Multi-mode Micro Lens Array (MLA) P1L

Flat and Right Angle Type Micro Lens Arrays Provide Low Cost Optical Connections in Free Space Applications

12ch Flat - P1L12A-C1/-C2/-F1/-F2
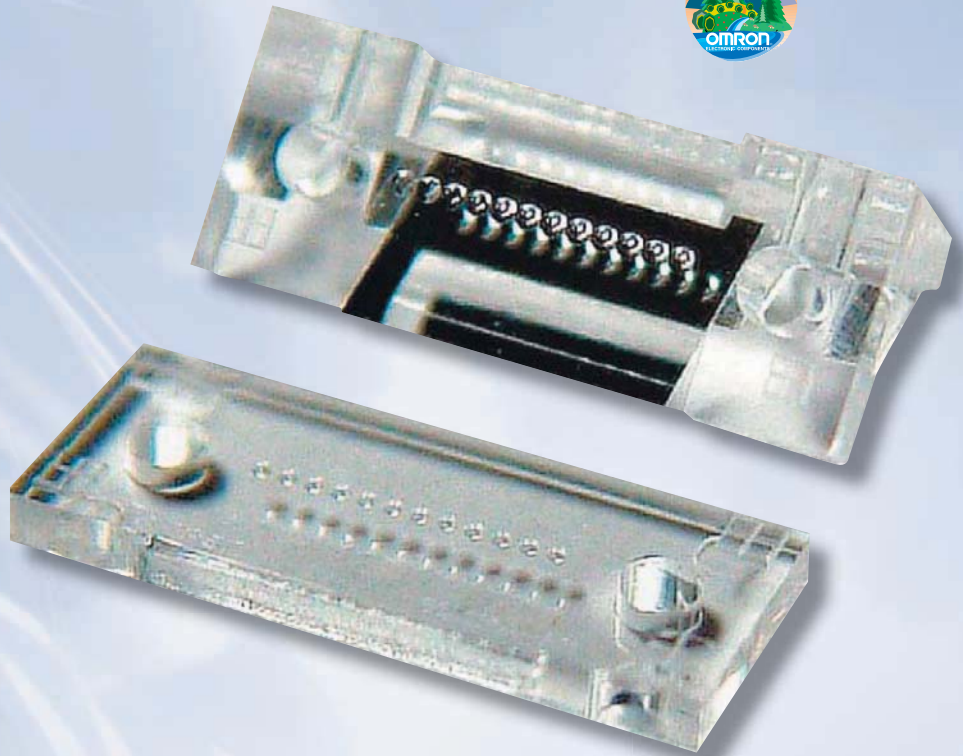**12ch Right Angle - P1L12C-F1/-F2**

Features

- Easy alignment with high precision positioning holes based on MT guide pins
- Low cost achieved by high precision injection molding
- Anti-reflective (AR) coating available
- Insertion loss (IL) can be reduced through customization
- Custom lens and various channel configurations available (i.e. 1 x 4, 2 x 12, etc.)

Applications

- Free-space Optical Connectivity
- Transceiver (For Parallel Optical Link)
- Optical Interconnection
- Board-to-board
- Chip-to-chip Interconnection

Specifications	P1L12A-C1/-C2	P1L12A-F1/-F2	P1L12C--F1/-F2
Type	Flat (Collimator Type)	Flat (Focuser Type)	Right Angle
Number of Lens	1 x 12	1 x 12	2 x 12
Insertion Loss	≤2.0dB (Typ. 1.2dB) [1]	≤2.5dB (Typ. 1.5dB) [2]	≤ 2.5dB (Typ. 1.5dB) [3],[4]
Cross Talk	≥50dB	≥50dB	≥ 50dB
Lens Position Tolerance	0.005mm[5]	0.005mm[5]	0.005mm [5]
Operating Temp. Range	-40 to +85°C	-40 to +85°C	-40 to +85°C
Storage Temp. Range	-40 to +85°C	-40 to +85°C	-40 to +85°C
Dimensions	W2.5 x L6.4 x H0.55mm	W2.5 x L6.4 x H0.55mm	W2.6 x L6.4 x H2.6m

[1] Light Source: 850nm (Steady State Mode by LED)/Air Gap: 1.5mm (Lens to Lens) Attached to the MT guide pin without any other alignment and matching glue
[2] Light Source: 850nm_VCSEL(*12um, Divergence < 30°)/Air Gap: 0.3mm (VCSEL to Lens), 0.3mm (Lens to Fiber) active alignment for VCSEL side, non active alignment for fiber side without matching glue between fiber and lens
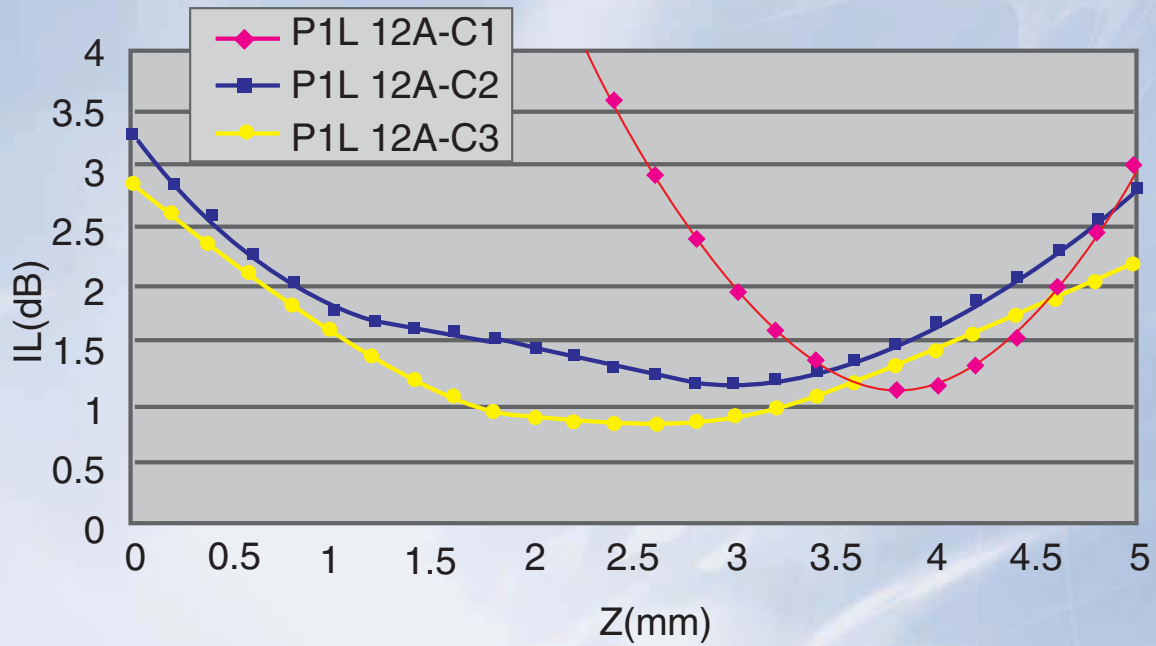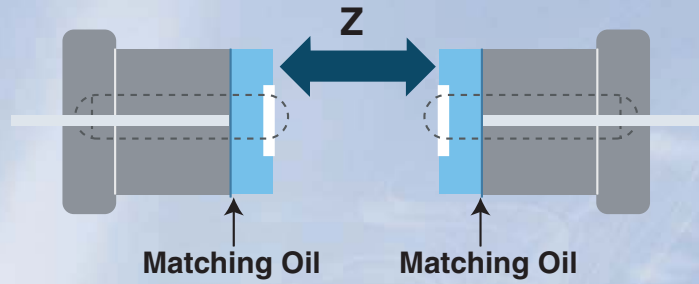[3] Light Source: 850nm (Steady State Mode by LED)/Air Gap: 0.4mm (Fiber to Lens) Attached to the MT guide pin without any other alignment and matching glue (F2)

[4] Light Source: 850nm, VCSEL(•12um,Divergence<30•)/Air Gap: 0.3mm(VCSEL to Lens), 0.5mm(Lens to Fiber) active alignment for VCSEL side, non active alignment for fiber (F1)
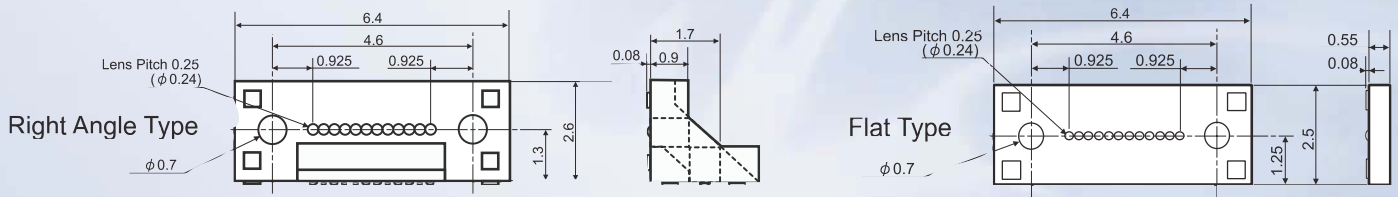[5] Lens position tolerance is defined as an error to the true position referred to the center point of alignment holes

Example of free-space coupling efficiency in a SM application.

Fiber SMF
Light Source 1310nm LD
Without AR coating

Z

Matching Oil   Matching Oil

Chart: IL(dB) vs Z(mm)

Legend:
- P1L 12A-C1
- P1L 12A-C2
- P1L 12A-C3

Y-axis: IL(dB) — 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4
X-axis: Z(mm) — 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5

Dimensions (mm)

Right Angle Type

Lens Pitch 0.25 (φ0.24)
φ0.7
6.4
4.6
0.925 0.925
2.6
1.3
1.7
0.08 0.9

Flat Type

Lens Pitch 0.25 (φ0.24)
φ0.7
6.4
4.6
0.925 0.925
2.5
1.25
0.55
0.08

Building A Part Number

P1L12 ▢ - ▢▢ ▢▢ ▢▢

Type:

Working Distance: C1=1.5nm, C2=2.5nm

Focus VCSEL to lens: F1=.2nm, F2=.3nm

Type of I/O: F1=Fiber to Fiber, F2=VCSEL to Fiber