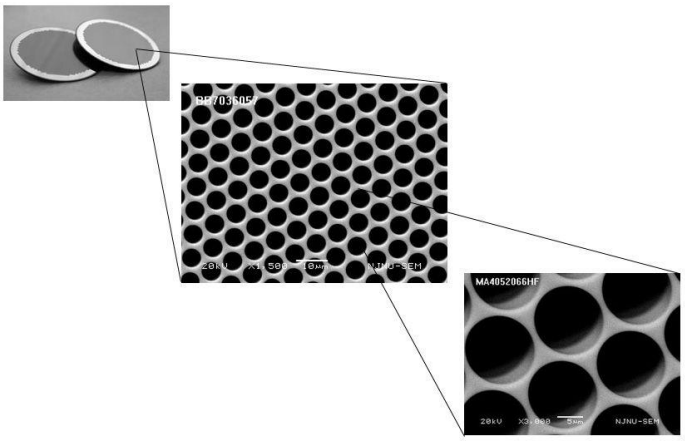
MCP

Microchannel Plate – Nude
(see separate data sheet for assemblies)



A Microchannel Plate (MCP) is an electronic amplifier device, which is the important component of wafer focusing image intensifiers. The MCP is made of glass with final shape of very thin glass plate composed of many small channels, i.e. there are about 6M channels in one 18mm MCP's and each channel is an amplifier multiplying each electronic signal. A single electron is multiplied by a factor of 3-5. An MCP with an aspect ratio of 40:1 amplifies the electrons typical by a factor of more than 10.000.

Applications:

- Amplification in electron tubes
- Image intensifiers and Streak tubes
- Fast PMT for TOF or others
- Particle detection in analytical Systems
- TOF-Mass Spectrometer
- ESCA, EBMS, FIM, LEED etc.
- Cosmic Rays and Particle Physics
- Detection of Plasma ions, electrons, Positrons and high energy particles
- Detection of UV-,VUV-light and X-rays

KEY FEATURES AND BENEFITS

- ☐ High efficiency, good resolution, high gain, low noise
- ☐ Single MCPs and matched double and triple MCP sets available
- ☐ Image and Detection Mode Versions
- ☐ CsI coating possible to increase the sensitivity
- ☐ Immunity to magnetic fields
- ☐ Sensitive to electrons, ions, VUV- and UV-light, X-rays and Gamma-rays
- ☐ High resolution plates available on request
- ☐ Bake-out up to 400°C possible

A microchannel plate (MCP) is a lead glass plate including an array of electron multipliers with diameter of the tube in the range of 4-50 µm in parallel with thousands of other tubes. The length of a multiplier tube corresponds to the thickness of the glass plate. The aspect ratio of the MCP is the length/diameter ratio of the channels. The channel axes are biased by a small angle (6° to 12°) to optimize the secondary electron emission in the channels. Under the influence of a supplied high voltage electrons are accelerated in the channels and hit the wall. A single electron is multiplied by a factor of 3-5. An MCP with an aspect ratio of 40:1 amplifies the electrons typical by a factor of more than 10.000. So a single channel can be understood as a dynode continuous structure of a photomultiplier tube.

Except channel type amplifier with fast response and resolution in two-dimensional space, the MCP can also directly detect various particle or ion, and a variety of high-energy radiation. Therefore, a MCP is capable for all associated with these substances detection apparatus, imaging instruments or devices.

The application of MCP's in image intensifiers is a mature technology, but new technology in other fields are also actively under research and development. The product offered is first class quality for R&D, production and service.

Customers who have already designed their own MCP detector mount and need replacement microchannel plates, tectra offers a wide range of nude standard MCPs and extended dynamic range MCPs (for high input currents MCPs). Our microchannel plates are available in all conventional standard circular OD formats e.g. 25, 33, 50, 88 and 100+mm (see MCP specifications below).

However tectra strength lies in the wide variety of mounted MCP configurations. Whether you require a single, double (Chevron) or Z stack, resistance matched MCP detector coupled to a standard anode giving ~ 40ns time response or whether you need a fast anode for ion or electron time-of-flight detector with sub ns timing tectra has the off the shelf solution. Alternatively you may need to image or profile your ion/electron beam / soft x-ray / photon or other molecular or sub atomic particle. For these applications we offer MCP detectors together with high quality phosphor screens offering industry leading spatial resolution. When it comes to phosphors we offer the standard P20, P43 and P47 and have developed additional phosphors for fast timing requirements (see the MCP Assembly datasheet).

All the above combinations are available stand alone or flange mounted MCP detectors with the appropriate high voltage SHV feedthroughs. Flange mounted versions can be supplied with or without viewport. For more details see the Microchannel Plate Detector Assembly data sheet.

Join our customers at major research centers around the globe who have already experienced the quality and outstanding sales and application support that we offer.

Standard Microchannel Plates (Nude):

MCP	Quality Detection (D) /Imaging (I)*	Aspect Ratio (channel length/dia.) *	Outer Diameter mm	Active Area Dia. mm	Channel Dia. μm	Channel Pitch μm	Bias Angle	Thickness mm	Resistance Ohm@500V	Gain at 800V
MCP18/6	D/I	40:1/60:1	Φ18±0.04	Φ10.5	6±0.5	8±0.5	6º±1º	0.38±0.05	70~240	≥1500
MCP25/6	D/I	40:1/60:1	Φ24.8±0.04	Φ18.8	6±0.5	8±0.5	5.5º±0.5º	0.30±0.02	100~240	≥1500
MCP25/8	D/I	40:1/60:1	Φ24.8±0.04	Φ18.8	8±0.5	10±0.5	5.5º±0.5º	0.30±0.02	100~240	≥1500
MCP33/8	D/I	40:1/60:1	Φ32.7±0.04	Φ26	8±0.5	10±0.5	6º±0.5º	0.30±0.02	50~300	≥2500
MCP33/10	D/I	40:1/60:1	Φ32.7±0.04	Φ26	10±0.5	12±0.5	11.5º±0.5º	0.48±0.02	50~300	≥2500
MCP36/12	D/I	40:1/60:1	Φ35.9±0.04	Φ31	12±0.5	14.5±0.5	15.5º±0.5º	0.5±0.02	65~185	≥4000
MCP50/12	D/I	40:1/60:1	Φ49.95±0.05	Φ45	12±0.5	15±0.5	7º±0.5º	0.5±0.02	40~150	≥7000 (1000V)
MCP56/12	D/I	40:1/60:1	Φ55.95±0.05	Φ50	12±0.5	15±0.5	8º±0.5º	0.5±0.02	10~200	≥7000 (1000V)
MCP81/21	D/I	40:1/60:1	Φ80.95±0.05	Φ75	21±0.5	25±0.5	6º±0.5º	1.0±0.05	30~200	≥7000 (1000V)
MCP88/21	D/I	40:1/60:1	Φ87.95±0.05	Φ80	21±0.5	25±0.5	6º±0.5º	1.0±0.05	30~200	≥7000 (1000V)
MCP100/21	D/I	40:1/60:1	Φ99.95±0.075	Φ95	21±0.5	25±0.5	6º±0.5º	1.2±0.05	30~200	≥7000 (1000V)
MCP106/21	D/I	40:1/60:1	Φ106.3±0.1	Φ100	21±0.5	25±0.5	6º±0.5º	1.2±0.05	30~200	≥7000 (1000V)

*please select according to your application

Technical Specification

Open Ratio	≥60%
Electrode Material	Ni-Cr
Depth of electrode	
Input plane	≤0.8d (d: pore size)
Output plane	2~3d (d: pore size)
Bake out temperature	≤400°C
Applied Voltage	
40:1 MCP	1kV (max)
60:1 MCP	1,2kV (max)

Please contact us for more Information.
We and our team behind us will be happy to help you!

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