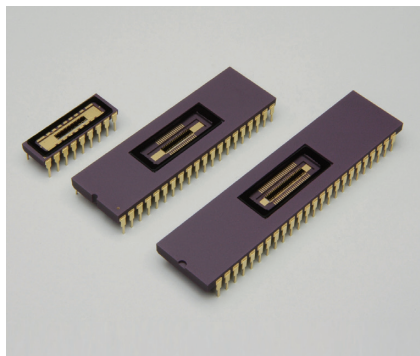


InGaAs PIN photodiode arrays



G12430 series

16/32/46 element InGaAs array for near IR detection

The G12430 series is one-dimensional InGaAs PIN photodiode array in a ceramic DIP (dual inline package). It can be used to perform simple spectroscopic analysis.

Features

- 16, 32, or 46 element array
- Designed for simple measurement
- Large photosensitive area size

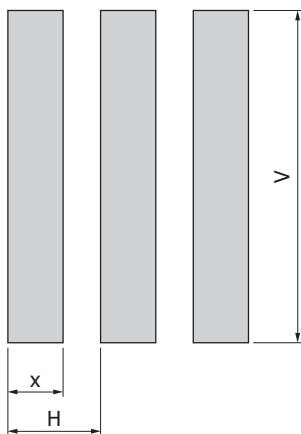
Applications

- NIR spectrophotometers

Structure

Parameter	G12430-016D	G12430-032D	G12430-046D	Unit
Cooling	Room temperature type			-
Number of elements	16	32	46	elements
Elements size	0.45 × 1	0.2 × 1		mm
Element pitch	0.5	0.25		mm
Package	18-pin ceramic DIP	40-pin ceramic DIP	48-pin ceramic DIP	-
Window material	Borosilicate glass			-

Details of photosensitive area



Number of elements	x	H	V	Unit
16	0.45	0.5	1	mm
32	0.2	0.25		
46				

KIRD0118EB

Static electricity can damage or degrade the G12430 series. Use caution when handling.

Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Reverse voltage	V _R max.	5	V
Operating temperature	T _{opr}	-20 to +70*	°C
Storage temperature	T _{stg}	-20 to +85*	°C
Soldering conditions	-	260 °C or less, within 5 s	-

* No dew condensation

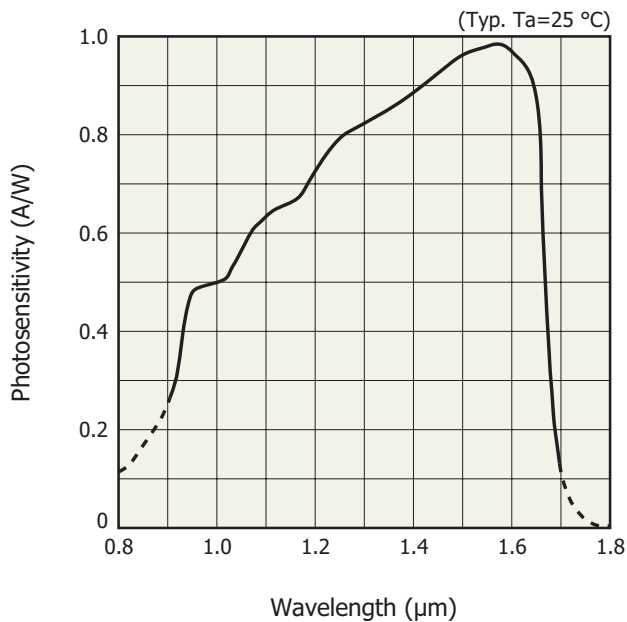
When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

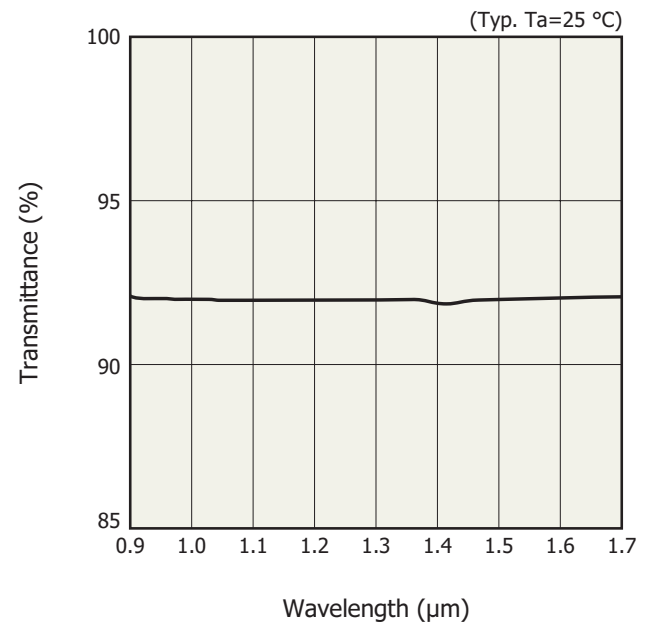
Electrical and optical characteristics (Ta=25 °C, per element)

Parameter	Symbol	Condition	G12430-016D			G12430-032D			G12430-046D			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	0.9 to 1.7	-	-	0.9 to 1.7	-	-	0.9 to 1.7	-	μm
Peak sensitivity wavelength	λ_p		-	1.55	-	-	1.55	-	-	1.55	-	μm
Photosensitivity	S	$\lambda = \lambda_p$	0.85	0.95	-	0.85	0.95	-	0.85	0.95	-	A/W
Dark current	I _D	V _R =1 V	-	500	2500	-	250	1250	-	250	1250	pA
Dark current temperature coefficient	ΔT_{ID}	V _R =10 mV	-	1.1	-	-	1.1	-	-	1.1	-	times/°C
Cutoff frequency	f _c	V _R =1 V, R _L =50 Ω $\lambda = 1.3 \mu\text{m}$, -3 dB	15	30	-	25	60	-	25	60	-	MHz
Terminal capacitance	C _t	V _R =1 V, f=1 MHz	-	60	100	-	35	60	-	35	60	pF
Shunt resistance	R _{sh}	V _R =10 mV	20	100	-	40	200	-	40	200	-	M Ω
Detectivity	D*	$\lambda = \lambda_p$	1×10^{12}	5×10^{12}	-	1×10^{12}	5×10^{12}	-	1×10^{12}	5×10^{12}	-	cm·Hz ^{1/2} /W
Noise equivalent power	NEP	$\lambda = \lambda_p$	-	2×10^{-14}	4×10^{-14}	-	1×10^{-14}	3×10^{-14}	-	1×10^{-14}	3×10^{-14}	W/Hz ^{1/2}

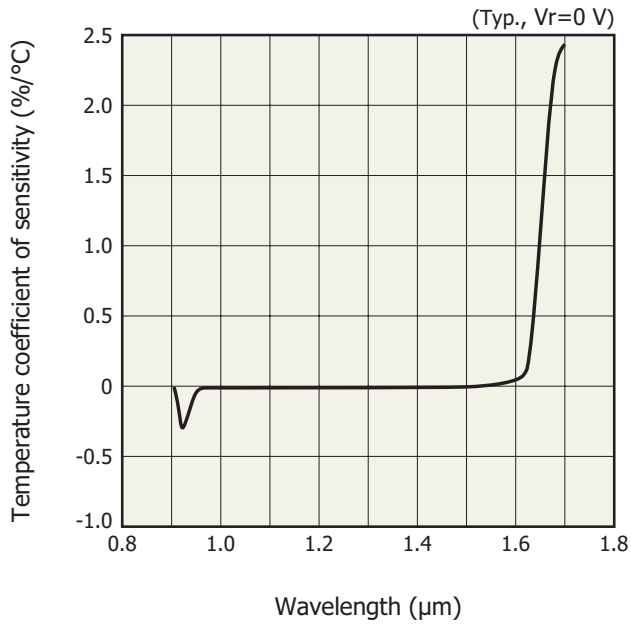
Spectral response



Spectral transmittance of window material

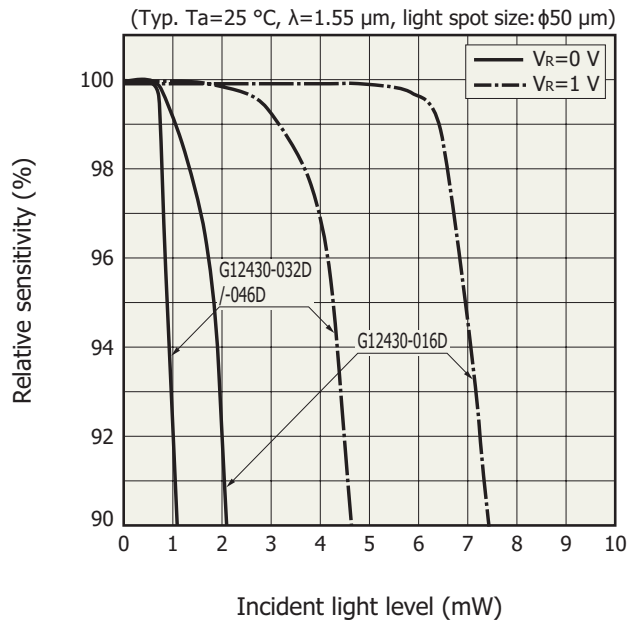


Photosensitivity temperature characteristics



KIRD80636EA

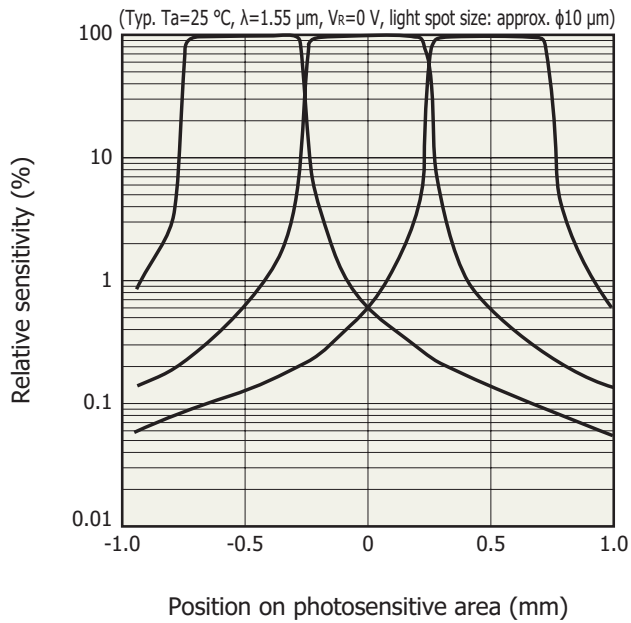
Linearity



KIRD80567EA

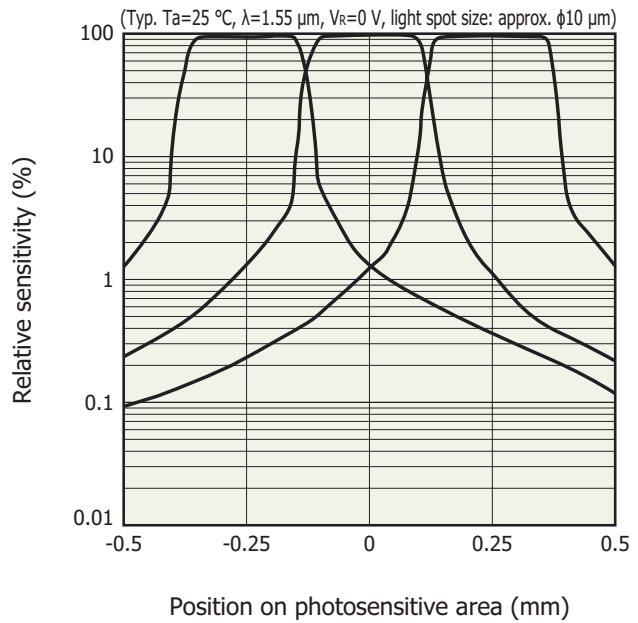
Cross-talk characteristics

G12430-016D



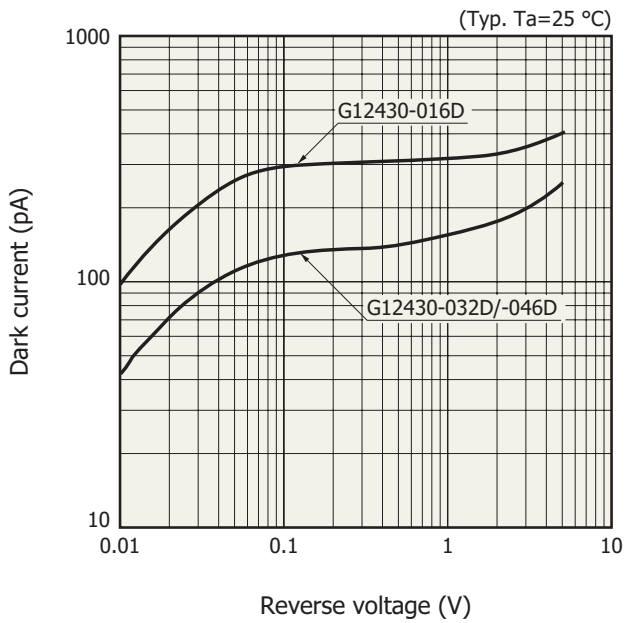
KIRD80568EA

G12430-032D/-046D

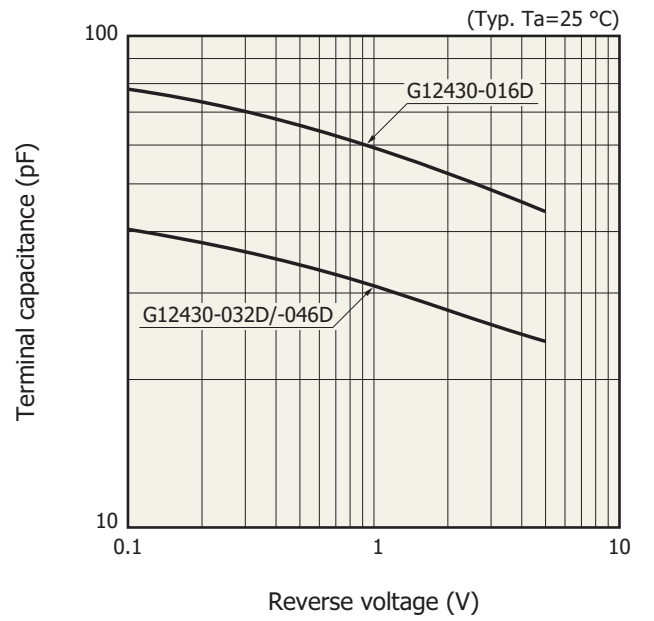


KIRD80569EA

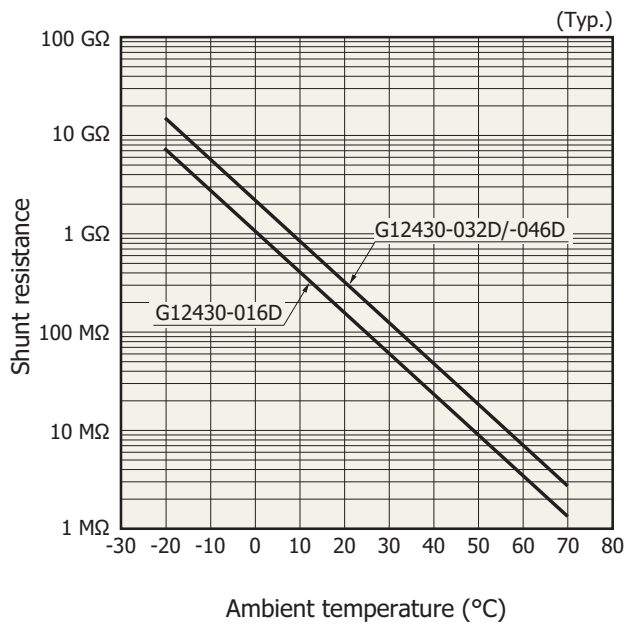
Dark current vs. reverse voltage



Terminal capacitance vs. reverse voltage

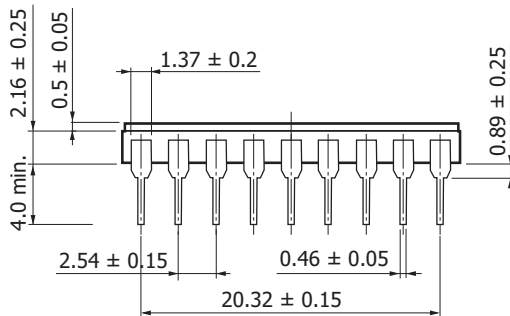
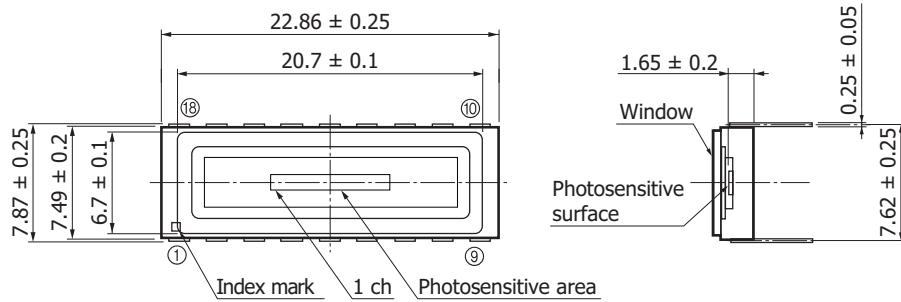


Shunt resistance vs. ambient temperature



Dimensional outlines (unit: mm)

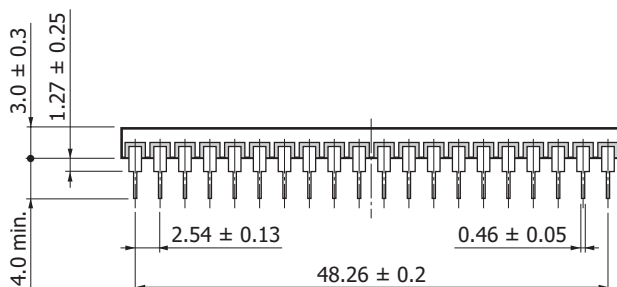
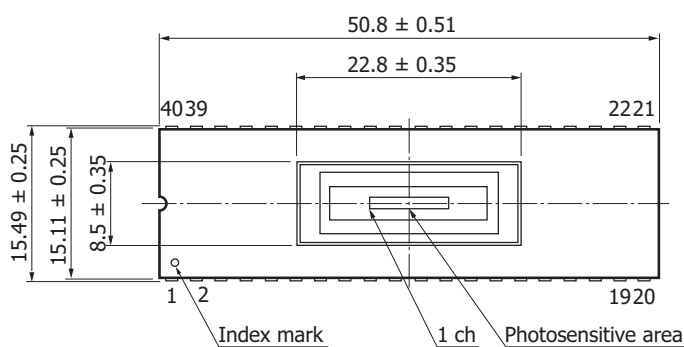
G12430-016D



Package material: Ceramic
 Lead treatment: Ni/Au plating
 Lead material: FeNi alloy
 Reflective index of window material: 1.47
 Window thickness: 0.5 ± 0.05
 AR coat: None
 Window sealing method: Resin sealing
 Position accuracy of photosensitive area center:
 $-0.3 \leq X \leq +0.3$
 $-0.3 \leq Y \leq +0.3$
 Position accuracy of photosensitive area inclination:
 $-5^\circ \leq \theta \leq +5^\circ$

KIRDA0237EA

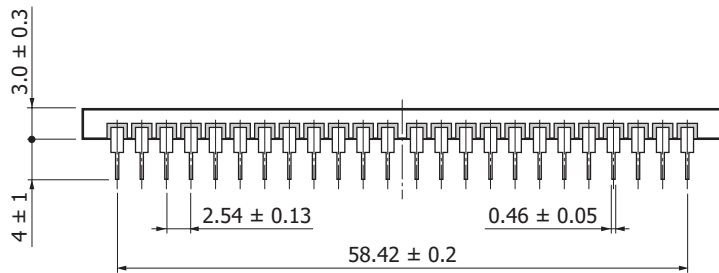
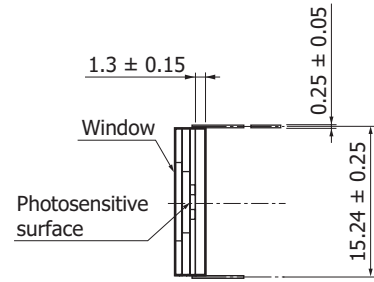
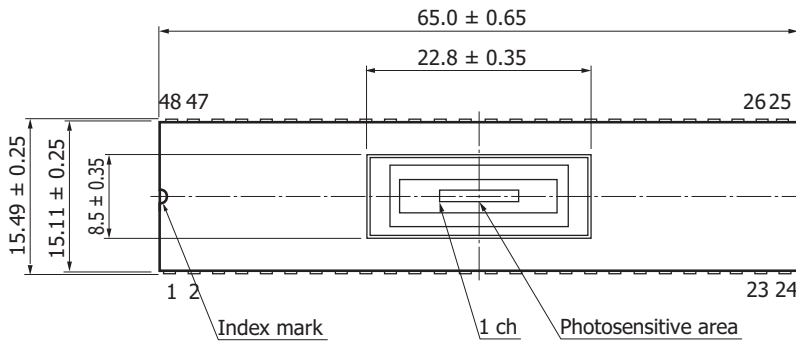
G12430-032D



Package material: Ceramic
 Lead treatment: Ni/Au plating
 Lead material: FeNi alloy
 Reflective index of window material: 1.47
 Window thickness: 0.75 ± 0.05
 AR coat: None
 Window sealing method: Resin sealing
 Position accuracy of photosensitive area center:
 $-0.3 \leq X \leq +0.3$
 $-0.3 \leq Y \leq +0.3$
 Position accuracy of photosensitive area inclination:
 $-5^\circ \leq \theta \leq +5^\circ$

KIRDA0238EA

G12430-046D



Package material: Ceramic
 Lead treatment: Ni/Au plating
 Lead material: FeNi alloy
 Reflective index of window material: 1.47
 Window thickness: 0.75 ± 0.05
 AR coat: None
 Window sealing method: Resin sealing
 Position accuracy of photosensitive area center:
 $-0.3 \leq X \leq +0.3$
 $-0.3 \leq Y \leq +0.3$
 Position accuracy of photosensitive area inclination:
 $-5^\circ \leq \theta \leq +5^\circ$

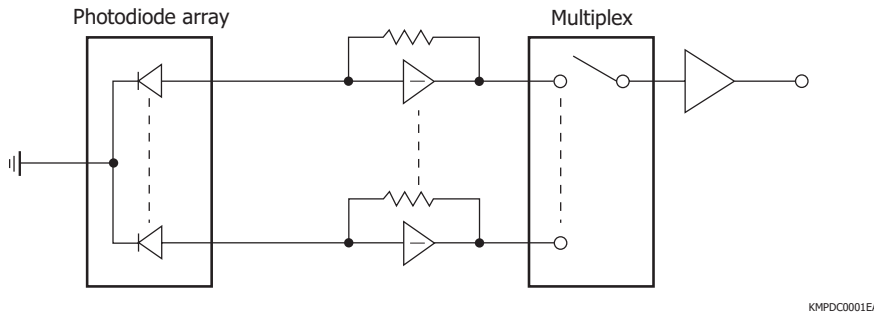
KIRDA0239EA

Pin connections

Pin no.	G12430-016D	G12430-032D	G12430-046D	Pin no.	G12430-016D	G12430-032D	G12430-046D
1	KC	KC	KC	25	-	27	KC
2	2	NC	2	26	-	25	45
3	4	2	4	27	-	23	43
4	6	4	6	28	-	21	41
5	8	6	8	29	-	19	39
6	10	8	10	30	-	17	37
7	12	10	12	31	-	15	35
8	14	12	14	32	-	13	33
9	16	14	16	33	-	11	31
10	KC	16	18	34	-	9	29
11	15	18	20	35	-	7	27
12	13	20	22	36	-	5	25
13	11	22	24	37	-	3	23
14	9	24	26	38	-	1	21
15	7	26	28	39	-	NC	19
16	5	28	30	40	-	NC	17
17	3	30	32	41	-	-	15
18	1	32	34	42	-	-	13
19	-	NC	36	43	-	-	11
20	-	NC	38	44	-	-	9
21	-	KC	40	45	-	-	7
22	-	NC	42	46	-	-	5
23	-	31	44	47	-	-	3
24	-	29	46	48	-	-	1

Operating circuit

In the most generally used circuit, op amplifiers are connected to each channel to read the output in real time. The output of an op amplifier is of low impedance and thus can be easily multiplexed.



KMPDC0001EA

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions

- Disclaimer
- Safety consideration
- Metal, ceramic, plastic package products / Precautions

■ Technical information

- Infrared detector / Technical information

Information described in this material is current as of September 2017.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

HAMAMATSU

www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81)53-434-3311, Fax: (81)53-434-5184

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218, E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8, E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10, E-mail: infos@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44)1707-294888, Fax: (44)1707-325777, E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Torshamsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01, E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41, E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R.China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866, E-mail: hpc@hamamatsu.com.cn

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No. 158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081, E-mail: info@hamamatsu.com.tw