Finisar designs and manufactures high-performance and reliable fiber optics products for military applications. With 25 years experience in the optical communications industry, Finisar is recognized as the world’s largest supplier and volume leader of optical components and subsystems. The products featured in this solutions guide provide an overview of some optics technology best suited for advanced military applications.

### Endurance™ Rugged, Compact 10 Gb/s Transceiver

Finisar’s Endurance transceiver provides bi-directional optical data links at data rates from 1 Gb/s up to 10 Gb/s for harsh environments. It is interoperable with standard SFP/SFP+ pluggable modules and contains 2-wire serial communication interface for digital control and diagnostics.

Endurance operates at a wide temperature range from -40°C to 85°C and available with an optional conformal coating resistant to corrosive environments. It mounts directly to the Printed Circuit Board to handle excessive shock and vibration. Finisar’s 850nm oxide Vertical Cavity Surface Emitting Laser (VCSEL) is best-in-class for reliability and has excellent performance over temperature. Endurance has been qualified to additional military specifications for long-term aging, salt spray and vibration.

At half the length of Small-Form Factor (SFF) modules, Endurance saves space on Printed Circuit Boards and allows multiple modules to be mounted side-by-side for high-density edge port counts.

### 3 GHz XFP-RF Wavelength-Tunable Transmitters

Finisar’s XFP-RF transmitter is a small form factor hot-pluggable optical module that can be fully loaded with analog carriers from 50 MHz to 3000 MHz on a single wavelength for RF-over-Fiber applications. The transmitter wavelength can be tuned to any of the 43 different Dense Wavelength Division Multiplexing (DWDM) wavelengths across the entire C-band in less than 500 ms. With 43 transmitters, this allows up to 43 optical signals, each with a full RF load up to 3GHz, to be multiplexed onto a single optical fiber to provide high bandwidth capacity.

### Advanced RF Optical Detectors and Receivers

Finisar’s single and balanced photodetectors, which leverage advanced waveguide integrated photodiodes, offer a highly-linear frequency response from DC to over 100 GHz and high RF output power levels for Analog RF-over-Fiber applications. The detectors operate at various wavelengths including 1310 nm and 1550 nm. Finisar also offers receivers mating these advanced photodetectors with high-performance transimpedance amplifiers.
Optical Sensors and Discrete Components
Finisar offers a broad array of optical sources that can be used for developing sensors for reflective and scattering applications such as gesture recognition, motion sensors, velocity measurement, 3D scanning, and turbidity measurements. Finisar’s laser components can also be utilized for atomic clocks, communication links in hazardous environments with transmitting power over fiber to operate the remote site and free-space, line-of-site communication data links.

Finisar’s VCSELs products include single mode and multi-mode devices, spanning wavelength ranges from 780 to 1000nm and powers from sub-mW to >1W and can operate reliably across the entire industrial temperature range in hermetic and non-hermetic environments. Finisar also has custom optical sensor design and packaging capabilities that can deliver a product as simple as a TO-46 can with a VCSEL die or as complex as a touch-less velocity sensor with integrated electronics delivering an analog signal output.

SNAP12 Parallel Transmitters and Receivers
Finisar's SNAP12 transmitters and receivers are high-performance fiber optic modules for parallel data communication applications. The transmitter module incorporates a 12-channel VCSEL (Vertical Cavity Surface Emitting Laser) array and the receiver module contains a 12-channel PIN photodiode array. These multi-rate devices operate from 1 Gb/s to 2.7 Gb/s per channel, providing up to 32 Gb/s aggregate bandwidth with a link length up to 600 meters.

The SNAP12 transmitters and receivers operate at a wide temperature range from -40ºC to 85ºC. The devices are powered by 3.3 volts and utilize a standard MPO ribbon fiber connector interface.

WaveShaper Optical Instrumentation
The WaveShaper family of Programmable Optical Processors provide a range of programmable optical filtering and switching options for optical R&D and production test applications. Based on Finisar’s high resolution, solid-state Liquid Crystal on Silicon (LCoS) optical engine, the WaveShaper family provides extremely fine control of filter characteristics, including center wavelength, bandwidth, shape, dispersion and attenuation. The WaveShaper range includes a Channel Selector, Programmable Optical Filter and Multi-port Optical Processor. Versions of the WaveShaper platform are also available to be embedded into OEM equipment.

The precise control of channel or filter wavelength, bandwidth, shape, phase and amplitude, makes the WaveShaper family a uniquely powerful tool for optical R&D and production test.

Optical Passives
Finisar has a wide-array of high-performance optical passive products including wavelength multiplexers, optical splitters/combiners, optical isolators, and optical interleavers.

Finisar’s Dense Wavelength Division Multiplexers (DWDM) enables up to 48 wavelengths to be combined onto a single fiber for high-capacity transport. They utilize Thin Film Filter technology which offers flexibility from single to high port count and high integration from single MUX or DeMux to OADM (Optical Add-Drop Multiplexer) feature in one module. This product requires no electrical power, and offers a combination of low loss and high channel isolation along with long term reliability.

Finisar’s optical splitters/combiners utilize silicon fiber array technology for high uniformity and low insertion loss. Versions are available from 1X2 and 2X2 splits, up to 1X64 and 2X64 splits.
Finisar’s broad product portfolio includes all major transceiver types including:

- SFP
- SFF
- XPAK
- X2
- SFP+
- QSFP
- PON
- XENPAK
- CFP
- CXP
- XFP
- 300-PIN

About Finisar

Finisar Corporation (NASDAQ: FNSR) is a global technology leader of fiber optic subsystems and components that enable high-speed voice, video and data communications for networking, storage, wireless, and cable TV applications. For more than 25 years, Finisar has provided critical optics technologies to system manufacturers to meet the increasing demands for network bandwidth. Finisar is headquartered in Sunnyvale, California, USA with R&D, manufacturing sites, and sales offices worldwide. For additional information, visit www.finisar.com.