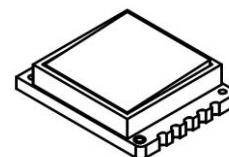
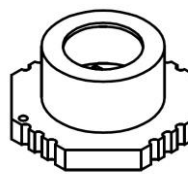


# IC01410-01, IC01420-01

## PRELIMINARY DATASHEET

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



TO39 cap square-shaped cap

#### FEATURES

- Cut-off wavelength: 1.7  $\mu\text{m}$
- RoHS-compliant III-V material
- Anti-reflection coating on the active element
- Front-side illuminated
- 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:  $\text{CH}_4$
- Telecommunication
- LIDARs
- Laser range finders, laser warning systems
- Lasers and diodes life tests
- Food analysis
- Pharmaceutical analysis

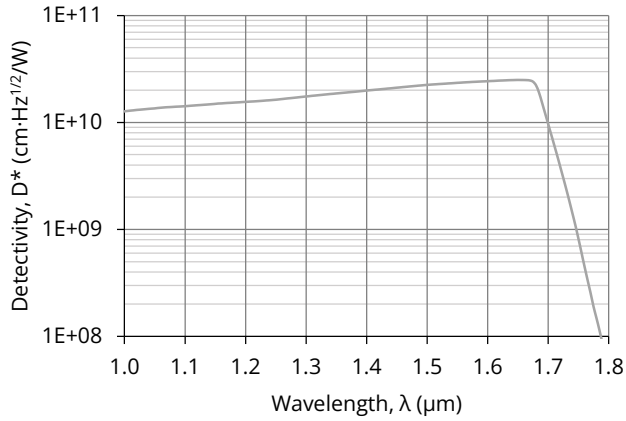
#### DETECTION MODULE CONFIGURATION

Detection module symbol	Cooling	Temperature sensor	Active area diameter, $d_a$ , mm	Optical immersion	Format	Acceptance angle $\Phi$ , deg.	Window
IC01410-01	no	n/a	1	no	TO39 cap	$\sim 70$	$\text{wAl}_2\text{O}_3$
IC01420-01					square-shaped cap	$\geq 140$	(wedged sapphire)

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

Parameter	Test conditions, remarks	Value			Unit
		Min.	Typ.	Max.	
Active element temperature, $T_{\text{chip}}$	$T_{\text{chip}} = T_{\text{amb}}$	-	293	-	K
Peak wavelength, $\lambda_{\text{peak}}$		-	$1.62 \pm 0.03$	-	$\mu\text{m}$
Cut-off wavelength, $\lambda_{\text{cut-off}}$ (10%)	At 10% of peak responsivity	1.69	1.71	-	$\mu\text{m}$
Detectivity, $D^*$	At $\lambda_{\text{peak}}$ , $f = 10 \text{ kHz}$	-	$2.5 \times 10^{10}$	-	$\text{cm} \cdot \text{Hz}^{1/2} / \text{W}$
Output noise voltage density, $v_n$	At $f = 10 \text{ kHz}$	-	910	-	$\text{nV} / \text{Hz}^{1/2}$
Voltage responsivity, $R_v$	At $\lambda = \lambda_{\text{peak}}$	-	$2.56 \times 10^5$	-	V/W
Transimpedance, $K_i$		256	-	10 000	kV/A
Low cut-off frequency, $f_{\text{lo}}$	DC coupling	-	0	-	Hz
High cut-off frequency, $f_{\text{hi}}$		-	1	-	MHz
Output impedance, $R_{\text{out}}$		-	50	-	$\Omega$
Reference voltage output, $V_{\text{ref}}$		-	1	-	V
Power supply voltage, $+V_{\text{sup}}$		-	3.3	-	V
Power consumption, P		-	0.15	-	W

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



### MECHANICAL LAYOUT AND SIGNAL OUTPUT

- [IC01410-01 detection module technical drawing](#)
- [IC01420-01 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.