



**Centre for Integrated Photonics**

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## **Reflective semiconductor optical amplifier delivers optimized performance for WDM passive optical networks**

*\* eliminates expensive tunable sources at client ends of WDM passive optical networks*

*\* provides first practical building block for flexible, cost-effective WDM PONs*

Ipswich, UK, December 12, 2005

**The Centre for Integrated Photonics (CIP)** has developed a reflective semiconductor optical amplifier offering highly optimized performance for WDM passive optical network (PON) applications. Capable of delivering 20 dB of gain, the semiconductor optical amplifier (SOA) can be modulated at rates up to 1.5Gb/s to provide wavelength-agile optical data transmission facilities for clients in fibre-to-the-home/premises (FTTH/FTTP) access network architectures - without the expense of a tunable wavelength source.

A novel curved waveguide architecture inside the monolithic InP (indium phosphide) based SOA, the SOA-RL-OEC-1550, delivers smooth output characteristics with a ripple of just 0.5 dB typical and a polarization-dependent gain of 1.5 dB typical. This highly optimized performance - which is believed to be unique on the market - provides the first practical building block for the development of flexible and cost-effective PONs based on wavelength division multiplexing (WDM).

"A lot of PON development is in progress, but for this kind of optical transmission architecture we're seeing engineers using prototypes based on standard SOAs with less than optimal anti-reflection characteristics," says Neil Weston of The Centre for Integrated Photonics (CIP). "This reflective SOA offers application-specific performance to support development and trials, and is based on a monolithic device design that is well suited to high-yield, low-cost volume manufacture."

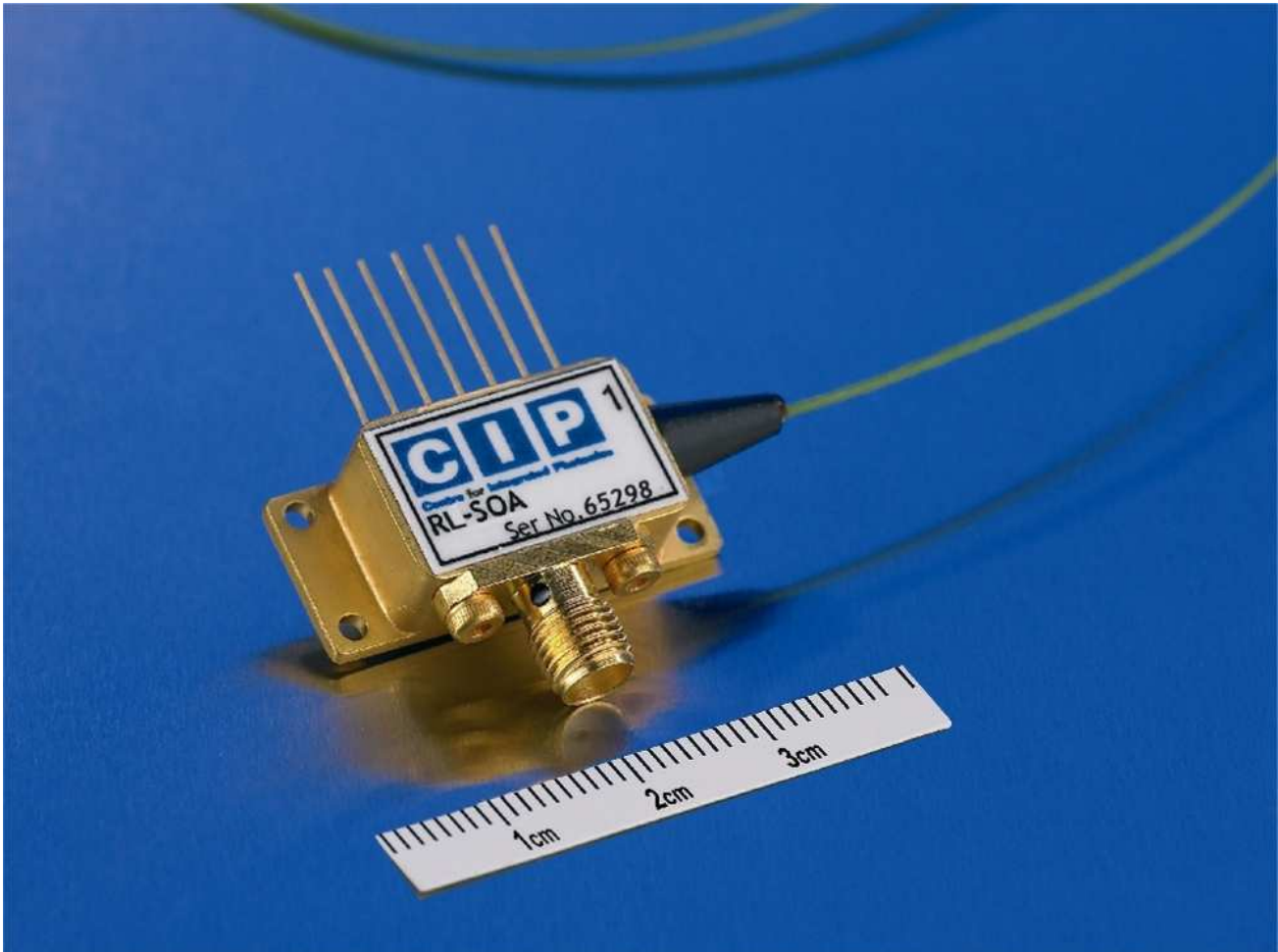
The SOA-RL-OEC-1550 has ultra-low front facet reflectivity (<10<sup>-5</sup>), and is ideal as a reflective colourless amplifying modulator in WDM-PON schemes, or as a gain block for external cavity lasers. The device employs CIP's proprietary InP buried heterostructure design which delivers very high light confinement. It is available in a 7-pin butterfly/SMA package with a thermistor, thermo-electric cooler, single-mode fibre pigtail and a 50 ohm input impedance matching circuit, or as a custom chip-on-carrier product.

Key specifications include a small signal gain of 20 dB typical over a wavelength range from 1530 to 1570 nm, gain ripple of 0.5 dB typical/1.5 dB maximum, polarization dependent gain of 1.5 dB typical/3 dB maximum, and a data modulation rate of up to 1.5 Gbits/sec.

A datasheet is available from [info@ciphotonics.com](mailto:info@ciphotonics.com).

CIP also offers a highly polarization-selective variant of the device, the SOA-R-OEC-1550.

Image & text available at: [www.wordsun.com/cip7.htm](http://www.wordsun.com/cip7.htm) or [www.ciphotonics.com/cip\\_press.htm](http://www.ciphotonics.com/cip_press.htm)



**The Centre for Integrated Photonics Ltd (CIP)** is a leading supplier of advanced photonic hybrid integrated circuits and InP based optoelectronic chips, devices and modules for communications, biomedical, defence and industrial markets. CIP is also a major provider of technical services and consultancy in the photonics field. With 500 years of combined expertise in photonics, CIP refines research into viable products based on leading edge technologies, thus helping customers develop the photonic products of tomorrow. CIP's wide range of competencies are based on advanced world renowned research and are uniquely broad, incorporating III-V photonic materials, silicon micromachining, planar silica waveguides and systems measurements expertise. Together with state-of-the-art, ISO9001:2000 registered, co-located fabrication and pilot production facilities, CIP is able to help customers realise new exciting product ideas based on these technologies.

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