

Optical Engines

opnext →

WE *light* IT UP

Opnext Lights It Up

Opnext (NASDAQ: OPXT) is paving the way to a future of exciting laser developments and groundbreaking applications. Our industry heritage, future-focused thinking and deep commitment to research and development help us anticipate and meet the needs of a diverse range of markets, from telecomm and datacomm to medical, and information and industry applications, to defense and security.

Established in 2000, Opnext was created from the resources of the Fiber Optic Components Business Unit at Hitachi. We have continued to build on three decades of advanced Hitachi technology, establishing our own broad portfolio of solutions.

Technology

Opnext technologies represent the leading edge of product development in the marketplace today. Our optical engines are the core of an extensive portfolio of solutions for use throughout the network including lasers, transceivers, transponders and subsystems. Our solutions are backed by a strong and dedicated R&D program and the confidence that comes with proven experience and application success.

Research and Development

Opnext technology leads the industry and is well regarded in our many markets because we anticipate and meet our customers' needs for best-quality components and innovative applications at economical prices. We continue to expand our existing product line with the full support of Hitachi's R&D efforts, including the Central Research Laboratory (CRL), Mechanical Engineering Research Laboratory (MERL), and Production Engineering Research Laboratory (PERL).

Service

The high capacity networks of today and tomorrow call for significant cost and power reduction and increased performance and reliability. Opnext combines our laser technology with the optical packaging platforms needed to meet industry MSA

standards, and add comprehensive engineering resources, for solutions that exceed expectations.

Our dedication and talent has earned us a reputation for excellence in all we do. Opnext engineers work hand-in-hand with customers, tailoring our solutions to every applications' specifications. Our focus on service extends from the first meeting through to final delivery — we are truly committed.

The dedication of Opnext professionals has helped us earn several accolades including being selected as "Cisco Technology Supplier of the Year," as the Top Optical Component Supplier by Ovum-RHK, and being selected for multiple annual Supplier Performance Awards by CIENA. Lightwave Magazine, the only publication serving the fiber optic communication industry worldwide, named Opnext one of its Top Five component suppliers for two consecutive years.

Opnext was established with a commitment to quality. Today, and into the future, you'll find evidence of that commitment in our relationships with our customers, communities and peers and in every solution we deliver.

Let Opnext bring new light to your applications. Visit www.opnext.com or contact us by calling 732-544-3400.

Featured Products

Extending our high speed portfolio is the **40G Differential Phase Shift Keying (DPSK) 300-pin DWDM Transponder** for ultra long haul and regional network applications. Available.

For cost effective 10GbE applications, Opnext has the full suite of **LRM** modules. These 1.3um based modules are offered in all form factors including X2, XENPAK, and SFP+.

Proliferating the advantages of pluggable modules in metro applications, the **Opnext Long Reach TDM and DWDM modules** are available in both the XENPAK, X2, and XFP form factors. These modules utilize the MSA standard XMD TOSA following the common platform theme.

Used in metro and long haul DWDM applications, the Opnext **Widely Tunable, standard and dispersion robust LFF 300-pin Transponders** offer customers ease of configuration during installation and improves inventory management. Coming soon are the SFF and XFP full tunable modules.

Leveraging our proven EA-DFB laser technology, Opnext has developed low power and wide temperature operation **1.5µm XFP** with demonstrated performance and quality.

Accelerating the shift from discrete solution to integrated transceivers is enabled by Opnext's Multi-ratio (1G-2.7G) **DWDM SFP** modules available with <1W power consumption in 120km and 200km reach.

System flexibility and configurability are additionally enhanced by the Opnext X-module family of products which leverages the XMD common TOSA platform for **300-pin, XENPAK, X2, XPAK, XFP, and SFP+** modules in support of 1.3µm and 1.5µm applications. Available.

Utilizing our extensive experience with laser and transceiver design we've enhanced **850nm** based modules such as our **10GBASE-SR XENPAK, X2, XFP, and SFP+** modules providing reliable solution for mission critical data center applications.

40G, 300-pin Form Factor

| Package | Data Rate | Function | Part Number | Reach | Availability |
|---------|-----------|--|--|--|----------------------|
| 300-pin | 40 Gbit/s | 16 ch MUX/DEMUX with Jitter Filter | TRV7B10xN 1.55 μm ILM / PIN-PD | < 2 km VSR2000-3R2 (ITU-T G.693) | Available |
| | | | TRV7B11xN 1.55 μm ILM / PIN-PD | < 2 km VSR2000-3R2 (ITU-T G.693) | Available |
| | | | TRV7B12xN 1.55 μm ILM / PIN-PD | < 2 km VSR2000-3R2 (ITU-T G.693) | Under Development |
| | | | OTM-400 1.55 μm ILM / PIN-PD | < 2 km VSR2000-3R2 (ITU-T G.693) | Available |
| | | | TRV7BA0xN 1.55 μm Tunable LD+MZ / PIN-PD | DWDM, 50 GHz ODB Modulation | Available |
| | | | OTM-440 1.55 μm Tunable LD+MZ / DLI-BPD | DWDM, 50 GHz DPSK Modulation | Sampling |
| | | | TRV7BC0xN 1.55 μm Tunable LD+MZ / DLI-BPD | DWDM, 50 GHz DQPSK Modulation | Under Development |



Features

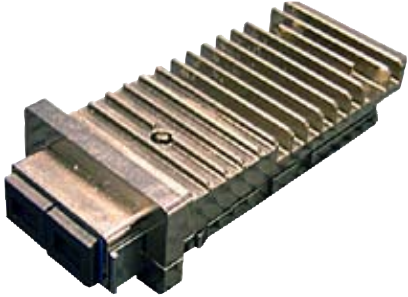
- Laser Class 1
- VSR2000-3R2: 2 km Reach
- Transmission length: 1500 km (DWDM DPSK)
- DWDM 50GHz DPSK and DQPSK Modulation
- Operation Case Temperature: 0 to 70°C
- Low Power Consumption
- OIF SFI-5 Electrical Interface
- MSA I2C Edition 4 Management Interface
- 300-pin MSA Package

Applications

- OC-768, STM-256 and OTU3 short reach / DWDM
- MAN and WAN applications
- Long Haul and Regional Networks
- Router to Router Client
- Router to Transport Client
- Router IP over DWDM Line Side
- Transport DWDM Line Side

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temp. (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption Typical (W) | Reach | Dimensions | Remarks |
|-------------|--------------------|-----------------|----------------------|--------------------|-----------------------|----------------------|----------------|--------------------------|-------------------------------|---|--|--------------------------|
| TRV7B10xN | 40 43 | 1,550 | 0 to 70 | 0 to +3 | >8.2 | -6 to +3 | CML (SFI-5) | +5, +1.8 +3.3 -5.2 | 16 | <2 km VSR2000-3R2 (ITU-T G693) | 127 x 177 x 17.8 mm 5 x 7 x 0.7" (w/ fin) 5 x 7 x 0.54" (flat top) | I2C, jitter Filter |
| TRV7B11xN | 40 43 | 1,550 | 0 to 70 | 0 to +3 | >8.2 | -6 to +3 | CML (SFI-5) | +5, +1.8 +3.3 -5.2 | 16 | <2 km VSR2000-3R2 (ITU-T G693) | 127 x 152 x 15.4 mm 5 x 6 x 0.61" (flat top) | I2C, jitter Filter |
| TRV7B12xN | 40 43 | 1,550 | 0 to 70 | 0 to +3 | >8.2 | -6 to +3 | CML (SFI-5) | +5, +1.8 +3.3 -5.2 | TBD | <2 km VSR2000-3R2 (ITU-T G693) | 89 x 114 x 13.7 mm 3.5 x 4.5 x 0.54" (flat top) | I2C, jitter Filter |
| OTM-400 | 40 43 | 1,550 | 0 to 70 | 0 to +3 | >8.2 | +3.0 (max) | CML (SFI-5) | +5, +3.3 -5.2 | 13 | <2 km VSR2000-3R2 (ITU-T G693) | 102 x 127 x 18 mm 4 x 5 x 0.71" (flat top) | I2C, jitter Filter |
| TRV7BA0xN | 40 43 | 1,550 | 0 to 70 | +1 to +9 | >9 | 0 to +7 | CML (SFI-5) | +5, +1.8 +3.3 -5.2 | 18 | DWDM, 50 GHz ODB Modulation | 127 x 177 x 17.8 mm 5 x 7 x 0.7" (flat top) | I2C, jitter Filter |
| OTM-440 | 43 44.6 | 1,550 | 0 to 70 | 3 | TBD | 6 - 10 | CML (SFI-5) | +5, +3.3 -5.2 | 21 | DWDM with full C-Band Tunable, 50 GHz, DPSK Modulation | 123 x 152.4 x 17.48 mm 4.8 x 6 x 0.688" (flat top) | I2C, jitter Filter |
| TRV7BC0xN | 43 44.6 | 1,550 | 0 to 70 | TBD | TBD | TBD | CML (SFI-5) | +5, +1.8 +3.3 -5.2 | TBD | DWDM with full C-Band Tunable, 50 GHz, DQPSK Modulation | 127 x 177 x 17.8 mm 5 x 7 x 0.7" (flat top) | I2C, jitter Filter |

X2 Form Factor

| Package | Data Rate | Interface | Part Number | Reach | Availability |
|---|-----------|-----------|--|---------------------------------------|--------------|
|  | 10 Gbit/s | XAUI | TRTC010EN Electrical | ≤20 m CX4 10 GbE | Available |
| | | | TRT5001EN 1.3 μm uncooled DM/PIN-PD | ≤220 m ^{*1} , LRM, 10GbE | Available |
| | | | TRT5041EN 4 x 1.3 μm uncooled DFB/PIN-PD | ≤300 m ^{*1} , LX4, 10 GbE | Available |
| | | | TRT200xEN 0.85 μm uncooled VCSEL/PIN-PD | ≤300 m ^{*2} , SR, 10 GbE | Available |
| | | | TRT502xEN 1.3 μm uncooled DFB/PIN-PD | ≤10 km, LR, 10 GbE | Available |
| | | | TRT705xEN 1.55 μm cooled EA-DFB/PIN-PD | ≤40 km, ER, 10 GbE | Available |
| | | | TRT7063EN 1.55 μm cooled EA-DFB/APD | ≤80 km, ZR, 10 GbE | Available |

Features

- Laser Class 1
- MSA compliant
- VCSEL, DFB or EA-DFB transmitter
- PIN-PD or APD with CDR
- IEEE 802.3ae, aq compliant electrical interface
- Alarms, controls and performance monitoring functions

Applications

- Metropolitan area network
- Building vertical riser
- Inter and Intra Campus
- Data Centers

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption (W) | Reach | Dimensions |
|-------------|--------------------|----------------------------------|----------------------------|-----------------------|-----------------------|----------------------|----------------|-------------------|-----------------------|--------------------------------------|--|
| TRTC010EN | 10.3 | - | -5 to 70 | - | - | - | XAUI | +5 +3.3 APS | <3.0 | ≤20 m CX4 10GbE | 91 x36 x 13.46 mm 3.58 x 1.42 x 0.53" |
| TRT5001EN | 10.3 | 1,310 | 0 to 70 | >>-4.5 ^{*3} | >3.5 | -6.5 ^{*4} | XAUI | +5 +3.3 APS | <4.0 | ≤220 m ^{*1} , LRM, 10GbE | 91 x36 x 13.46 mm 3.58 x 1.42 x 0.53" |
| TRT5041EN | 10.3 | 1,275 1,300 1,325 1,349 | 0 to 70 | >>-6.75 ^{*3} | >3.5 | -14.25 ^{*4} | XAUI | +5 +3.3 APS | <4.0 | ≤300 m ^{*1} LX4 10GbE | 91 x36 x 13.46 mm 3.58 x 1.42 x 0.53" |
| TRT200xEN | 10.3 | 850 | 0 to 70 | ≥-4.3 ^{*3} | ≥3 | ≥-7.5 ^{*4} | XAUI | +3.3 APS | ≤4.0 | ≤300 m ^{*2} SR 10GbE | 91 x36 x 13.46 mm 3.58 x 1.42 x 0.53" |
| TRT502xEN | 10.3 | 1,310 | 0 to 70 | ≥-5.2 ^{*3} | ≥3.5 | ≥-10.3 ^{*4} | XAUI | +3.3 APS | ≤4.0 | ≤10 km LR 10GbE | 91 x36 x 13.46 mm 3.58 x 1.42 x 0.53" |
| TRT705xEN | 10.3 | 1,550 | 0 to 70 | >>-1.7 ^{*3} | >3 | -11.3 ^{*4} | XAUI | +5 +3.3 APS | <4.0 | ≤40 km ER 10GbE | 91 x36 x 13.46 mm 3.58 x 1.42 x 0.53" |
| TRT7063EN | 10.3 | 1,550 | 0 to 70 | ≥0 | ≥8.2 | ≥-24 | XAUI | +5 +3.3 APS | ≤4.0 | ≤80 km ZR 10GbE | 91 x36 x 13.46 mm 3.58 x 1.42 x 0.53" |


^{*1} This solution applies to FDDI grade 62.5 μm multimode fiber with a worst case modal bandwidth-distance product of 500 MHz-km

^{*2} This solution applies to high bandwidth 50 μm multimode fiber with a minimum modal bandwidth of 2,000 MHz-km

^{*3} This value is in Optical Modulation Amplitude (OMA)

^{*4} Stressed sensitivity value is in Optical Modulation Amplitude (OMA)

XENPAK Form Factor

| Package | Data Rate | Interface | Part Number | Reach | Availability |
|---|------------------|-------------|--|--------------------------------------|--------------|
| XENPAK | 10 Gbit/s | XAUI | TREC010EN Electrical | ≤20 m CX4 10 GbE | Available |
|  | | | TRE5001EN 1.3 μm uncooled DM/PIN-PD | ≤220 m ^{*1} , LRM, 10GbE | Available |
| | | | TRE5041EN 4 x 1.3 μm uncooled DFB/PIN-PD | ≤300 m ^{*1} , LX4, 10 GbE | Available |
| | | | TRE200xEN 0.85 μm uncooled VCSEL/PIN-PD | ≤300 m ^{*2} , SR, 10 GbE | Available |
| | | | TRE502xEN 1.3 μm uncooled DFB/PIN-PD | ≤10 km, LR, 10 GbE | Available |
| | | | TRE705xEN 1.55 μm cooled EA-DFB/PIN-PD | ≤40 km, ER, 10 GbE | Available |
| | | | TRE7062EN 1.55 μm cooled EA-DFB/APD | ≤80 km, ZR, 10 GbE | Available |
| | | | TRE7062ENabc 1.55 μm cooled EA-DFB/APD | ≤80 km DWDM 10 GbE | Available |

Features

- Laser Class 1
- MSA compliant
- VCSEL, DFB or EA-DFB transmitter
- PIN-PD or APD with CDR
- IEEE 802.3ae, aq compliant electrical interface
- Alarms, controls and performance monitoring functions

Applications

- 10 Gbit/s Ethernet
- OADM
- Metropolitan area network
- Building vertical riser
- Inter and Intra Campus
- Data Centers

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption (W) | Reach | Dimensions |
|--------------|--------------------|----------------------------------|----------------------------|----------------------|-----------------------|----------------------|----------------|-------------------|-----------------------|---------------------------------------|---|
| TREC010EN | 10.3 | - | -5 to 70 | - | - | - | XAUI | +5 +3.3 APS | <3.0 | ≤20 m CX4 10GbE | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" |
| TRE5001EN | 10.3 | 1,310 | 0 to 70 | >-4.5 ^{*3} | >3.5 | -6.5 ^{*4} | XAUI | +5 +3.3 APS | <4.0 | ≤220m ^{*1} , LRM, 10GbE | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" ³ |
| TRE5041EN | 10.3 | 1,275 1,300 1,325 1,349 | 0 to 70 | >-6.75 ^{*3} | >3.5 | -14.25 ^{*4} | XAUI | +5 +3.3 APS | <6.0 | ≤300 m ^{*1} LX4 10 GbE | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" |
| TRE200xEN | 10.3 | 850 | 0 to 70 | ≥-4.3 ^{*3} | ≥3 | ≥-7.5 ^{*4} | XAUI | +3.3 APS | ≤4.0 | ≤300 m ^{*2} SR 10 GbE | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" |
| TRE502xEN | 10.3 | 1,310 | 0 to 70 | ≥-5.2 ^{*3} | ≥3.5 | ≥-10.3 ^{*4} | XAUI | +3.3 APS | ≤4.0 | ≤10 km LR 10 GbE | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" |
| TRE705xEN | 10.3 | 1,550 | 0 to 70 | >-1.7 ^{*3} | >3 | -11.3 ^{*4} | XAUI | +5 +3.3 APS | <9.0 | ≤40 km ER 10 GbE | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" |
| TRE7062EN | 10.3 | 1,550 | 0 to 70 | ≥0 | ≥8.2 | ≥-24 | XAUI | +5 +3.3 APS | ≤9.0 | ≤80 km ZR 10 GbE | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" |
| TRE7062ENabc | 10.3 | 1,530 to 1,560 | 0 to 70 | ≥-1 | ≥8.2 | ≥-24 | XAUI | +5 +3.3 APS | ≤9.0 | ≤80 km DWDM 100GHz | 121 x36 x 17.4 mm 4.76 x 1.42 x 0.68" |

^{*1} This solution applies to FDDI grade 62.5 μm multimode fiber with a worst case modal bandwidth-distance product of 500 MHz·km

^{*2} This solution applies to high bandwidth 50 μm multimode fiber with a minimum modal bandwidth of 2,000 MHz·km

^{*3} This value is in Optical Modulation Amplitude (OMA)

^{*4} Stressed Sensitivity value is in Optical Modulation Amplitude (OMA)

XFP Form Factor



| Package | Data Rate / Application | Part Number | Reach | Availability |
|------------|-------------------------|--|---|--------------|
| XFP | 10 Gbit/s | TRF2001xN-GA000 0.85 μ m uncooled VCSEL/PIN-PD | ≤ 300 m*1 10GBASE-S (10GbE) 1200-MX-SN-I (10GFC) | Available |
| | | TRF5013xN-GA000 TRF5013xE-GA000 1.3 μ m uncooled DFB/PIN-PD | ≤ 2 km / 7 km I64.1/SR-1 ≤ 10 km 10GBASE-L (10GbE) 1200-SM-LL-L (10GFC) | Available |
| | | TRF5023EN-GA000 TRF5022EH-LA000 1.3 μ m uncooled DFB/PIN-PD | ≤ 10 km 10GBASE-L (10GbE) 1200-SM-LL-L (10GFC) | Available |
| | | TRF7052xN-GA000 TRF7052xE-GA000 1.55 μ m ILM/PIN-PD | ≤ 40 km S64.2b/IR-2 10GBASE-E (10GbE) | Available |
| | | TRF7052Fxabc 1.55 μ m ILM/PIN-PD | ≤ 40 km DWDM | Available |
| | | TRF7061xN-LF001 1.55 μ m ILM/APD | ≤ 80 km G959.1/P1L1-2D2 | Available |
| | | TRF7061FNabc 1.55 μ m ILM/APD | ≤ 80 km DWDM | Available |

Features

- Laser Class 1
- XFP MSA compliant
- 1310nm DFB-LD or 1550nm ILM TOSA
- PIN-PD or APD ROSA
- 10G Serial Electrical I/F (XFI)
- I2C Management Interface

Applications

- OC-192 and STM-64 add/drop multiplexers
- Storage Area Network
- High-speed data Communications
- IP router ATM core switch
- Metropolitan transmission

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption (W) | Reach | Dimensions |
|--|--------------------------------------|-------------------|--------------------------------|---------------------|-----------------------|--------------------------------|----------------|------------------|-----------------------|--|---------------------------|
| TRF2001EN-GA000 TRF2001FN-GA000 (*5) | 10.3, 10.5 11.1 11.3 | 850 | 0 to 70 | > -4.3 *2 | > 3 | -7.5 *3 | XFI | +3.3 | < 1.5 | ≤ 300 m *1 10GBASE-S(10GbE) 1200-MX-SN-I (10GFC) | 18.35 x 78.0 x 8.5 mm3 |
| TRF5013xN-GA000 TRF5013xE-GA000 (*4) | 10, 10.3 10.5, 10.7 11.1, 11.3 | 1,310 | -5 to 75 (xN) -5 to 85 (xE) | -6 to -1 | > 6 | -11 or -10.3 *3 to 0.5 | XFI | +3.3 | < 2.0 | ≤ 2 km / 7 km I64.1/SR-1 < 10 km 10GBASE-L(10 GbE) 1200-SM-LL-L(10 GFC) | 18.35 x 78.0 x 8.5 mm3 |
| TRF5023EN-GA000 TRF5022EH-LA000 (*6) | 10.3, 10.5 | 1,310 | -5 to 75 (EN) -5 to 85 (EH) | -5.2 *2 to 0.5 | > 3.5 | -10.3 *3 to 0.5 | XFI | +3.3 | < 2.0 | ≤ 10 km 10GBASE-L(10GbE) 1200-SM-LL-L(10GFC) | 18.35 x 78.0 x 8.5 mm3 |
| TRF7052xN-GA000 TRF7052xE-GA000 (*4) | 10, 10.3 10.7, 11.1 11.3 | 1,550 | -5 to 75 (xN) -5 to 85 (xE) | -1 to +2 | > 8.2 | -13 or -11.3 *3 to -1 | XFI | +3.3 +5 | < 3.5 | ≤ 40 km S64.2b/IR-2 10GBASE-E(10GbE) | 18.35 x 78.0 x 8.5 mm3 |
| TRF7061xN-LF001(*4) | 10, 10.3 10.7, 11.1 | 1,550 | -5 to 70 | 0 to +4 | > 9.0 | -24 to -7 | XFI | +3.3 +5 | < 3.5 | ≤ 80 km G959.1/P1L1-2D2 | 18.35 x 78.0 x 8.5 mm3 |
| TRF7052Fxabc | 10, 10.3 10.7, 11.1 | 1,529 to 1,561 | -5 to 70 | -1 to +2 | > 8.2 | -14 to -1 | XFI | +3.3 +5 | < 3.5 | ≤ 40 km DWDM | 18.35 x 78.0 x 8.5 mm3 |
| TRF7061FNabc | 10, 10.3 10.7, 11.1 | 1,529 to 1,561 | -5 to 70 | -1 to +3 | > 9.0 | -24 to -7 | XFI | +3.3 +5 | < 3.5 | ≤ 80 km DWDM | 18.35 x 78.0 x 8.5 mm3 |

*1: This solution applies to high bandwidth 50 μ m multimode fiber with a minimum modal bandwidth of 2,000 MHz km

*2: OMA: Optical Modulation Amplitude

*3: Stressed receiver sensitivity in OMA

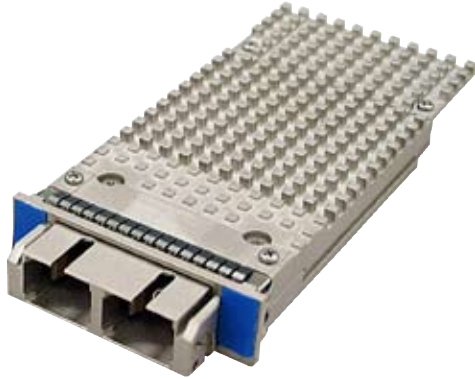
*4: x: B: Does not support 10.7 Gbit/s, F: Supports 10.7 Gbit/s

*5: E: Does not support 11.1 Gbit/s and 11.3 Gbit/s, F: Supports 11.1 Gbit/s and 11.3 Gbit/s

*6: TRF5023 does not support 11.1 Gbit/s

XPAK Form Factor

| Package | Data Rate | Interface | Part Number | Reach | Availability |
|---------|-----------|-----------|--------------|------------------------------------|--------------|
| XPAK | 10 Gbit/s | XAUI | TRP2004EN-LL | ≤300 m ^{*1} 10GBASE-SR | Available |
| | | | TRP5024EN-SL | ≤10 km 10GBASE-LR | Available |



Features

- Laser Class 1
- MSA compliant
- VCSEL, DFB or EA-DFB transmitter
- PIN-PD or APD with CDR
- IEEE 802.3ae compliant electrical interface
- Alarms, controls and performance monitoring functions

Applications

- 10 Gbit/s Ethernet
- Building vertical riser
- Inter and Intra Campus
- Data Centers
- Storage Network

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption (W) | Reach | Dimensions |
|--------------|--------------------|-----------------|----------------------------|---------------------|-----------------------|----------------------|----------------|------------------|-----------------------|------------------------------------|---|
| TRP2004EN-LL | 10.3 | 850 | 0 to 70 | ≥-4.3 ^{*2} | ≥3 | ≥-7.5 ^{*3} | XAUI | +3.3 APS | ≤4.0 | ≤300 m ^{*1} 10GBASE-SR | 86 x 36 x 9.8 mm 3.39 x 1.42 x 0.39" |
| TRP5024EN-SL | 10.3 | 1,310 | 0 to 70 | ≥-5.2 ^{*2} | ≥ 3.5 | ≥-10.3 ^{*3} | XAUI | +3.3 APS | ≤4.0 | ≤10 km 10GBASE-LR | 86 x 36 x 9.8 mm 3.39 x 1.42 x 0.39" |

^{*1}: This solution applies to high bandwidth 50 μm multimode fiber with a minimum modal bandwidth of 2,000 MHz·km

^{*2}: This value is in optical modulation amplitude (OMA)

^{*3}: Stressed sensitivity value is Optical modulation amplitude (OMA)

SFP+ Form Factor



| Package | Data Rate | Interface | Part Number | Reach | Availability |
|---|-----------|-----------|---|--|--------------|
| SFP+ | 8 Gbit/s | SFI | TRS2200SW 850nm VCSEL PIN-PD | ≤150 m ^{*1} SW | Available |
| | | SFI | TRS5220SM 1310nm DFB PIN-PD | ≤10 km LW | Available |
| | 10 Gbit/s | SFI | TRS20A0EN TRS20A0EM 850nm VCSEL PIN-PD | ≤100 m ^{*2} 10GbE USR [*] | Available |
| TRS200xEN 850nm VCSEL PIN-PD | | | ≤300 m ^{*2} 10GBASE-SR | Available | |
| TRS5001EN 1310nm DFB PIN-PD | | | ≤220 m ^{*3} 10GBASE-LRM | Sampling | |
| TRS502xEN 1310nm DFB PIN-PD | | | ≤10 km 10GBASE-LR | Available | |
| TRS705xEN 1550nm uncooled EA-DFB/PIN-PD | | | ≤40 km 10GBASE-ER | Under Development | |

Features

- Laser Class 1
- SFP+ MSA compliant
- 10G Serial Framer I/F (SFI)
- I2C Management Interface
- <1W Power Consumption

Applications

- Rack to rack
- Data Centers
- Premise
- Metro
- Switches and Routers

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption (W) | Reach | Dimensions |
|------------------------|--------------------|-----------------|----------------------------|----------------------|-----------------------|----------------------|----------------|------------------|-----------------------|-------------------------------------|---|
| TRS2200SM | 8.5 | 850 | -5 to 85 | >-5.2 ^{*4} | - | >-8.2 ^{*5} | SFI | +3.3 | 1.0 | ≤50 m ^{*1} SW | 56.5 x 13.9 x 11.85 mm 2.22 x 0.55 x 0.47" |
| TRS5220SM | 8.5 | 1310 | -5 to 85 | > -5.4 ^{*4} | 3.5 | -13.8 ^{*6} | SFI | +3.3 | 1.0 | ≤10 km | 56.5 x 13.9 x 11.85 mm 2.22 x 0.55 x 0.47" |
| TRS20A0EN TRS20A0EM | 10.3 | 850 | 0 to 70 -5 to 85 | >-5.0 ^{*4} | >3 | >-7.5 ^{*5} | SFI | +3.3 | 1.0 | ≤100 m ^{*2} 10GbE USR | 56.5 x 13.9 x 11.85 mm 2.22 x 0.55 x 0.47" |
| TRS200xEN | 10.3 | 850 | 0 to 70 | ≥-4.3 ^{*4} | ≥3 | ≥-7.5 ^{*5} | SFI | +3.3 | ≤1.0 | ≤300 m ^{*2} 10GBASE-SR | 56.5 x 13.9 x 11.85 mm 2.22 x 0.55 x 0.47" |
| TRS5001EN | 10.3 | 1,310 | 0 to 70 | >-4.5 ^{*4} | >3.5 | >-6.5 ^{*5} | SFI | +3.3 | 1.0 | ≤220 m ^{*3} 10GBASE-LRM | 56.5 x 13.9 x 11.85 mm 2.22 x 0.55 x 0.47" |
| TRS502xEN | 10.3 | 1,310 | 0 to 70 | ≥-5.2 ^{*4} | ≥3.5 | ≥-10.3 ^{*5} | SFI | +3.3 | ≤1.0 | ≤10 km 10GBASE-LR | 56.5 x 13.9 x 11.85 mm 2.22 x 0.55 x 0.47" |
| TRS705xEN | 10.3 | 1,550 | 0 to 70 | ≥-1.7 ^{*4} | ≥3 | ≥-11.3 ^{*5} | SFI | +3.3 | ≤1.5 | ≤40 km 10GBASE-ER | 56.5 x 13.9 x 11.85 mm 2.22 x 0.55 x 0.47" |

* 10GbE USR is not an IEEE standard.

*1: This distance applies to OM2 multimode fiber

*2: This solution applies to high bandwidth 50µm multimode fiber with a minimum modal bandwidth of 2000MHz · km

*3: This solution applies to FDDI grade 62.5µm multimode fiber with a worst case modal bandwidth-distance product of 500MHz · km

*4: This value is in Optical Modulation Amplitude (OMA)

*5: Stressed sensitivity value is in OMA

*6: Unstressed Sensitivity value is in OMA

10G, 300-pin Form Factor

| Package / Data Rate | Function | Size | Part Number | Reach | Availability |
|---|----------------------------------|--|---|---|--------------|
| 300-pin 10 Gbit/s | 16 ch MUX/DEMUX | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | TRV5019BS/ZS 1.3 μm uncooled DFB/PIN-PD | < 2 km / 7 km 164.1 / SR-1 (GR-253) | Available |
| | | | TRV5029BS*/ZS* 1.3 μm uncooled DFB/PIN-PD | <12 km SR-1(GR-1377) | Available |
| | | | TRV5029EN* 1.3 μm uncooled DFB/PIN-PD | 10 km 10GBASE-LR (10GbE) | Available |
| | | | TRV5029EZ* 1.3 μm uncooled DFB/PIN-PD | < 2 km / 7 km, 10 km 164.1 / SR-1 (GR-253) 10GBASE-LR (10GbE) | Available |
| | | | TRV5039BS* 1.3 μm uncooled DFB/PIN-PD | < 20 km S64.1 / IR-1 | Available |
| | | | TRV5018BS 1.3 μm uncooled DFB/PIN-PD | < 2 km / 7 km, 10 km 164.1 / SR-1 (GR-253) 10GBASE-LR (10GbE) | Available |
| | | | TRV5028BS 1.3 μm uncooled DFB/PIN-PD | <12 km SR-1 (GR-1377) | Available |
| | | | TRV5038BS 1.3 μm uncooled DFB/PIN-PD | <20 km S64.1 / IR-1 | Available |
| | | | TRV7058BN/ 7059BN*/EN* 1.55 μm ILM/PIN-PD | ≤ 40 km IR-2/S-64.2b 10GbE | Available |
| | | | TRV7063xN*/7064BN 1.55 μm ILM/APD | ≤ 80 km LR-2/P1L1-2D2 10GbE | Available |
| 88.9 x 114.3 x 13.5 mm 3.5 x 4.5 x 0.53" | | | TRV7089xN/7080BN 1.55 μm C/L-band CW-LD+MZ/APD | DWDM, 100 GHz 1600 ps/nm | Available |
| | | | TRV708ExN*/708FBN 1.55 μm full C/L-band Tunable LD+MZ/APD | DWDM, 50 GHz 1600 ps/nm | Available |
| | | | TRV709ExN*/709FBN 1.55 μm full C/L-band Tunable LD+MZ/APD | DWDM, 50 GHz +/- 800 ps/nm | Available |
| | | | TRV70A1xN*/70A2xN 1.55 μm full C/L-band Tunable LD+MZ/ APD+VOA | DWDM, 50 GHz +/- 3000 ps/nm | Available |
| | | | TRV708N* 1.55μm full C-band Tunable LD+MZ/APD | DWDM, 50 GHz 1600 ps/nm | Sampling |
| | | | TRV709N* 1.55μm full C-BAND Tunable LD+MZ/APD | DWDM, 50 GHz +/- 800 ps/nm | Sampling |

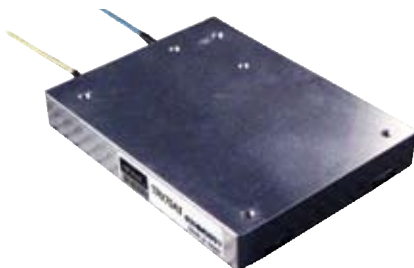


Features

- Laser Class 1
- SONET and ITU SDH compatible at OC-192 and STM-64 rates
- MSA compliant
- Short-reach, intermediate-reach, long-reach, and DWDM applications
- Available with C-band and L-band (TRV708x / TRV709x type)
- Increased dispersion tolerance (TRV70A1/A2 type)
- DFB, ILM or MZ + CW-LD transmitter
- PIN-PD or APD receiver with CDR
- Electrical interface with 16ch 622/644 Mbit/s MUX/DEMUX
- 622/644 Mbit/s LVDS data interface
- OIF, SFI4 compliant electrical interface
- Compact package with 300-pin (10x30 pin) electrical connector

Applications

- OC-192 and STM-64 short-reach and long-reach terrestrial DWDM transmission
- Metropolitan area network
- IP router and ATM core switch
- OADM
- High-speed data communications
- FEC (10.7 Gbit/s, G.709)
- 10 Gbit/s Ethernet



*: Built in Jitter Filter

**Built in VOA (Variable Optical Attenuator)

*1: OMA: Optical Modulation Amplitude

*2: Stressed receiver sensitivity in OMA

*3: +3.3V Single voltage supply is available with power consumption of 4.8W typ

10G, 300-pin Portfolio Cont.

Short-Reach

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temp. (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption (W) | Reach | Dimensions | Remarks |
|-----------------|--------------------|-----------------|----------------------|--------------------|-----------------------|----------------------|----------------|------------------|-----------------------|---|--|--------------------------|
| TRV5019BS/ZS *4 | 10 10.7 | 1,310 | -5 to 70 | -6 to -1 | >6 | -11 to -1 | LVDS | +3.3, +1.8*3 | 4.3 | <2 km / 7 km I64.1/SR-1 (GR-253) | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C, Jitter Filter |
| TRV5029BS/ZS *4 | 10 10.7 | 1,310 | -5 to 70 | -4 to 0 | >6 | -12 to 0 | LVDS | +3.3, +1.8*3 | 4.3 | <12 km SR-1 (GR-1377) | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C, Jitter Filter |
| TRV5029EN | 10.3 | 1,310 | -5 to 70 | -5.2*1 to 0.5 | >3.5 | -10.3*2 to 0.5 | LVDS | +3.3, +1.8*3 | 4.3 | 10 km 10GBASE-LR (10GbE) | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C, Jitter Filter |
| TRV5029EZ | 10 10.3 | 1,310 | -5 to 70 | -5.2*1 to -1 | >6 | -10.3*2 to 0.5 | LVDS | +3.3, +1.8*3 | 4.3 | <2 km / 7 km, 10 km I64.1/SR-1 (GR253) 10GBASE-LR (10GbE) | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C, Jitter Filter |
| TRV5039BS | 10 | 1,310 | -5 to 70 | 1 to 5 | >6 | -12 to 0 | LVDS | +3.3, +1.8*3 | 4.3 | <20 km S64.1 / IR-1 | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C, Jitter Filter |
| TRV5018BS | 10 10.3 10.7 | 1,310 | -5 to 70 | -5.2*1 to -1 | >6 | -10.3*2 to 0.5 | LVDS | +3.3, +1.8*3 | 4.3 | 10 km 10GBASE-LR (10GbE) | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C |
| TRV5028BS | 10 10.3 10.7 | 1,310 | -5 to 70 | -4 to 0 | >6 | -10.3*2 to 0.5 | LVDS | +3.3, +1.8*3 | 4.3 | <12 km SR-1 (GR-1377) 10GBASE-LR(10GbE) | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C |
| TRV5038BS | 10 10.3 10.7 | 1,310 | -5 to 70 | 1 to 5 | >6 | -12 to 0 | LVDS | +3.3, +1.8*3 | 4.3 | <20 km S64.1 / IR-1 | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" | I2C |

*1: OMA: Optical Modulation Amplitude

*2: Stressed receiver sensitivity in OMA

*3: +3.3V Single voltage supply is available with power consumption of 4.8W typ

*4: BS: Single rate 10 Gbit/s, ZS: Dual rate

Intermediate and Long Reach

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Output Power (dBm) | Extinction Ratio (dB) | Received Power (dBm) | Electrical I/F | Power Supply (v) | Power Consumption (W) | Reach | Dimensions |
|-----------------------------|--------------------|-----------------------|----------------------------|--------------------|-----------------------|----------------------|----------------|--------------------|-----------------------|---|---|
| TRV7058BN TRV7059BN/EN | 10 10.3 10.7 | 1,530 to 1,562 | 0 to 70 | -1 to +2 | >8.2 | -14 to -1 | LVDS | +3.3, -5.2 | 5.0 | ≤40 km IR-2/S-64.2b 10GbE | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" |
| TRV7063xN TRV7064BN | 10 to 11.3 | 1,530 to 1,565 | 0 to 70 | 0 to +4 | >9.0 | -24 to -7 | LVDS | +3.3, -5.2 | 5.0 | ≤80 km P1L1-2D2, 10GbE | 55.9 x 76.2 x 13.5 mm 2.2 x 3.0 x 0.53" |
| TRV7089xN TRV7080BN | 10 to 11.3 | 1,530 to 1,565 | 0 to 70 | +3 to +6 | >10 | -24 to -7 | LVDS | +3.3, -5.2 | typ. 6.0 | 1600 ps/nm DWDM, 100GHz | 88.9 x 114.3 x 13.5 mm 3.5 x 4.5 x 0.53" |
| TRV708ExN *2 TRV708FBN | 10 to 11.3 | 1,528.8 to 1,563.9 | 0 to 70 | +4 to +7 | >10 | -24 to -7 | LVDS | +3.3, -5.2 +5.0 | typ. 8.0 | DWDM with full C/L-band Tunable, 50GHz, 1600 ps/nm | 88.9 x 114.3 x 13.5 mm 3.5 x 4.5 x 0.53" |
| TRV709ExN *2 TRV709FBN | 10 to 11.3 | 1,528.8 to 1,563.9 | 0 to 70 | +4 to +7 | >12 | -24 to -7 | LVDS | +3.3, -5.2 +5.0 | typ. 8.0 | DWDM with full C/L-band Tunable, 50GHz, ±800 ps/nm | 88.9 x 114.3 x 13.5 mm 3.5 x 4.5 x 0.53" |
| TRV70A1xN *1,2 TRV70A2xN | 10 to 11.3 | 1,528.8 to 1,563.9 | 0 to 70 | +4 to +7 | > 7 | -22 to +5 *1 | LVDS | +3.3, -5.2 +5.0 | typ. 11.0 | DWDM with full C/L-band tunable 50 GHz, +/- 3000 ps/nm @ BER=1E-3 | 88.9 x 114.3 x 13.5 mm 3.5 x 4.5 x 0.53" |
| TRV708N *2 | 10 to 11.3 | 1,528.8 to 1,563.9 | 0 to 70 | +4 to +7 | >10 | -24 to -7 | LVDS | +3.3, -5.2 +5.0 | typ. 8.0 | DWDM with full C-band tunable 50 GHz, 1600 ps/nm | 88.9 x 114.3 x 13.5 mm 3.5 x 4.5 x 0.53" |
| TRV709N *2 | 10 to 11.3 | 1,528.8 to 1,563.9 | 0 to 70 | +4 to +7 | >12 | -24 to -7 | LVDS | +3.3, -5.2 +5.0 | typ. 8.0 | DWDM with full C-band tunable 50 GHz, ±800 ps/nm | 88.9 x 114.3 x 13.5 mm 3.5 x 4.5 x 0.53" |

*1: Built in VOA (Variable Optical Attenuator)

*2: Available with PIN PD as an option

SFP Form Factor



Features

- Laser Class 1
- Compliant with Small Form Factor Pluggable MSA Specification
- Compact size (13.3 x 49.8 x 9.8 mm / 0.52 x 1.95 x 0.39")
- Compliant with Industry Standard RFT Electrical Connector and Cage
- Available with either button release or bail release latching mechanism
- High-Performance and Cost-Effective
- Single +3.3V Power Supply and TTL Logic Interface
- Low Power Consumption
- Metal Package for Superior EMI Performance
- EEPROM with Serial ID Functionality
- Enhanced Monitoring Functionality
- Digital Diagnostics per SFF-8472 available
- Standard and Wide Operating Temperature Ranges

Applications

- SONET / SDH from 155 Mbit/s to 2.7 Gbit/s (OC-48, OC-12, OC-3, and STM-16, STM-4, STM-1)
- Gigabit Ethernet (GbE-SX, GbE-LX, and GbE-ZX)
- Fibre Channel (1.062/2.125/4.25 Gbit/s FC)
- Transmission distances from 150 m to 100 km
- Metropolitan and access systems
- IP routers and ATM core switches
- DWDM for Metro Area Networks

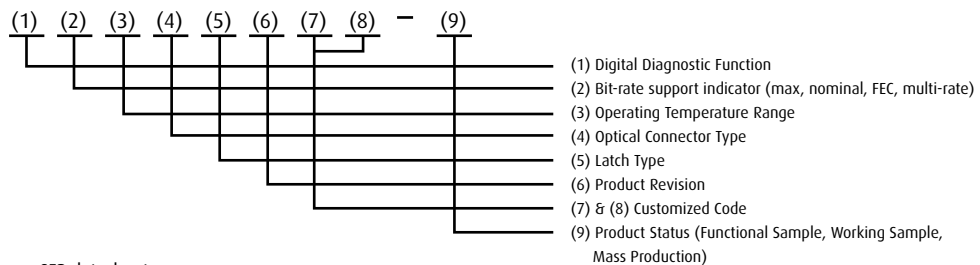
x = 5: Without digital diagnostic function
x = 6: With digital diagnostic function

| Package | Data Rate / Application | Part Number | Reach | Availability |
|---------------------------------|----------------------------------|---------------------------------------|--------------------------------|--------------|
| SFP | DWDM ≤ 2.7 Gbit/s | TRF79A6 C-Band ITU Grid DFB APD | DWDM, 100 GHz 2400 ps/nm | Available |
| | | TRF79B6 C-Band ITU Grid DFB APD | DWDM, 100 GHz 4000 ps/nm | Available |
| | OC-48 / STM-16 | TRF591x 1310nm FP PIN-PD | <2 km SR / I-16 | Available |
| | | TRF592x 1310nm DFB PIN-PD | <15 km IR-1 / S-16.1 | Available |
| | | TRF595x 1310nm DFB APD | <40 km LR-1 / S-16.1 | Available |
| | OC-12 / STM-4 | TRF796x 1550nm DFB APD | <80 km LR-2 / L-16.2 | Available |
| | | TRF552x 1310nm FP PIN-PD | <15 km IR-1 / S-4.1 | Available |
| | | TRF555x 1310nm DFB PIN-PD | <40 km LR-1 / L-4.1 | Available |
| | | TRF756x 1550nm DFB PIN-PD | <80 km LR-2 / L-4.2 | Available |
| | | TRF758x 1550nm DFB PIN-PD | <100 km LR-2/L-4.2 Extended | Available |
| | OC-3 / STM-1 | TRF542x 1310nm FP PIN-PD | <15 km IR-1 / S-1.1 | Available |
| | | TRF545x 1310nm FP PIN-PD | <40 km LR-2 / L-1.2 | Available |
| TRF746x 1550nm DFB PIN-PD | | <80 km LR-2 / L-1.2 | Available | |
| TRF748x 1550nm DFB PIN-PD | | <100 km LR-2/L-4.2 Extended | Available | |
| GbE | TRF271x 850nm VCSEL PIN-PD | <550 m SX | Available | |
| | TRF573x 1310nm FP PIN-PD | <10 km LX | Available | |
| | TRF776x 1550nm DFB PIN-PD | <80 km ZX | Available | |

SFP Form Factor Cont.


| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Maximum Operating Temperature (°C) | Output Power (dBm) | Reach | Extinction Ration (dB) | Received Power (dBm) | TOSA Isolator | TOSA Stub | ROSA Stub |
|-------------|---------------------|-----------------|------------------------------------|--------------------|--------------------------------------|------------------------|----------------------|---------------|-----------|-----------|
| TRF79A6 | DWDM ≤2.7 Gbit/s | 1,530 to 1,562 | -5 to 70 | 0 to +4 | DWDM, 100 GHz 2400 ps/nm | >8.2 | -28 to -8 | ✓ | ✓ | ✓ |
| TRF79B6 | | 1,530 to 1,562 | -5 to 70 | 0 to +4 | DWDM, 100 GHz 4000 ps/nm | >8.2 | -28 to -8 | ✓ | ✓ | ✓ |
| TRF591x | OC-48 / STM-16 | 1,310 | -40 to 85 | -10 to -3 | ≤ 2 km SR / L-16 | >8.2 | -18 to -3 | | ✓ | ✓ |
| TRF592x | | 1,310 | -40 to 85 | -5 to 0 | ≤ 15 km IR-1 / S-16.1 | >8.2 | -18 to 0 | available | ✓ | ✓ |
| TRF595x | | 1,310 | -40 to 85 | -2 to +3 | ≤ 40 km LR-1 / L-16.1 | >8.2 | -27 to -9 | ✓ | ✓ | ✓ |
| TRF796x | | 1,550 | -40 to 85 | -2 to +3 | ≤ 80 km LR-2 / L-16.2 | >8.2 | -28 to -9 | ✓ | ✓ | ✓ |
| TRF552x | OC-12 / STM-4 | 1,310 | -40 to 85 | -15 to -8 | ≤ 15 km IR-1 / S-1.1 | >8.2 | -28 to -8 | | ✓ | |
| TRF555x | | 1,310 | -40 to 85 | -5 to 0 | ≤ 40 km LR-1 / L-4.1 | >10 | -28 to -8 | | ✓ | |
| TRF756x | | 1,550 | -40 to 85 | -5 to 0 | ≤ 80 km LR-2 / L-4.2 | >10 | -28 to -8 | ✓ | ✓ | ✓ |
| TRF758x | | 1,550 | -40 to 85 | -3 to +2 | ≤ 100 km LR-2 / L-4.2 Extended | >10 | -30 to -8 | ✓ | ✓ | ✓ |
| TRF542x | OC-3 / STM-1 | 1,310 | -40 to 85 | -15 to -8 | ≤ 15 km IR-1 / S-1.1 | >8.2 | -28 to -8 | | ✓ | |
| TRF545x | | 1,310 | -40 to 85 | -5 to 0 | ≤ 40 km LR-1 / L-1.1 | >10 | -34 to -10 | | ✓ | |
| TRF746x | | 1,550 | -40 to 85 | -5 to 0 | ≤ 80 km LR-2 / L-1.2 | >10 | -34 to -10 | ✓ | ✓ | ✓ |
| TRF748x | | 1,550 | -40 to 85 | -3 to +2 | ≤ 100 km LR-2 / L-4.2 Extended | >10 | -34 to -10 | ✓ | ✓ | ✓ |
| TRF271x | GbE | 770 to 860 | -20 to 85 | -9.5 to -3 | ≤ 550 m SX | >9 | -17 to 0 | | | |
| TRF573x | | 1,270 to 1,355 | -40 to 85 | -9.5 to -3 | ≤ 10 km LX | >9 | -19 to -3 | | | |
| TRF776x | | 1,550 | -40 to 85 | 0 to +5 | ≤ 80 km ZX | >9 | -24 to 0 | ✓ | ✓ | ✓ |

Product Nomenclature



For details of product nomenclature, please see SFP datasheet.

TOSA/ROSA Form Factor

| Function | Data Rate | Package | Part Number | Reach | Availability |
|--|-----------|----------|------------------------------|--------------|--------------|
|  Laser Diode Modules | 10 Gbit/s | MSA-TOSA | LD5033 1.3 μ m DFB | ≤ 10 km | Available |
| | | | LD5037 1.3 μ m DFB | ≤ 10 km | Available |
| | | | LF7063 1.5 μ m EA-DFB | ≤ 80 km | Sampling |
| Photo Diode Modules | 10 Gbit/s | MSA-ROSA | PD7056 APD-TIA (Linear) | -26 dBm | Available |
| | | | PD7057 APD-TIA (AGC) | -25 dBm | Sampling |

Features

Laser Diode Modules (TOSA: Transmitter Optical Sub Assembly)

- XMD MSA compliant
- 1310 nm uncooled Direct Modulated DFB laser: LD5033, LD5037
- 1550 nm cooled EA-DFB Laser: LF7063

Photo Diode Modules (ROSA: Receiver Optical Sub Assembly)

- XMD MSA compliant
- High GB APD
- Integrated Linear TIA (PD7056), TIA with AGC (PD7057)
- High Gain and high sensitivity

Applications

- Small Form Transponders and Transceivers

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Modulated Output Power (dBm) | Extinction Ratio (dB) | Dispersion (ps/nm) | Penalty (dB) | Reach | Dimensions | Remarks |
|-------------|--------------------|-----------------|----------------------------|------------------------------|-----------------------|--------------------|--------------|--------------|---------------------|---|
| LD5033 | 10 | 1,290 to 1,330 | 0 to 75 | -3 typ | >5 | - | - | ≤ 10 km | $\Phi 5.6, L=15$ mm | DM-DFB XMD-MSA |
| LD5037 | 10 | 1,290 to 1,330 | -5 to 80 | -3 typ | >5 | - | - | ≤ 10 km | $\Phi 5.6, L=15$ mm | DM-DFB XMD-MSA (Without Thermistor) |
| LF7063 | 10 | 1,530 to 1,565 | 0 to 75 | 1 typ | ≥ 9 | 1,600 | ≤ 2 | ≤ 80 km | 6 x 6, L=17 | EA-DFB XMD-MSA |

| Part Number | Data Rate (Gbit/s) | Wavelength (nm) | Operating Temperature (°C) | Received Power (dBm) | Power Supply (v) Typical | Dimensions | Remarks |
|-------------|--------------------|-----------------|----------------------------|----------------------|--------------------------|----------------------|-----------------------------|
| PD7056 | 10 | 1,310 / 1,550 | 0 to 80 | -26 to -7 | 3.3 / 30 | $\Phi 5.35, L=14$ mm | APD-TIA (Linear) XMD-MSA |
| PD7057 | 10 | 1,310 / 1,550 | 0 to 80 | -25 to -7 | 3.3 / 30 | $\Phi 5.35, L=14$ mm | APD-TIA (AGC) XMD-MSA |

NOTE:

1. All specifications described herein are subject to change without prior notice.
2. To ensure safety and normal operation, be sure to read the instruction manual carefully before using the products.
3. Safety Considerations: Invisible laser radiation is emitted from the end of the fiber pigtail or optical connector of laser products and will be harmful to the human eye. Avoid looking directly into the beam during operation.

About this catalog

The Optical Engines Brochure is meant to showcase the Opnext line of modules, laser diodes and photodiodes. For more detailed information on our line of Optodevices or Subsystems, please visit the Opnext website at <http://www.opnext.com> or contact your nearest Opnext location or sales representative.

**Headquarters:
Sales and Operations,
Pluggables Business Unit**

Opnext, Inc.

46429 Landing Parkway
Fremont, CA 94538

T | 510.580.8828
F | 510.580.8819

Global Operations

1 Christopher Way
Eatontown, NJ 07724

T | 732.544.3400
F | 732.544.3540

Subsystems Business Unit

151 Albright Way
Los Gatos, CA 95032

T | 408.385.3000
F | 408.871.0720

Modules Business Unit

Opnext Japan, Inc.

216 Totsuka-cho, Totsuka-ku
Yokohama 244-8567, Japan

T | +81.45.865.7111
F | +81.45.864.1523

Sales Office

Opnext Japan, Inc.

Takagi Building 3F
Iwamoto-cho 1-3-9, Chiyoda-ku
Tokyo 101-0032, Japan

T | +81.3.3865.5591
F | +81.3.3865.5597

Devices Business Unit

Opnext Japan, Inc.

190, Kashiwagi, Komoro-shi
Nagano-ken, 384-8511, Japan

T | +81.267.22.4111
F | +81.267.25.2542

Opnext Germany, GmbH

European Sales and Operations

Werner-Eckert-Str. 2
81829 München, Germany

T | +49.89.4515188.0
F | +49.89.4515188.99

Shanghai Representative Office

Westgate Tower, Room 2804
1038 Nanjing Xi Lu
Jingan District, Shanghai, PRC

T | +86.21.6218.3676
F | +86.21.6218.3669

Optical Engines

opnext 

www.opnext.com