

UHP Slit Valve Door

No. 5114B1-USA

Ultra-High Purity (UHP) Bonded Door For Reduced Particulation, Increased Wafer Yield

The UHP Slit Valve Door is an engineered sealing system designed to improve productivity and reduce downtime in critical semiconductor processing applications. Developed in cooperation with a leading semiconductor OEM, the UHP Slit Valve Door consists of a sealing element chemically bonded to an aluminum or stainless steel door. This sealing element typically consists of Parker's chemical-resistant, thermally stable Parofluor™ (perfluorinated FFKM) or fluorocarbon (FKM) compounds. The integrated door and seal system is processed and packaged in an ultra-high purity manufacturing cell.

Molded Seal Advantages



Unlike an o-ring that is stretched around groove corners, the UHP Slit Valve Door sealing element is molded in place. This process eliminates stresses in the sealing material that are a common cause

of failure in o-ring type seals. In applications characterized by a combination of high temperatures and harsh chemicals, an o-ring seal can expand and become "pinched" in a dovetail groove. This pinching can result in seal failure, particle generation and loss of productivity. The UHP Slit Valve Door's innovative design eliminates pinching and other problems related to thermal stability and chemical resistance. It also prolongs seal life and promotes increased equipment productivity.

Easy, Precise Installation

The UHP Slit Valve Door's one-piece design reduces downtime by eliminating the need for labor-intensive preparation of the gland and replacement of a conventional seal into a dovetail groove. It also ensures proper seal installation and orientation.

Advanced Bonding Technology

Parker employs advanced perfluoroelastomer bonding technology in the manufacture of the UHP Slit Valve Door. The superior stability of the bond between door and sealing



element provides improved abrasion resistance and seal integrity that result in extremely low particle generation and dramatically increased seal service life.

Features and Benefits

- Reduces particulation by up to **95%** as compared with a conventional o-ring in a dovetail groove assembly - *see reverse, Figure 1*
- Increases seal life up to **10 times** over conventional o-ring in a dovetail groove assembly - *see reverse, Figure 2*
- Molded seal eliminates stresses to the elastomeric material, reducing chemical attack
- Custom-engineered seal design maintains optimal sealing force for increased seal life
- Bonded technology eliminates movement of seal and reduces particle generation
- Molded seal eliminates parting lines and potential for leak path
- One-piece design reduces installation labor and equipment downtime
- Bonded seal eliminates "virtual" leaks and/or contamination underneath the seal
- UHP processing and packaging eliminates contamination

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Parker Seals

UHP Slit Valve Door, continued ...

Figure 1.

The UHP Slit Valve Door's bonding technology and seal design reduce potential for contamination by up to 95% in semiconductor processing applications.

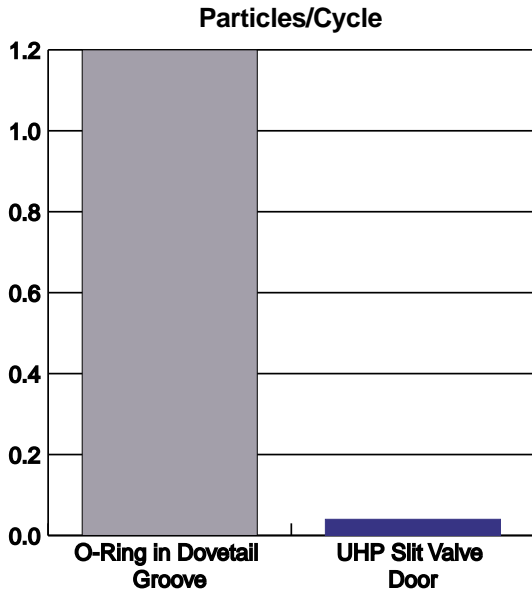
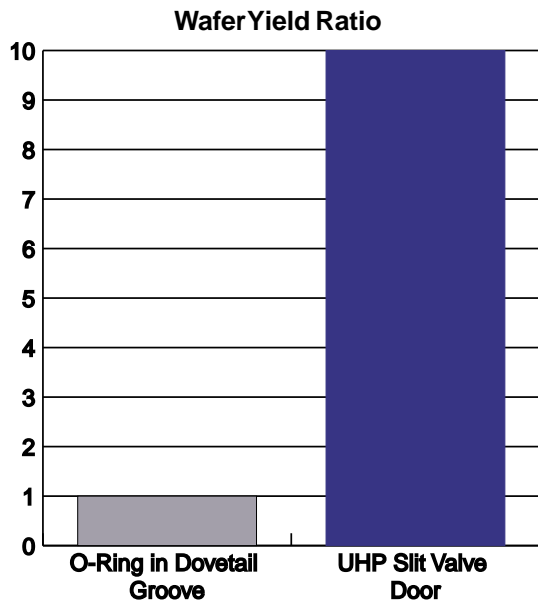


Figure 2.

Parker's UHP Slit Valve Door reduces the number of PM schedules by a factor of 10.



Semiconductor Sealing Solutions

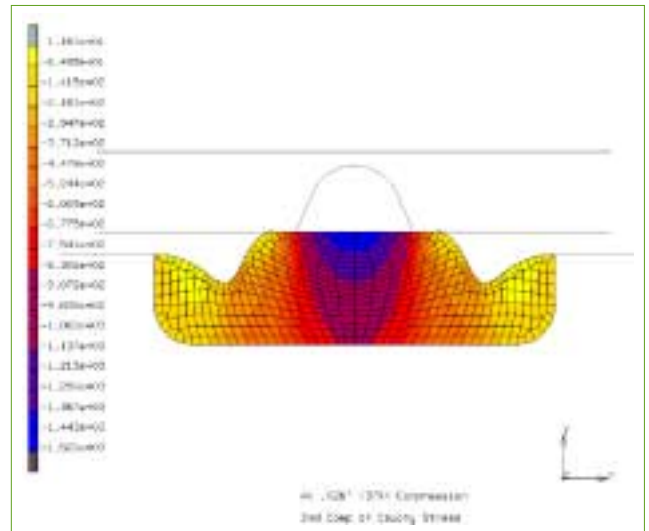
Parker's Composite Sealing Systems (CSS) Division supports the semiconductor manufacturing industry with a wide range of engineered sealing products and systems, including end effectors, contact rings, flange seals and resilient metal seals. CSS bonding technology can also be applied to high-performance thermoplastics for thrust plates and other applications.



Parker is constantly developing new engineered sealing solutions for the semiconductor processing industry.

More Than Manufacturing

Parker Hannifin's Composite Sealing Systems Division is a leading supplier of bonded sealing products to the semiconductor manufacturing industry. In addition to its innovative line of sealing products, CSS has also developed a range of customer support tools, including a dedicated product/applications engineering staff, finite element analysis (FEA) assisted design, and inPHorm, a seal design and material selection software package.



Parker offers finite element analysis (FEA) assisted engineering and other time-saving tools to its customers.

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