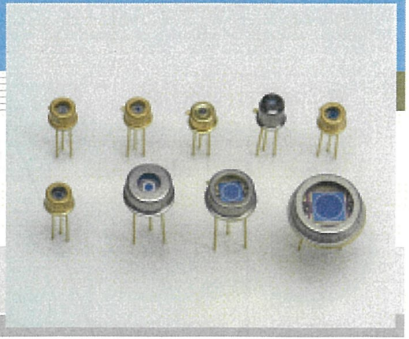


# Si APD

## 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	TO-5		
S2383	φ3.0	7.0				
S2383-10 *3						
S3884	④/K	TO-8	φ5.0	19.6		
S2384	⑤/K					
S2385	⑥/K					

### 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 *4 I <sub>D</sub>		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								0.2	2	600	6		
S8611								0.5	5	400	10		
S2383								1	10	120	40		
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)

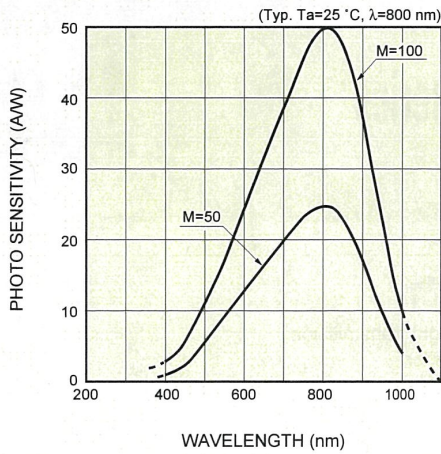
**SOLID  
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**HAMAMATSU**

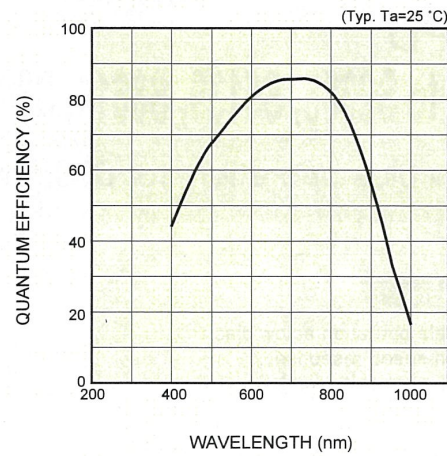
1

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

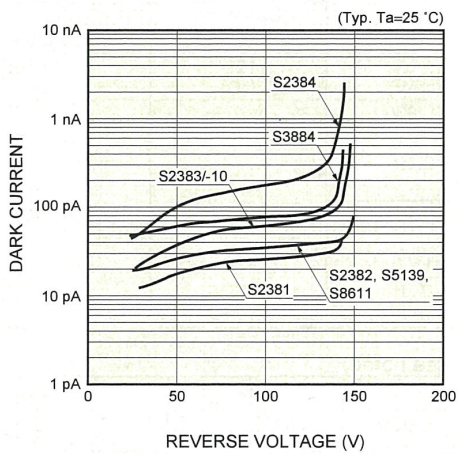
## ■ Spectral response



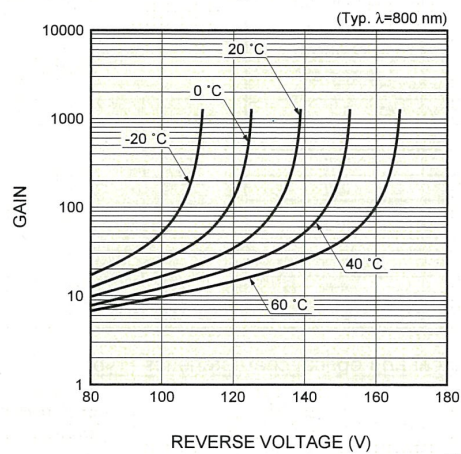
## ■ Quantum efficiency vs. wavelength



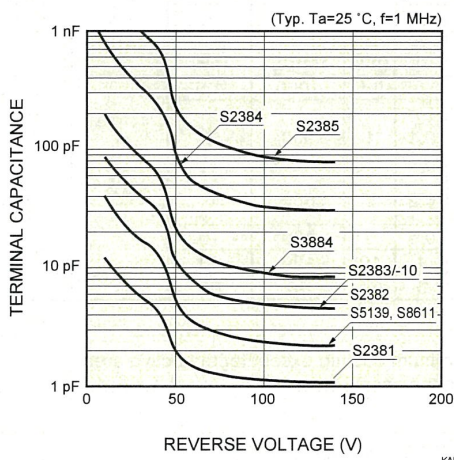
## ■ Dark current vs. reverse voltage



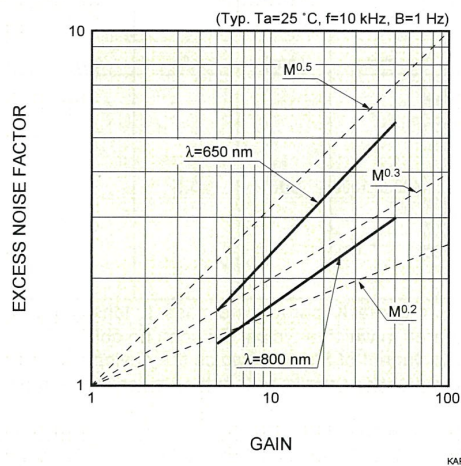
## ■ Gain vs. reverse voltage



## ■ Terminal capacitance vs. reverse voltage



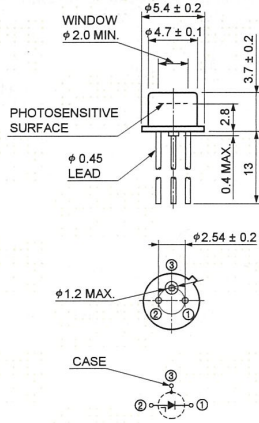
## ■ Excess noise factor vs. gain



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

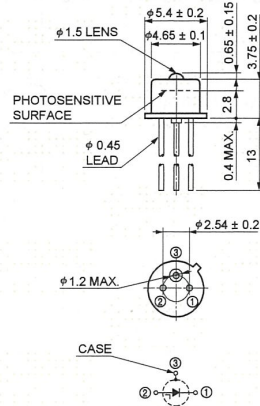
## Dimensional outlines (unit: mm)

① S2381, S2382, S2383/-10



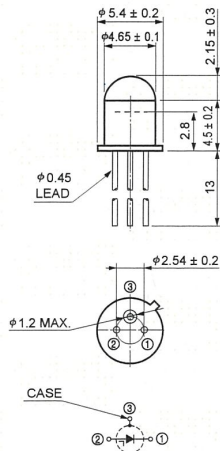
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② S5139



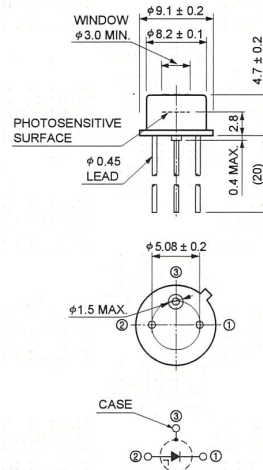
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③ S8611



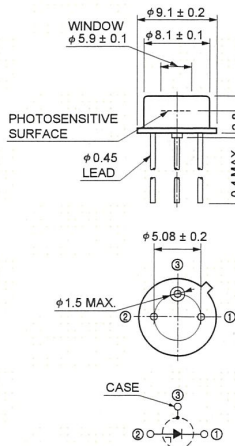
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④ S3884



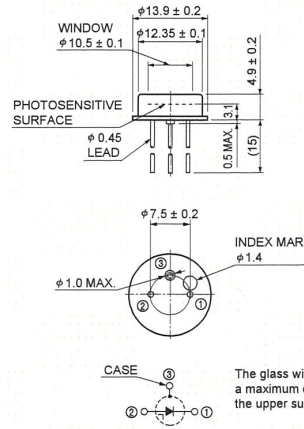
KAPDA0011EB

⑤ S2384



KAPDA0012EA

⑥ S2385



KAPDA0013ED

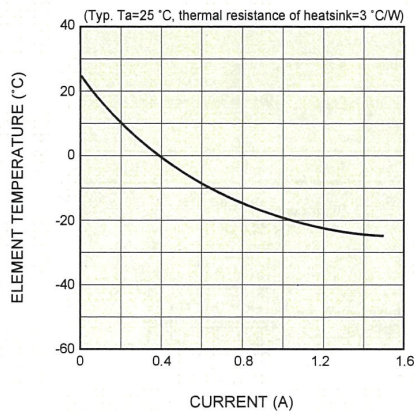
The glass window may extend a maximum of 0.2 mm beyond the upper surface of the cap.

The glass window may extend a maximum of 0.2 mm beyond the upper surface of the cap.

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 * <sup>b</sup>	-		φ0.2	φ0.5	φ1.0	φ3.0	mm	
Spectral response range	λ		400 to 1000					
Peak sensitivity wavelength	λ <sub>p</sub>	M=60	-			800	nm	
		M=100	800			-	nm	
Cooling temperature	ΔT		35				°C	
Package	-		TO-8				-	

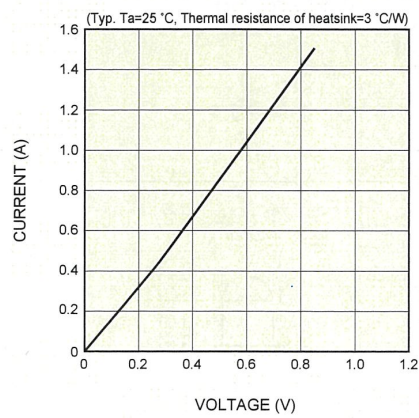
\*5: Active area in which a typical gain can be obtained.  
We welcome your request for active areas different from those listed above.

■ Cooling characteristic of TE-cooler



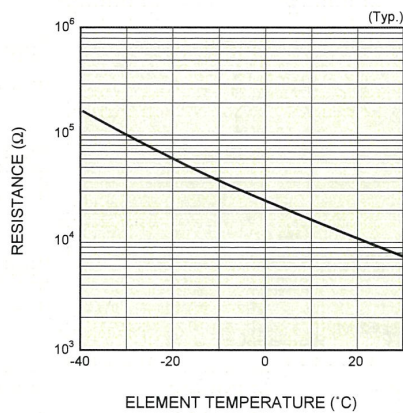
KAPD80098EA

■ Current vs. voltage characteristic of TE-cooler



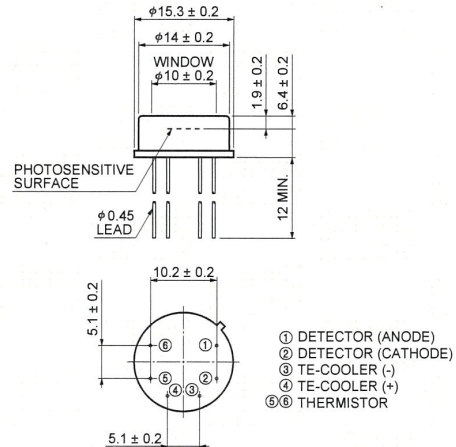
KAPD80100EA

■ Thermistor temperature characteristic



KIRD80116EA

■ Dimensional outline (unit: mm)



KAPDA0000EB

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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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