

Features

- High sensitivity
- High reliability
- High-speed response
S1223: $f_c=30$ MHz
S1223-01: $f_c=20$ MHz
- Low capacitance

Applications

- Optical measurement equipment
- Analytical equipment, etc.

General ratings

Parameter	Symbol	S1223	S1223-01	Unit
Window material	-	borosilicate glass		-
Package	-	TO-5		-
Active area size	A	2.4 × 2.8	3.6 × 3.6	mm
Effective active area	-	6.6	13	mm ²

Absolute maximum ratings

Parameter	Symbol	S1223	S1223-01	Unit
Reverse voltage	V_R Max.	30		V
Power dissipation	P	100		mW
Operating temperature	T_{opr}	-40 to +100		°C
Storage temperature	T_{stg}	-55 to +125		°C

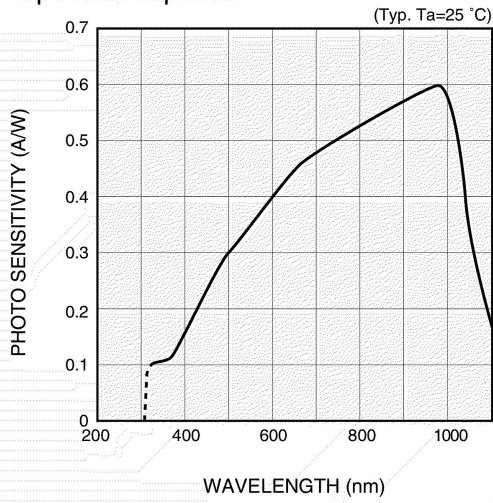
Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	S1223			S1223-01			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	320 to 1100	-	-	320 to 1100	-	nm
Peak sensitivity wavelength	λ_p		-	960	-	-	960	-	nm
Photo sensitivity	S	$\lambda=\lambda_p$	-	0.6	-	-	0.6	-	A/W
		$\lambda=660$ nm	-	0.45	-	-	0.45	-	
		$\lambda=780$ nm	-	0.52	-	-	0.52	-	
		$\lambda=830$ nm	-	0.54	-	-	0.54	-	
Short circuit current	I_{sc}	100 lx	5	6.3	-	10	13	-	μA
Dark current	I_D	$V_R=20$ V	-	0.1	10	-	0.2	10	nA
Temp. coefficient of I_D	T_{CID}		-	1.15	-	-	1.15	-	times/°C
Cut-off frequency	f_c	$V_R=20$ V, -3 dB	-	30	-	-	20	-	MHz
Terminal capacitance	C_t	$V_R=20$ V, $f=1$ MHz	-	10	-	-	20	-	pF
Noise equivalent power	NEP	$V_R=20$ V	-	9.4×10^{-15}	-	-	1.3×10^{-14}	-	W/Hz ^{1/2}

Si PIN Photodiode S1223-01

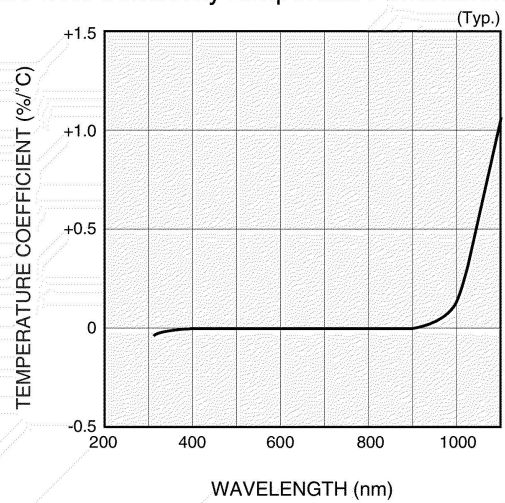
SIVAGO[®]
SEMICONDUCTOR

■ Spectral response



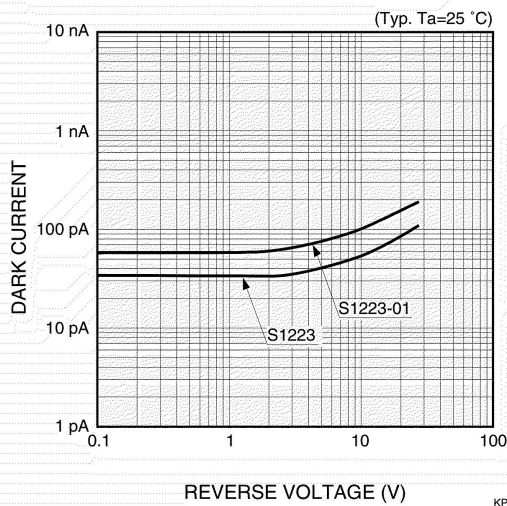
KPINB0143EA

■ Photo sensitivity temperature characteristic



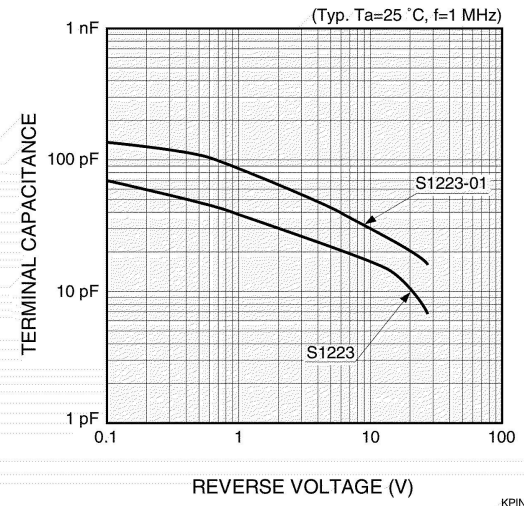
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■ Dark current vs. reverse voltage



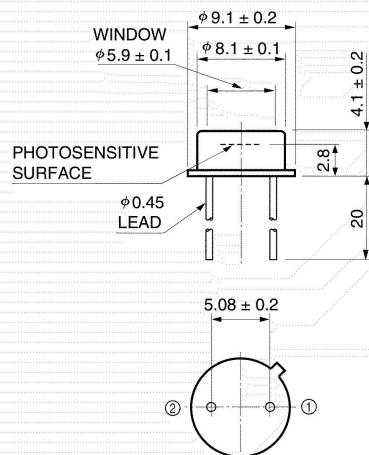
KPINB0145EA

■ Terminal capacitance vs. reverse voltage



KPINB0146EA

■ Dimensional outline (unit: mm)



CONNECTED TO CASE

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

KPINA0073EA

Packing Quantity Specification

1. 200Pcs/1Box,10 Boxes/1 Carton

Label Form Specification

製品名 PRODUCT	
コードNo. CODE No.	
数量 Q'TY	
ロットNo. LOT No.	
備考 REMARKS	
	

- PRODUCT: Part Number
- CODE NO.: Product Serial Number
- QTY: Packing Quantity
- LOT No: Lot Number
- REMARKS:Remarks

Notes

Lead Forming

1. During lead frame bending, the lead frame should be bent at a distance more than 3mm from bottom of the epoxy.

Note: Must fix lead frame and do not touch epoxy before bending to avoid Photodiode broken.

2. Lead forming should be done before soldering.

3. Avoid stressing the Photodiode package during leads forming. The stress to the base may damage the Photodiode's characteristics or it may break the Photodiode.

4. Cut the Photodiode lead frame at room temperature. Cutting the lead frame at high temperatures may cause failure of the Photodiode.

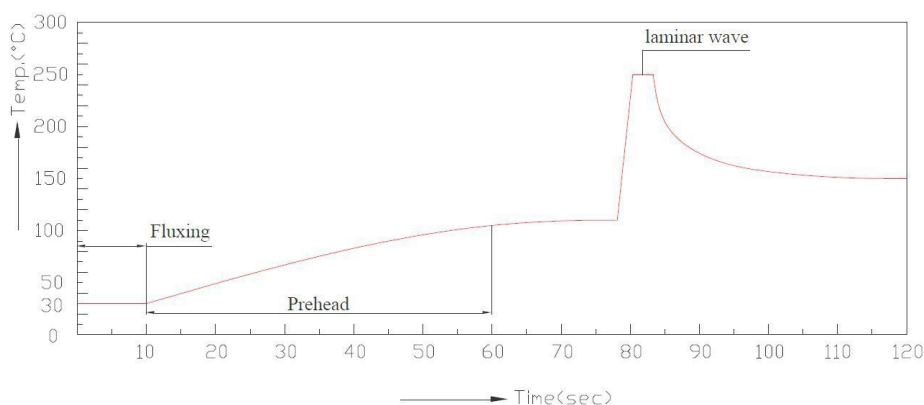
5. When mounting the Photodiode onto a PCB, the PCB holes must be aligned exactly with the lead position of the Photodiode. If the Photodiode are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the Photodiode.

Soldering

- Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.
- Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

3. Recommended soldering profile



- Avoiding applying any stress to the lead frame while the Photodiode are at high temperature particularly when soldering.
- Dip and hand soldering should not be done more than one time
- After soldering the Photodiode, the epoxy bulb should be protected from mechanical shock or vibration until the Photodiode return to room temperature.
- A rapid-rate process is not recommended for cooling the Photodiode down from the peak temperature.
- Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the Photodiode.
- Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

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