

# Flowplane™ Linear Filtration Technology

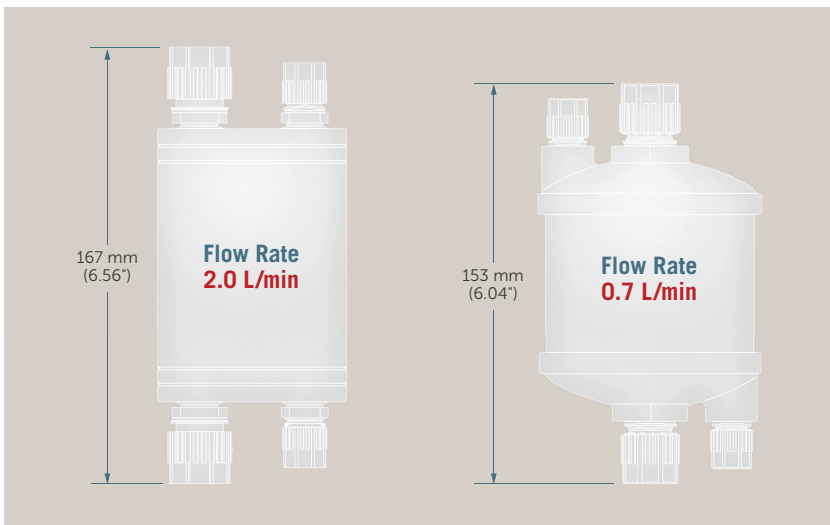
*Enabling next-generation cleanliness and contamination control performance in advanced technology node applications*

To meet industry demands to reduce defects, semiconductor fabs have historically had to trade off between small particle removal efficiency and high flow rate performance. This is no longer a problem with the introduction of Entegris' FlowPlane™ linear filtration technology. The ultra clean linear filter design enables faster start up times and reduced tool downtime. The unique rectangular form factor improves flow path, and the enhanced membrane ensures low on-wafer defect levels in critical cleaning processes.

Many advanced applications require a minimum flow rate to maintain maximum cleaning process performance. Traditional radial (round) filters with next-generation membranes inevitably can no longer meet those strict performance requirements. However, FlowPlane's design delivers up to 2X the flow rate performance of a similarly sized radial filter coupled with the best particle retention available.



FlowPlane is well suited for point-of-dispense (POD) applications (installed just before the nozzle) as well as outgassing applications that require space-constrained installation points. Moreover, the linear construction provides greater location flexibility within the tool. FlowPlane delivers the ultimate protection against particles and other defect-causing contaminants and an unparalleled level of contamination control performance.



*FlowPlane delivers up to 2X the flow rate of similarly sized filters.*

## APPLICATIONS

- Sub-2X technology nodes
- Point of dispense/final filtration near the dispense head for next-generation processes
- Space-constrained environments requiring high-efficiency filtration performance

## FEATURES & BENEFITS

<b>Optimized linear filter design</b>	Up to 2X increase in flow rate compared to similar size devices Lowest hold up volume 40% space savings compared to existing designs
<b>Standard size and port configuration</b>	Easy retrofit with existing device footprints
<b>Enhanced filter cleanliness</b>	Faster flush-up reduces tool downtime Reduced particle counts with UCM-10 cleaning technology
<b>Flexible installation orientation</b>	U-line and in-line filter configurations Mount at any angle without compromising venting capability in outgassing applications
<b>Compact device size for POD filtration</b>	POD filtration reduces defects and improves yield

## SPECIFICATIONS

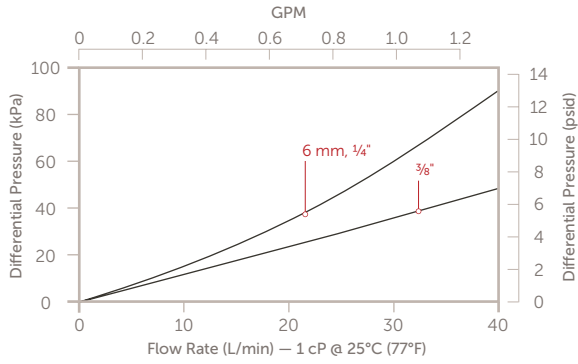
### Toronto® 7 with FlowPlane Linear Technology

<b>Materials of construction</b>	Membrane	Prewet, nondewetting PTFE
	Supports, shell	PFA
<b>Retention rating</b>	7 nm	
<b>Surface area</b>	0.60 m <sup>2</sup> (6.46 ft <sup>2</sup> )	
<b>Maximum operating conditions</b>	Maximum operating pressure: 0.59 MPa (5.9 bar; 86 psi) @ 25°C (77°F) 0.19 MPa (1.9 bar, 28 psi) @ 150°C (302°F)  Maximum forward differential pressure: 0.39 MPa (3.9 bar; 57 psi) @ 25°C (77°F)  Maximum reverse pressure: 0.29 MPa (2.9 bar; 42 psi) @ 25°C (77°F)  Maximum operating temperature: 150°C (302°F)	
<b>Metallic extractables</b>	UCM-10	Testing conducted for 23 metals
	UCM-10	TOC, CI, NVR, F

Note: All FlowPlane product configurations are PFOA free.

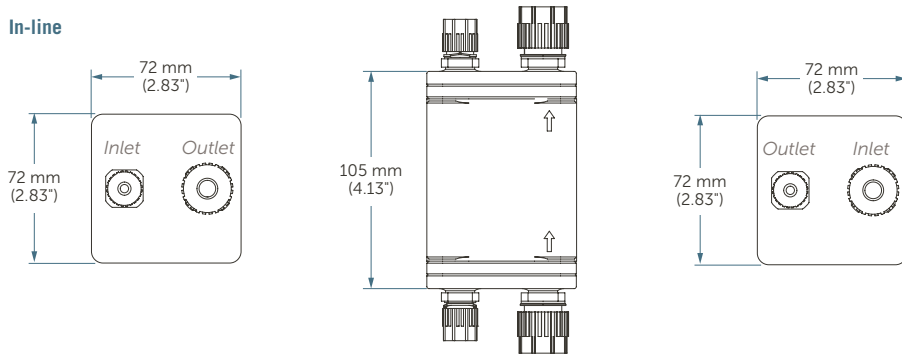
## PERFORMANCE DATA

### Torrento 7 nm with FlowPlane Linear Technology

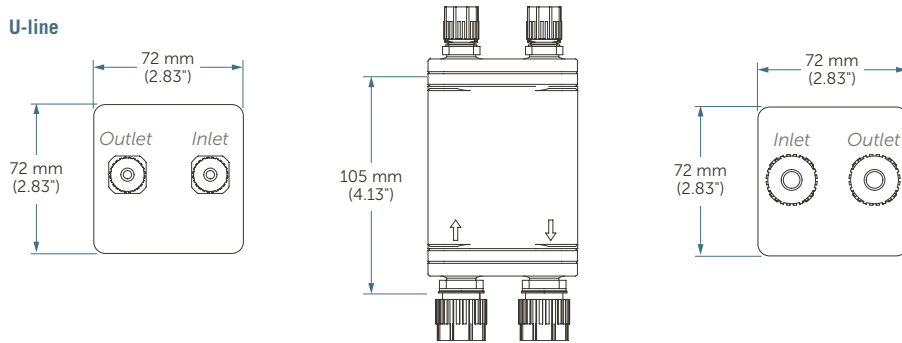


## DIMENSIONS

### In-line



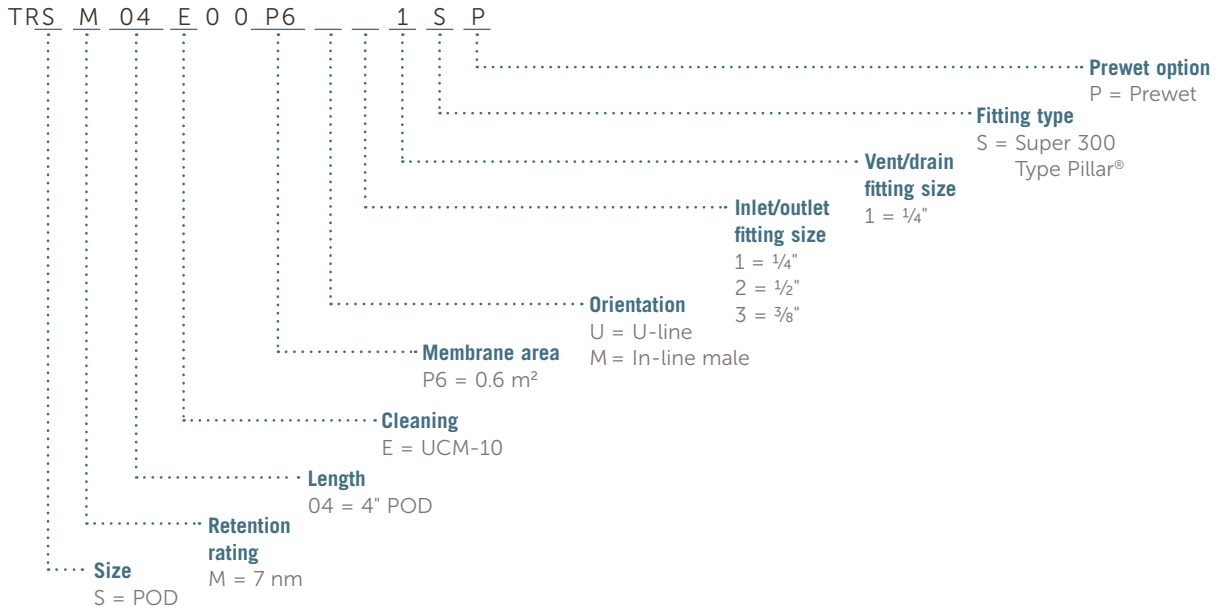
### U-line



## ORDERING INFORMATION

This information serves as a guide. Please contact your local representative to confirm part numbers.

Torrento 7 nm with FlowPlane Linear Technology: part number



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