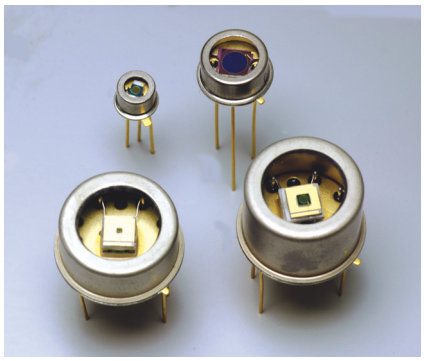
HAMAMATSU
PHOTON IS OUR BUSINESS

InGaAs PIN photodiodes

G12183 series



Long wavelength type (cutoff wavelength: 2.55 to 2.6 µm)

Features

- **Cutoff wavelength: 2.55 to 2.6 µm**
- **Low cost**
- **Photosensitive area: ϕ0.3 to ϕ3 mm**
- **Low noise**
- **High sensitivity**
- **High reliability**
- **High-speed response**

Applications

- **Optical power meters**
- **Gas analyzers**
- **Moisture meters**
- **NIR (near infrared) photometry**

Options

Amplifier for InGaAs PIN photodiode	**C4159-03**
Heatsink for one-stage TE-cooled type	**A3179**
Heatsink for two-stage TE-cooled type	**A3179-01**
Temperature controller for TE-cooled type	**C1103-04**

Structure / Absolute maximum ratings

Type no.	Dimensional outline /Window material*1	Package	Cooling	Photosensitive area (mm)	Absolute maximum ratings						
					Thermister power dissipation (mW)	TE-cooler allowable current (A)	TE-cooler allowable voltage (V)	Reverse voltage VR max (V)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)	Soldering conditions
G12183-003K	(1)/B	TO-18	Non-cooled	ϕ0.3	-	-	-	1	-40 to +85*2	-55 to +125*2	260 °C or less, within 10 s
G12183-005K				ϕ0.5							
G12183-010K				ϕ1							
G12183-020K	(2)/B	TO-5		ϕ2							
G12183-030K				ϕ3							
G12183-103K	(3)/B	TO-8	One-stage TE-cooled	ϕ0.3	0.2	1.5	1.0		-40 to +70*2	-55 to +85*2	
G12183-105K				ϕ0.5							
G12183-110K				ϕ1							
G12183-120K				ϕ2							
G12183-130K				ϕ3							
G12183-203K	(4)/B	TO-8	Two-stage TE-cooled	ϕ0.3		1.0	1.2				
G12183-205K				ϕ0.5							
G12183-210K				ϕ1							
G12183-220K				ϕ2							
G12183-230K				ϕ3							

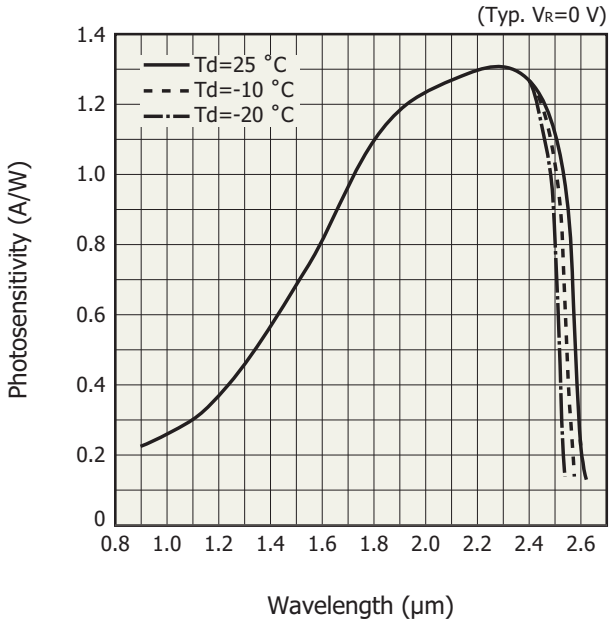
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.
*1: B=Borosilicate glass
*2: No condensation

The G12183 series may be destroyed or deteriorated by electrostatic discharge, etc. Be carefull when using the G12183 series.

Electrical and optical characteristics (Typ., unless otherwise noted)

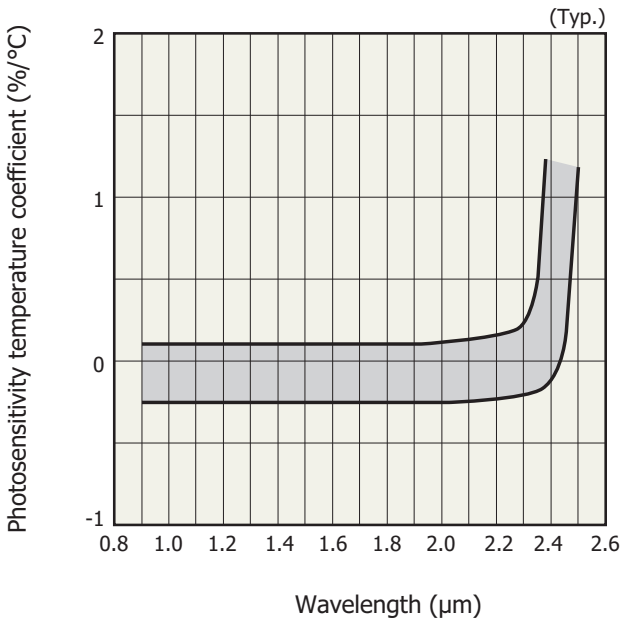
Type no.	Measurement Condition: Element temperature (°C)	Spectral response range λ (μm)	Peak sensitivity wavelength λp (μm)	Photosensitivity S λ=λp: Min. (A/W)	Photosensitivity S λ=λp: Typ. (A/W)	Dark current ID VR=0.5 V: Typ. (μA)	Dark current ID VR=0.5 V: Max. (μA)	Temp. coefficient of ID VR=0.5 V	Cutoff frequency fc VR=0 V RL=50 Ω: Min. (MHz)	Cutoff frequency fc VR=0 V RL=50 Ω: Typ. (MHz)	Terminal capacitance Ct VR=0 V f=1 MHz: Typ. (pF)	Terminal capacitance Ct VR=0 V f=1 MHz: Max. (pF)	Shunt resistance Rsh VR=10 mV: Min. (kΩ)	Shunt resistance Rsh VR=10 mV: Typ. (kΩ)	Detectivity D* λ=λp: Min. (cm·Hz^1/2/W)	Detectivity D* λ=λp: Typ. (cm·Hz^1/2/W)	Noize equivalent power NEP λ=λp: Typ. (W/Hz^1/2)	Noize equivalent power NEP λ=λp: Max. (W/Hz^1/2)
G12183-003K	25	0.9 to 2.6	2.3	1	1.3	0.4	4	1.035	20	50	50	100	20	100	3×10^{10}	9×10^{10}	4×10^{-13}	9×10^{-13}
G12183-005K						1	10		5	20	140	300	10	50			5×10^{-13}	1.5×10^{-12}
G12183-010K						3	30		2	6	500	1000	2.8	14			1×10^{-12}	3×10^{-12}
G12183-020K						10	100		1	1.5	1800	3000	0.65	3			2×10^{-12}	5×10^{-12}
G12183-030K						30	300		0.5	0.8	4000	5000	0.25	1.4			3×10^{-12}	8×10^{-12}
G12183-103K	-10	0.9 to 2.57				0.12	1.2		20	70	44	100	200	1000	1×10^{11}	3×10^{11}	1×10^{-13}	3×10^{-13}
G12183-105K						0.3	3		5	25	120	300	100	500			1.5×10^{-13}	4.5×10^{-13}
G12183-110K						0.9	9		2	7	440	1000	28	140			2.5×10^{-13}	8×10^{-13}
G12183-120K						3	30		1	2	1500	3000	6.5	30			5.5×13^{-13}	2×10^{-12}
G12183-130K						9	90		0.5	0.9	3400	5000	2.8	14			8.5×10^{-13}	2.5×10^{-12}
G12183-203K	-20	0.9 to 2.55				0.085	0.85		20	75	40	100	400	2000	1.5×10^{11}	4.5×10^{11}	7×10^{-14}	2×10^{-13}
G12183-205K						0.21	2.1		5	28	110	300	200	1000			1×10^{-13}	3×10^{-13}
G12183-210K						0.65	6.5		2	8	400	1000	55	280			2×10^{-13}	5.5×10^{-13}
G12183-220K						2.1	21		1	2.3	1400	3000	13	60			4×10^{-13}	1×10^{-12}
G12183-230K						6	60		0.5	1	3200	5000	5.5	28			6×10^{-13}	2×10^{-12}

Spectral response



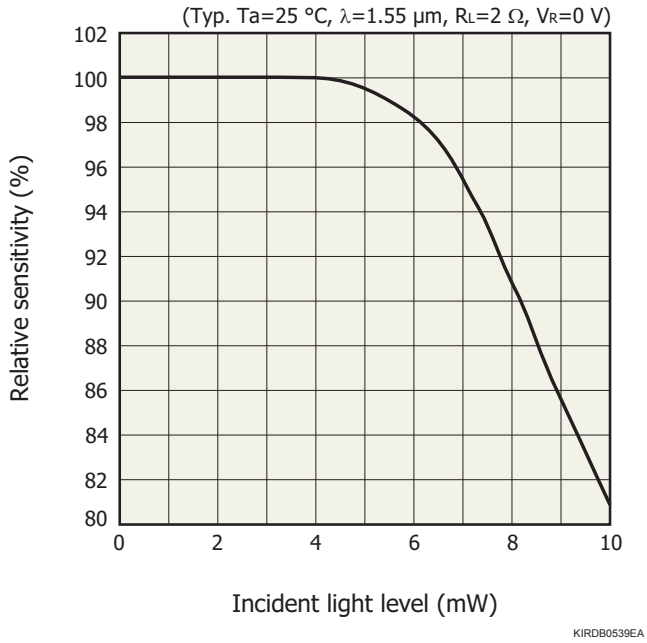
KIRDB0491EC

Photosensitivity temperature characteristics



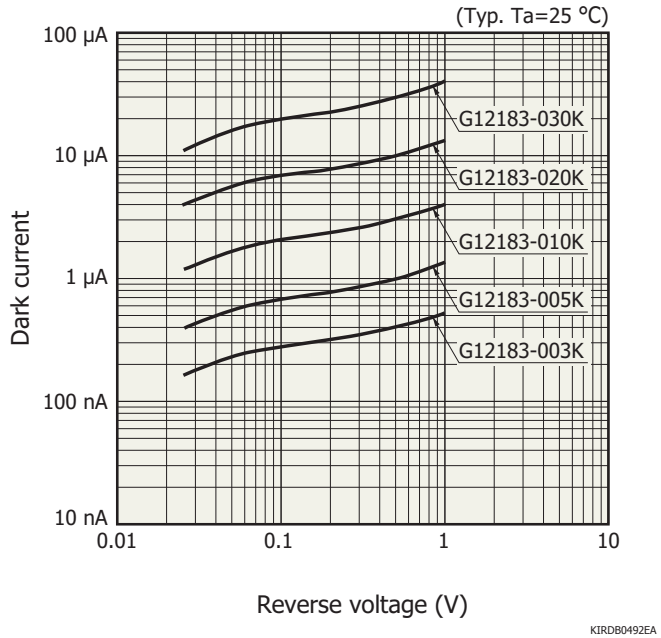
KIRDB0206EA

Linearity (G12183-010K)

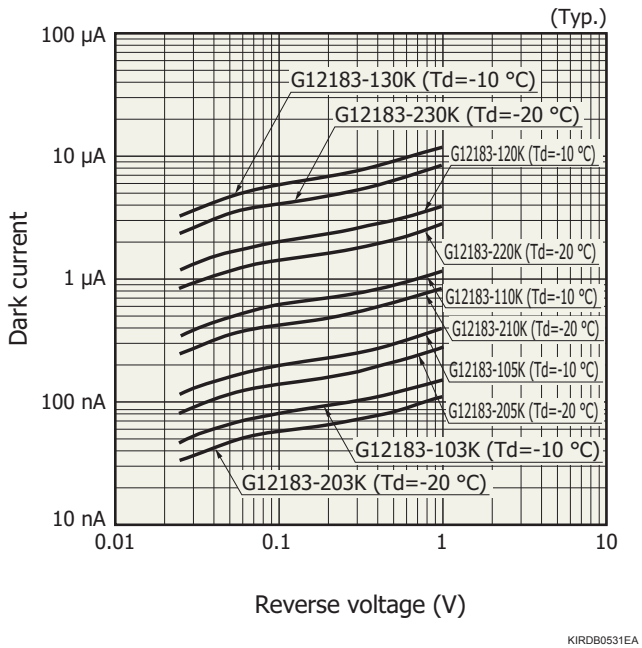


Dark current vs. reverse voltage

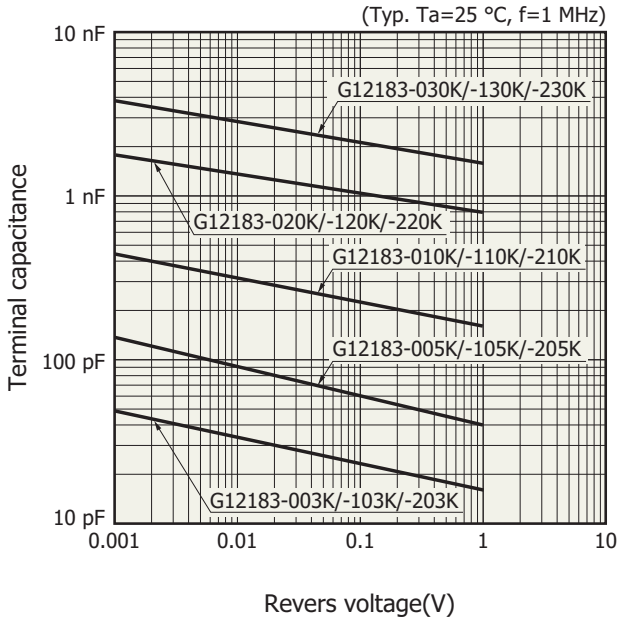
Non-cooled type



TE-cooled type

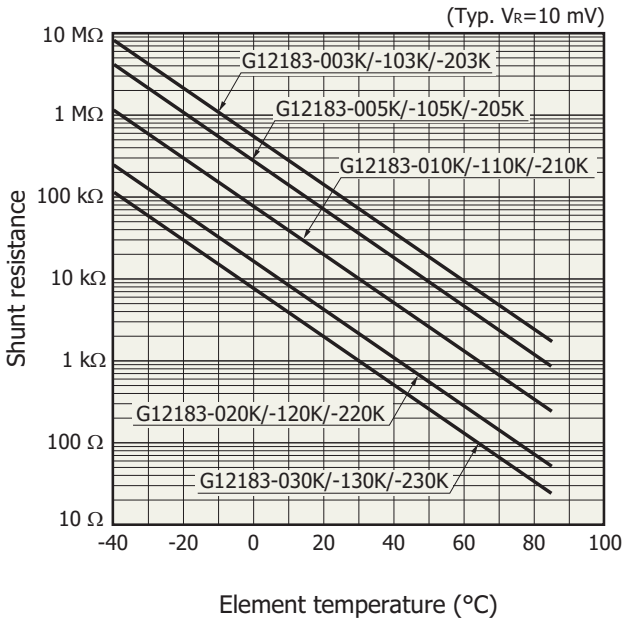


Terminal capacitance vs. reverse voltage



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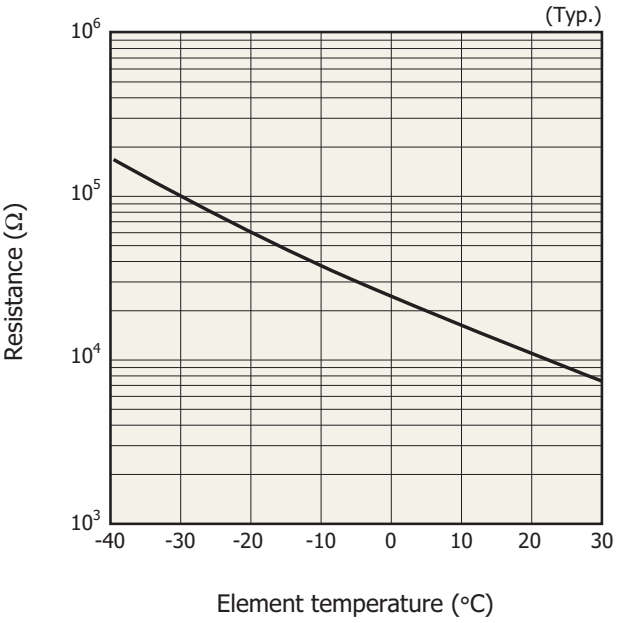
Shunt resistance vs. element temperature



KIRDB0494EB

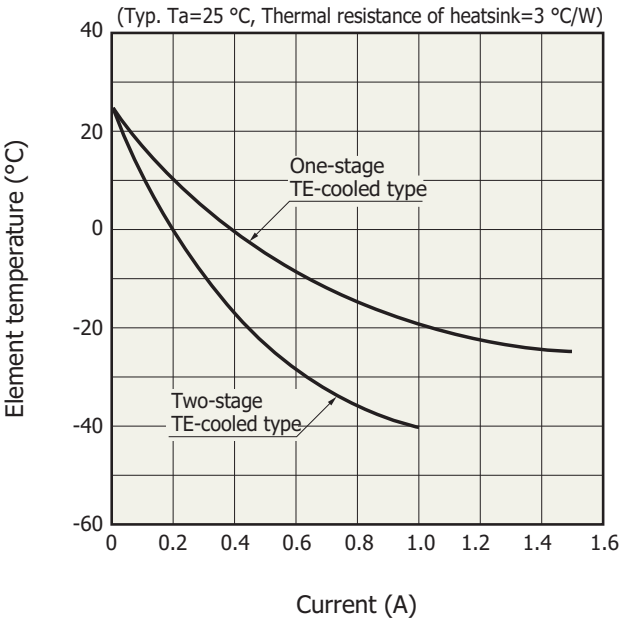
The operating temperature for one-stage and two-stage TE-cooled types is up to 70 °C.

Thermistor temperature characteristics



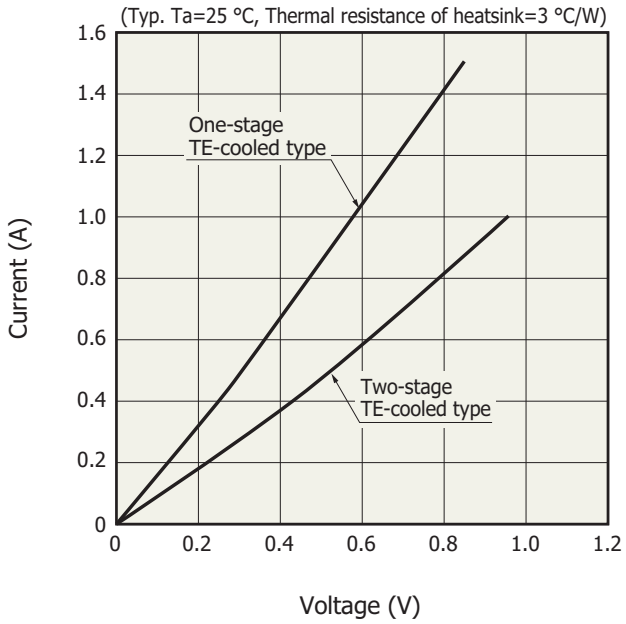
KIRDB0116EA

Cooling characteristics of TE-cooler



KIRDB0231EA

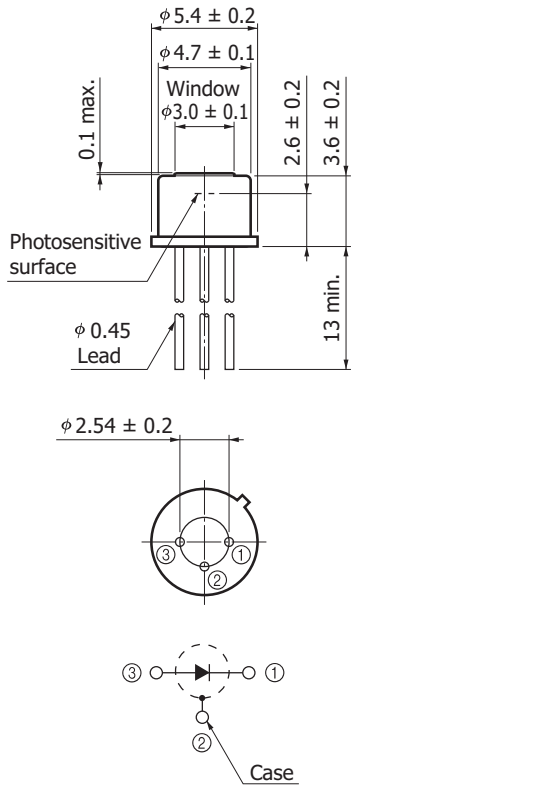
Current vs. voltage (TE-cooler)



KIRDB0115EB

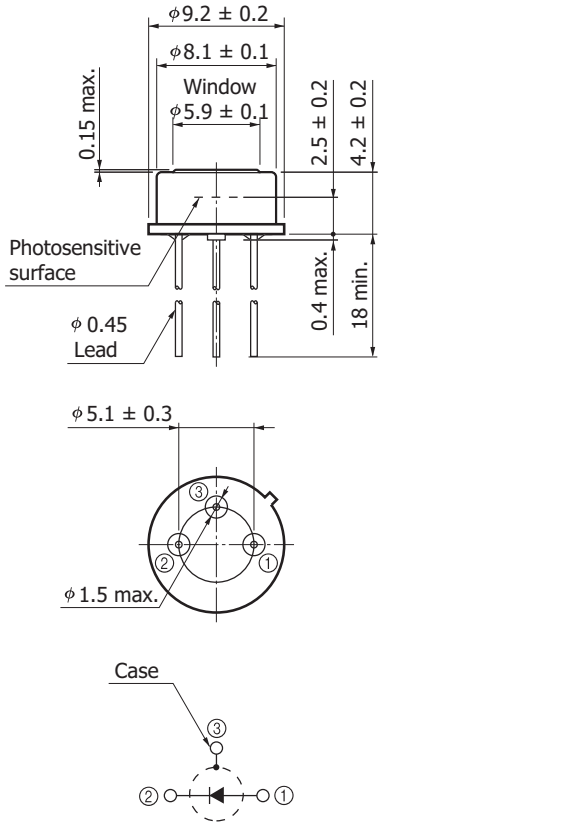
Dimensional outlines (unit: mm)

(1) G12183-003K/-005K/-010K



Distance from photosensitive
area center to cap center
-0.2≤X≤+0.2
-0.2≤Y≤+0.2

(2) G12183-020K/-030K

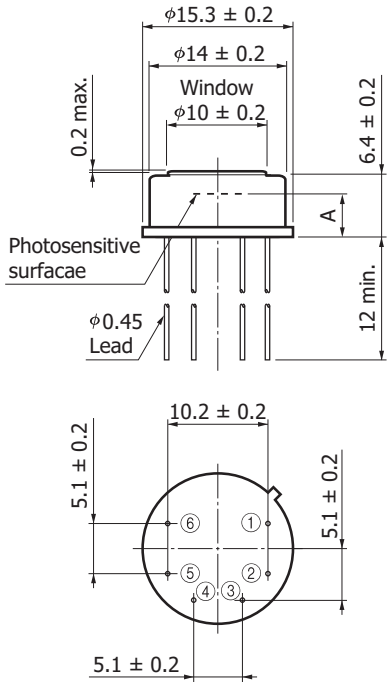


Distance from photosensitive
area center to cap center
-0.2≤X≤+0.2
-0.2≤Y≤+0.2

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(3) G12183-103K/-105K/-110K/-120K/-130K



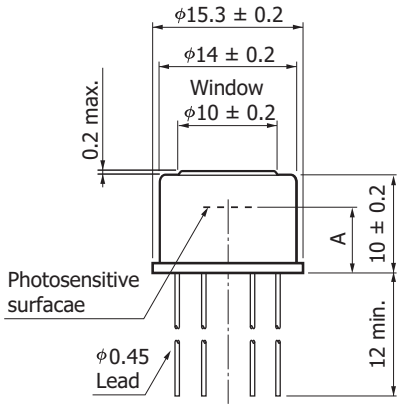
① Detector (anode)
② Detector (cathode)
③ TE-cooler (-)
④ Te-cooler (+)
⑤⑥ Thermistor

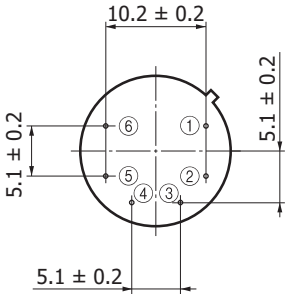
Distance from photosensitive area center to cap center
-0.3≤X≤+0.3
-0.3≤Y≤+0.3

	G12183-103K /-105K/110K	G12183-120K /-130K
A	4.3 ± 0.2	4.4 ± 0.2

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(4) G12183-203K/-205K/-210K/-220K/-230K





① Detector (anode)
② Detector (cathode)
③ TE-cooler (-)
④ Te-cooler (+)
⑤⑥ Thermistor

Distance from photosensitive area center to cap center
-0.3≤X≤+0.3
-0.3≤Y≤+0.3

	G12183-203K /-205K/-210K	G12183-220K /-230K
A	6.6 ± 0.2	6.7 ± 0.2

KIRDA0229EA

Information described in this material is current as of April, 2013.
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.
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