

UM-I-6

$3.0 - 6.7 \ \mu m$ and DC - 1 MHz HgCdTe universal IR detection module with optically immersed photovoltaic detector

UM-I-6 is universal "all-in-one" IR detection module. Thermoelectrically cooled, optically immersed photovoltaic detector, based on HgCdTe heterostructure, is integrated with transimpedance, DC coupled preamplifier, a fan and a thermoelectric cooler controller in a compact housing. 3° wedged zinc selenide anti-reflection coated window prevents unwanted interference effects. UM-I-6 detection module is very convenient and user-friendly device, thus can be easily used in a variety of MWIR applications.



Specification ($T_a = 20^{\circ}C$)

PARAMETERTypical valueOptical parametersCut-on wavelength λ_{aut-on} (10%), µm 3.0 ± 1.0 Peak wavelength λ_{peak} , µm 5.2 ± 0.5 Optimum wavelength λ_{opt} , µm 6.0 Cut-off wavelength $\lambda_{aut-off}$ (10%), µm 6.7 ± 0.3 Detectivity D*(λ_{opt}), cm:Hz ^{1/2} /W $\geq 2.3\times10^{10}$ Detectivity D*(λ_{opt}), cm:Hz ^{1/2} /W $\geq 1.5\times10^{10}$ Output noise density vn(100 kHz), nV/Hz ^{1/2} ≤ 350 Electrical parameters \vee Voltage responsivity Rv(λ_{peak}), V/W $\geq 6.5\times10^4$ Voltage responsivity Rv(λ_{opt}), HzDCHigh cut-off frequency fin, Hz $\geq 1M$ Output impedance Rout, Ω 50 Output voltage offset Vorr, mV $max \pm 20$ Power supply voltage Vsup, V ± 5 Dc monitor (approx. 0 V offset)Voltage responsivity Rv(λ_{opt}), V/W $\geq 6.5\times10^3$ Voltage responsivity Rv(λ_{opt}), V/W $\geq 6.5\times10^3$ Output voltage offset Vorr, mV $max \pm 20$ Power supply voltage Vsup, V ± 5 Dc monitor (approx. 0 V offset)Voltage responsivity Rv(λ_{opt}), V/WVoltage responsivity Rv(λ_{opt}), V/W $\geq 3.6\times10^3$ Low cut-off frequency fin, HzDCHigh cut-off frequency fin, HzDCDc monitor (approx. 0 V offset)Voltage responsivity Rv(λ_{opt}), V/WVoltage responsivity Rv(λ_{opt}), V/W $\geq 3.6\times10^3$ Low cut-off frequency fin, HzDCDifficult cut-off frequency fin, HzDCDifficult cut-off frequency fin, HzDC <th>specification (T_a = 20 C)</th> <th></th>	specification (T _a = 20 C)	
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Voltage responsivity $R_v(\lambda_{peak})$, V/W $\geq 6.5 \times 10^3$ Voltage responsivity $R_v(\lambda_{opt})$, V/W $\geq 3.6 \times 10^3$ Low cut-off frequency f_{lo} , HzDCHigh cut-off frequency f_{hi} , Hz150kOther informationActive element materialepitaxial HgCdTe heterostructureOptical area A_0 , mm×mm1×1Windowwedged zinc selenide AR coated (wZnSeAR)Acceptance angle Φ ~36°Ambient operating temperature T_{a} , °C10 to 30Signal output socketSMADC monitor socketSMAPower supply socketDC 2.5/5.5Mounting holeM4	Power supply voltage V _{sup} , V	+5
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High cut-off frequency f_{hl} , Hz150kOther informationepitaxial HgCdTe heterostructureActive element materialepitaxial HgCdTe heterostructureOptical area Ao, mm×mm1×1Windowwedged zinc selenide AR coated (wZnSeAR)Acceptance angle Φ ~36°Ambient operating temperature Ta, °C10 to 30Signal output socketSMADC monitor socketSMAPower supply socketDC 2.5/5.5Mounting holeM4		≥3.6×10 ³
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Active element materialepitaxial HgCdTe heterostructureOptical area Ao, mm×mm1×1Windowwedged zinc selenide AR coated (wZnSeAR)Acceptance angle Φ~36°Ambient operating temperature Ta, °C10 to 30Signal output socketSMADC monitor socketSMAPower supply socketDC 2.5/5.5Mounting holeM4	High cut-off frequency fhi, Hz	150k
Active element material heterostructure Optical area A ₀ , mm×mm 1×1 Window wedged zinc selenide AR coated (wZnSeAR) Acceptance angle Φ ~36° Ambient operating temperature T _a , °C 10 to 30 Signal output socket SMA DC monitor socket SMA Power supply socket DC 2.5/5.5 Mounting hole M4	Other information	
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Window (wZnSeAR) Acceptance angle Φ ~36° Ambient operating temperature T _a , °C 10 to 30 Signal output socket SMA DC monitor socket SMA Power supply socket DC 2.5/5.5 Mounting hole M4	Optical area A _o , mm×mm	1×1
Acceptance angle Φ ~36° Ambient operating temperature T _a , °C 10 to 30 Signal output socket SMA DC monitor socket SMA Power supply socket DC 2.5/5.5 Mounting hole M4	Window	wedged zinc selenide AR coated
Ambient operating temperature Ta, °C10 to 30Signal output socketSMADC monitor socketSMAPower supply socketDC 2.5/5.5Mounting holeM4	WINDOW	. ,
Signal output socketSMADC monitor socketSMAPower supply socketDC 2.5/5.5Mounting holeM4		
DC monitor socketSMAPower supply socketDC 2.5/5.5Mounting holeM4		
Power supply socketDC 2.5/5.5Mounting holeM4	Signal output socket	SMA
Mounting hole M4	DC monitor socket	SMA
	Power supply socket	DC 2.5/5.5
Fan yes	Mounting hole	M4
	Fan	yes

Features

- Integrated TEC controller and fan
- Single power supply
- DC monitor
- Optimised for effective heat dissipation
- Compatible with optical accessories
- Cost effective OEM version available
- Universal and flexible
- Quantity discounted price
- Fast delivery

Applications

- Gas detection, monitoring and analysis (CO, CO₂, NH₃, NO_x)
- Flue gas denitrification
- Fuel combustion monitoring at power plants and other industrial facilities
- Contactless temperature measurements

*) R_L – load resistance

Mechanical layout, mm



Schematic diagram



Spectral transmission of wZnSeAR window (typical example)



Included accessories

2×SMA-BNC cables + AC adaptor

Dedicated accessories

- **OTA** optical threaded adapter
- DRB-2 base mounting system