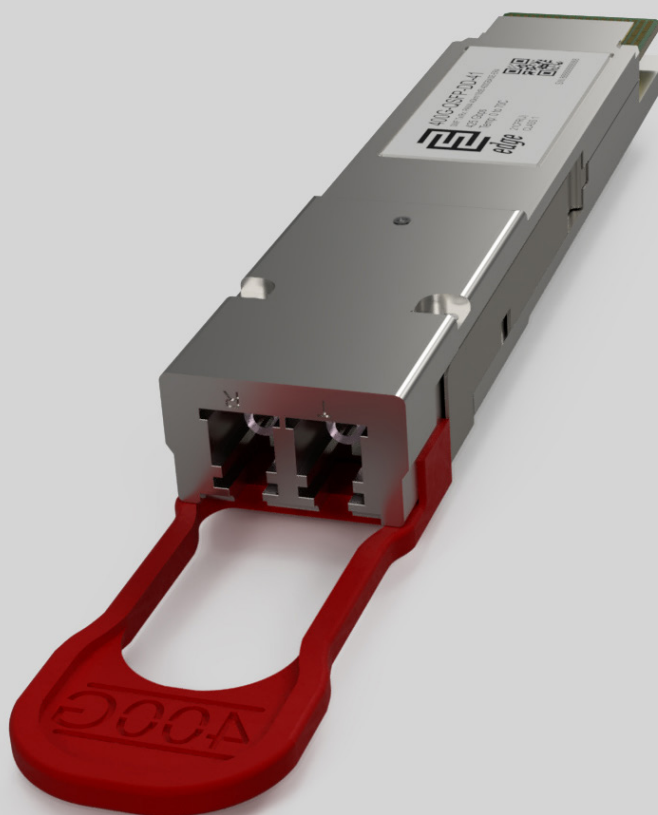


Key Highlights:

- **Type:** 400GBASE-ER4 QSFP-DD
- **Compatibility:** Multi-Vendor MSA Compatible
- **Tx/Rx Wavelength:** 1295.56, 1300.05, 1304.58, 1309.14 nm
- **Laser:** EML
- **Modulation:** PAM4
- **Fiber Type:** Single-Mode Fiber (SMF)
- **Connectors:** Double LC
- **Optical Budget:** 18dB
- **Max. Distance:** 40km
- **Data Rate:** 425 Gbps
- **DDM/DOM:** Supported
- **Power Consumption:** ≤ 12W
- **Temperature:** Standard 0° - 70°C



Optical Transceiver : 400G-QSFP-DD-41

Product Description:

400G-QSFP-DD-41 is a 400GBASE-ER4 Lite Multi-Vendor MSA Compatible QSFP-DD (Quad Small Form-Factor Pluggable - Double Density) Transceiver designed for operation over Double Fiber Single-Mode Fiber (SMF) optical cable. On the transmission side module converts 8x 50G 400GAUI-8 PAM4 (Pulse-Amplitude Modulation) electrical input channels (each 53.125Gbps) into 4 Single Lambda 100G PAM4 LAN-WDM optical signals. Reversely the opposite is done on the receiving side, module converts 4 Single Lambda 100G PAM4 CWDM optical signals into 8x 50G 400GAUI-8 electrical inputs. Module has minimum guaranteed optical budget of 18 dB, which in most cases is enough to reach 30km with 400G KP4 FEC and 40 km distance with built-in PFEC over OS2 single-mode fiber. However, distance is just indicative parameter for comfort of identification that is calculated by taking into account minimal optical budget and average attenuation of optical cabling in industry. 400G-QSFP-DD-41 uses top quality Quad channel EML driver and 4 LAN WDM EML lasers together with an optical multiplexer (4 LAN WDM lines: 1295.56, 1300.05, 1304.58 and 1309.14 nm) transmitter and 400Gb/s APD array receiver. 400G-QSFP-DD-41 400GBASE- ER4 Lite supports DDM/DOM optical diagnostics that provide real-time



diagnostic information about the present operating conditions. 400G-QSFP-DD-41 operates in Standard 0°-70°C temperature range and has Double LC interface. 400G-QSFP-DD-41 400GBASE-ER4 Lite QSFP-DD support up to 425 Gbps data rate and is designed for 400G Ethernet application. 400G-QSFP-DD-41 QSFP-DD Double Fiber optical transceiver is multi-purpose module used in number of different places of today's networking. Consequently, most popular use cases are in Internet Service Provider (ISP), Mobile Operator and Data Center Core Networks. 400G-QSFP-DD-41 400GBASE-ER4 Lite QSFP-DD transceiver is CE/RoHS certified and is compliant with product safety standards.

400G-QSFP-DD-41 is fully compliant to QSFP-DD MSA, CMIS 4.0, IEEE 802.3bs 400 Gbps specification. Consequently, compliance to above standards guarantees that module is compatible and works with majority of networking equipment, where is not implemented special algorithm for protection against third party modules. However – our technical team has accumulated deep expertise in custom-encoded firmware's for 400GBASE-ER4 Lite QSFP-DD transceiver in order to make it work in almost any brand equipment. We will be glad to know your requirements.

Product Specification:

General parameter	Value
Media Type:	Single-Mode Fiber (SMF)
Connectors:	Double LC
TX Wavelength:	1295.56, 1300.05, 1304.58, 1309.14 nm
RX Wavelength:	1295.56, 1300.05, 1304.58, 1309.14 nm
Minimum Optical Budget:	18dB
Maximum Distance:	40 km
Supported Data Rate:	425 Gbps
Data Rate, each Lane up to:	106.25 Gbps
Modulation:	PAM4
Supported Applications:	Ethernet (425 Gbps), Infinband
Digital Diagnostic Monitoring (DDM):	Supported
Optical Clock And Data Recovery (CDR):	Supported
Operating Temperature Range:	Standard 0°- 70°C
Storage Temperature Range:	- 40° to 85°C
Relative Humidity (Non-Condensation):	0 to 85%
Power Consumption:	≤ 12W
Power Supply Voltage Typical:	+ 3.3V
Power Supply Voltage Range:	-3.135 to 3.465V



General parameter	Value
Chipset:	INPHI
Compliance:	QSFP-DD MSA, IEEE 802.3bs, CE, RoHS-6, Class 1 Laser Product, IEC60825-1, 21 CFR 1040.10 - 1040.11

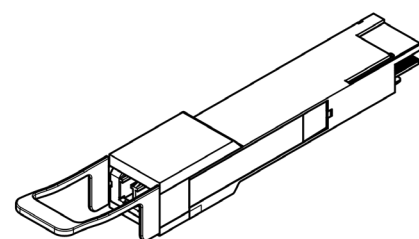
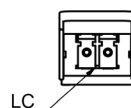
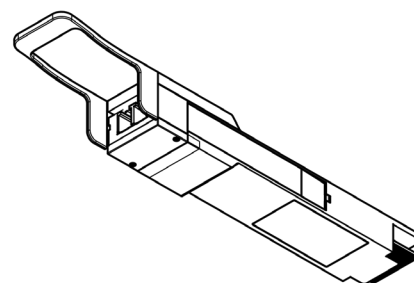
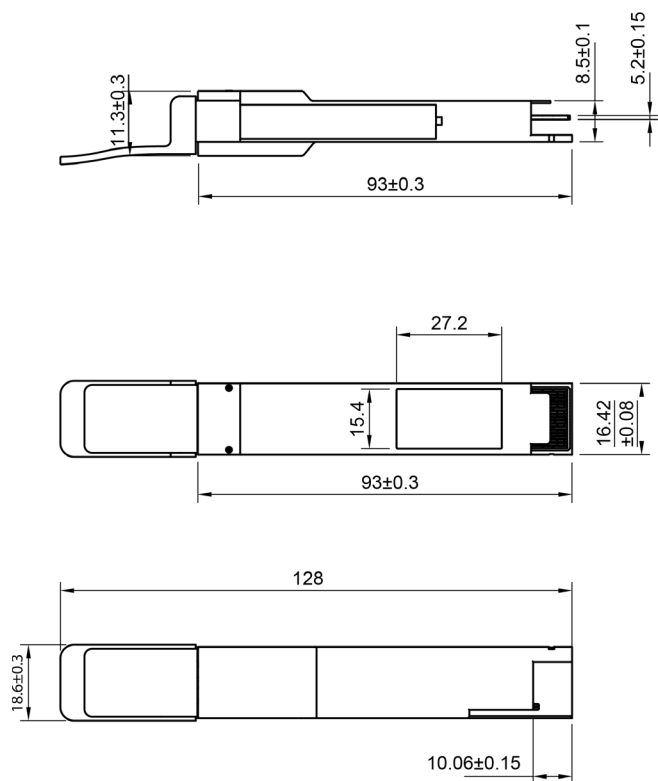
Transmitter Parameters:	Value
Transmitter Type:	EML Laser
Tx Wavelength Bandwidth:	LWDM4 Lanes (L0 Tx center 1295.56nm, L1 Tx center 1300.05nm, L2 Tx center 1304.58nm, L3 Tx center 1309.14nm)
Total Average Launch Power (Max):	14.7 dBm
Side-mode Suppression Ratio (Min):	30 dB
Outer Optical Modulation Amplitude OMA (Min) Each Lane:	3.4 dBm
Outer Optical Modulation Amplitude OMA (Max) Each Lane:	9 dBm
Difference in Launch Power between any Two Lanes OMA (Max):	4 dBm
Launch Power in OMA minus TDECQ (Min) Each Lane:	2 dBm
Extinction Ratio (Min):	6 dB
Relative Intensity Noise (Max):	- 132 dB/Hz
Transmitter reflectance (Max):	- 26 dB
Average Launch Power OFF Transmitter (Max) Each Lane:	- 30 dB

Receiver Parameters:	Value
Receiver Type:	APD Array
Rx Wavelength Bandwidth:	LWDM4 Lanes (L0 Tx center 1295.56nm, L1 Tx center 1300.05nm, L2 Tx center 1304.58nm, L3 Tx center 1309.14nm)



Receiver Parameters:	Value
Damage Threshold Each Lane:	-2.4 dBm
Receiver Sensitivity (OMA) Each Lane:	-15.1 dB
Receiver Saturation, Each Line:	-3.4 dB

Mechanical Dimensions:



Compatibility:

EDGE Optical transceivers can be provided with custom-encoded firmware, in order to provide compatibility with more than 100 vendor brands in data and telecom communications industry:



MS - General MSA
AD - ADVA
AE - Advantech
AL - Alcatel (Nokia)
AT - Allied Telesis
AR - Arista
AS - Arris
AV - Avaya
BC - Barracuda
BR - Broadcom
QL - Cavium (Qlogic)
CR - Ceragon
CP - Checkpoint
CH - Chelsio
CN - Ciena
CI - Cisco
LI - Cisco (Linksys)
CE - Comnet
CO - Coriant
DH - Dahua
DC - DCN
DL - Dell & Force10
DK - D-Link

DZ - DZS(Dasan-Zhone)
EI - ECI
EC - EdgeCore
EW - EdgeWare
EL - Eltex
EM - EMC2
EN - Enterasys
ER - Ericsson
EF - EXFO
EX - Extreme Networks
F5 - F5 Networks
FI - Finisar
FO - Fortinet
FU - Fujitsu
H3 - H3C
HI - Hirschmann
HU - Huawei
IB - IBM
IF - Infinera
IN - Intel
IX - Ixia
JU - Juniper Networks
KM - KeyMile

KY - KyLand
LN - Lenovo
ML - Mellanox
ME - Meraki (Cisco)
MT - MikroTik
MO - Moxa
MR - MRV
NC - NEC
NG - Netgear
NK - Nokia
NT - Nortel
NS - NSN
OR - Oracle
PA - Palo Alto Network
PL - Planet
QC - QCT(Quanta)
QN - QNAP
RD - RAD
RW - RadWare
RC - Raisecom
RK - Ruckus
RU - Ruijie Networks
SG - Samsung

SV - Sandvine
SC - Silicom
SF - SolarFlare
SW - Sonicwall
SM - Supermicro
SY - Synology
TC - Telco Systems
TP - TP-LINK
TN - Trendnet
UN - Ubiquiti Networks
VX - VeEx
WG - WatchGuard
WS - Waystream
WT - Westermo
ZT - ZTE
ZX - Zyxel
HP - HP
AG - Avago
OC - Oclaro
EU - Emulex
TM - Transmode
AU - HP Aruba
XX - Other

Warranty:

EDGE Optic's provides a limited **warranty for sixty (60) months** from Purchaser's receipt of the Equipment represented in this data sheet against defective design or workmanship. Warranty does not cover damage caused by improper deployment, misuse and accidents.

