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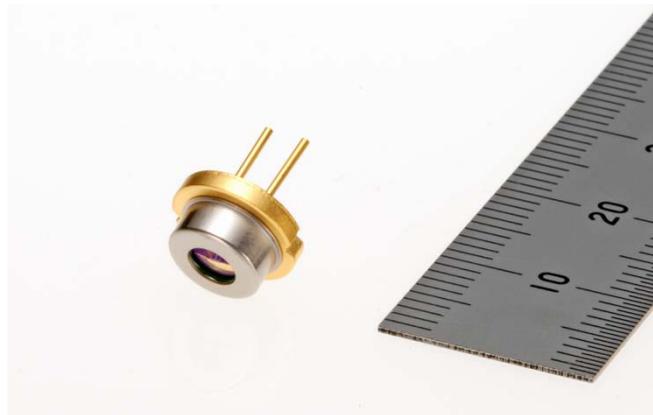
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## **Mitsubishi Electric Develops New Red Laser Diode for Projectors with Industry-leading Output Power**

**TOKYO, June 17, 2014** – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has developed a 638-nanometer (nm) wavelength red laser diode (LD) offering output power of 1.8 W at continuous-wave operation, the world's highest level among 638-nm LDs in this package size used as light sources for projectors. A commercial launch is targeted for the fiscal year ending in March 2016 at which time laser light sources for projectors are expected to take off.

The breakthrough LD will be presented during the Laser Display Conference 2014 (LDC 2014) at National Chung Hsing University in Taichung, Taiwan on June 19 and 20.



638-nanometer wavelength red laser diode

Light sources for color projectors, conventionally lamps, are being replaced with solid-state light sources offering higher energy efficiency, higher color reproduction and longer life. LDs deliver high output power while consuming low power because of their high power-conversion efficiency.

Previously, the output power of red LDs with wavelengths shorter than 640 nm was not sufficient for high-brightness projector applications at high temperatures. As a first step to overcome this limitation, Mitsubishi Electric applied specialized window-mirror structures and epitaxial growth technology to develop an LD capable of 0.5 W power output at continuous-wave operation, which is packaged in a

5.6-mm-diameter transistor-outline can (TO-can). Thereafter, it applied a new LD structure in a 9.0-mm TO-can package to achieve industry-leading output power of 1.8 W at a 638-nm lasing wavelength, which meets demands for bright projector systems.

**Features**

**1) *Highest recorded output power of 1.8 W at 638 nm at continuous wave operation due to improved LD structure***

- Achieves high output power in this package size due to the optimization of its layer structure and emitting-region size
- Continuous wave output power of 1.8 W, currently the world’s highest in the 638-nm band
- Luminosity as a red light source exceeds 220 lumens due to lasing at short wavelength
- Industry-leading electrical conversion efficiency of 38% at 1.8 W at 25 degrees Celsius, helping to reduce power consumption

**2) *Wide operational temperature range thanks to new package***

- Good heat dissipation due to use of a large TO-can package with diameter of 9.0 mm
- Emits 1.8 W at continuous wave operation within an operating range of 0 to +45 degrees Celsius
- Emits 1.3 W at continuous wave operation above 55 degrees Celsius

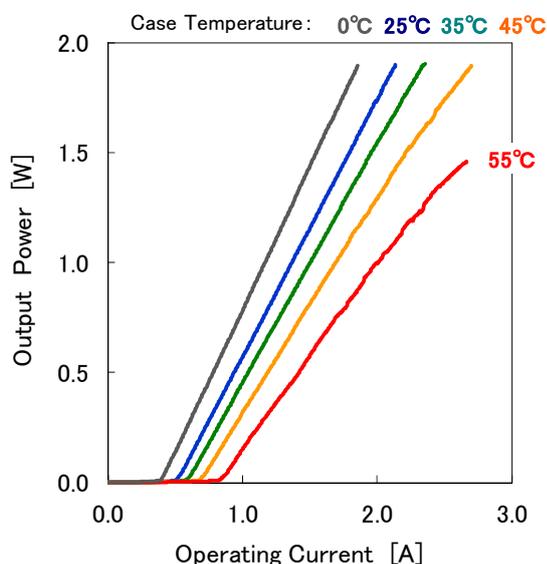


Figure 1: Power-current characteristics

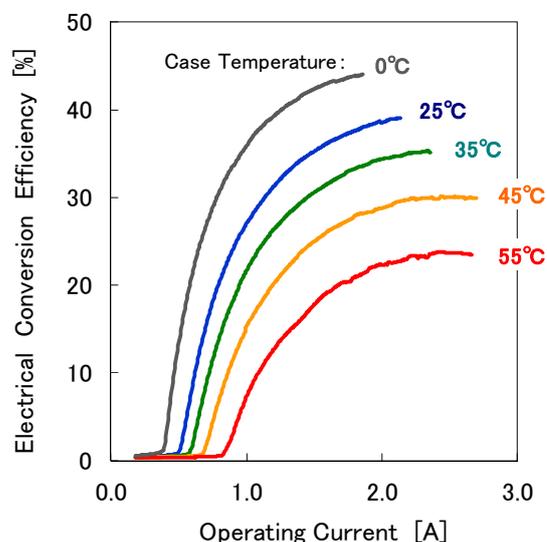


Figure 2: Conversion efficiency-current characteristics

**Future Development**

Going forward, Mitsubishi Electric plans to enhance its new LD’s high-power, low-consumption characteristics, aiming at a commercial launch in the fiscal year ending in March 2016, at which time laser light sources for projectors are expected to take off.

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### **About Mitsubishi Electric Corporation**

With over 90 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of 4,054.3 billion yen (US\$ 39.3 billion\*) in the fiscal year ended March 31, 2014. For more information visit <http://www.MitsubishiElectric.com>

\*At an exchange rate of 103 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2014