

X-RAY Windows



Applications

X-ray Detectors

- Si(Li) Detectors
- Si-PIN Detectors
- Silicon Drift Detectors (SDD)

The transmission of light element energies through the AP3.3 and AP3.7 windows is given in the table below:

Atomic Number	Element	Transmission ($K\alpha$) (% of maximum)	
		AP3.3	AP3.7
14	Si	74%	70%
13	Al	75%	72%
11	Na	69%	62%
9	F	54%	38%
8	O	47%	%
7	N	31%	13%
6	C	47%	33%
5	B	29%	11%
4	Be	9%	1%

AP3 Windows

Ultra-thin Polymer X-ray Windows

AP3 ultra-thin polymer windows are the highest performing x-ray windows available for low energy x-ray analysis. AP3 windows are ideal for applications that require high x-ray transmission of light element energies, high mechanical strength, light rejection, vacuum tightness, and reliability.

Features

Ultra-thin polymer window
Silicon support structure
UV, IR, and visible light rejection
DuraCoat™
Uniform thickness
High purity

Benefits

High transmission of low energies
High mechanical strength, durable
Low detector noise
Chemical resistant, hermetic seal
Uniform transmission
Low spectral contamination

Window Composition

AP3 windows are composed of ultra-thin layers of MOXTEK polymer, DuraCoat™, and aluminum. AP3 windows are supported by a silicon support structure which is attached to a metal mount.

X-Ray Transmission

AP3.3 windows are used in applications that require the highest transmission of low energy x-rays. AP3.7 windows are used in applications where maximum light element sensitivity is not required. Both of these windows are used in applications where conventional beryllium windows are ineffective.

Light Rejection and Vacuum Tightness

AP3 windows provide excellent rejection of UV, IR, and visible light. AP3 windows also provide a hermetic barrier to gases. Every window is tested and is guaranteed to have a leak rate of less than 5×10^{-10} mbar L/sec of helium.

Mechanical Strength

AP3 windows are supported by a rigid silicon grid with 77% open area. This patented window design enables the window to withstand over 1.3 atmospheres of differential pressure. AP3 windows have survived over 100,000 cycles at a differential pressure of 1.2 atm without degradation in window performance.

Corrosion Resistant

The proprietary MOXTEK DuraCoat™ treatment enables the AP3 window to withstand hostile environments. DuraCoat provides exceptional corrosion resistance in 100% humidity.

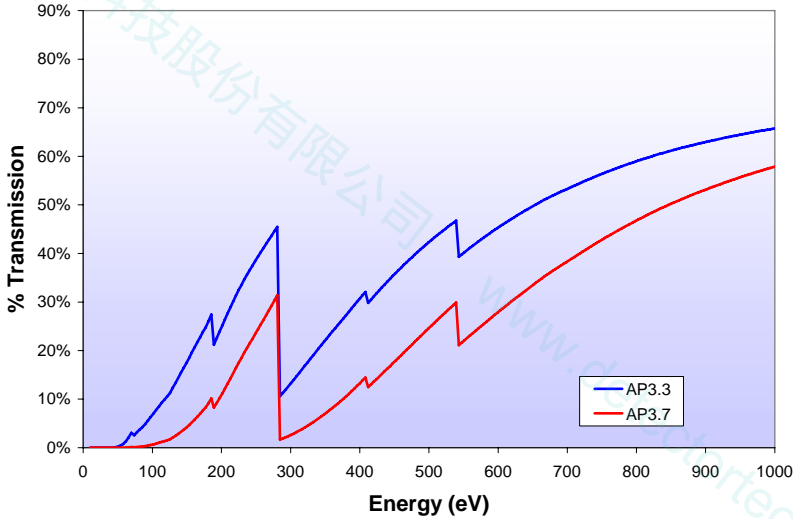


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MOXTEK

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X-Ray Transmission, Film + Grid
AP3.3 and AP3.7 X-RAY WINDOWS



Standard Window Sizes

Common window sizes available are shown in the following table. Windows can be custom fabricated.

Part Number	Active Area (mm ²)	ID (mm)	OD (mm)	Support Thickness (mm)
Window and mount are circular and concentric				
SWN00367	10	3.6	7.9	0.38
SWN00373	16	4.6	6.6	0.38
SWN00309	18	4.8	9.4	0.38
SWN00357	25	5.6	7.9	0.38
SWN00366	32	6.4	9.1	0.38
SWN00342	32	6.4	9.9	0.38
SWN00307	32	6.4	10.7	0.38
SWN00356	49	7.9	12.2	0.38
SWN00315	82	10.2	14.0	0.76
SWN00322	99	11.2	17.8	0.76
Circular window is off-centered in a circular mount				
SWN00343	20	5.1	8.4	0.38

Part Number	Active Area (mm ²)	Window Diameter (mm)	Mount l x w (mm)	Support Thickness (mm)
Circular window is centered in a rectangular mount				
SWN00053	6.2	2.8	4.2 x 5.6	0.38
SWN00368	10.2	3.6	5.3 x 7.4	0.38

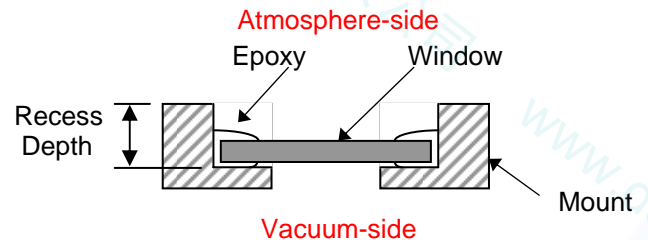
Window Specifications

Parameter	Specification
Open Area	77%
He Leak Rate	<5x10 ⁻¹⁰ mbarL/sec
Maximum Temperature (1 atm Differential)	40°C
Maximum Temperature (Zero Pressure Differential)	70°C
Front Burst Pressure Limit	2 atm
Back-Pressure Tolerance	1 atm
Minimum energy transmission	Be(K _α)

Mounting

AP3 windows are bonded to a metal mount. Mounts may be supplied or machined by MOXTEK. The preferred mount material is stainless steel 316 or other hard alloy. Aluminum can be used as an alternative. A drawing should be supplied that illustrates the orientation of the window support structure with respect to the metal mount.

AP3 windows are mounted using vacuum compatible epoxy. The window should be recessed slightly from the face of the mount. A minimum recess depth of 1.5 mm is required.



Warranty

AP3 windows are warranted against failure for a period of 16 months from shipment date. Contact MOXTEK for normal usage specifications.

Ordering Information

Please contact MOXTEK for price and delivery information.

AP3 windows are also available through EDXRF and EDS system manufacturers.



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