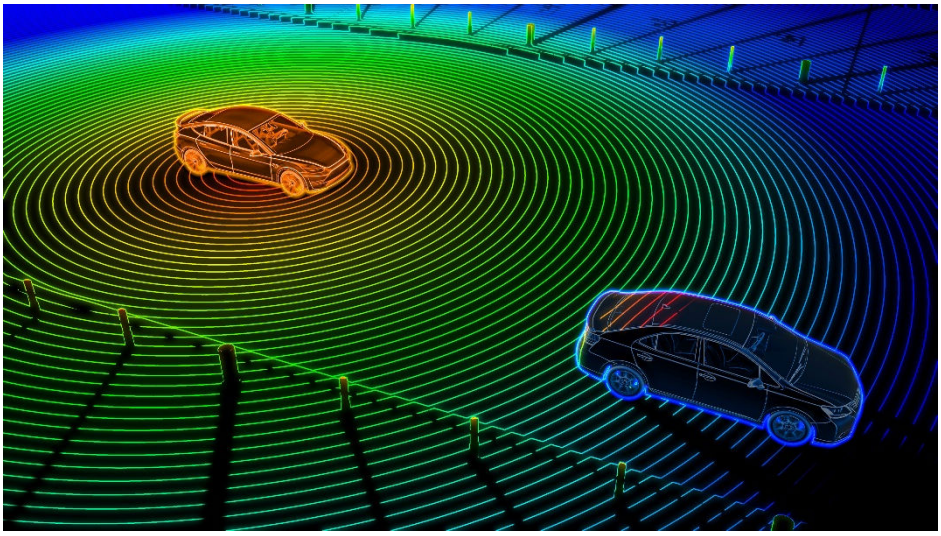
Item Number: 2515-0010

Item Description: 1550nm MOPA chip, >100W Peak Power in Nanoseconds

Application: Time-of-Flight Lidar for Autonomous Driving Vehicles

ECCN: 6A005 (Export regulated by U.S. Government Export Administration Regulations)



Features:

- **1550nm Eye-safe Wavelength**
- **High power short pulse**
- **Single chip diode laser**
- **Reliable**
- **Compact**
- **Cost effective**
- **Produced at wafer level**

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Chip Specification and Pulsed Operation Parameters (preliminary)

	MINIMUM	TYPICAL	MAXIMUM	UNIT
Mechanical dimensions				
Length		5		mm
Width		1		mm
Thickness		0.125		mm
Oscillator length		1		mm
Amplifier length		4		mm
General specifications				
Emitter width at facet		500		microns
Operating temperature	5		40	C
Slope efficiency		0.35		W/A
Oscillator current		0.7		A
Oscillator voltage		3.5		**V**
Power output and amplifier current		see table below		
Polarization		TE		
Center wavelength		1550		nm
Side mode supression ratio (CW excitation only)		40		dB
Temperature tuning rate		0.12		nm/K
Beam divergence vertical		35		deg
Beam divergence horizontal		20		deg
Astigmatism		1.5		mm

Representative pulsed operation parameters				
Pulse energy	Pulse length	Maximum repetition rate	Peak current	Peak voltage
4 microjoules	20 ns	250 kHz	570 A	8.8 V
2 microjoules	20 ns	1500 kHz	285 A	4.8 V
2 microjoules	5 ns	50 kHz	1150 A	16.8 V

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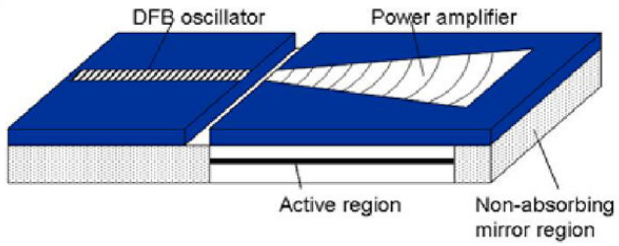
MOPA Chip General Description and Integration Guide



Schematic view of DFB-MOPA Chip

General Description:
This note describes the structure and specifications of the QPC Lasers DFB-MOPA diode laser for LIDAR applications. The laser can be used for time-of-flight, CW Doppler or FMCW LIDAR, but the present description focuses on specifications appropriate for TOF.

The diode consists of two monolithically integrated sections:
1. A low power (several hundred mW) single lateral mode and single-frequency DFB oscillator "seed" laser
2. A tapered semiconductor amplifier which coherently amplifies the freely diffracting seed beam to much higher powers.

The tapered amplifier has hundreds of times larger area than the oscillator, very high powers can be generated without encountering high optical, electrical or thermal fluxes

Keeping these fluxes to low levels avoids nonlinear effects which might otherwise distort the beam or degrade reliability

Multi-watt average powers, and peak pulsed powers in the 100 W range can be obtained while maintaining near diffraction-limited beam quality. These diodes provide higher diffraction limited powers than any other diode design

The exit beam has a vertical beam waist at the output facet and the horizontal beam waist is located several hundred microns behind the output facet. The optics used to collimate or fiber-couple the output beam must be designed with this astigmatism in mind.

The two sections are typically driven by separate current supplies with the oscillator section driven CW and the amplifier driven pulsed