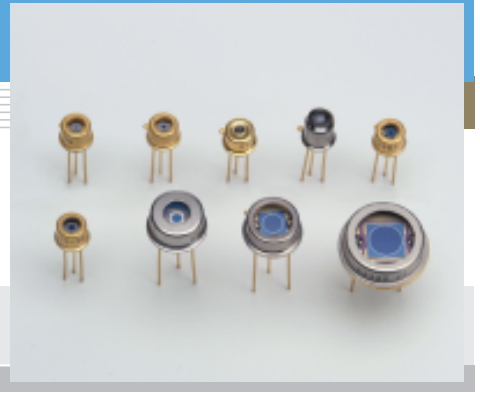


# Si APD

## S2381 to S2385, S5139, S8611, S3884, S4315 series

Low bias operation, for 800 nm band



### Features

- Stable operation at low bias
- High-speed response
- High sensitivity and low noise

### Applications

- Spatial light transmission
- Rangefinder

### ■ General ratings / Absolute maximum ratings

Type No.	Dimensional outline/ Window material *1	Package	Active area *2 size (mm)	Effective active area (mm <sup>2</sup> )	Absolute maximum ratings	
					Operating temperature T <sub>opr</sub> (°C)	Storage temperature T <sub>stg</sub> (°C)
S2381	①/K	TO-18	φ0.2	0.03	-20 to +85	-55 to +125
S2382			φ0.5	0.19		
S5139						
S8611			③/L			
S2383	①/K	TO-5		φ1.0		
S2383-10 *3			④/K	φ1.5		
S3884	⑤/K	φ3.0		7.0		
S2384		⑥/K	TO-8	φ5.0		
S2385						

### ■ Electrical and optical characteristics (Typ. T<sub>a</sub>=25 °C, unless otherwise noted)

Type No.	Spectral response range λ (nm)	Peak *4 sensitivity wavelength λ <sub>p</sub> (nm)	Photo sensitivity S M=1 λ=800 nm (A/W)	Quantum efficiency QE M=1 λ=800 nm (%)	Breakdown voltage V <sub>BR</sub> I <sub>D</sub> =100 μA		Temp. coefficient of V <sub>BR</sub> (V/°C)	Dark current I <sub>D</sub> *4		Cut-off *4 frequency f <sub>c</sub> R <sub>L</sub> =50 Ω (MHz)	Terminal *4 capacitance C <sub>t</sub> (pF)	Excess Noise figure *4 x λ=800 nm	Gain M λ=800 nm
					Typ. (V)	Max. (V)		Typ. (nA)	Max. (nA)				
S2381	400 to 1000	800	0.5	75	150	200	0.65	0.05	0.5	1000	1.5	0.3	100
S2382								0.1	1	900	3		
S5139													
S8611								0.5	5	400	10		
S2383													
S2383-10 *3								3	30	40	95		
S3884													
S2384													
S2385													

\*1: Window material K: borosilicate glass, L: lens type borosilicate glass

\*2: Active area in which a typical gain can be obtained

\*3: This is a variant of S2383 in which the device chip is light-shielded by aluminum coating except for the active area

\*4: Measured under conditions that the device is operated at the gain listed in the specification table

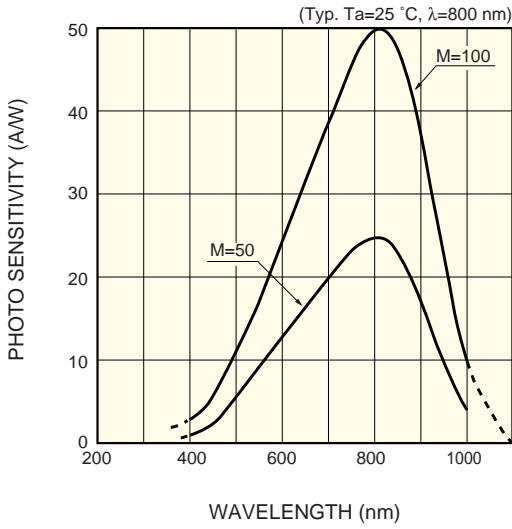
Note) The following different breakdown voltage ranges are available.

S2381, S2382, S5139, S8611, S3884: -01 (80 to 120 V), -02 (120 to 160 V), -03 (160 to 200 V)

S2381-10: -10A (80 to 120 V), -10B (120 to 160 V), -10C (160 to 200 V)

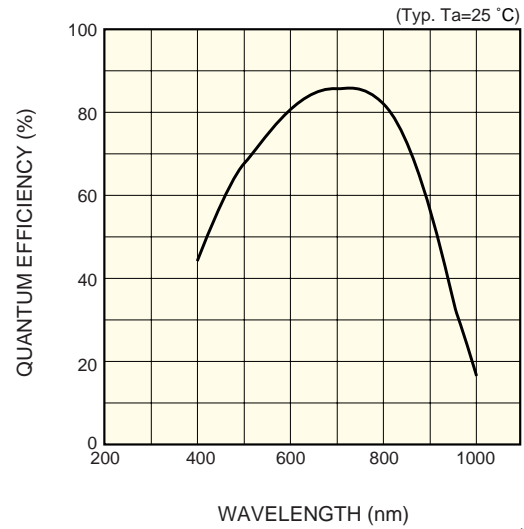
**SOLID STATE DIVISION**

■ Spectral response



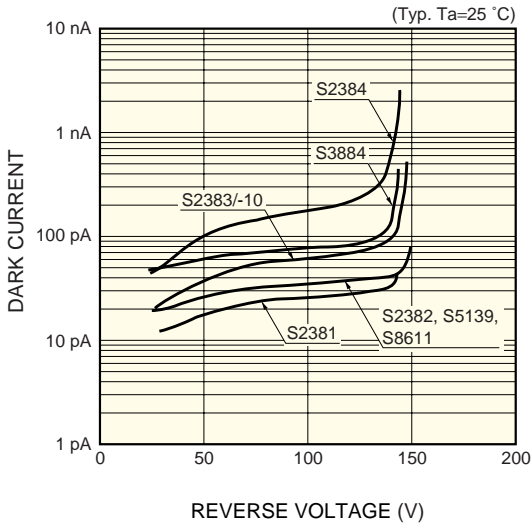
KAPDB0020EB

■ Quantum efficiency vs. wavelength



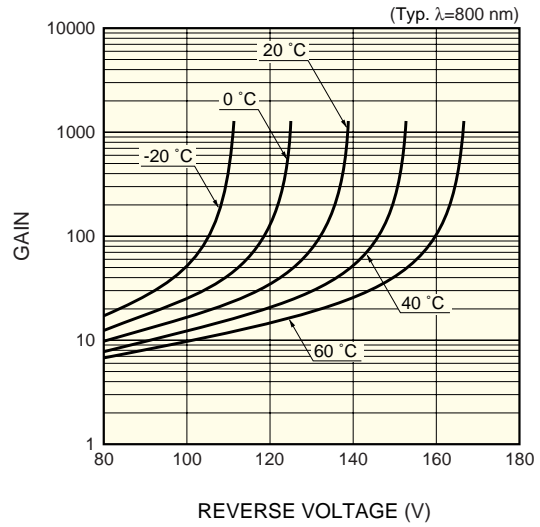
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■ Dark current vs. reverse voltage



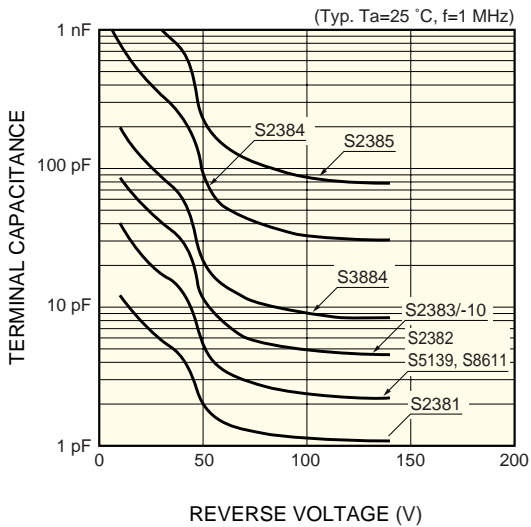
KAPDB0016EC

■ Gain vs. reverse voltage



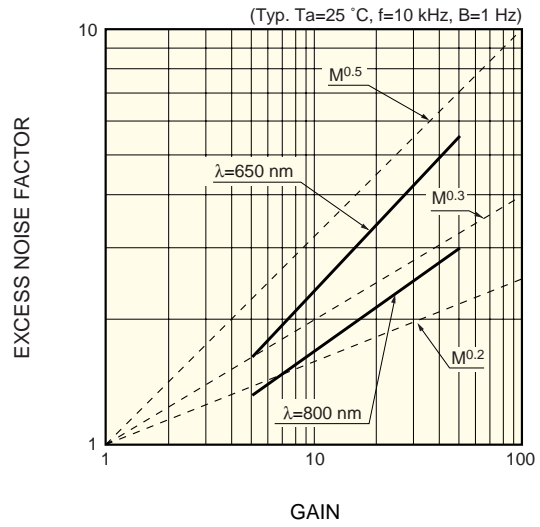
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■ Terminal capacitance vs. reverse voltage



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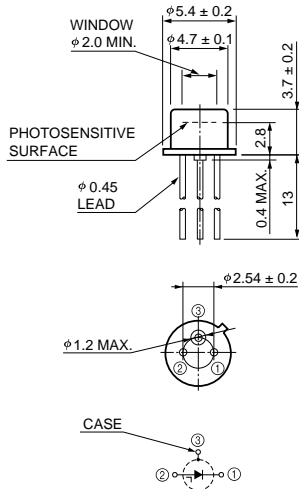
■ Excess noise factor vs. gain



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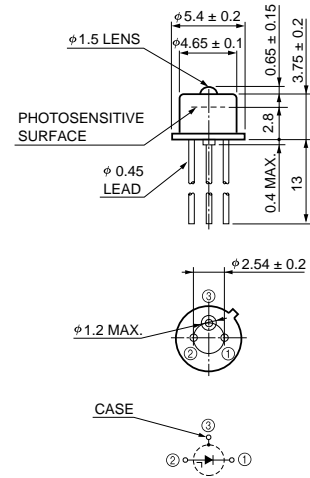
## Dimensional outlines (unit: mm)

① S2381, S2382, S2383/-10



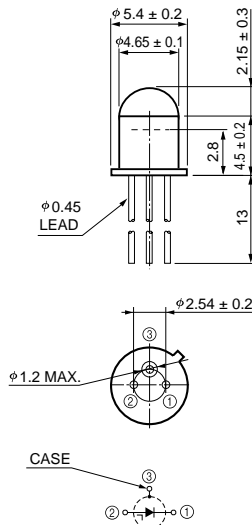
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② S5139



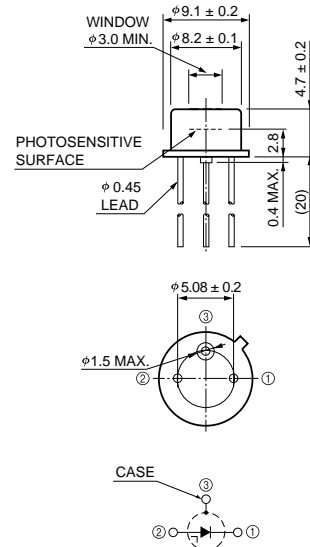
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③ S8611



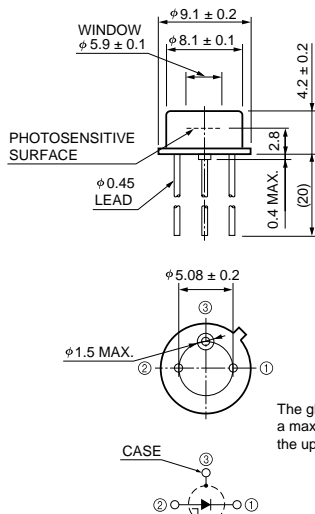
KAPDA0031EA

④ S3884



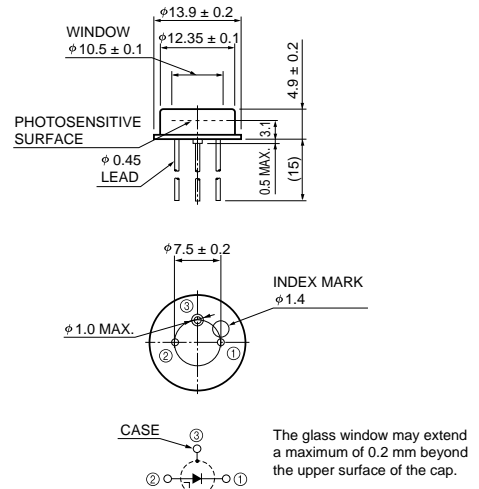
KAPDA0011EB

⑤ S2384



KAPDA0012EA

⑥ S2385



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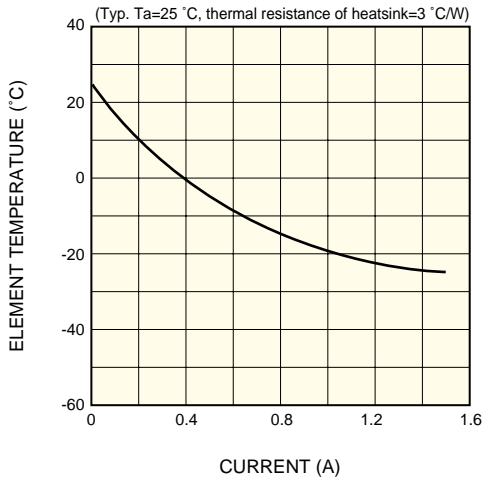
## TE-cooled type APD S4315 series

Parameter	Symbol	Condition	S4315	S4315-01	S4315-02	S4315-04	Unit
APD	-		S2381	S2382	S2383	S2384	-
Effective active area *5	-		φ0.2	φ0.5	φ1.0	φ3.0	mm
Spectral response range	$\lambda$		400 to 1000				nm
Peak sensitivity wavelength	$\lambda_p$	M=60	-		800		nm
		M=100	800		-		
Cooling temperature	$\Delta T$		35				°C
Package	-		TO-8				-

\*5: Active area in which a typical gain can be obtained.

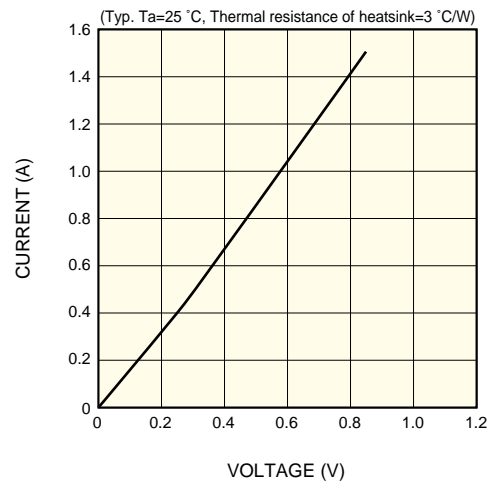
We welcome your request for active areas different from those listed above.

### Cooling characteristic of TE-cooler



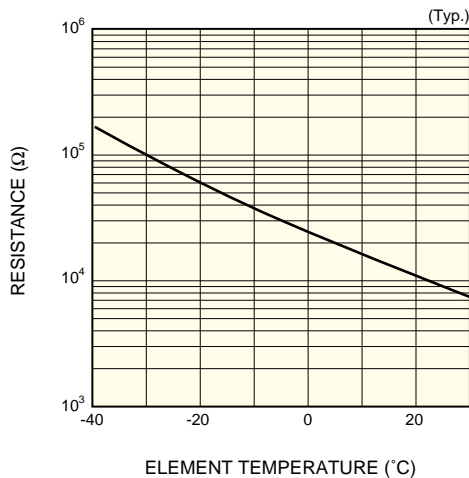
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### Current vs. voltage characteristic of TE-cooler



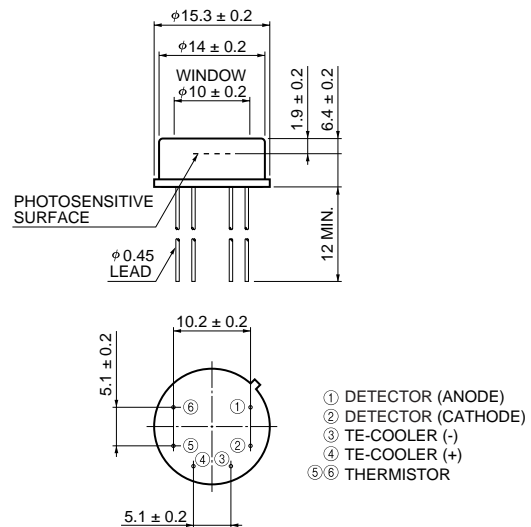
KAPDB0100EA

### Thermistor temperature characteristic



KIRDB0116EA

### Dimensional outline (unit: mm)



KAPDA0020EB

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Type numbers of products listed in the specification sheets or supplied as samples may have a suffix "(X)" which means tentative specifications or a suffix "(Z)" which means developmental specifications. ©2010 Hamamatsu Photonics K.K.

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