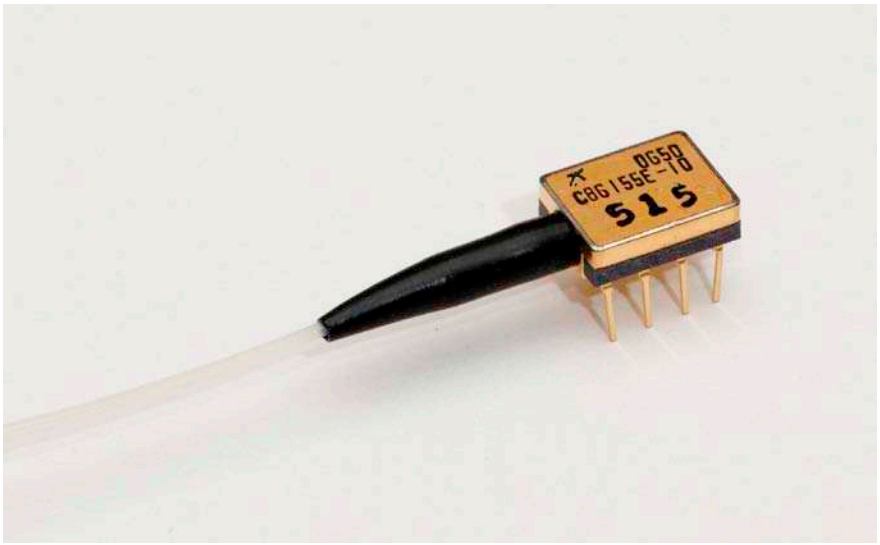
C86155E-10

Quasi-Continuous-Wave 980 nm Laser Diode



The C86155E-10 high energy fiber pigtailed Quasi-Continuous-Wave (Quasi-CW) Laser Diode has been designed specifically to meet the demanding requirements of Laser Initiated Ordnance (LIO) applications. Its high output power combined with small fiber optic mode field diameter produce power densities in excess of 4 MW/cm^2.

The C86155E-10 is supplied in a hermetic ceramic 8 pin mini-DIL package outline for convenient integration into system configurations where space and weight are limited. Excelitas' precision fiber pigtailing technique ensures the 100 µm optical fiber is positioned and secured at its optimum location and remains so over a wide operating temperature range.

The 980 nm broad area laser employs advanced epitaxial materials providing a reliable, high optical power output capability and significant power retention at elevated temperature.

This laser is equipped with an integral rear facet monitor photodiode to ensure precise optical output power control. Certified to meet ISO 9001, the laser diode is designed to satisfy MIL-STD-883 and/or MIL-STD-750.

Excelitas is pleased to support customer-specific requirements.

Key Features

- Quasi-CW operation
- High fiber coupled output power
- Small fiber optic MFD (100 µm)
- Operating at 70°C
- Rugged, compact packaging
- High reliability, qualified in excess of 1 million shots

Applications

- Laser Initiated Ordnance (LIO)
- Electronic Safe & Arm

Quasi-CW 980 nm Laser Diode

Table 1. Characteristics at 22°C

Parameter		C86155E-10			Units
		Minimum	Typical	Maximum	
Power Output at 25°C at If= 2A	$P_{o\ 25ºC}$	1.0	1.25		W
Power Output at 70°C at If = 2A	$P_{o\ 70ºC}$	0.7	1.05		W
Forward Current at 1 W	I_f		1.6	2.5	A
Center Wavelength	λ		980		nm
Pulse width	t_w			10	ms
Duty Factor	du			10	%
Fiber Optic Core/Cladding Diameter			100/140		µm
Fiber Optic Numerical Aperture	NA		0.29		
Rear Facet Monitor Current at 1 W	I_m		900		µA
Rear Facet Monitor Bias Voltage	V_{bias}	5	15	40	V
Storage temperature	T_s	-20		+85	°C
Operating temperature	T_o	-20		+70	°C
Lead soldering @ 260°C Max				5	s

Operating Considerations

The laser diode is operated by forward biasing its pn junction. Maximum ratings and limiting values should never be exceeded. Exposure of the diode to even brief transient current spikes, particularly in the reversed bias direction can cause catastrophic device failure. It is recommended that the device be protected by connecting a resistor (~5 Ω) in series with the laser diode. Adequate heat sinking should be provided.

For Your Safety

Laser Radiation: Under operation, these devices produce invisible electromagnetic radiation that is harmful to the human eye.

To ensure that these laser components meet the requirements of Class IIIb laser products, they must not be operated outside their maximum ratings. Power supplies used with these components must be such that the maximum peak forward current cannot be exceeded. It is the responsibility of the user incorporating a laser into a system to certify the Class of use and ensure that it meets the requirements of the ANSI or appropriate authority.

Further details may be obtained in the following publications:

21CFR 1040.10 – “Performance standards for light emitting products (Laser Products)”.

ANSI Z136.1 – “American National Standard for safe use of lasers”.

IEC 60825-1 – “Safety of laser products”.

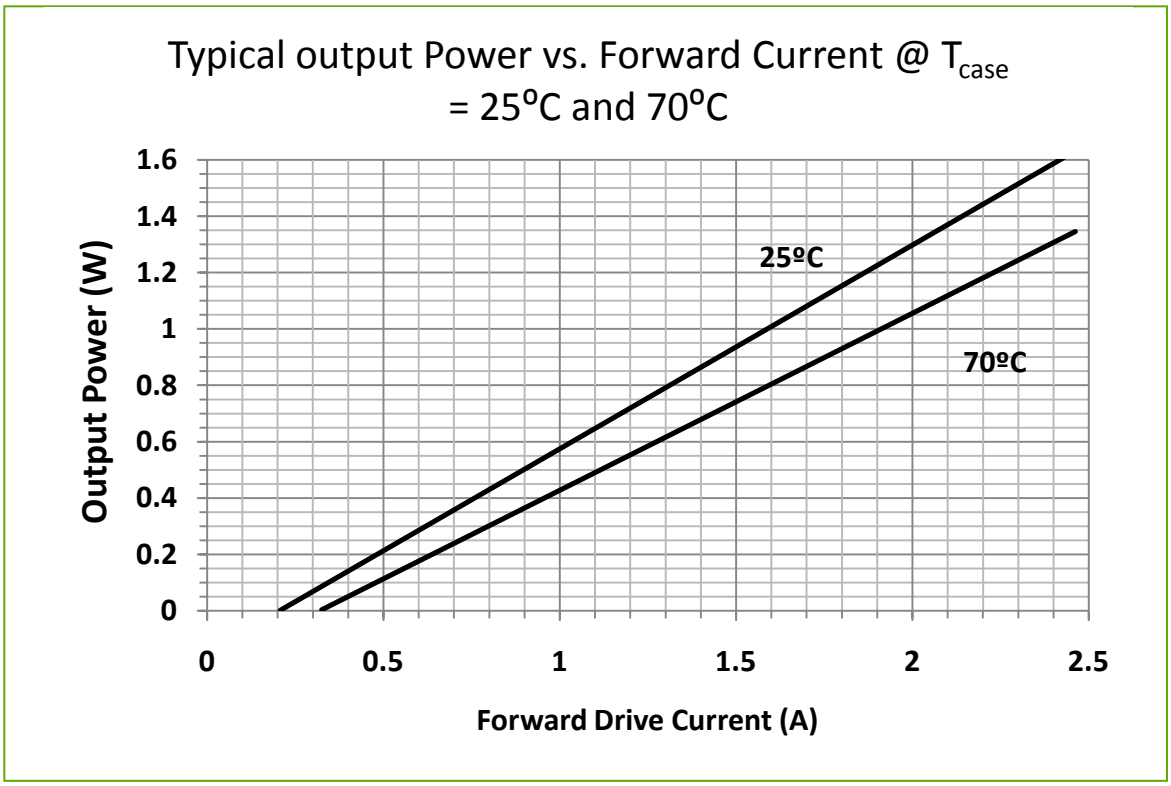


Figure 1
Output Power vs. Drive Current

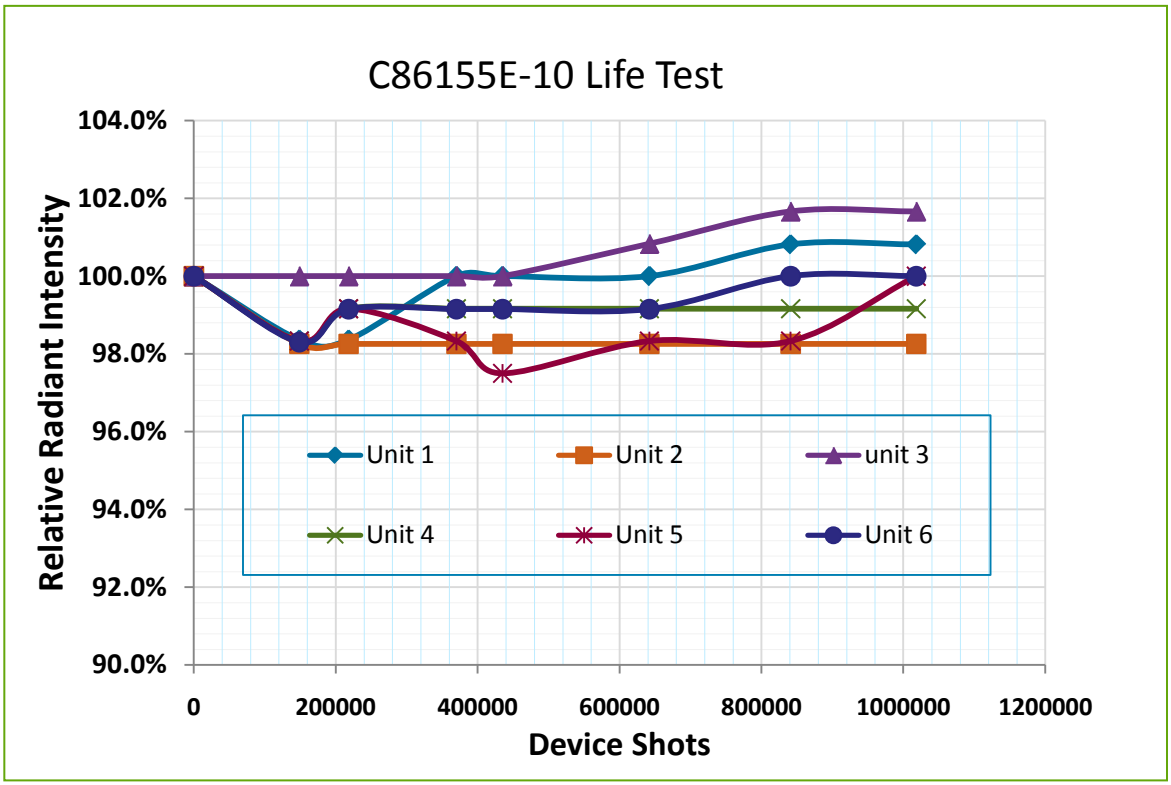


Figure 2
Reliability / Life test

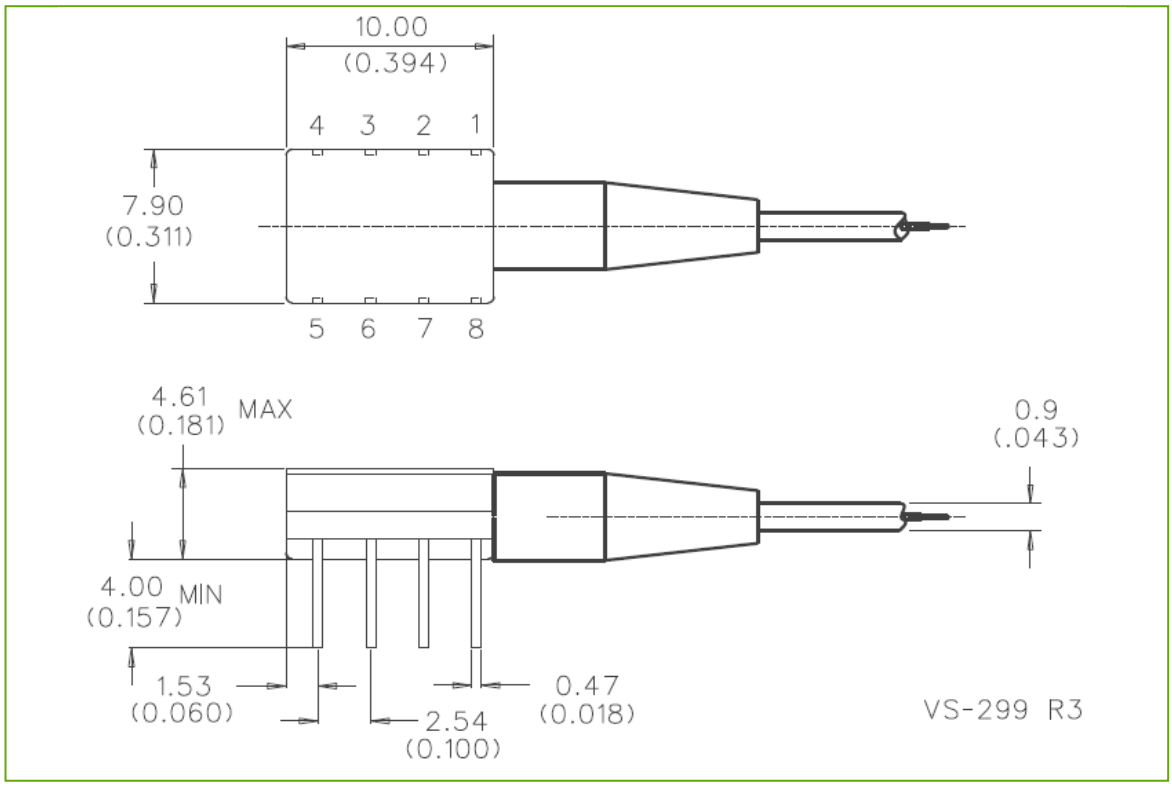


Figure 3
Package Dimension, in mm (inches)

ESD warning
Lasers should only be handled at an ESD-safe work station.

Warranty
A standard 12-month warranty following shipment applies. Any warranty is null and void if the laser case has been opened.

About Excelitas Technologies
Excelitas Technologies is a global technology leader focused on delivering innovative, customized solutions to meet the lighting, detection and other high-performance technology needs of OEM customers.

From analytical instrumentation to clinical diagnostics, medical, industrial, safety and security, and aerospace and defense applications, Excelitas Technologies is committed to enabling our customers' success in their specialty end-markets. Excelitas Technologies has approximately 3,000 employees in North America, Europe and Asia, serving customers across the world.

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