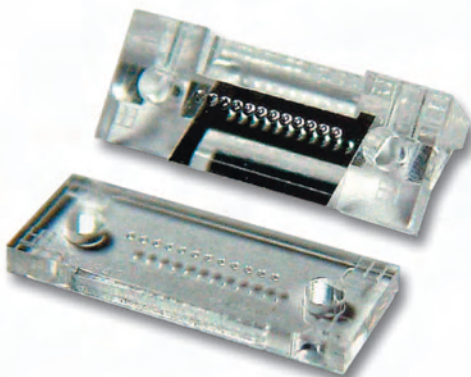


12ch Flat – P1L12A-C1/-C2/-F1/-F2
12ch Right Angle – P1L12C-F1/-F2
Flat and right angle type Micro Lens
Arrays provide low cost optical
coupling in free space applications

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



Ordering Information

Model Number Legend

P1L12
 1 **2**

1. Type

- A: Flat (plate),
- C: Right-angle

2. Working distance & function

- C1: Flat (plate) Collimate 850nm
LED: 1.5mm,
- C2: 2.5mm,
- F1: Flat (plate) Focus 850nm
VCSEL to lens & lens to fibre:
0.3mm,
- F2: 0.2mm,

- F1: Right-angle Focus 850nm
VCSEL to lens 0.3mm & lens to
fibre 0.5mm,
- F2: Right-angle Focus 850nm LED,
fibre to lens 0.3mm.

Application Examples

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

Specifications

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 Temperature Range	-40 to +85°C	-40 to +85°C	-40 to +85°C
Storage Temperature 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 H2.6mm

*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 Fibre) active alignment for VCSEL side non active alignment for fibre side without matching glue between fibre and lens

*3 Light Source: 850nm (Steady State Mode by LED)/Air Gap: 0.4mm (Fibre to Lens) Attached to the MT guide pin without any other alignment and matching glue

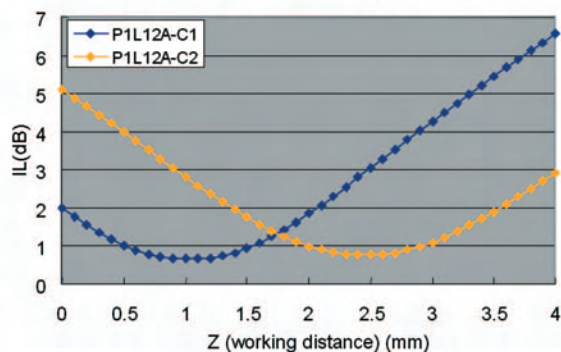
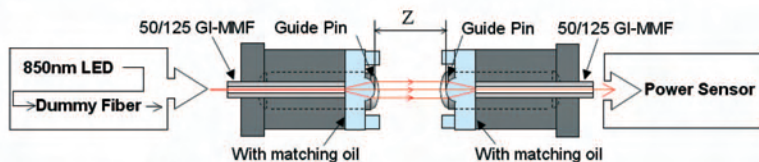
*4 Light Source: 850nm VCSEL(*12um, Divergence < 30°)/Air Gap: 0.3mm (VCSEL to Lens), 0.5mm (Lens to Fibre) active alignment for VCSEL side non active alignment for fibre side without matching glue between fibre and lens

*5 Lens position tolerance is defined as an error to the true position referred to the center point of alignment holes

■ Selection Guide

Model		P1L12A				P1L12C	
Function		C1	C2	F2	F1	F2	F1
Coupling Image							
Feature		Plate type, 12ch Collimator (short gap)	Plate type, 12ch Collimator (long gap)	Plate type, 12ch Focuser (short WD) without gap between L & F	Plate type, 12ch Focuser (long WD) with gap between L & F	Right-angle type for fibre coupling, re-direction by total internal reflection (F - F)	Right-angle type for VCSEL coupling, re-direction by total internal reflection (VCSEL-F)
Comment		Available for Focuser spot size: F2, F1, C1	Designed for longest gap			IL: approx 3dB (VCSEL-F)	Without guide holes VCSEL
Specification	Insertion Loss (IL)	≤2.0dB (typ 1.2dB)			≤2.5dB (typ 1.5dB)		2.5dB (typ 1.5dB)
	Crosstalk (XT)	≥50dB					
	Error of Centre (μm)	5μm circle					
	Total Error (μm)	-	-	-	-	≤10μm	
Measurement Condition	Light Source	850nm LED (steady-state mode)		850nm VCSEL (Ø12μm) Divergence <30°		850nm LED (steady-state mode)	850nm VCSEL (Ø12μm) Divergence <30°
	Coupling Distance (mm)	1.5mm	2.5mm	VCSEL - Lens: 0.2mm	VCSEL - Lens: 0.3mm	Fibre - Lens: 0.4mm	VCSEL- Lens:0.3mm Lens-Fibre: 0.5mm
	Other Condition	Without index matching glue between fibre and lens		Without index matching glue between fibre and lens		Non active alignment	Non active alignment for fibre side
		Non active alignment		Non active alignment for fibre side		Using fixed jig	Active alignment for VCSEL side
		Using fixed jig		Active alignment for VCSEL side		-	
Application		Multimode fibre-, transmission and reflective free space parallel optical interconnect; Proprietary backplane, Multi-fibre interconnect based on MT, MT-RJ, MPO, MTP; SNAP12 Transmitter/ Receiver; POP4 modules; Infiniband; ODI; Alternative to GRIN and ball lens					

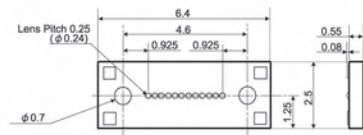
■ Example of free-space coupling efficiency in a Multimode application



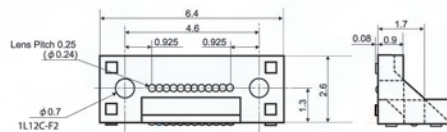
■ Dimensions (mm)

Flat Type

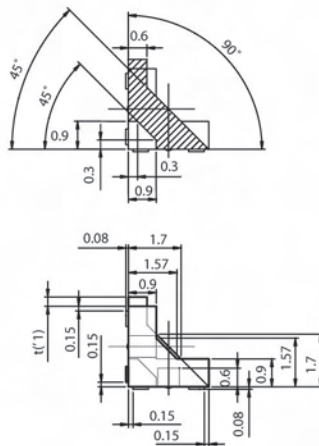
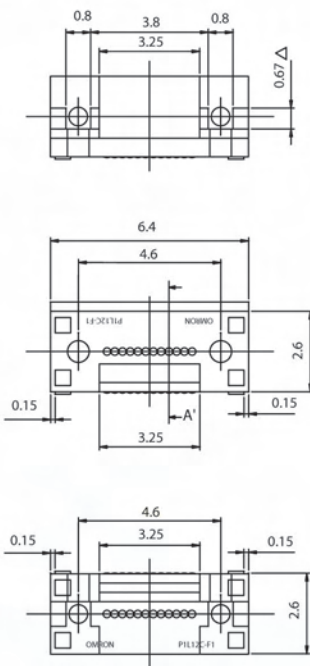
P1L12A-C1/C2/F1/F2



Right Angle Type P1L12C-F2



Right Angle Type P1L12C-F1



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