



US 20230231358A1

(19) **United States**

(12) **Patent Application Publication**
Kovsh et al.

(10) **Pub. No.: US 2023/0231358 A1**

(43) **Pub. Date: Jul. 20, 2023**

(54) **OPTICAL COMMUNICATION INTERFACE**

H04B 10/524 (2006.01)

H04B 10/54 (2006.01)

H04B 10/564 (2006.01)

(71) Applicant: **Arista Networks, Inc.**, Santa Clara, CA (US)

(52) **U.S. Cl.**

CPC **H01S 5/02251** (2021.01); **H01S 5/50** (2013.01); **G02B 6/4296** (2013.01); **G02B 6/4204** (2013.01); **H01S 5/0651** (2013.01); **G02B 6/4292** (2013.01); **H04B 10/70** (2013.01); **H04B 10/503** (2013.01); **H01S 5/3412** (2013.01); **H01S 5/146** (2013.01); **H04B 10/505** (2013.01); **H04B 10/506** (2013.01); **H04B 10/524** (2013.01); **H04B 10/541** (2013.01); **H04B 10/564** (2013.01)

(72) Inventors: **Alexey Kovsh**, Saratoga, CA (US);
David Towne, San Carlos, CA (US);
Peter Parkinson, San Jose, CA (US);
Andreas Bechtolsheim, Portola Valley, CA (US)

(21) Appl. No.: **18/162,004**

(22) Filed: **Jan. 31, 2023**

Related U.S. Application Data

(63) Continuation of application No. 16/938,581, filed on Jul. 24, 2020, now Pat. No. 11,594,854.

Publication Classification

(51) **Int. Cl.**

H01S 5/02251 (2006.01)

H01S 5/50 (2006.01)

G02B 6/42 (2006.01)

H01S 5/065 (2006.01)

H04B 10/70 (2006.01)

H04B 10/50 (2006.01)

H01S 5/34 (2006.01)

H01S 5/14 (2006.01)

(57)

ABSTRACT

Embodiments of the present disclosure include optical transmitters and transceivers with improved reliability. In some embodiments, the optical transmitters are used in network devices, such as in conjunction with a network switch. In one embodiment, lasers are operated at low power to improve reliability and power consumption. The output of the laser may be modulated by a non-direct modulator and received by integrated optical components, such as a modulator and/or multiplexer. The output of the optical components may be amplified by a semiconductor optical amplifier (SOA). Various advantageous configurations of lasers, optical components, and SOAs are disclosed. In some embodiments, SOAs are configured as part of a pluggable optical communication module, for example.

