BostonElectronics







# V8 Detector Set

Room temp fast 1x1 mm LWIR set, BNC preamp, for < 2 to 11+ microns, DC to 5MHz.

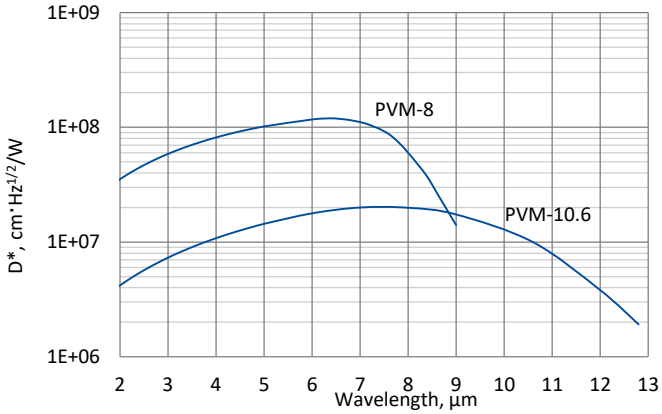
- PVM-10.6-1x1 BNC
- VIP-DC-5M-H
- PPS-03

# PVM series

## 2 – 13 µm HgCdTe ambient temperature photovoltaic multiple junction detectors

**PVM series** features uncooled IR photovoltaic multiple junction detectors based on sophisticated HgCdTe heterostructures for the best performance and stability. The detectors are optimized for the maximum performance at $\lambda_{opt}$. They are especially useful as large active area detectors operating within 2 to 13 µm spectral range.

### Spectral response ($T_a$ = 20°C)






BNC TO39

Exemplary spectral detectivity, the spectral response of delivered devices may differ.

### Specification ($T_a$ = 20°C)

| Parameter | Detector type | | | |
|---|---|---|---|---|
| | PVM-8 | | PVM-10.6 | |
| Active element material | epitaxial HgCdTe heterostructure | | | |
| Optimal wavelength $\lambda_{opt}$, µm | 8.0 | | 10.6 | |
| Detectivity D*($\lambda_{peak}$), cm·Hz$^{1/2}$/W | ≥1.2×10$^8$ | | ≥2.0×10$^7$ | |
| Detectivity D*($\lambda_{opt}$), cm·Hz$^{1/2}$/W | ≥6.0×10$^7$ | | ≥1.0×10$^7$ | |
| Current responsivity-active area length product $R_i(\lambda_{opt})$·L, A·mm/W | ≥0.008 | | ≥0.002 | |
| Time constant τ, ns | ≤4 | | ≤1.5 | |
| Resistance R, Ω | 50 to 300 | | 20 to 150 | |
| Active area A, mm×mm | 1×1, 2×2, 3×3, 4×4 | | | |
| Package | TO39 | BNC | TO39 | BNC |
| Acceptance angle Φ | ~90° | ~102°*), ~124°**) | ~90° | ~102°*), ~124°**) |
| Window | none | | | |

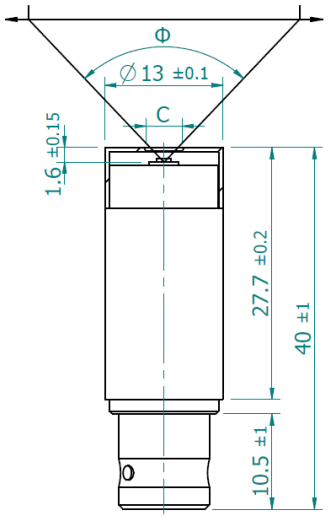
*) Aperture C = Ø4 mm.
**) Aperture C = Ø6 mm.



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## Mechanical layout, mm

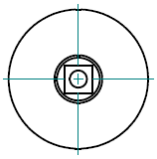
### BNC package



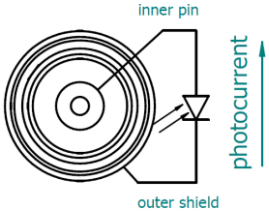

| Parameter | Value | |
|---|---|---|
| Active area, mm×mm | 1×1, 2×2 | 3×3, 4×4 |
| C, mm | Ø4 | Ø6 |
| Acceptance angle Φ | ~102° | ~124° |

C - aperture

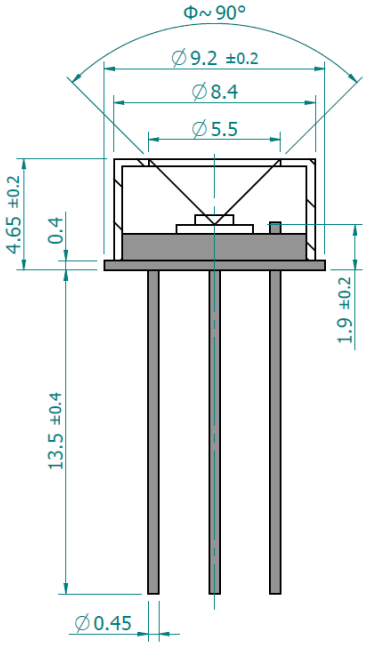
Top view



Bottom view

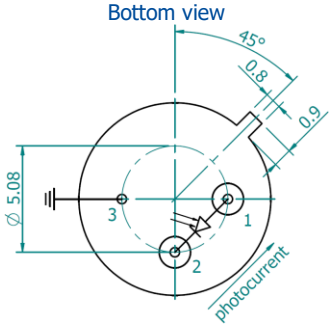



### TO39 package




Φ – acceptance angle

Bottom view




| Function | Pin number |
|---|---|
| Detector | 1, 2 |
| Chassis ground | 3 |



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# IR detecting assembly including - type PVM-10.6-1x1 detector with type VIP-DC-5M-H (old name: VPDC-5H) amplifier.

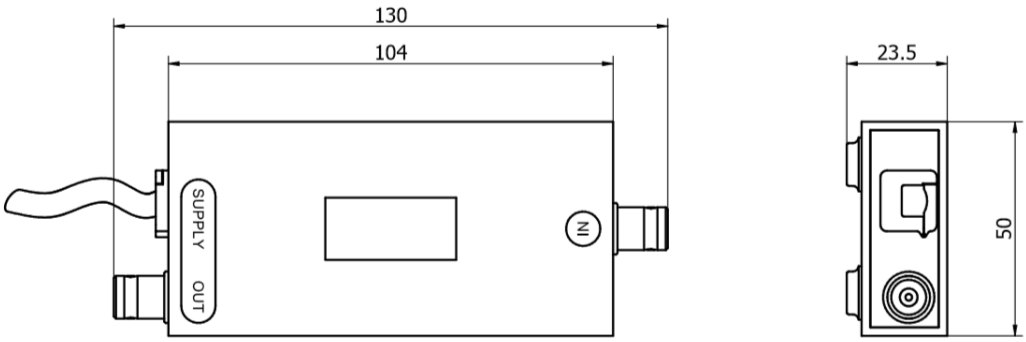
## Specifications:

| Parameter | Symbol | Unit | Min | Typical Value | Max | Conditions |
|---|---|---|---|---|---|---|
| **Detector resistance** | *Rdet* | Ω | 20 | | 100 | |
| **Detector responsivity** | $R_i$ | A/W | $1.0 \cdot 10^{-3}$ | | $1.7 \cdot 10^{-2}$ | |
| **Transimpedance** | $K_i$ | V/A | $2.2 \cdot 10^{4}$ | $2.4 \cdot 10^{4}$ | $2.6 \cdot 10^{4}$ | |
| **Bandwidth** | *BW (3dB)* | MHz | *0 - 4.5* | *0 – 5.0* | *0 - 5.5* | @$R_{det}$=50Ω |
| **Output voltage swing** | $V_{out}$ | V | *±3.98* | *±4.0* | *±4.02* | |
| **Output voltage offset** | $V_{off}$ | mV | | | *±25* | |
| **Noise density with detector - at output** | $V_n$ | nV/√Hz | *380* | | | @ $f_{meas}$ = 100kHz, @*Rdet =100*Ω |
| | | | | | *1400* | @ $f_{meas}$ = 100kHz, @*Rdet =20*Ω |
| **Preamplifier rise time** | $t_r$ | ns | *65* | *70* | *75* | @Rdet =50Ω |
| **Power supply voltage** | $V_{ss}$ | V | ±11 | ±12 | ±13.2 | |
| **Power supply current** | $I_{ss}$ | mA | | | ±30 | |
| **Polarity of output signal** | - | - | - | negative | - | Incident IR radiation : CO2 laser pulse |
| **Conditions:** preamplifier load resistance 1MΩ, ambient temperature 22ºC | | | | | | |

**WARNING!**

- Supply voltage must be **±12V** (±20%)
- Do not change power supply plugs or pins!
- Make sure that all cables are connected before power on
- Do not swap components (preamplifier power supplies, cables) between the IR sets

| | |
|---|---|
| **Signal connector type** | BNC |
| **Power supply cable type** | PIGTAIL |




**15 March 2019**

# PPS-03 series

**PPS-03** is a small-size, easy to use and universal preamplifier power supply, designed to operate with VIGO detection module microM-10.6 and other devices containing uncooled detectors in TO39 packages and preamplifiers SIP-TO39.



## Specification ($T_a$ = 20°C)

| Parameter | Value | Conditions, remarks |
|---|---|---|
| Power supply voltage $V_{sup}$, $V_{DC}$ | min 9.0<br>max 16.0 | |
| Output voltage, $V_{DC}$ | ±15<br>±9 | PPS-03-15<br>PPS-03-09 |
| Output current, mA | ±100 | |
| IR module socket | DB9 (female) | D-sub 9 pin |
| Power supply socket | DC 2.1/5.5 | |
| Weight, g | 100±5 | |

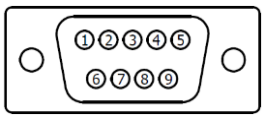
## Code description

| Type | | Output voltage, $V_{DC}$ |
|---|---|---|
| **PPS-03** | – | **09**<br>**15** |

## Included accessories

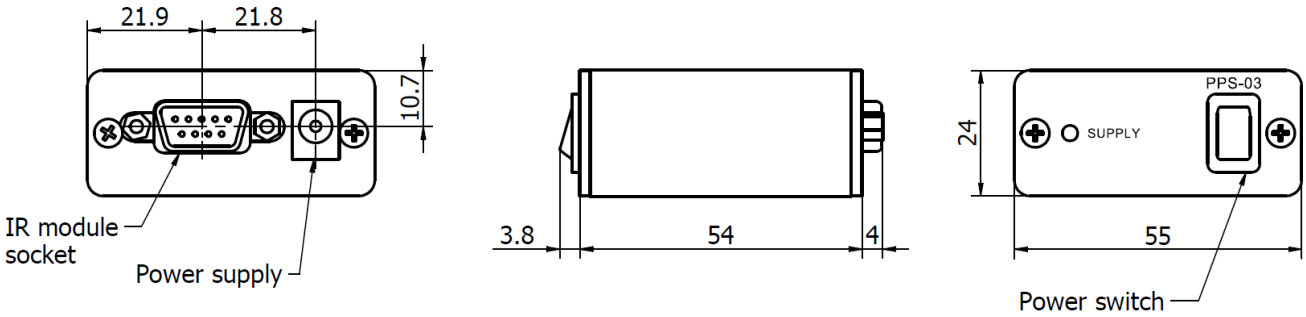
- **AC adaptor**

## IR module socket D-sub 9 pin (male)




| Function | Symbol | Pin number |
|---|---|---|
| Not connected | N.C. | 1 |
| Not connected | N.C. | 2 |
| Ground | GND | 3 |
| Not connected | N.C. | 4 |
| Not connected | N.C. | 5 |
| Power supply output (–) | $-V_{sup}$ | 6 |
| Not connected | N.C. | 7 |
| Not connected | N.C. | 8 |
| Power supply output (+) | $+V_{sup}$ | 9 |

## Mechanical layout, mm






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