

# ENDURANCE PRODUCTS

**Rugged and Compact  
125Mb/s to 14Gb/s Optical Transceivers**

Dec 2022

## ENDURANCE TRANSCEIVER HIGHLIGHTS

- **Performance and functionality of SFP+ transceiver in compact, solder-down form-factor**
  - Includes Finisar Digital Diagnostics for early warning & troubleshooting
- **Protocol-agnostic at data rates from 125Mb/s (FastE) to 14Gb/s**
  - Multi-rate and Rate-Select versions available
- **Ruggedized features for industrial/military customers**
  - Board-mounted
  - I-Temp versions tested to MIL (military) specs
  - Options with Conformal Coating
- **Availability**
  - Short-Reach/Short-Reach (850nm)
  - 10G/1G Long-Wave/Long-Reach (1310nm)



## **FINISAR INSIDE!**

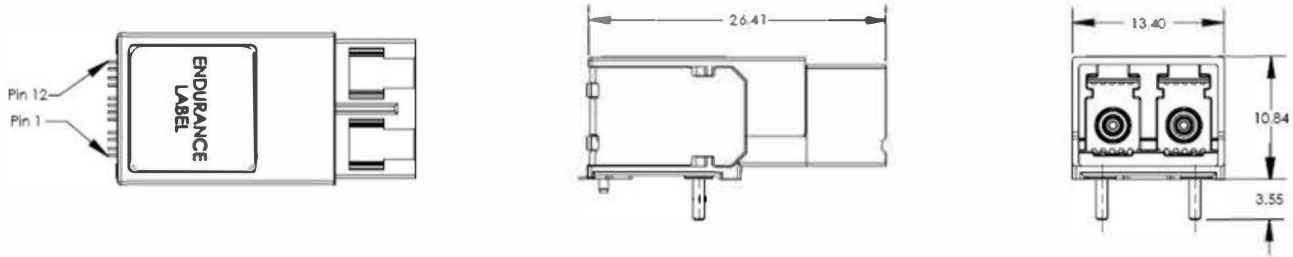
- **Endurance utilizes Finisar's designed and controlled components:**
  
- **850nm oxide VCSEL or 1310nm DFB laser**
  - Excellent performance over temperature
  - High-Reliability
  - Fabricated in Finisar facility
  
- **SmartLDPA**
  - Custom Integrated Circuit designed by Finisar containing Laser Driver, Post-Amp and micro-controller
  - Very small footprint enabling Endurance compact form-factor
  - Low power consumption
  
- **Finisar-Enhanced Digital Diagnostics**

## ENDURANCE – RUGGEDIZED FEATURES

- **Designed for high-endurance applications such as:**
  - Industrial
  - Military
  - Remote Radio Units for Cellular Antennas
- **Ruggedized features available:**
  - Wide operating temperature range of **-40°C to 85°C**
  - Wide storage temperature range of **-57°C to 100°C**
  - **Conformal coating** option available:
    - Internal PCBA/Flex/Optics are coated prior to assembly
    - Utilizes Paralyne-C conformal coating material
    - Qualified to salt spray test **MIL-STD-810G** (Test method 509.5) and 95% RH
- **Metal housing to reduce Electro-Magnetic Interference (EMI)**
- **Mounting posts to handle shock and vibration**
  - Industrial/Military version qualified to Fixed Wing Propeller Aircraft vibration test per **MIL-STD-810G**



# ENDURANCE OUTLINE DIMENSIONS



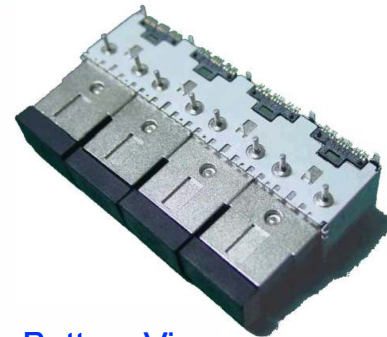
Half the length of the Small Form Factor (SFF) Transceiver



SFF Module

Endurance

Multiple Endurance modules can be ganged side-by-side



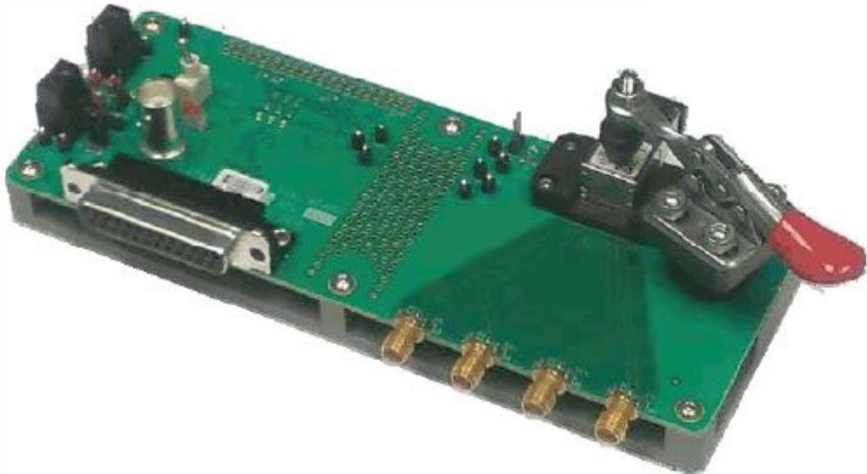
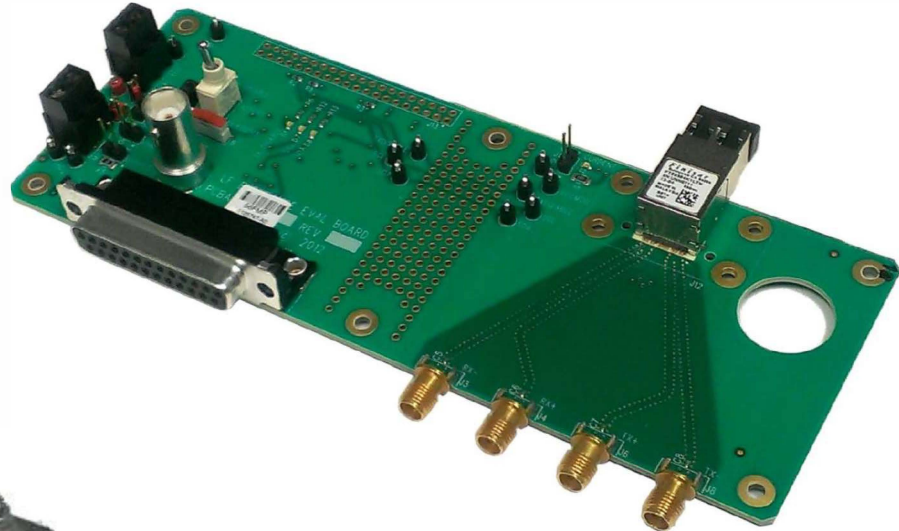
Bottom View

# ENDURANCE PRODUCTS AT A GLANCE – INDUSTRIAL & MILITARY

Product Overview				
Endurance Military				
PRODUCT PART NUMBER	DESCRIPTION	TEMP RANGE	REACH	STATUS
FTE8511K1LTN	Endurance, Short-Reach 850nm, Multi-Mode, Rate-Select 10Gbps/1Gbps, Industrial Temp	-40°C to +85°C	300 meters @ 10 Gbps	Production
FTE8510K1LTN	Endurance, Short-Reach 850nm, Multi-Mode, 10Gbps, Industrial Temp	-40°C to +85°C	300 meters @ 10 Gbps	Production
FTE8504K1LTN	Endurance, Short-Reach 850nm, Multi-Mode, 4G/2G/1G Fibre Channel & 1 GbE, Industrial Temp	-40°C to +85°C	550 meters @ 1 Gbps 150 meters @ 4 Gbps	Production
FTE8501K1LTN	Endurance, Short-Reach 850nm, Multi-Mode, 1G/125Mbps FastE & 1 GbE, Industrial Temp	-40°C to +85°C	550 meters @ 1 Gbps	Production
FTE8511K1LTY	Endurance, Short-Reach 850nm, Multi-Mode, Rate-Select 10Gbps/1Gbps, Industrial Temp, <a href="#">Conformal Coating</a>	-40°C to +85°C	300 meters @ 10 Gbps	Production
FTE8510K1LTY	Endurance, Short-Reach 850nm, Multi-Mode, 10Gbps, Industrial Temp, <a href="#">Conformal Coating</a>	-40°C to +85°C	300 meters @ 10 Gbps	Production
FTE8504K1LTY	Endurance, Short-Reach 850nm, Multi-Mode, 4G/2G/1G Fibre Channel & 1 GbE, Industrial Temp, <a href="#">Conformal Coating</a>	-40°C to +85°C	550 meters @ 1 Gbps 150 meters @ 4 Gbps	Production
FTE1401K1LTN	Endurance, Long-Reach 1310nm DFB, Single-Mode, 1Gbps/125Mbps Multi-rate, -40C to 85C	-40°C to +85°C	10 Km	Beta
FTE1411K1LTN	Endurance, Long-Reach 1310nm DFB, Single-Mode, 10GbE/1Gbps Rate-Select, -40C to 85C	-40°C to +85°C	10 Km	Production
FTE1411K1LTY	Endurance, Long-Reach 1310nm DFB, Single-Mode, 10GbE/1Gbps Rate-Select, -40C to 85C, <a href="#">Conformal Coating</a>	-40°C to +85°C	10 Km	Production
FTE8516N1LCN	Endurance, Short-Reach 850nm VCSEL, 16G/8G/4G Fibre Channel (14.025Gb/s) with CDR, Dual Rate, 0C to 70C (modified pin-out)	0°C to +70°C	100 meters	Production

# ENDURANCE EVALUATION BOARDS

FDB-1047-S  
(Solder-down the module)



FDB-1047-CL  
(Clamp the module)

## ENDURANCE - KEY ADVANTAGES

- **Endurance offers up to 10 Gbps capability in a very compact footprint**
  - With same form-factor, provides seamless path to upgrade from low-speed (1Gbps) to high-speed (10Gbps)
- **Endurance enables digital diagnostic capabilities**
  - Supports diagnostics as defined in SFP Multi-Source Agreement
  - Provides additional Finisar-enhanced digital diagnostics
- **The first 10Gbps non-pluggable solution available**
  - Provides a rigid mountable part that can handle high speed signals
  - Allows equipment makers to capture the value of the optics versus end-customers buying pluggable optics separately
  - Pluggable SFP+ or XFP modules are not optimal for hardened applications:
    - Heat sinking is difficult
    - Extra “ruggedization” required to secure module inside cage

**COHERENT**