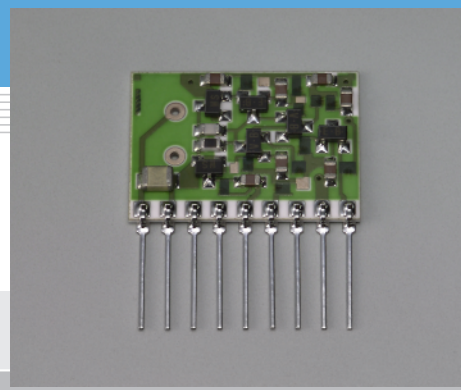


Charge amplifier H4083

For radiation and high energy particle detection



H4083 is a low-noise hybrid charge amplifier designed for a wide range of spectrometric applications including soft X-ray and low to high energy gamma-ray spectrometry. The first stage of this amplifier uses a low-noise junction type FET, which exhibits excellent performance when used with a photodiode having a large junction capacitance. H4083 is especially suited for use with Hamamatsu S3590/S3204 series, etc. Si PIN photodiodes. S3590 series photodiodes can be directly mounted on the backside of H4083, so there will be no increase in stray capacitance. H4083 is compact and lightweight, making detector design and development more flexible.

Features

- Low noise
- Compact and lightweight
- Easy handling

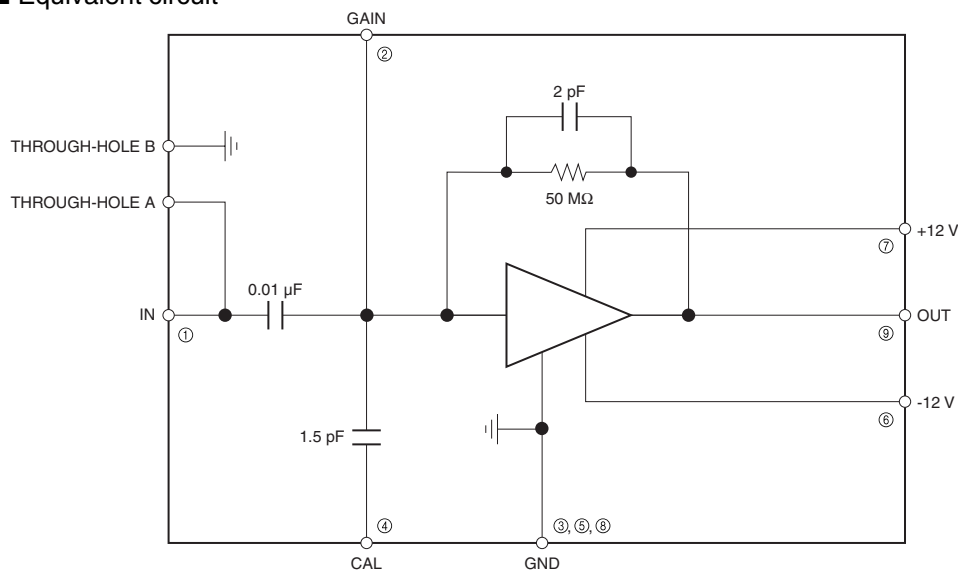
Applications

- Detection of X-rays, radiation, high energy particles

Specification

Parameter	Specification
Amplification method	Charge-sensitive type
Input/output polarity	Inverted
Charge gain	0.5 V/pC
	22 mV/MeV (Si)
Noise characteristic	550 electrons/FWHM
Negative feedback constant	50 MΩ/2 pF
Power supply	±12 V
Power consumption	150 mW
Configuration	9-pin, single line type
Dimensional outline	24 (W) × 19 (H) × 4 (T) mm

Equivalent circuit



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■ Pin connection

Pin No.	Symbol	Content
①	IN	Input terminal
②	GAIN	Feedback constant adjustment terminal
③	GND *	Input ground terminal
④	CAL	Last pulse input terminal
⑤	GND *	Power and output ground terminal
⑥	-12 V	Power terminal
⑦	+12 V	Power terminal
⑧	GND *	Output ground terminal
⑨	OUT	Output terminal
Through-hole A	P	Anode connection terminal
Through-hole B	N	Cathode connection terminal

* GND is internally connected.

The left end pin is designated No. 1 when viewed from the component side with the pins facing downwards.

● Using pin No. 2

Use pin No. 2 when changing the feedback constant which is typically 50 MΩ/2 pF. Connect feedback resistance and capacitance between pin No. 2 and No. 9. Note that this connection is made parallel to the internal feedback resistance and capacitance.

● Changing the feedback resistance and capacitance

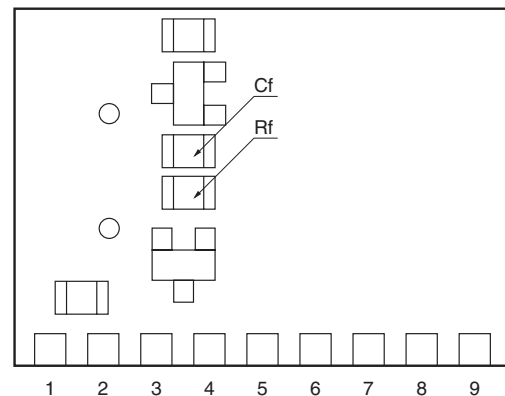
If you want to change the feedback constant without making parallel connections, directly replace the resistor (Rf) and capacitor (Cf) shown at the right, which serve as feedback resistance and capacitance.

Replacement components should be 2012 size.

● Using through-holes A and B

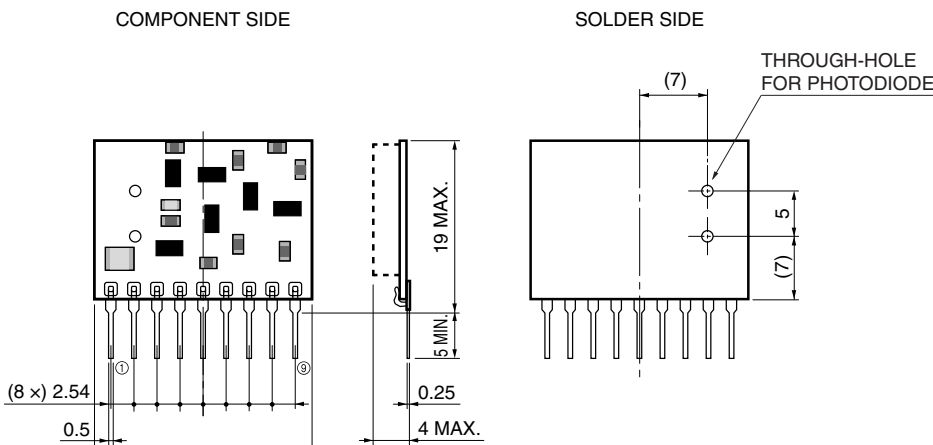
When H4083 is not covered with protective coating, a photodiode (such as S3590 series) can be directly soldered on the board. In this case, insert the photodiode leads into the through-holes from the solder side.

■ Component side diagram



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■ Dimensional outline (unit: mm)



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