PHOTONICS NEWS

Company Newspaper of the LASER COMPONENTS Group

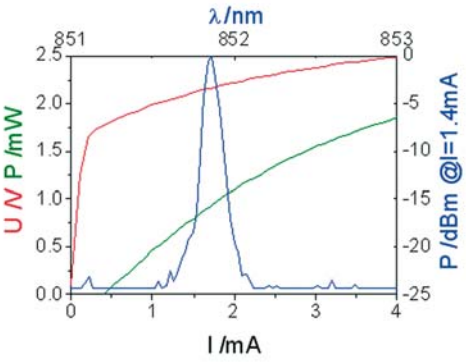
January 2010
Issue 21

1.4 mW at Less Than 3.5 mA, Polarization Locking, Ultra Low Power Consumption

New Generation of Single-mode VCSEL

Today, more and more mobile applications need power saving VCSELs (Vertical Cavity Surface Emitting Lasers), e.g. trackballs for mobile phones, wireless laser mice, mobile industry applications. Power-saving VCSELs help to extend the battery life time and improve the customer experience.

In order to meet this increasing demand, Philips ULM-Photonics qualified and released a new single-mode VCSEL platform for ultra low power consumption and high output power. In this new platform, Philips ULM Photonics implements several innovative approaches to achieve polarization control without any trade-off on VCSEL efficiency, so that VCSELs can work on very low operating currents and at the same time provide high laser output power in single mode with polarization locking. The graph shows a typical L-I-V curve of chips, which are in mass production already.



The first released product specification based on this platform is named ULM850-A4-PL-S0101U, which offers customers all valuable features for mobile applications:

- High output power with ultra low operating current requirement (1.4 mW@3.5 mA, typically 1.4 mW@2.5 mA)
- Single mode performance (side mode suppression ratio >10 dB, typical >25 dB)
- Polarization locking (no static or dynamic polarization flips)
- Small footprint for low cost and compactness (200 µm x 200 µm)
- Extended operating temperature (-20 °C ~ 60 °C)

For more information and the datasheet, please visit our website. Our sales team will be readily available to discuss custom product specification for individual applications.

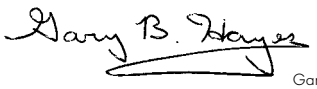
Data sheets at: www.lasercomponents.com
Product Code: 978

LASER COMPONENTS IG, Inc.

2009 Success – 2010 Optimistic

I would again like to thank you for working with LASER COMPONENTS IG, Inc. as we have experienced a very successful year in 2009. Our actual revenue was 20% over forecast and most amazing our 2009 bookings increased 44%. Despite the difficulties our economy wrestled with in 2009 we have experienced fantastic results. This is attributed to our diverse product offerings serving a gambit of market segments, our many unique products with proven quality, the support and success of our suppliers & our customer's end products, and yes - considerable hard work.

Now 2010 looks even more optimistic. We have strength in our existing product offerings and we have several new enhanced products that complement our photonics technologies. You can see some of these opportunities in this Photonics News issue and will be amazed at what we are planning to release this coming year. So stay tuned. If you are not already working with LASER COMPONENTS, please join us. If you are already part of our organization then thank you. We can all be successful and will win together.



Gary Hayes
CEO / General Manager

See us at Photonics West, Booth 2317

SPIE Photonics West

Detector Area from 80 µm to 350 µm

XXL InGaAs APDs

In military applications detection signals are typically very weak. Now that eye-safe pulsed laser diodes have just recently been introduced at 1550 nm for rangefinding applications, the appropriate detector will follow.

Maximum Sensitivity at 1550 nm

These new InGaAs photodiodes detect in the spectral range from 1000 nm to 1650 nm. They peak at 1550 nm!

The so-called IAG series offers much more: In addition to the reliable detector areas of 80 µm and 200 µm, an XXL version is also produced. The massive 350 µm diameter of this series almost overshadows its other features:

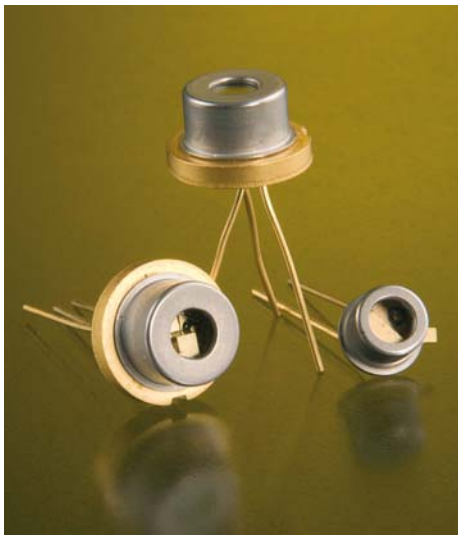
- Large bandwidth up to 2.5 GHz
- Smallest dark currents possible
- NEP of typically 0.01 pW/sqrHz
- Damage threshold > 200 kW/cm^2

Robust and extremely dynamic, these APDs are delivered in a TO-46 housing. The option of customer-specific solutions is always available with us!

Data sheets at: www.lasercomponents.com
Product Code: 952

Multi-Junction Technology Applied to a New Wavelength

Eye-Safe 1550 nm Pulsed Laser Diodes



The innovations of the new 1550 nm pulsed laser diode (PLD) can be summed up in two points. For one, systems into which this PLD has been integrated still fall under laser safety class 1 and 2, the wavelength is not visible with standard night vision equipment.

The tested and proven technology of the 905 nm PLDs was used in the new 1550 nm pulsed laser diodes manufactured by LASER COMPONENTS Canada. A laser diode chip contains several epitaxially integrated emitters. With two emitters the new 155G1S2J02x achieves an output power of 5 W @ 150 ns, dc = 0.1% at an emitter size of only 50 µm x 7 µm, making it the perfect match for our 80 µm InGaAs APD. At shorter pulse lengths the optical peak power can be overdriven accordingly. Future developments will include a 150 µm emitter width to match our 200 µm InGaAs APD. The 1550 nm pulsed laser diodes are best suited for use in military laser rangefinders and identification friend or foe (IFF) systems.

The extremely reliable base material used in PLDs is InGaAsP, which is also applied in industrial scanners. The wide operating temperature range from -45°C to +85°C and the excellent temperature stability guarantee a wide measuring range also in warmer regions. To exhaust all technical advantages of PLD chips, they are integrated into a hermetically sealed TO housing. This ensures a high degree of reliability, the ability to overdrive, and a very precise chip position in the housing.

Data sheets at: www.lasercomponents.com
Product Code: 950

For Easy Operation of High Power LDs

Driver for High Power LDs on a Single Circuit Board

Lasers are becoming smaller and more compact, making them much more portable and less expensive. Now there are drive electronics with similar features: OEM laser diode drivers are small in size and low in price.

The concept of regulating the current in the LDP-C series is innovative and has significant advantages over linearly regulated systems. For example, the loss of power is significantly reduced. The almost instantaneous output current makes it possible to achieve low current rise times of typically 400 ns to 5 µs.

Technical Data:

- Variable pulse widths of QCW to CW
- Output current 18 A, 40 A, or 200 A
- Analog modulation up to 16 Hz

Data sheets at: www.lasercomponents.com
Product Code: 055

High Voltage (HV) Modules – For Easy Operation of HV Components

Generate a High Voltage up to 1000 V!

Avalanche photodiodes, photomultipliers, radiation detectors, radiation counters, and piezo actuators all have one thing in common: These components require a high voltage up to 1000 V to operate.

We offer a solution at a low price with our high voltage module HV 1000. With its very small footprint, this module fits onto any circuit board!

The integrated switching regulators operate with a pulse frequency of about 100 kHz. The output noise voltage is approximately 10 mVpp at full power and thus extremely low. Using an external condenser this value can be optimized even further!

It is possible to generate the control voltage and very precisely regulate it either using a potentiometer, which can be connected to the internal 5 V reference voltage, or through an external source.

So That You Have Everything under Control

Output voltage and output current test ports are available to monitor operation more easily!

Data sheets at: www.lasercomponents.com
Product Code: 155

IR Detection has Never Been so Affordable

Pyroelectric Line Sensors

The thin film pyroelectric line sensors, now available from Pyreos and LASER COMPONENTS, provide a versatile low cost option for high resolution analysis in the Near IR, mid IR and even the Terahertz range. These robust, uncooled detectors offer excellent signal to noise ratio, a fast response time and are coupled with unbeatable pricing. IR detection has never been so affordable, at all wavelengths, presenting new opportunities for ubiquitous personal medical devices, low cost portable analytical equipment, laser meters, line cameras and terahertz imagers.

Pyreos currently has line sensors with up to 510 sensor elements available in a robust metal package with a choice of filter windows. The component has an inbuilt temperature sensor, and a multiplexed analogue output making for simple integration. With a demonstration kit available to get you started, you can be performing high resolution analysis in no time at all.

The flexibility of Pyreos sensor design and manufacturing technology offers the further opportunity for custom sensor resolutions, with a sensor fully optimised to a customer's unique requirements, and rapidly prototyped at low NRE by Pyreos.

Data sheets at: www.lasercomponents.com
Product Code: 2000

Not Just as a Laser Diode, But as a Module as Well!

Inexpensive Blue and Purple Laser Modules

LASER COMPONENTS not only offers laser diodes with blue and purple wavelengths, but the corresponding FLEXPOINT® laser diode modules that are specifically designed to perfectly suit your application as well. Thanks to our large production volume we are able to offer very competitive prices!

Customer-specific Laser Modules

We manufacture your target module at 405 nm or 445 nm, regardless of whether you are looking for a circular or elliptical beam, line-generating optics, SMA fiber connector, power adjustment via potentiometer or a third wire, and digital or analog modulation. In addition, you may choose your desired output power: the maximum at 405 nm is 100 mW; at 445 nm we can offer 50 mW. Alternatively, you may state the required laser class from 1 to 3R.

FLEXPOINT® Laser Modules – Standard Products

Of course, we also carry standard modules in our portfolio that are readily available. Made in Germany, quality and the adherence to the required laser class are our highest priorities when it comes to laser modules.

Data sheets at: www.lasercomponents.com
Product Code: 074

Lasers for Image Processing

Structured Laser Light

In image processing, lasers are the first choice for producing a line in the 3D light-sectioning method. The laser light can be focused in a fine line onto a surface. Different line generators produce varyingly long lines. In combination with a camera the structure of the surface can be measured.

Fields of Application

FLEXPOINT® HOM line lasers are commonly used to examine welding seams, adhesive beads, and in simple profile measurements.

Pattern Generators

Crosses, grids, multiple lines, circles, or dot matrices are required for certain measurements tasks. These patterns can be easily produced using so-called diffractive optical elements (DOEs). Instead of using several lasers, a DOE can be applied to the FLEXPOINT®. It can either be integrated permanently into the module or mounted in a plastic cap.

Individual Pieces or OEM quantities

All FLEXPOINT® laser modules are available individually or in large quantities for OEM integration in 3D vision sensors.

Data sheets at: www.lasercomponents.com
Product Code: 174

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Achieve Better Performance and Thermal Stability

colorPol® Polarizers for Display Applications

High temperature lamps, wide environmental conditions, and vacuum pressure settings create fading or degradation of plastic polarizers when used in a variety of display, sensing, and instrumentation applications. As equipment moves out of the living room or office and into the field integrators require more durability from their components. Fortunately CODIXX offers colorPol® glass polarizers achieving higher display quality as well as rugged durability over a variety of conditions.

CODIXX colorPol® glass polarizers withstand extreme power and temperature conditions while maintaining >100,000:1 contrast ratio. They can be treated like any other glass or silicon wafer whereby enduring -50 to +400 °C temperature ranges, UV radiation, and cleaning with most solvents and acids.

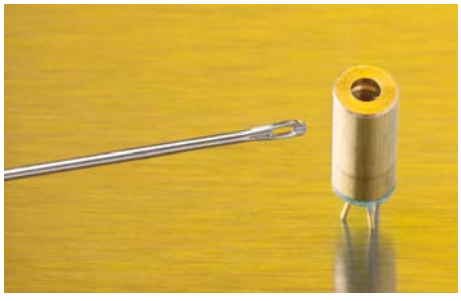
CODIXX manufactures optical polarizers for the UV, Visible, Near-IR, and Mid-IR ranges. Sizes range from 1 x 1 mm² to 100 x 60 mm² in round, rectangular, or custom dimensions.

Data sheets at: www.lasercomponents.com
Product Code: 085

Laser Diode Modules with a Diameter of 3.3 mm

OEM Laser Diode Modules: Small – Red – Low Cost

With a diameter of only 3.3 mm and a length of 7 mm and 6.1 mm, we can offer you the world's smallest laser diode modules. These modules emit a red collimated dot at 650 nm; they already contain collimation optics and drive electronics. This ensures easy electric integration of these modules into your system. The available output power of Type 17 is < 1 mW; Type 07 is available with two levels of output power: < 1 mW and < 2.5 mW.



Due to their small housings, these modules are particularly well suited for applications in which very little space is available in the assembly. The LC-LMD series laser diode modules are an inexpensive and simple solution used in consumer products, hardware and household appliances, as targeting and adjustment aids, or as senders in optical sensors.

Data sheets at: www.lasercomponents.com
Product Code: 50