

~Contributing to the spread of home based broadband~
Omron releases ultracheap, tiny optical communication devices

July 10, 2003 – Omron Corporation will begin making shipments for samples of the following optical communications devices:

- P1S22A Single-mode type 2 x 2 optical switch (available from July 14)**
- P1L12A Multi-mode type micro lens array (available from July 14)**
- P1X4A 4-ch CWDM multiplexer/demultiplexer (available from August)**
- P1S18A Single-mode type 1 x 8 optical switch (available from August)**

FTTH (Fiber-to-the-home), eagerly anticipated home directed super high speed broadband, has spread at a staggering rate, but a tremendous cost reduction for network devices is sought in order to realize affordable service. Omron has responded to this need by developing a product group integrating proprietary micro lens array (MLA) and actuator technologies, aiming at access networks, metro networks, and interconnection ^(*).

Expensive high-precision parts and the large number of assembly parts/number of alignments have been required by optical communications devices up to now, so there was no way to avoid high costs. At Omron, lens and other optical elements are manufactured through replication, utilizing arrayed parts reduces the number of assembly parts, and total auto-alignment is possible by arraying parts together, realizing extremely low costs.

Specifically, the micro lenses, arrayed in a line the distance of 250um, are inserted into a concentrated/parallel type coaxial series aspheric configuration. Replicable processing of a coaxial symmetric free form lens is also possible and the expansion of various applications is possible. Moreover, fine level optics design becomes attainable and significant miniaturization is realized.

By bringing dramatic cost reduction to this device group, network technologies that could only be used until now in backbone networks will expand into access domains, so an increase in demand is targeted. Plus, the characteristics of light, such as its sustainability against noise and safety to humans, are well recognized. Omron thus expects an expansion of light utilizing circuit design into vast fields and will intensify new demand by providing devices that engineers can use with ease.

- (*1) Access Network: Subscriber transmission network (ADSL, FTTH, etc.)
- Metro Network: Metro area transmission network
- Interconnection: Internal device optical wiring

- **P1S22A Single-mode type ⁽²⁾ 2 x 2 optical switch**

- Characteristics

- Range of 1525 ~ 1565nm. Self-maintaining functionality.

- Magnetic drive system along with a reduction of assembly parts to the utmost limit, realizes as a 2 x 2 switch the miniaturization of a MEMS system currently marketed

- Targets replacement of electric switches for redundancy switching in access networks and installation into optical transmission systems and transmission devices

- Specifications

- Insertion loss ⁽³⁾: 2.5dB or lower (Typ. 1.7dB)

- Crosstalk ⁽⁴⁾: 55dB or higher

- Return loss: 35dB or higher

- Drive pressure when switching: 5VDC

- Dimensions: 12 (W) x 27 (L) x 8 (H) mm

- Sample price: 24,000 yen (connector not included)

- Omron will begin supplying the multi-mode ⁽⁵⁾ type as well within the coming days.

- **P1L12A Multi-mode type micro lens array**

Characteristics

Injected molding formation of 12 lenses in a 250um pitch, utilizes commercially available MT connector and positioning pin, making possible the world's first non-alignment assembly. Thus, not only a cost reduction of the lens itself, but a huge assembly cost reduction for users as well.

Specifications

Lens arrangement: 1 x 12

Insertion loss: 2dB or lower (Typ. 1.5dB)

Crosstalk: 50dB or higher

Dimensions: 2.5 (W) x 6.4 (L) x 0.55 (H) mm

Sample price: 2,400 yen

Aiming for multi-channel link optical transmission device/optical receiving device market and in the future the interconnection (internal device optical wiring) market.

(*2) Single-mode: Transmission format for a 1300 ~ 1500um band optical wavelength using a fiber 10um in diameter at its core.

(*3) Insertion loss: Coupling loss. Amount of signal entering a device that is lost during output.

(*4) Crosstalk: A signal transmitted by one circuit leaks into another circuit. Caused by deteriorating quality of transmission devices.

(*5) Multi-mode: Transmission format for an 800um band optical wavelength using a fiber 50um in diameter at its core.

- **P1X 4A 4-ch CWDM multiplexer/demultiplexer**

Characteristics

Constructed of an MLA and a subminiature dielectric multi-layer filter, realizes world's smallest size: 7.2 (W) x 14.5 (L) x 4.7 (H) mm.

Specifications

Insertion loss: 2.5dB or lower (Typ. 2dB)

Crosstalk: 30dB or higher

Main channel wavelengths: 1510, 1530, 1550, 1570nm

Effective wavelength interval: 13nm

Sample price: 35,000 yen (not including connector) estimate

Plus, Omron is currently developing a structurally identical multiplexer/demultiplexer compliant with differing wavelength bands and number of wavelengths.

- **P1S18A Single-mode type 1 x 8 optical switch**

Characteristics

Constructed of a linear actuator and MLA, realizes the world's smallest size among mechanical designs

Specifications

Insertion loss: 3dB or lower (Typ. 2dB)

Crosstalk: 55dB or higher

Return loss: 35dB or higher

Switching time of 15 seconds and equipped with self-maintaining functionality.

Wavelength range: 1290 ~ 1580nm

Drive pressure: 5VDC

Power consumption: 800mW (when switching)

Dimensions: 16 (W) x 44 (L) x 8.5 (H) mm

Sample price: 35,000 yen (not including connector) estimate

In addition, Omron is preparing to release a miniature control unit (W 16 x L 17 x H 8.5mm) to make circuit design easier for users, with an estimated sample price of 6,000 yen.

(*6) CWDM: Coarse Wave Division Multiplexing

Sales objective: 4 billion yen in FY 2005

For detailed information, please visit the web site at www.omron.co.jp/ecb/opto_e.

About Omron

Headquartered in Kyoto, Japan, OMRON Corporation is a global leader in the field of automation. Established in 1933 and headed by President Hisao Sakuta, Omron has more than 23,000 employees in over 35 countries working to provide products and services to customers in a variety of fields including industrial automation, electronic components, social systems (ticket gate machines, ticket vending machines, cash dispensers, and traffic control), and healthcare. The company is divided into five regions and head offices are in Japan (Kyoto), Asia Pacific (Singapore), China (Shanghai), Europe (Amsterdam) and US (Chicago). For more information, visit Omron's Web site at www.omron.com

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