HAMAMATSU
PHOTON IS OUR BUSINESS

InAsSb photovoltaic detector arrays

P15742 series

16, 46 element array capable of detecting up to 5 µm band

The P15742 series is one-dimensional InAsSb photovoltaic detector array in a ceramic DIP (dual inline package). They have a back-illuminated structure that achieves low crosstalk. These are environmentally friendly infrared detectors that do not use lead, mercury, or cadmium, which are substances restricted by the RoHS Directive.

Features

- **High sensitivity**
- **Low crosstalk**
- **RoHS compliant (lead, mercury, cadmium free)**

Applications

- **Infrared spectrophotometry**
- **Temperature measurement**
- **Remote sensing**

Structure

Parameter	P15742-016DS	P15742-046DS	Unit
Number of elements	16	46	-
Element size	0.45 × 0.7	0.2 × 0.7	mm
Element pitch	0.5	0.25	mm
Package	18-pin ceramic DIP	48-pin ceramic DIP	-
Window material	Sapphire		-

Absolute maximum ratings (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Value	Unit
Reverse voltage	V_R		1	V
Operating temperature	Topr	No dew condensation*1	-20 to +70	°C
Storage temperature	Tstg	No dew condensation*1	-20 to +80	°C

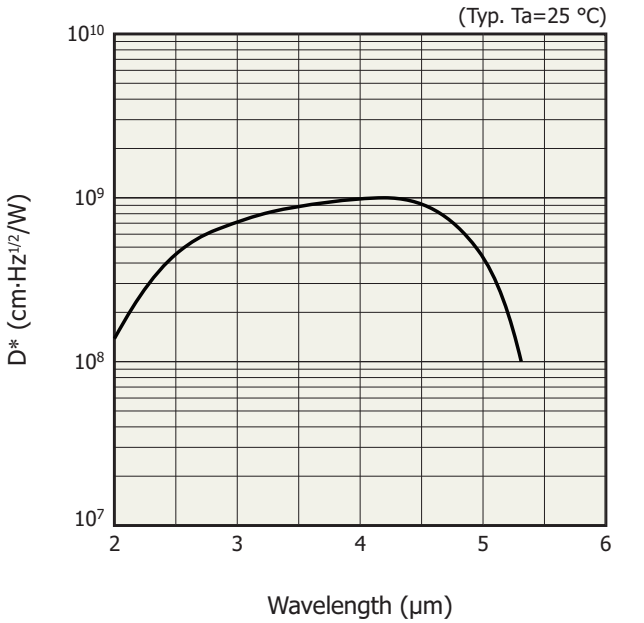
*1: When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
Note: Exceeding the absolute maximum ratings 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)

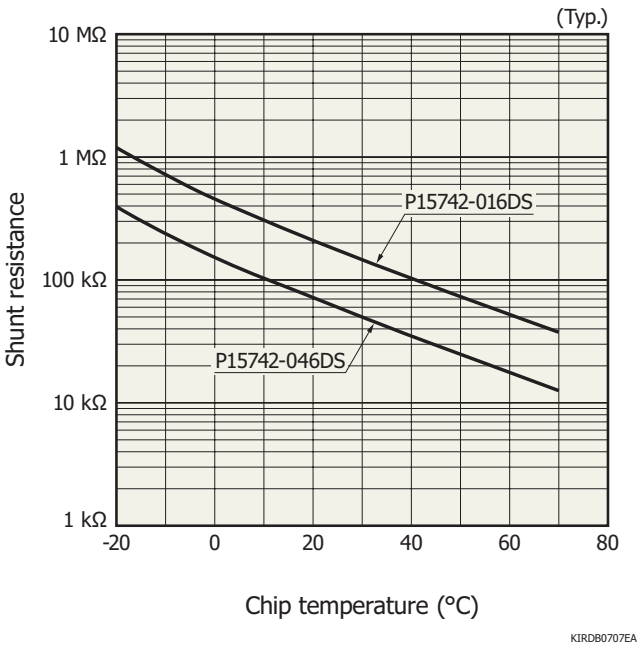
Parameter	Symbol	Condition	P15742-016DS			P15742-046DS			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Peak sensitivity wavelength	λp		-	4.1	-	-	4.1	-	µm
Cutoff wavelength	λc		5	5.3	-	5	5.3	-	µm
Photosensitivity	S	λ=λp	5	6.5	-	11.6	14.6	-	mA/W
Shunt resistance	Rsh	V_R=10 mV	70	180	-	24	60	-	kΩ
Detectivity	D*	(λp, 1200, 1)	8×10^8	1×10^9	-	8×10^8	1×10^9	-	cm·Hz$^{1/2}$/W
Rise time	tr	V_R=0 V, R_L=50 Ω 10 to 90%, λ=1.55 µm	-	15	-	-	15	-	ns
Terminal capacitance	Ct	V_R=0 V, f=1 MHz	-	40	-	-	50	-	pF
Noise equivalent power	NEP	λ=λp	-	5.6×10^{-11}	7×10^{-11}	-	4.2×10^{-11}	5.3×10^{-11}	W/Hz$^{1/2}$

Note: Uniform irradiation on the entire photosensitive area

Spectral response

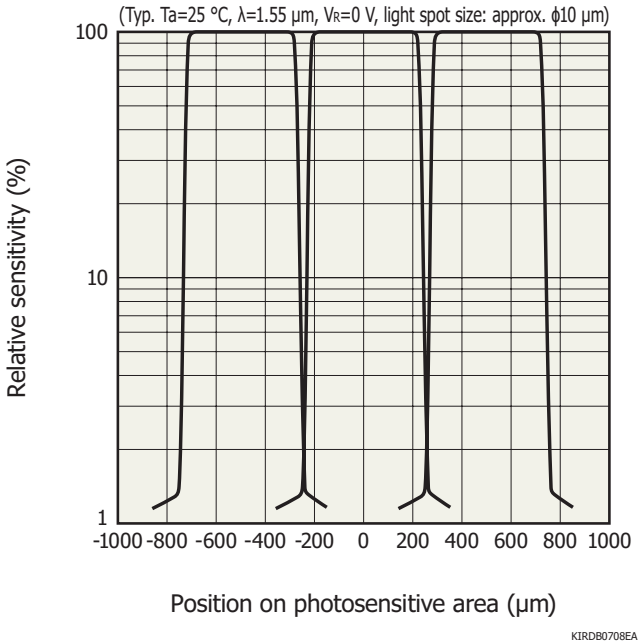


Shunt resistance vs. chip temperature

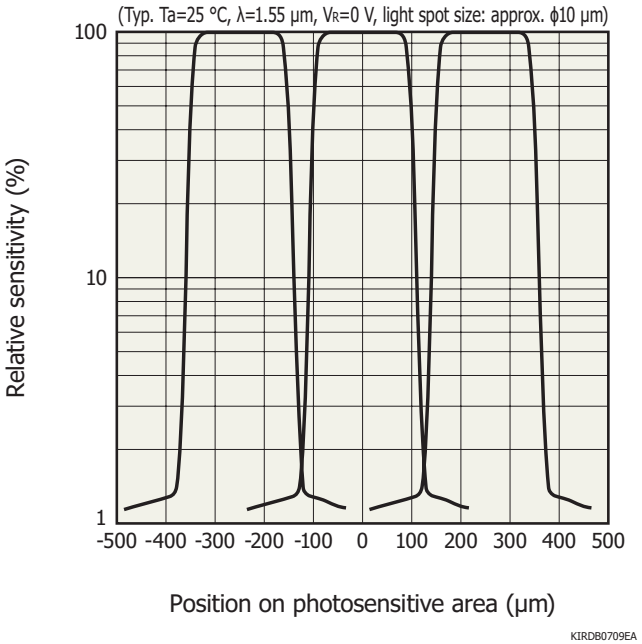


Crosstalk characteristics

P15742-016DS

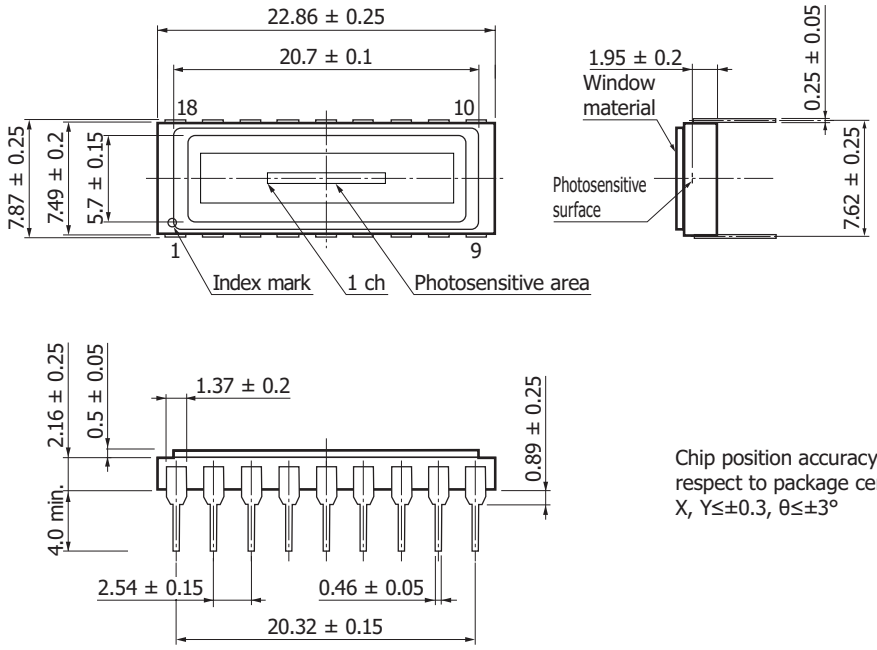


P15742-046DS



Dimensional outlines (unit: mm)

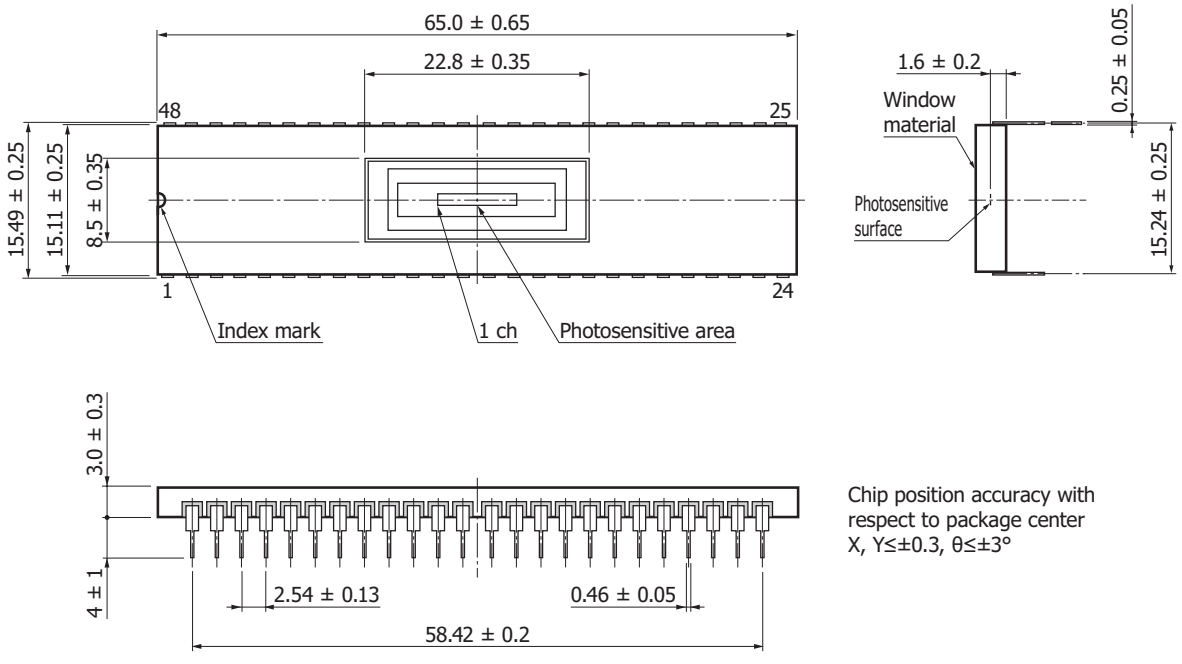
P15742-016DS



Chip position accuracy with respect to package center
X, Y≤±0.3, θ≤±3°

KIRDA0270EA

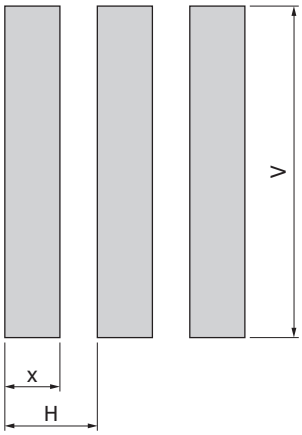
P15742-046DS



Chip position accuracy with respect to package center
X, Y≤±0.3, θ≤±3°

KIRDA0271EA

Details of photosensitive area (unit: mm)



Number of elements	x	H	V
16	0.45	0.5	0.7
46	0.2	0.25	

KIRDC0131EA

Pin connections

Pin no.	P15742-016DS	P15742-046DS	Pin no.	P15742-016DS	P15742-046DS
1	KC	KC	25		KC
2	2	2	26		45
3	4	4	27		43
4	6	6	28		41
5	8	8	29		39
6	10	10	30		37
7	12	12	31		35
8	14	14	32		33
9	16	16	33		31
10	KC	18	34		29
11	15	20	35		27
12	13	22	36		25
13	11	24	37		23
14	9	26	38		21
15	7	28	39		19
16	5	30	40		17
17	3	32	41		15
18	1	34	42		13
19		36	43		11
20		38	44		9
21		40	45		7
22		42	46		5
23		44	47		3
24		46	48		1

Note: KC: cathode (common), other than cathode: anode

Recommended soldering conditions

Solder temperature: 260°C (5 s or less, once)
Solder the leads at a point at leat 1.5mm away from the package body.

Note: When you set soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Related information

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

■ Precautions
· Disclaimer
· Safety consideration
· Compound opto-semiconductors (photosensors, light emitters)

■ Technical note
· Compound semiconductor photosensors

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