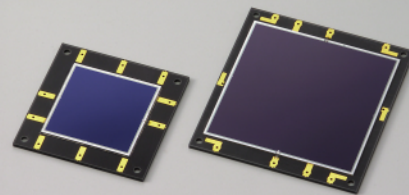


Si PIN photodiode S5377/S4276 series

Large area Si PIN photodiode for direct detection



S5377/S4276 series are large-area photodiodes specifically designed for the direct detection of high-energy charged particles and X-rays. These detectors are mounted on PC boards with openings for the purpose of ΔE detection of charged particles. Other Si detectors and PSDs with different configurations, thicknesses and surface areas are also available upon request.

Features

- Large area
- Low dark current
- Excellent about bias voltage tolerance

Applications

- Heavy ions energy detection
- X-ray detection
- $\Delta E/E$ detection

■ Specifications / Absolute maximum ratings

Type No.	Active area (mm)	Chip thickness (μm)	Uniform thickness (μm)	Surface orientation	Dead layer thickness *1		Absolute maximum ratings			
					Front side (μm)	Rear side (μm)	Reverse voltage V_R (V)	Current (mA)	Operating temperature *2 T_{opr} ($^{\circ}\text{C}$)	Storage temperature *3 T_{stg} ($^{\circ}\text{C}$)
S5377-04	28 × 28	325 ± 15	4.0	(111)	1.5	20	120	2	0 to +60	0 to +80
S5377-05		280 ± 15				2				
S5377-02		500 ± 15				20				
S5377-03		450 ± 15				2				
S4276-02	48 × 48	325 ± 15	5.0			20	120			
S4276-03		280 ± 15				2				

*1: Estimated value

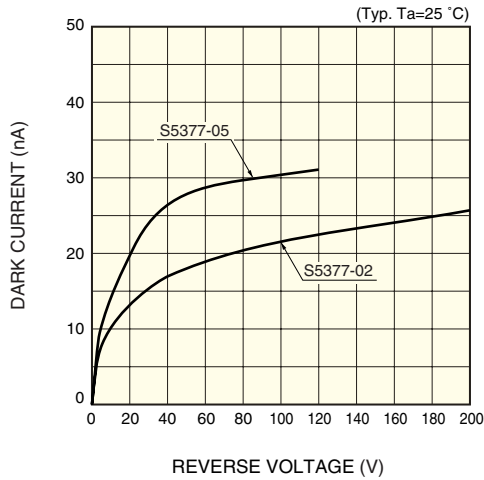
*2: No condensation

■ Electrical and optical characteristics (Typ. $T_a=25^{\circ}\text{C}$, unless otherwise noted)

Type No.	Full depletion voltage V_D Max. (V)	Dark current I_D		Rise time *3 t_r (ns)	Terminal capacitance C_t $V_R = V_D$ $f=100\text{ kHz}$ (pF)
		Typ. (nA)	Max. (nA)		
S5377-04	100	10	50	70	300
S5377-05		60	300		320
S5377-02	170	30	150	40	190
S5377-03		200	1000		200
S4276-02	100	20	100	100	860
S4276-03		200	1000		900

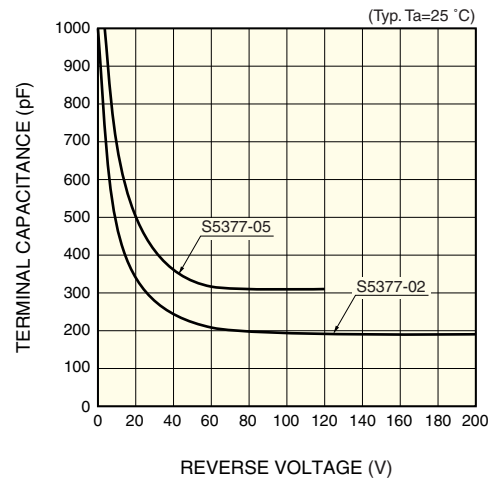
*3: Rise time is the time required for transition from 10 % to 90 % of the peak output value. The light source is a delta function pulse of a laser diode (800 nm) and the load resistance is 50 Ω .

■ Dark current vs. reverse voltage



KPINB0235EA

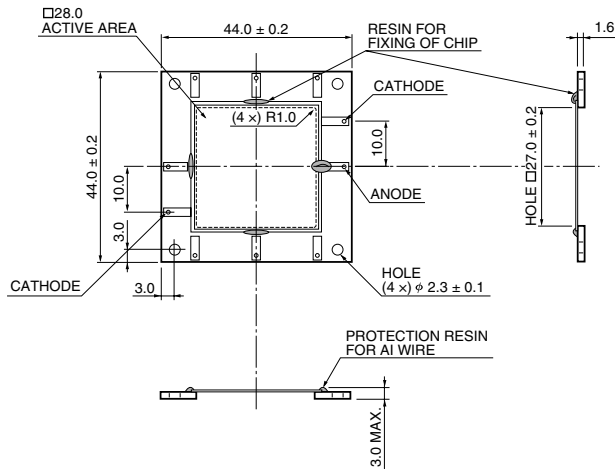
■ Terminal capacitance vs. reverse voltage



KPINB0236EA

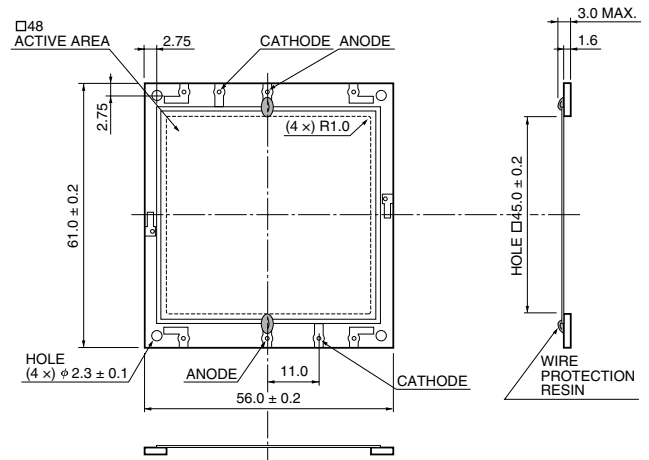
■ Dimensional outlines [unit: mm, tolerance unless otherwise noted: ±0.2, material of PCB: G10 (black)]

S5377 series



KSPDA0023EC

S4276 series



KSPDA0024EB

■ Reference

T. MOTOBAYASHI, et al., "PARTICLE IDENTIFICATION OF HEAVY IONS WITH LARGE SILICON DETECTORS", Nucl. Instr. Meth. A284 (1989) 526-528

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