage temperature, T_{stg}		-20 to 50	°C
Humidity	No dew condensation	10 to 90	%
Maximum incident optical power density	Continuous wave (CW) or single pulses >1 µs duration	2.5	W/cm^2
	Single pulses <1 µs duration	10	kW/cm^2

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.