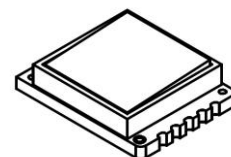
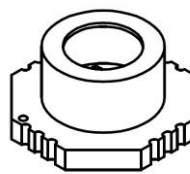


ICI04210-01, ICI04220-01

PRELIMINARY DATASHEET

InAsSb room-temperature infrared detection modules with an integrated ASIC-type amplifier



TO39 cap square-shaped cap

FEATURES

- Spectral range: 1.8 to 12.0 μm
- RoHS-compliant III-V material
- Back-side illuminated
- Unique immersion lens technology applied
- ASIC-type electronics
- Programmable gain
- DC coupling (AC coupling on request)
- Compact, surface-mount type package
- Long-term stability and reliability
- High ambient operating and storage temperature
- Low power consumption
- Possibility of mounting optical filters

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

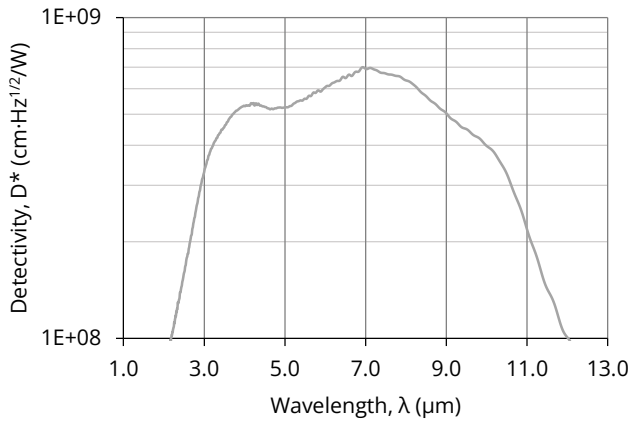
DETECTION MODULE CONFIGURATION

Detection module symbol	Cooling	Temperature sensor	Optical area d, A_o , mm	Optical immersion	Format	Acceptance angle Φ , deg.	Window
ICI04210-01	no	n/a	1×1	no	TO39 cap	~70	wZnSeAR (3 deg. wedged sinc selenide, anti-reflection coating)
ICI04220-01					square-shaped cap	≥140	

SPECIFICATION ($T_{\text{amb}} = 293 \text{ K}$, $R_{\text{load}} = 50 \Omega$)

Parameter	Test conditions, remarks	Value			Unit
		Min.	Typ.	Max.	
Active element temperature, T_{chip}	$T_{\text{chip}} = T_{\text{amb}}$	-	293	-	K
Cut-on wavelength, $\lambda_{\text{cut-off}} (10\%)$	At 10% of peak responsivity	-	1.8	-	μm
Peak wavelength, λ_{peak}		-	7.1	-	μm
Cut-off wavelength, $\lambda_{\text{cut-off}} (10\%)$	At 10% of peak responsivity	-	12.0	-	μm
Detectivity, D^*	At λ_{peak} , $f = 10 \text{ kHz}$	-	7.0×10^8	-	$\text{cm} \cdot \text{Hz}^{1/2} / \text{W}$
Output noise voltage density, v_n	At $f = 10 \text{ kHz}$	-	1.4	-	$\mu\text{V}/\text{Hz}^{1/2}$
Voltage responsivity, R_v	At $\lambda = \lambda_{\text{peak}}$	-	1.1×10^4	-	V/W
Transimpedance, K_i		16	-	640	kV/A
Low cut-off frequency, f_{lo}	DC coupling	-	0	-	Hz
High cut-off frequency, f_{hi}		-	5	-	MHz
Output impedance, R_{out}		-	50	-	Ω
Reference voltage output, V_{ref}		-	1	-	V
Power supply voltage, $+V_{\text{sup}}$		-	3.3	-	V
Power consumption, P		-	0.15	-	W

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



MECHANICAL LAYOUT AND SIGNAL OUTPUT

- [ICI04210-01 detection module technical drawing](#)
- [ICI04220-01 detection module technical drawing](#)

ABSOLUTE MAXIMUM RATINGS

Parameter	Test conditions, remarks	Value	Unit
Ambient operating temperature, T_{amb}	Detection module parameters depend on T_{amb}	-20 to 70	$^{\circ}\text{C}$
Storage temperature, T_{stg}		-20 to 70	$^{\circ}\text{C}$
Storage humidity	No dew condensation	10 to 90	%

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