

MCT (HgCdTe) Photoconductive Detectors (Dewar Types)

High sensitivity in the long wavelength range and high-speed response

● Choice of spectral response

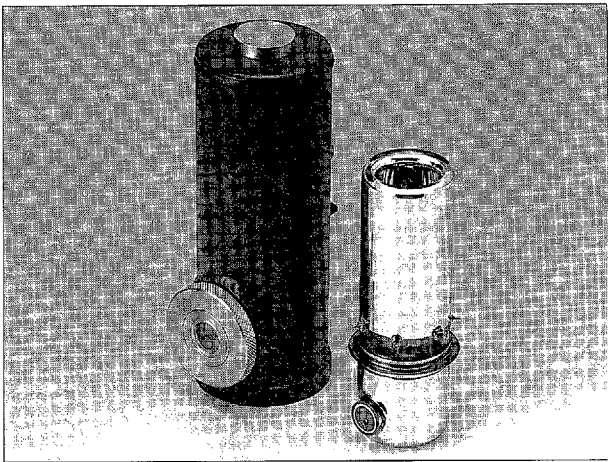
The band gap of HgCdTe can be modified by controlling the composition ratio of HgTe and CdTe. Utilizing this fact, various types are available in different spectral responses.

● Photoconductive mode operation

These devices operate in the photoconductive mode in which electrical resistance decreases with the input of infrared radiation.

● Custom devices available

In addition to the standard items listed in this catalog, custom devices are available with different active areas and numbers of elements. Also available are metal dewar types which can be re-evacuated when necessary.



● SPECIFICATIONS (Common)

Operating Temperature	-20 to +60 °C
Storage Temperature	-20 to +60 °C

● ACCESSORIES (Optional)

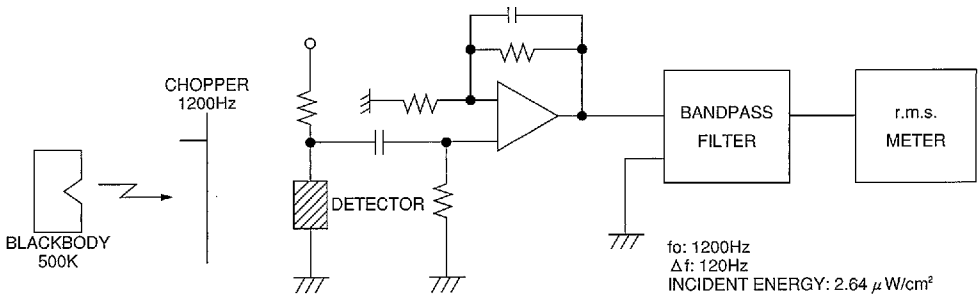
Housing for glass dewar	: A3262-02
Valve operator	: A3515
Preamplifier for MCT detectors (dewar types)	: C5185

(Typical data unless otherwise specified)

Type No.	Outline No. (P.35, 37)	Package	Active Area (mm)	Element Temperature (°C)	Photo Sensitivity S _p at λ _p (V/W)	D* (500, 1200, 1)		D* (λ _p 1200-1) (cm • Hz ^{1/2} /W)	NEP at λ _p (W/Hz ^{1/2})	Rise Time t _r 0 to 63 % Max. (μS)	Dark Resistance R _d (Ω)	Maximum Allowable Current (mA)
						Min. (cm • Hz ^{1/2} /W)	Typ. (cm • Hz ^{1/2} /W)					
Dewar Types (FOV=60 degrees)												
P5138-010	14	Glass dewar	0.1×0.1	-196	3×10 ⁴	1×10 ¹⁰	2×10 ¹⁰	4×10 ¹⁰	2.5×10 ⁻¹³	1	40	20
P5138-025		Glass dewar	0.25×0.25	-196	1×10 ⁴	1×10 ¹⁰	2×10 ¹⁰	4×10 ¹⁰	6.3×10 ⁻¹³	1	40	20
P5138-100		Glass dewar	1×1	-196	1×10 ³	5×10 ⁹	1×10 ¹⁰	2×10 ¹⁰	5×10 ⁻¹²	1	40	40
P3257	15	Metal dewar	1×1	-196	1×10 ³	5×10 ⁹	1×10 ¹⁰	2×10 ¹⁰	5×10 ⁻¹²	1	40	40
P5274		Metal dewar	1×1	-196	5×10 ²	1×10 ⁹	5×10 ⁹	7.5×10 ⁹	1.3×10 ⁻¹¹	1	40	40

Ⓐ Photo sensitivity depends on the bias current. The listed data is measured with the optimum bias current.

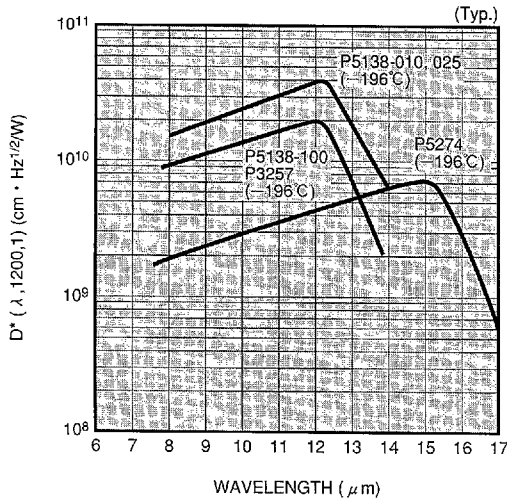
● Measuring Block Diagram



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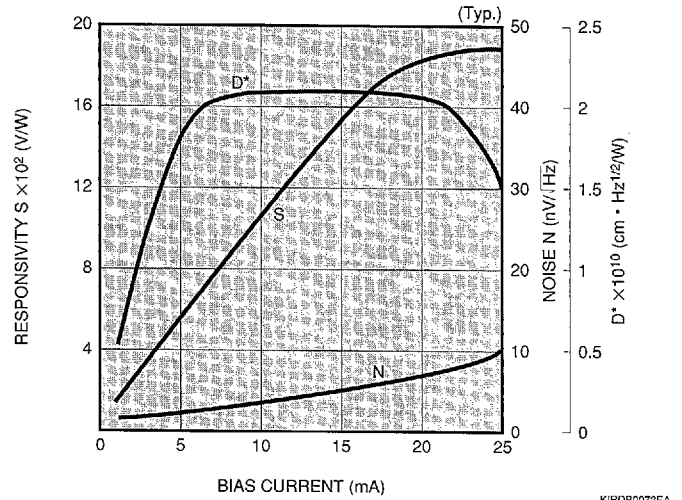
Spectral Response 2 to 16 μm

● Spectral Response



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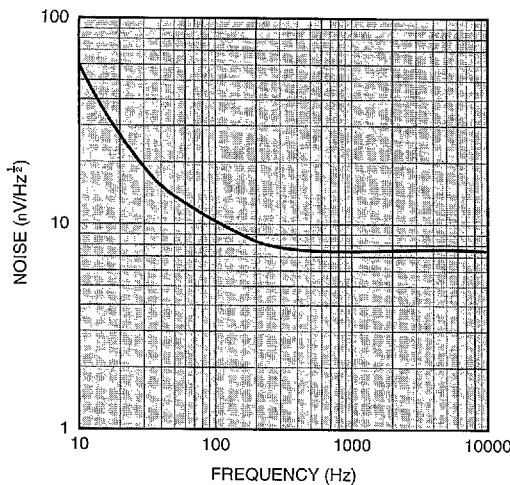
● S/N Ratio vs. Bias Current (P5138-100, P3257)



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The detector must be operated in a range where the S/N ratio becomes max.

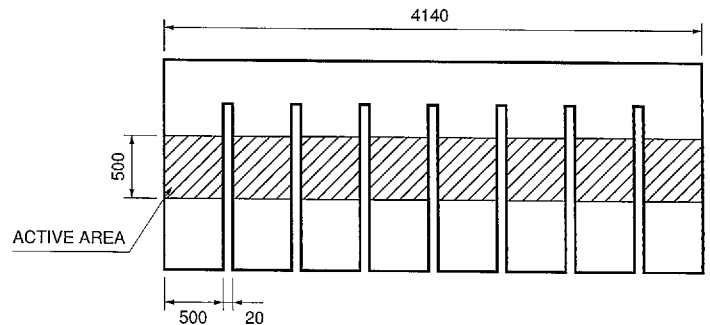
● Noise Level vs. Frequency



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● Details of Multielement Array (Reference Example; Unit: μm)

We welcome your inquiry regarding the number of elements, element size and packaging.



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Precautions for Use

1) Bias Current for MCT Photoconductive Detector

If the bias current is increased more than necessary, the element temperature rises due to Joule heat, resulting in degradation in the D^* . It should also be noted that if the bias current is applied in excess of the maximum supply current, even momentarily, then the element could be damaged. Therefore, use of a bias power supply with low ripple and careful choice of the optimum bias current is recommended.

2) Pouring Liquid Nitrogen

When filling the dewar with liquid nitrogen, use the following procedure: First pour 20 to 30 cc into the dewar, and wait for a while until the whitish vapor (made by the ebullient liquid nitrogen) settles.

Then pour another 20 to 30 cc into the dewar and wait for a while again.

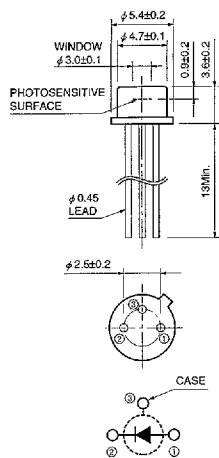
The remainder of filling may be done in one step. (Sudden filling from the beginning can cause the liquid nitrogen to overflow or splash.)

3) Handling

Refer to "Precautions for Handling Dewar Type Devices" on page 51.

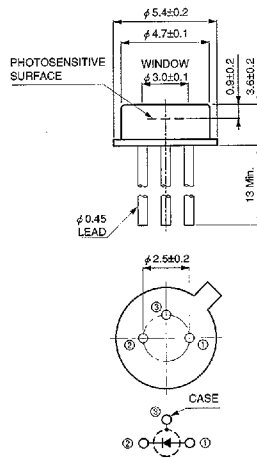
Dimensional Outlines (Unit: mm)

① G3476-01, etc.



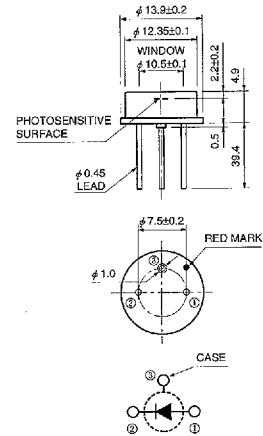
KIRDA0034EA

② G5832-02, -03



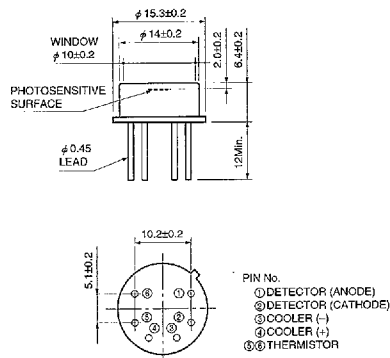
KIRDA0002EB

③ G5832-05, etc.



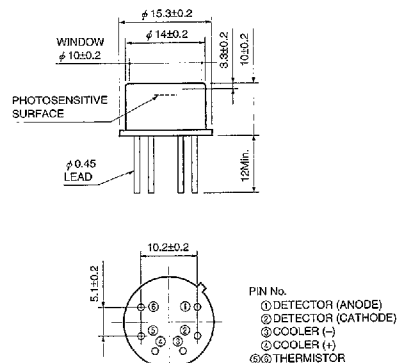
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④ G5832-11, etc.



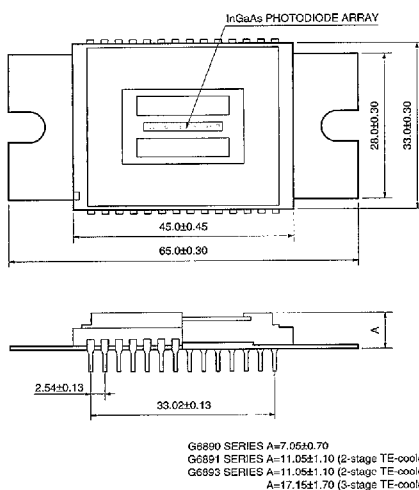
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⑤ G5832-21, etc.



KIRDA00031EB

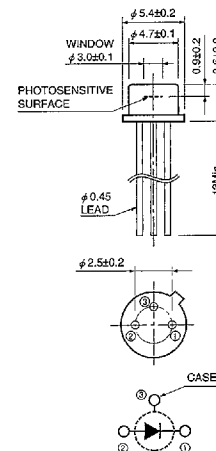
⑥ G6890-128, etc.



G6890 SERIES A=7.06±0.70
G6891 SERIES A=11.05±1.10 (2-stage TE-cooled)
G6893 SERIES A=11.05±1.10 (2-stage TE-cooled)
A=17.15±1.70 (3-stage TE-cooled)

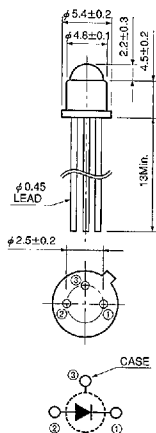
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⑦ B1720-02, etc.



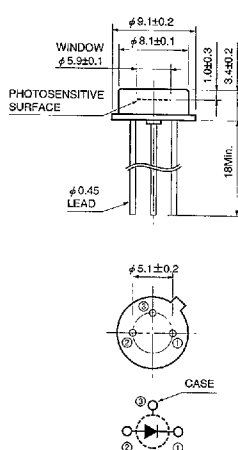
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8 B1720-05



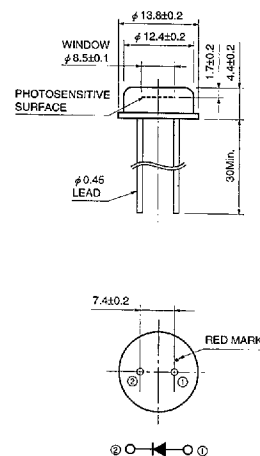
KIRDA0024EA

9 B2144-01, etc.



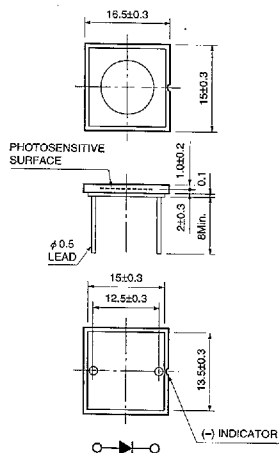
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10 B1919-01



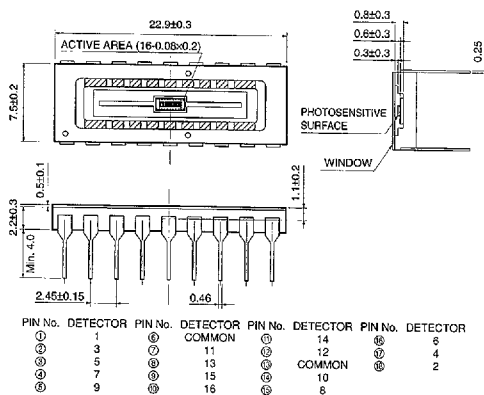
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11 B1920-01



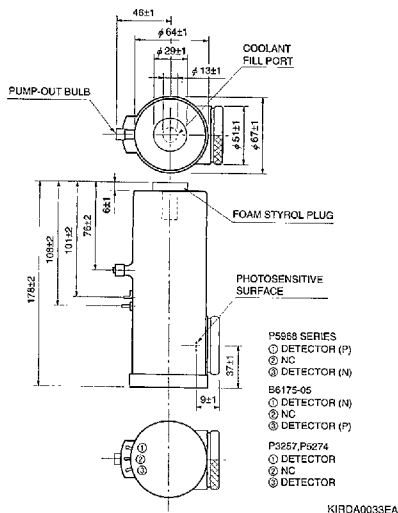
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12 G7151-16



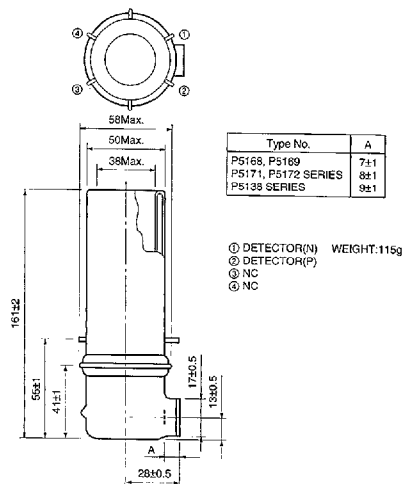
KIRDA0030EB

13 P5968 series, P7163, B6175-05, etc.



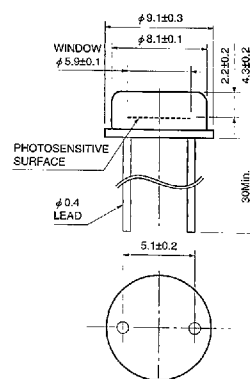
KIRDA0033EA

14 P5138, etc.



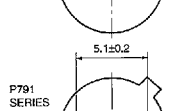
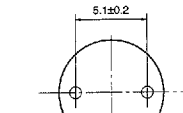
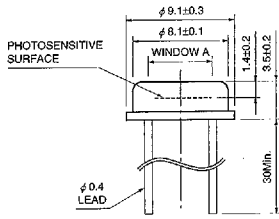
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15 P394



KIRDA0055EA

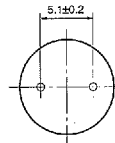
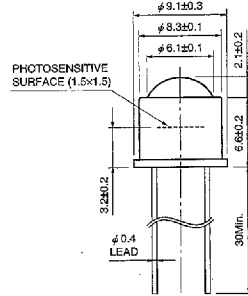
16 P394A, etc.



	P791 SERIES	OTHERS
A	5.5±0.1	5.9±0.1

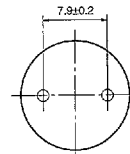
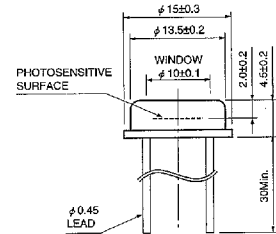
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17 P3226-02



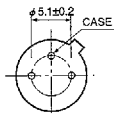
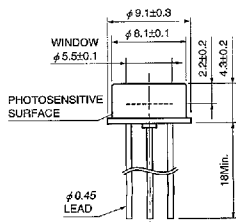
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18 P397



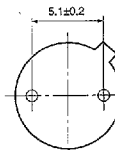
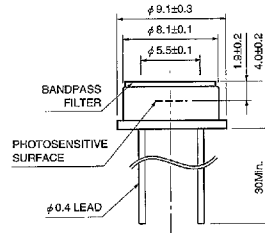
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19 P791-11



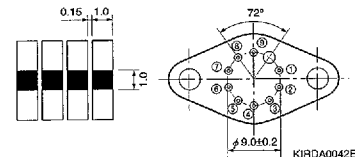
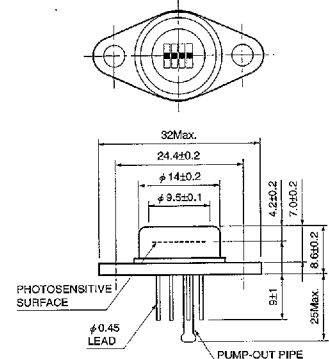
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20 P3207-04



KIRDA0054EA

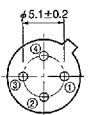
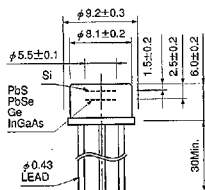
21 P4115



PIN No.
① THERMISTOR
② 1
③ 2
④ 3
⑤ 4
⑥ COMMON
⑦ COOLER (-)
⑧ COOLER (+)

KIRDA0042EC

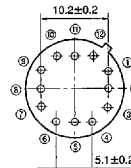
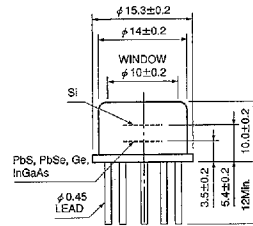
22 K1713-01, etc.



PIN No.
① Si (N)
② Si (P)
③ PbS, PbSe, Ge, InGaAs (N)
④ PbS, PbSe, Ge, InGaAs (P)

KIRDA0041EA

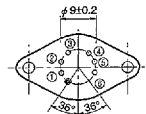
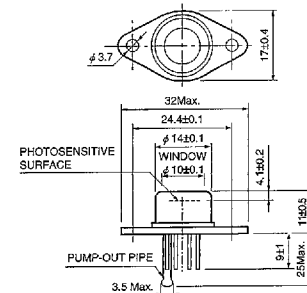
23 K3413-01, etc.



PIN No.
① PbS, PbSe, Ge, InGaAs (P)
② PbS, PbSe, Ge, InGaAs (N)
③ COOLER (-)
④ COOLER (+)
⑤ THERMISTOR
⑥ Si (N)
⑦ Si (P)

KIRDA0043EA

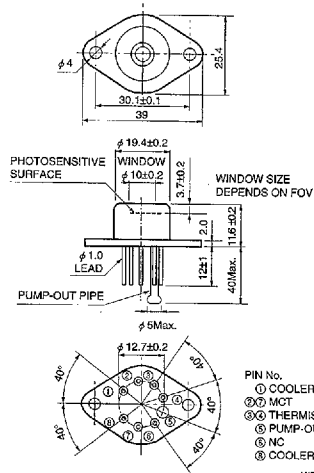
24 P3981-01, etc.



PIN No.
① THERMISTOR
② THERMISTOR
③ DETECTOR
④ DETECTOR
⑤ COOLER (-)
⑥ COOLER (+)

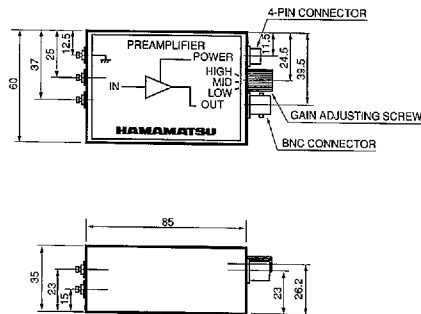
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25 P2750, etc.



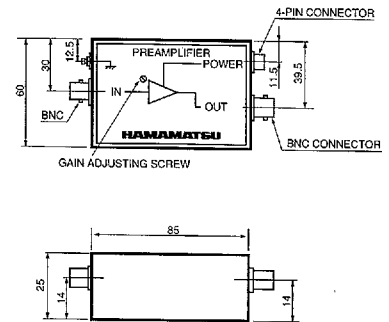
KIRDA0045EB

26 C4159, -01, -03



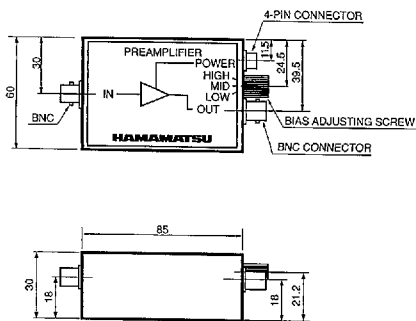
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27 C4159-02



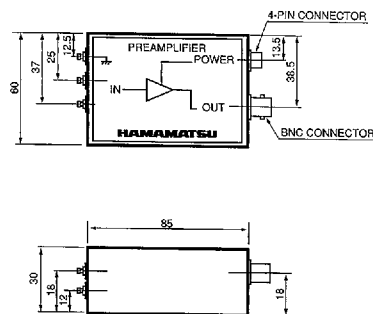
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28 C5185, -01



KIRDA0048EB

29 C3757-02



KIRDA0049EA