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KUBE Electronics AG

KUBE C174 Standard Quad Pyroelectric Sensor

for all PIR motion detectors, including lighting and intrusion alarm detectors.

Features:

- Four physically separated sensing elements (series opposed quad)
- Radiation falling on oppositely polarized elements simultaneously is cancelled
- TO-5 style sealed metal housing
- Includes JFET and optical filter window
- Broad optical bandwidth (5 to 25 µm) for maximum signal, but still good white light immunity
- For use with all KUBE lenses, specially for ceiling applications
- Excellent long term stability. Proven reliability under high humidity conditions
- Low noise / low false alarm rate
- RoHS conform

Characteristics	Value	Unit	Test Conditions
Element size (typ)	1.0 x 1.0	mm	nominal, each
Element spacing (typ)	1.0	mm	nominal
Optical wavelength	5 ... 25	µm	7 … 14 µm ≥70%
Responsivity (typ)	4860	V/W	7 … 14 µm @ 1Hz
Common mode rejection ratio (typ)	15:1 min 1:7		7 … 14 µm @ 1Hz
Noise (typ) 2 elements in series a&b or b&c	5.1	$\mu V / \sqrt{Hz}$	1.0 Hz rms, 1Hz
Operating voltage	2.2 ... 10	V_{dc}	V_D to Ground
Offset voltage	0.3 ... 1.2	V_{dc}	R_S = 100 kΩ
Operating drain current	0.2 … 10	µA	(recommended range)
Thermal breakpoint f_T (typ)	0.2	Hz	
Electrical breakpoint f_e (typ)	0.05	Hz	
Field of view (x; y)	132	degrees	from center between sensing elements
Field of view (diagonal)	~145	degrees	
Window Filter size	4.9 x 4.9	mm	
Operating temperature	-20 ... +50	°C	-30...+70° with precautions
Storage temperature	-40 ... +80	°C	change < 50°C / minute

Recommendations:

- A source resistor is needed to set the drain current and consequently the operating parameters of the internal JFET. A 47 kΩ or greater value resistor is recommended. For low power applications (0.2 µA), a source resistor of 3.3 MΩ can be used.
- The supply voltage must be stabilized (free of voltage steps and low frequency variations). This is best accomplished with a regulator or voltage reference chip, and RC filtering.
- Careful circuit board layout, short connections and shielding may be required for adequate RF immunity.
- For best quality, use well controlled hand soldering for pyroelectric sensors.
  Wave soldering is not recommended. Avoid mechanical stresses on the leads.
- If needed, clean window with alcohol to remove flux and fingerprints.
- Do not apply varnish, lacquer, silicone or other transparent coatings on window, as these materials will not transmit IR.

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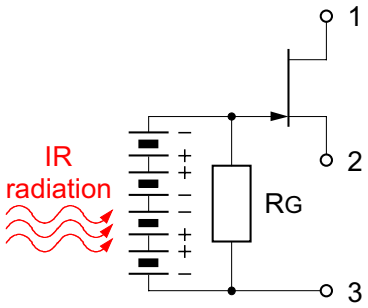
Internal circuit and pinout:



1 Drain (V_D)
2 Source
3 Ground

Drawing and Field of View: