

T-Junction Chips

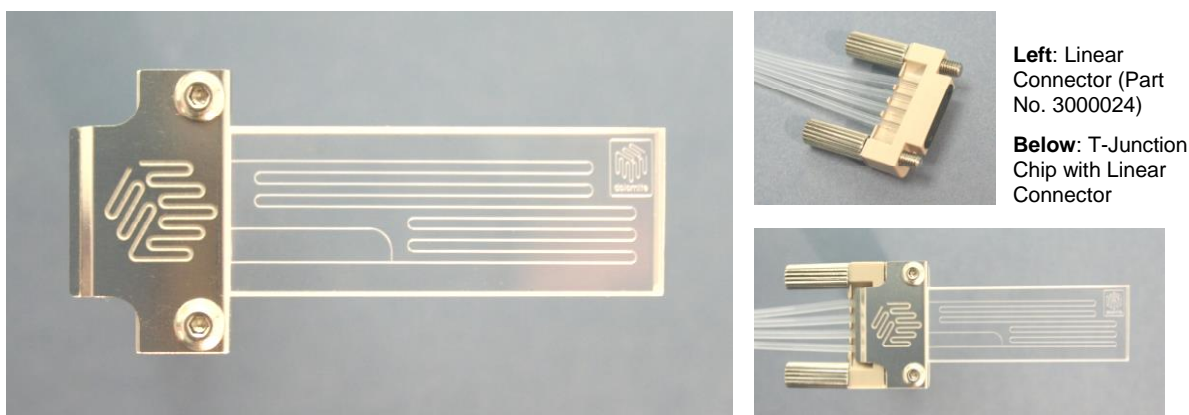


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Part name	Part number
T-Junction Chip with header	3000014
Thin T-Junction Chip with Header	3000086
Platinum T-Junction Chip with Header	3000089
Quartz T-Junction Chip with Header	3000141
T-Junction Chip with diced end	3200014
T-Junction Chip with diced end, hydrophobic	3200114
T-Junction Chip, hydrophobic	3000453

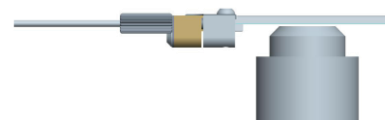
Description

The T-Junction Chip is a glass microfluidic device designed for a range of applications including mixing fluids, microreactions and droplet formation. The T-Junction Chip is supplied with a chip header (below). The header allows connection to the Linear Connector (Part No. 3000024).



Benefits

- Compact, low dead volume
- Quick connect/disconnect
- Extremely smooth channel surface
- Wide temperature and pressure range
- Excellent chemical compatibility
- High visibility (excellent access for optics)
- Thin T-Junction Chip features an ultra thin design (see picture on the right - specifically for high magnification microscopy applications)



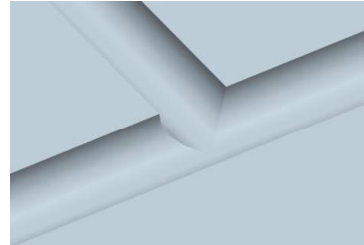
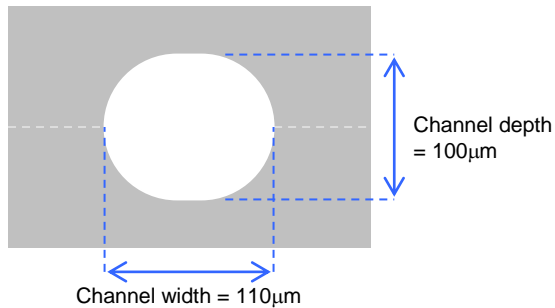
Specifications

Specification	3000014	3000453	3000089	3000141	3000086
Number of inputs	2				
Number of outputs	1				
Channel cross section	100µm x 110µm (depth x width)				
Channel length after junction	278mm (feed channels = 20mm and 22mm)				
Volume of channel after T-Junction	2.5µl				
Back pressure with 100µl/min flow (water)	1.5bar				
Surface roughness of channels (Ra)	5nm				
Chip size	45.0mm x 15.0mm				
Chip top layer thickness	2.0mm				
Chip base layer thickness	2.0mm	2.0mm	2.0mm	2.0mm	150µm
Include header (connector interface)	Yes				
Operating pressure	30bar*				
Material	Glass	Glass	Glass and platinum	Synthetic quartz (Viosil)	Glass
Fabrication process	HF etching and thermal bonding				
Channel coating	None (Hydrophilic)	Hydrophobic**	Platinum	None (Hydrophilic)	None (Hydrophilic)

*Based on tests at 21 °C

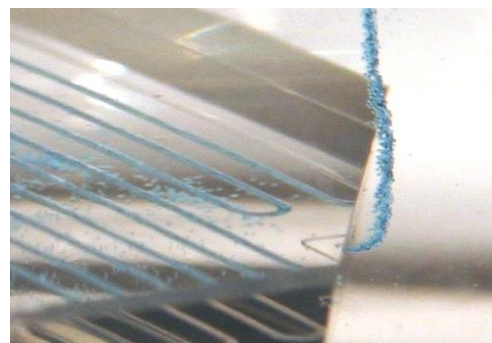
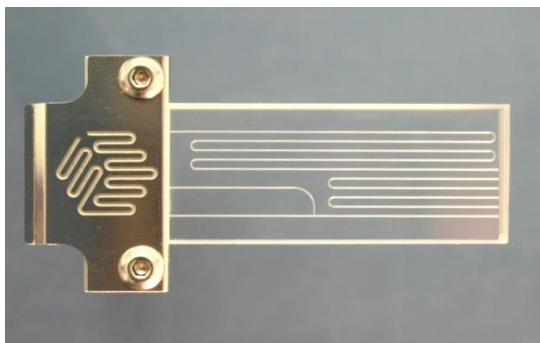
**The standard hydrophobic coating is not optimised for use with Picosurf 1 and 2 (fluorocarbon oils). If Picosurf is to be used we suggest using a fluorophilic coating on the channel surface.

Channel Cross-Sectional Profile



T-Junction Chip with Diced End (Part No. 3200114)

A version of the T-Junction Chip (Part No. 3200114) is available with diced end. This provides a flow path which bypasses the length of serpentine channel downstream of the junction and flows directly out of the chip edge. The primary function of this chip is for the ejection of droplets into bulk liquid without disruption to the flow and is compatible with the Droplet Collection Module (Part No. 3200112).



Droplets of water-in-oil ejected from diced end



Custom Options

Dolomite offers a wide range of custom solutions including different channel depths and widths, as well as a variety of surface coatings. The T-Junction Chips can be customised in the following ways:

Etch depth

T-Junction Chips fabricated from glass

- from 20 μm x 30 μm up to 700 μm x 710 μm (depth x width)
- the top layer or base layer can also be left un-etched giving a semi-circular channel cross-section

T-junction chips fabricated from Quartz

- from 20 μm x 30 μm up to 200 μm x 210 μm (depth x width)
- the top layer or base layer can also be left un-etched giving a semi-circular channel cross-section.

Channel surface

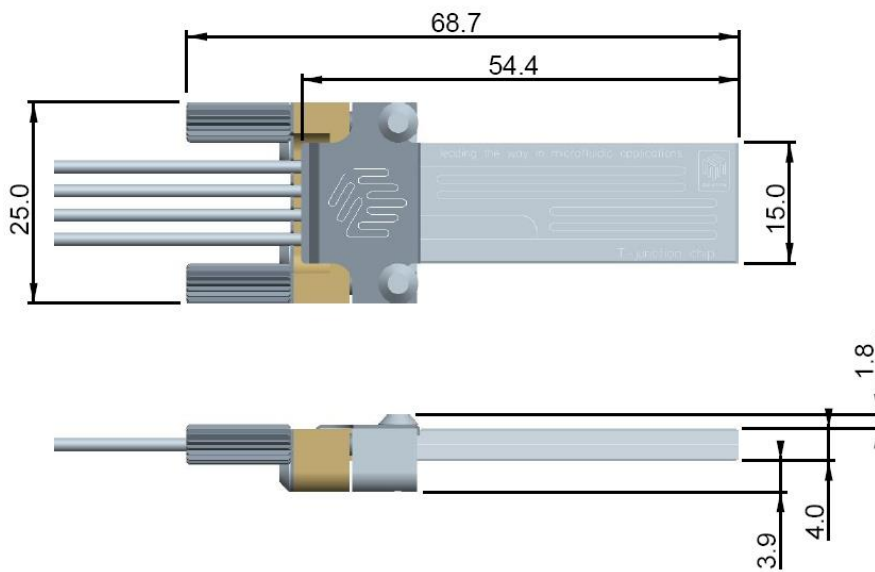
The channel surface is naturally hydrophilic. The chip can also be supplied with:

- Hydrophobic coating on channel surfaces (Part No. 3000453)
- Platinum coating on channel surfaces (Part No. 3000089)

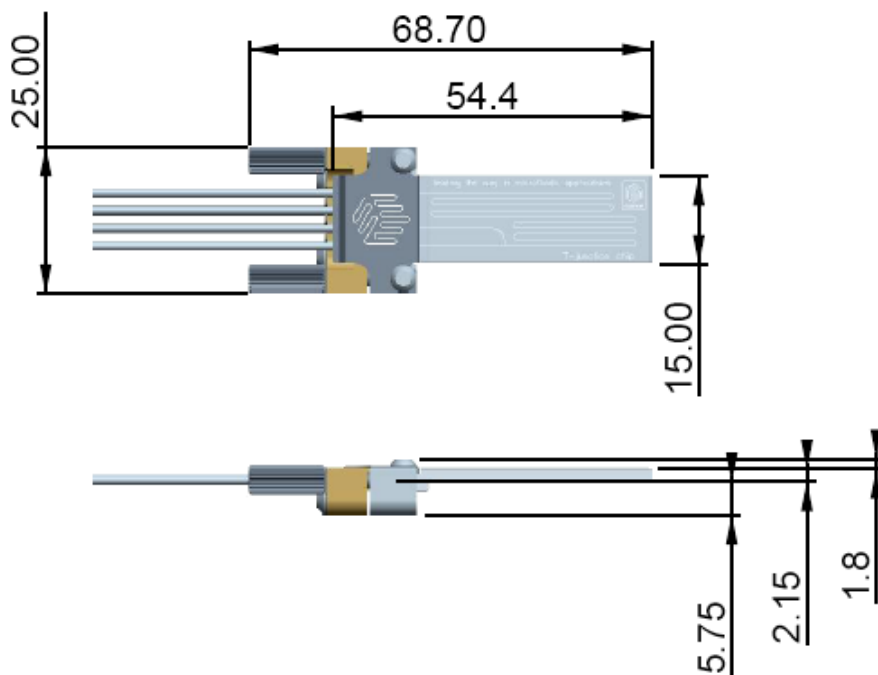
Geometry

Linear Connector Geometry with:

T-Junction Chip (Part No. 3000014), Platinum T-Junction Chip with Header (Part No. 3000089) and Quartz T-Junction Chip with Header (Part No. 3000141)

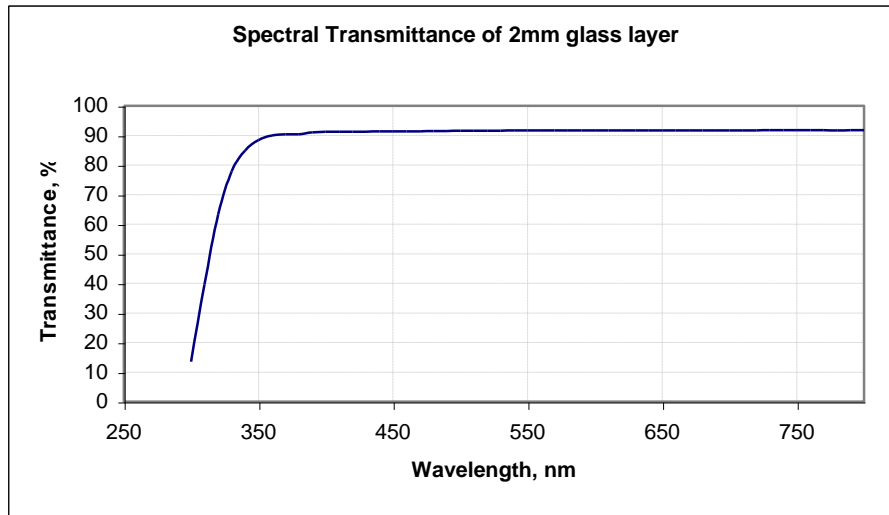


Thin T-Junction Chip with Header Part No. 3000086

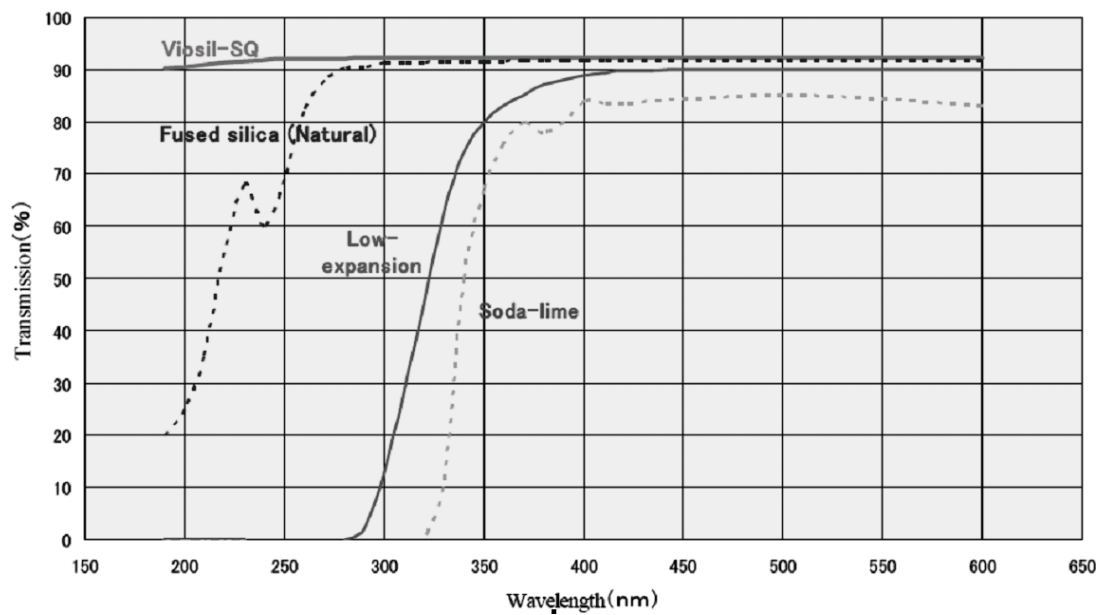


Optical Transmission

T-Junction Chip (Part No. 3000014, 3000453, 3200014, 3200114)



Quartz T-Junction Chip with Header (Part No. 3000141) (Material = Viosil-SQ)





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