



# Optical Transceiver Module Product Manual





Established in 1992, ZTT started from optical fiber communications and was listed on Shanghai Stock Exchange (SSE) in 2002 (Stock Code in SSE: 600522). ZTT has pictured a diversified industrial portfolio for marine equipment, renewable energy, new materials, smart grid, optical communications and other diversified industrial products. ZTT Group is now hosting 80 subsidiary companies and over 16,000 employees, operating 5 overseas

plants located in India, Brazil, Indonesia, Morocco and Turkey. ZTT owns more than 2500 patents with independent intellectual property rights, presided over or participated in more than 500 International and national industry standards. The products of ZTT are exported to 160 countries and regions. The company has ranked among the top 500 Chinese enterprises for consecutive years and broke through \$13.4 billion in sales revenue in





2022. ZTT follows the new economic model of fostering cleaner production and accelerating green and low-carbon development, works hard to serve as the pioneer of persistent endeavor to achieve national goal involving carbon dioxide emissions peaking by 2030 and carbon neutrality by 2060, emerging as a green manufacturing technology group assuming regional economy.





# 400G QSFP-DD DR4



## Product Features

- Hot-Pluggable QSFP-DD form factor
- Up to 425Gbps aggregate data rate
- Single MPO-12 receptacle with 8° angled-face
- Maximum link length of 500m on SMF with FEC
- Aligned with IEEE 802.3bs
- Single 3.3V power supply
- Power consumption ≤ 10W
- 2x high-power DFB, silicon optical integrated modulation
- 4x106Gbps PAM4 high sensitivity PIN receiver
- Case temperature range: 0~70°C
- RoHS compliance

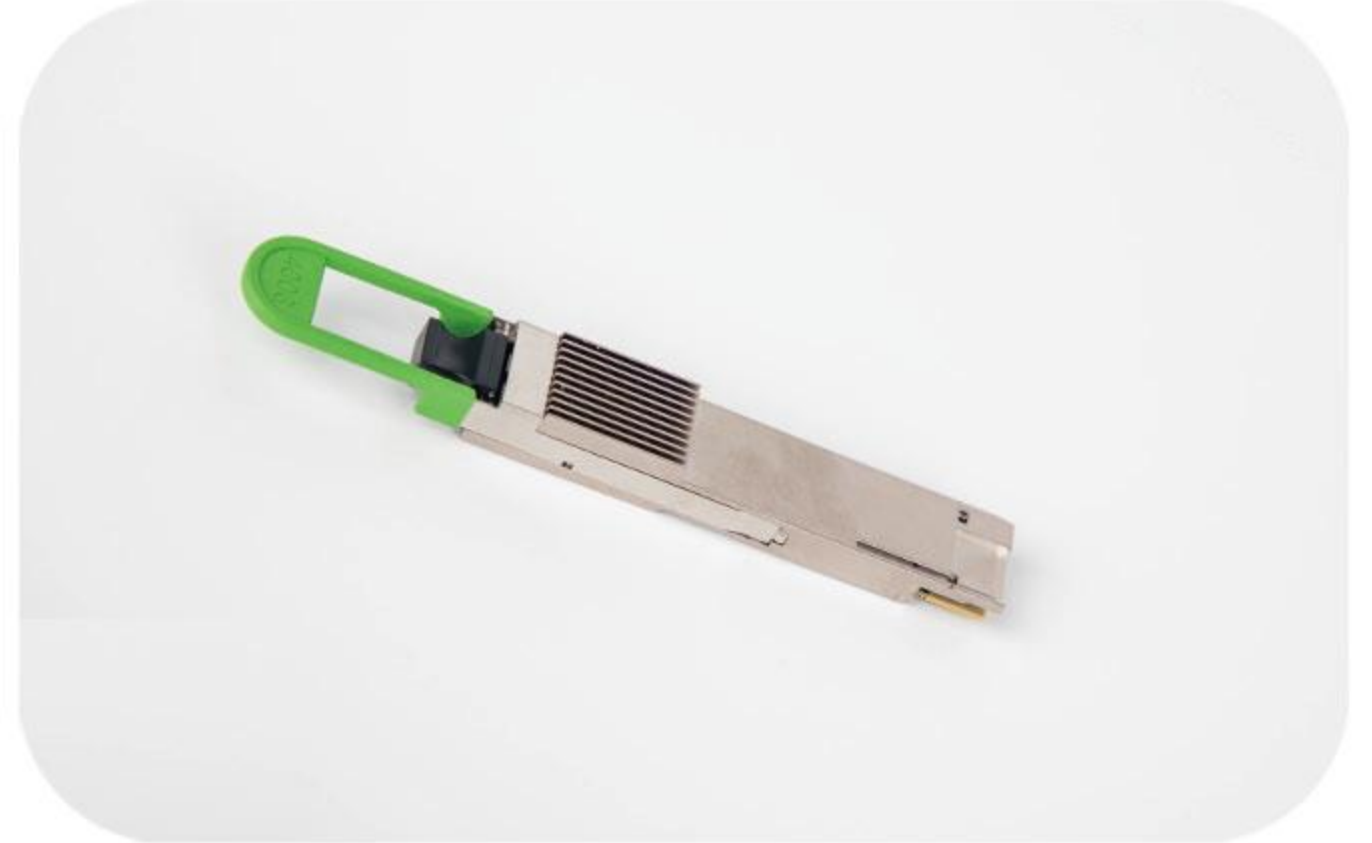
## Applications

- 400GBASE-DR Ethernet
- Data Center
- InfiniBand Interconnects

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMQD-131DRPC	4x100	2x high-power DFB	-2.9~+4	PIN	-3.9	0~70	0.5	10



# 400G QSFP-DD FR4



## Product Features

- Hot-Pluggable QSFP-DD form factor
- Up to 425Gbps aggregate data rate
- Duplex LC receptacle
- Maximum link length of 2km on SMF with FEC
- Aligned with IEEE 802.3cu
- Single 3.3V power supply
- Power consumption  $\leq 10W$
- 4x106Gbps PAM4 CWDM EML transmitter
- 4x106Gbps PAM4 high sensitivity PIN receiver
- Case temperature range: 0~70°C
- RoHS compliance

## Applications

- 400GBASE-FR Ethernet

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMQD-CDMFRPC	4x100	4x EML	-3.2~+4.4	PIN	-4.6	0~70	2	10



# 100G QSFP28 SR4



## Product Features

- Hot-Pluggable QSFP28 form factor
- Up to 103.1Gbps aggregate data rate
- Single MPO receptacle
- Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Aligned with IEEE 802.3bm
- Single 3.3V power supply
- Power consumption  $\leq 2.5W$
- 4x25Gbps VCSEL-based 850nm transmitter
- Case temperature range: 0~70°C
- RoHS compliance

## Applications

- 100GBASE-SR Ethernet
- Infiniband EDR
- Data Center

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMUQ-850SRNC	4x25	VCSEL	-6~+2.4	PIN	-7.5	0~70	0.1	2.5



# 100G QSFP28 CWDM4



## Product Features

- Hot-Pluggable QSFP28 form factor
- Up to 103.1Gbps aggregate data rate
- Duplex LC receptacle
- Maximum link length of 2km on SMF
- Aligned with 100G CWDM4 MSA
- Single 3.3V power supply
- Power consumption  $\leq 3.5W$
- 4X25Gbps CWDM DML transmitter
- High sensitivity PIN receiver
- Case temperature range: 0~70°C
- RoHS compliance

## Applications

- 100GBASE Ethernet
- 4WDM-MSA

Part Number	Date Rate	LD Type	Po	Rx Type	Sensitivity	Temperature	Reach	Power Consumption
ZMUQ- CDMFRNC	4x25	4x DML	-6.5~+2.5	PIN	-9.8	0~70	2	3.5



# 100G QSFP28 LR4 / ER4 / ZR4



## Product Features

- Hot-Pluggable QSFP28 form factor
- Supports 103.1Gbps and 112Gbps aggregate data rate
- Duplex LC receptacle
- Maximum link length of 80km on SMF
- Aligned with IEEE 802.3ba
- Single 3.3V power supply
- 4x25Gbps DML / EML LAN-WDM transmitter
- High sensitivity PIN receiver
- Case temperature range: 0~70°C
- ROHS compliance

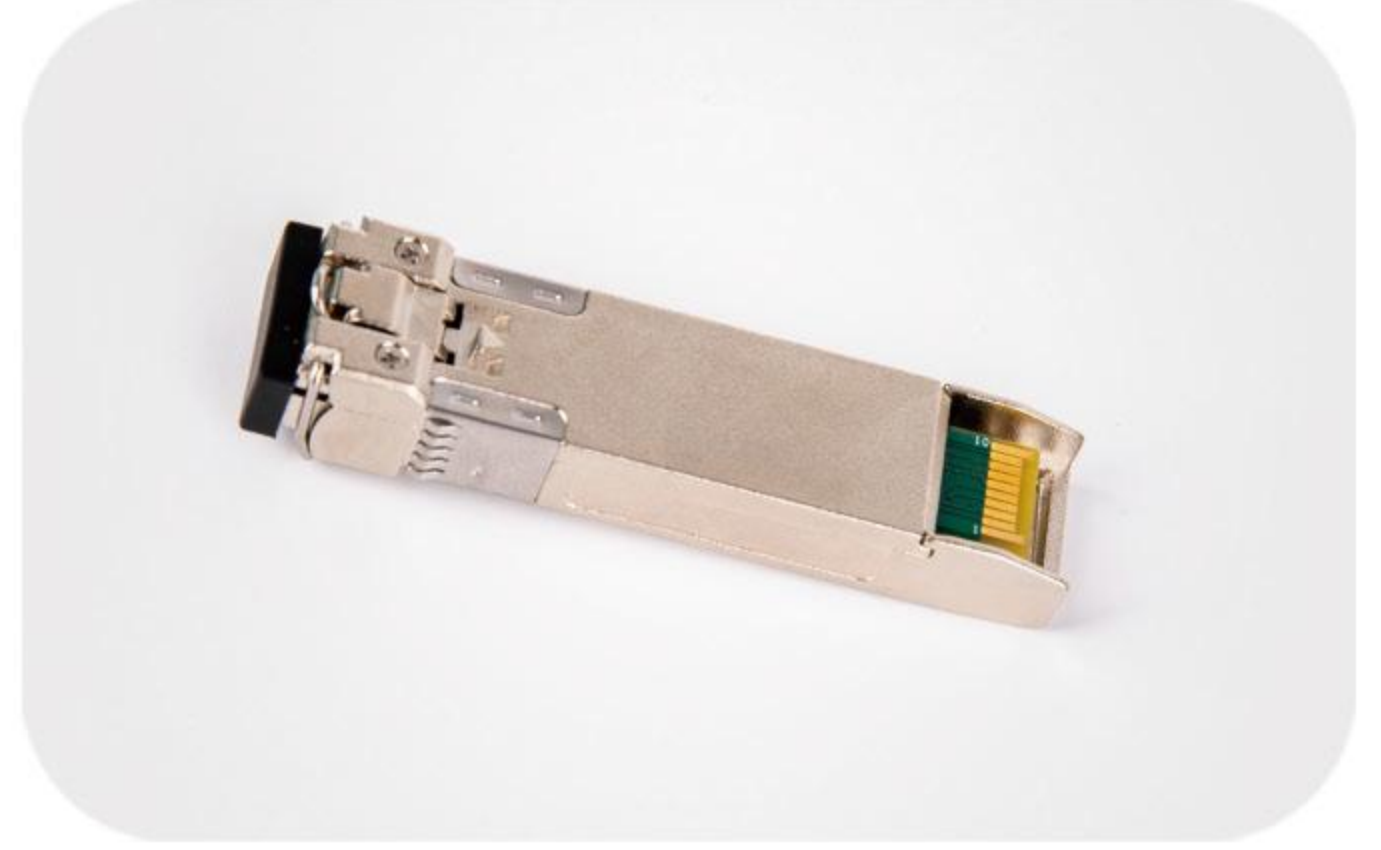
## Applications

- 100GBASE Ethernet
- Client-side 100G Telecom connections
- OTN OTU4

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMUQ-LDMLRNC	4x25	4xDML	-4.3~+4.5	PIN	-8.6	0~70	10	4.5
ZMUQ-LDMERNRNC	4x25	4xDML	-2.5~+6.5	APD	-18.5	0~70	40	6
ZMUQ-LDMZRNC	4x25	4xEML	+2~+6.5	SOA/PIN	-28	0~70	80	6.5



# 25G SFP28 SR



## Product Features

- Hot-pluggable SFP28 form factor
- Up to 25.78Gbps data rate
- Duplex LC receptacle
- Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Aligned with IEEE 802.3by
- Single 3.3V power supply
- Power consumption  $\leq$  1W
- 850nm VCSEL laser and PIN receiver
- Internal CDR on both transmitter and receiver channels
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 25GBASE-SR Ethernet
- 25G eCPRI
- Data Center

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMLP-850SRNx	25.78	VCSEL	-8.4~-2.4	PIN	-10.3	0~70 / -40~85	0.1	1



# 25G SFP28 LR / ER



## Product Features

- Hot-pluggable SFP28 form factor
- Up to 25.78Gbps data rate
- Supports CPRI wireless data rate
- Duplex LC receptacle
- Maximum link length of 10km / 40km on SMF
- Aligned with IEEE 802.3cc
- Single 3.3V power supply
- Power consumption  $\leq 1.8W$
- 1310nm DFB laser and PIN receiver for 10km, and APD for 40km
- Internal CDR on both transmitter and receiver channels
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 25GBASE Ethernet
- 25G eCPRI

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature ( °C )	Reach (km)	Power Consumption (W)
ZMLP-131LRNx	25.78	DFB	-4~+2	PIN	-12	0~70 / -40~85	10	1.5
ZMLP-131ERNx	25.78	DFB	0~+6	APD	-19	0~70 / -40~85	40	1.8



# 25G SFP28 CWDM



## Product Features

- Hot-pluggable SFP28 form factor
- Up to 25.78Gbps data rate
- Supports CPRI wireless data rate
- Duplex LC receptacle
- Maximum link length of 10km / 15km in 20nm channel spacing CWDM systems
- Aligned with IEEE 802.3cc
- Single 3.3V power supply
- Power consumption  $\leq 2W$
- CWDM DFB transmitter and PIN receiver
- Internal CDR on both transmitter and receiver channels
- Operating case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 25GBASE Ethernet
- 25G eCPRI
- 25G CWDM

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature ( °C )	Reach (km)	Power Consumption (W)
ZMLP-1xxLRNx-C	25.78	CWDM	0~+6	PIN	-14	0~70 / -40~85	10	2
ZMLP-1xxLONx-C	25.78	CWDM	+2~+7.5	PIN	-15.5	0~70 / -40~85	15	2



# 25G SFP28 LWDM



## Product Features

- Hot-pluggable SFP28 form factor
- Up to 25.78Gbps data rate
- Supports CPRI wireless data rate
- Duplex LC receptacle
- Maximum link length of 10km / 15km on SMF
- Aligned with IEEE 802.3cc
- Single 3.3V power supply
- Power consumption  $\leq$  2W
- Cooled DML transmitter and PIN receiver
- Internal CDR on both transmitter and receiver channels
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 25GBASE Ethernet
- 25G eCPRI

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature ( °C )	Reach (km)	Power Consumption (W)
ZMLP-LxxLRNx	25.78	LWDM	0~+6	PIN	-14.5	0~70 / -40~85	10	2
ZMLP-LxxLONx	25.78	LWDM	+2~+7	PIN	-15.5	0~70 / -40~85	15	2



# 25G SFP28 DWDM



## Product Features

- Hot-pluggable SFP28 form factor
- Up to 25.78Gbps data rate
- Supports CPRI wireless data rate
- Duplex LC receptacle
- Maximum link length of 10km / 15km on SMF
- Aligned with IEEE 802.3cc
- Single 3.3V power supply
- Power consumption  $\leq$  2W
- Cooled EM transmitter and PIN receiver for 10km, and APD for 15km
- Internal CDR on both transmitter and receiver channels
- Case temperature range: 0~70°C
- RoHS compliance

## Applications

- 25GBASE Ethernet
- 25G eCPRI
- 25G DWDM

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMLP-CxxLRNC	25.78	DWDM	-3~+5	PIN	-12	0~70	10	2
ZMLP-CxxL0NC	25.78	DWDM	0~+6	APD	-19	0~70	15	2



# 25G SFP28 BIDI



## Product Features

- Hot-pluggable SFP28 form factor
- Up to 25.78Gbps data rate
- Single LC receptacle, Bi-directional
- Maximum link length of 10km / 20km / 40km on SMF
- Aligned with IEEE 802.3cc
- Single 3.3V power supply
- Power consumption  $\leq 1.8W$
- 1270nm & 1330nm DFB laser for 10km / 15km / 20km
- 1270nm & 1310nm DFB laser for 20km / 40km
- 1290nm & 1310nm DFB laser for 40km
- PIN receiver for 10km / 15km / 20km, and APD for 40km
- Internal CDR on both transmitter and receiver channels
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

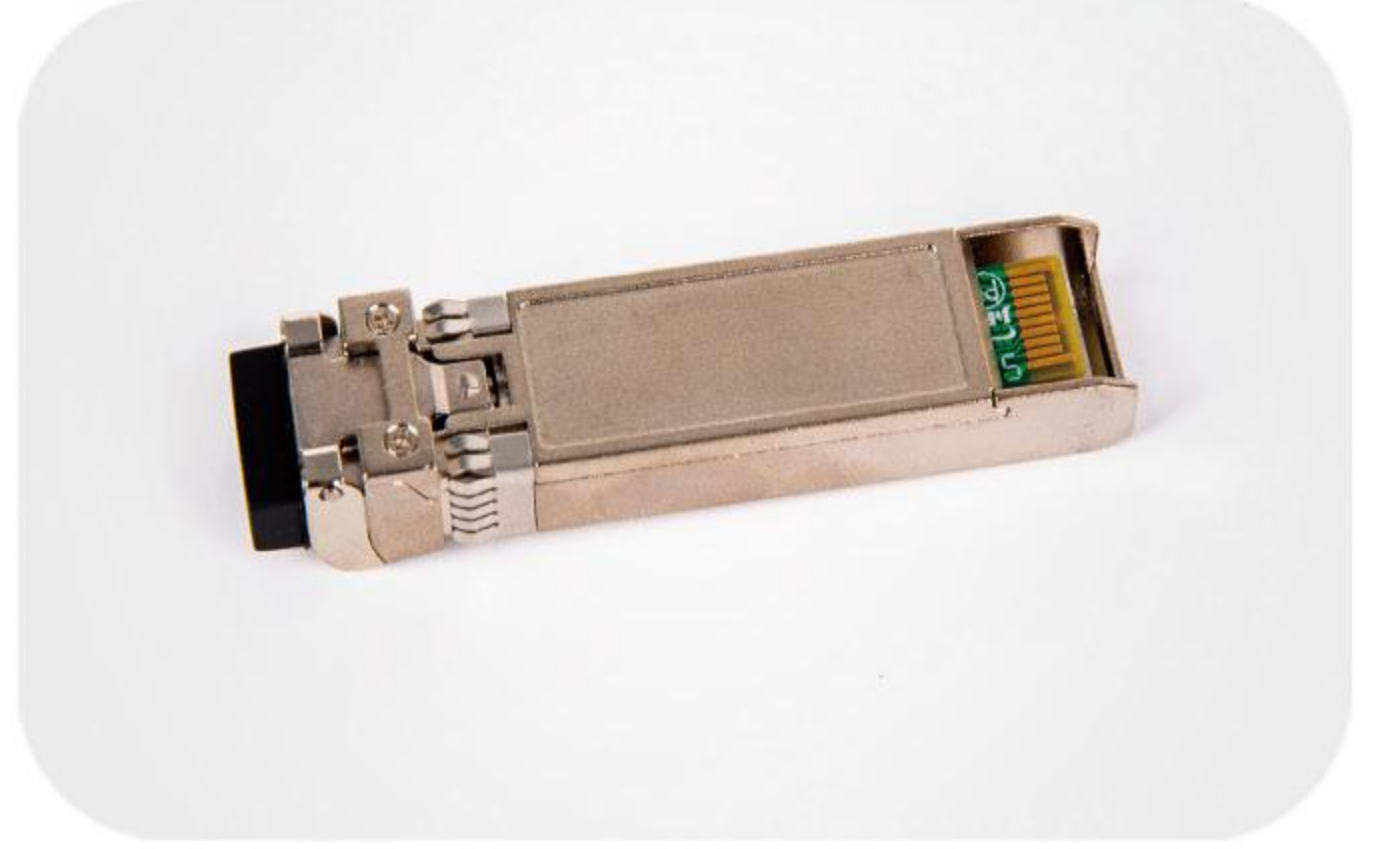
## Applications

- 25GBASE Ethernet
- 25G eCPRI

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature ( °C )	Reach (km)	Power Consumption (W)
ZMLP-BxxLRNx	25.78	DFB	-4~+2	PIN	-12	0~70 / -40~85	10	1.5
ZMLP-BxxL0Nx	25.78	DFB	0~+6	PIN	-13	0~70 / -40~85	15	1.5
ZMLP-BxxL1Nx	25.78	DFB	0~+6	PIN	-14.5	0~70 / -40~85	20	1.5
ZMLP-BxxERNx	25.78	DFB	0~+6	APD	-19	0~70 / -40~85	40	1.8



# 10G SFP+ SR



## Product Features

- Hot-pluggable SFP+ form factor
- Up to 11.3Gbps data rate
- Duplex LC receptacle
- Maximum link length of 300m on OM3 MMF
- Aligned with IEEE 802.3ae
- Single 3.3V power supply
- Power consumption  $\leq 1.0W$
- 850nm VCSEL transmitter and PIN receiver
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 10GBASE-SR Ethernet
- 10G Fiber Channel
- Data Center

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMKP-850S1NC	10.3125	VCSEL	-6~-1	PIN	-11.1	0~70 / -40~85	0.3	1



# 10G SFP+ LR / ER



## Product Features

- Hot-pluggable SFP+ form factor
- Up to 11.3Gbps data rate
- Support CPRI wireless data
- Duplex LC receptacle
- Maximum link length of 2km / 10km / 20km / 40km on SMF
- Aligned with IEEE 802.3ae
- Single 3.3V power supply
- Power consumption  $\leq 1.2W$
- 1310nm FP laser for 2km and DFB laser for 10km / 20km / 40km
- PIN receiver for 2km / 10km / 20km / 40km
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 10GBASE Ethernet
- CPRI
- 10G Fiber Channel

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMKP-131FRN1	10.3125	FP	-8.2~+0.5	PIN	-14.4	0~70 / -40~85	1.4/2	1
ZMKP-131LRNx	10.3125	DFB	-8.2~+0.5	PIN	-14.4	0~70 / -40~85	10	1
ZMKP-131L1Nx	10.3125	DFB	-5.2~+3	PIN	-14.4	0~70 / -40~85	20	1
ZMKP-131ERNx	10.3125	DFB	+1~+7.5	PIN	-15	0~70 / -40~85	40	1



# 10G SFP+ CWDM



## Product Features

- Hot-pluggable SFP+ form factor
- Up to 11.3Gbps data rate
- Supports CPRI wireless data rate
- Duplex LC receptacle
- Maximum link length of 10km / 20km / 40km on SMF
- Aligned with IEEE 802.3ae
- Single 3.3V power supply
- Power consumption  $\leq 1.5W$
- CWDM DML transmitter and PIN / APD receiver
- Case temperature range: 0~70°C or -20~85°C or -40~85°C
- RoHS compliance

## Applications

- 10GBASE Ethernet
- CPRI
- 10G CWDM

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature ( °C )	Reach (km)	Power Consumption (W)
ZMKP-1xxLRNx-C	10.3125	CWDM	-3~+4	PIN	-14	0~70 / -20~85	10	1
ZMKP-1xxL1Nx-C	10.3125	CWDM	+1~+7	PIN	-14	0~70 / -20~85	20	1
ZMKP-1xxLRNI-C	10.3125	CWDM	-3~+4	PIN	-14	-40~85	10	1.5
ZMKP-1xxL1NI-C	10.3125	CWDM	+1~+7	PIN	-14	-40~85	20	1.5
ZMKP-1xxERNx-C	10.3125	CWDM	+1~+7	APD	-19	0~70 / -20~85 / -40~85	40	1.5



# 10G SFP+ TDM / DWDM ER / ZR



## Product Features

- Hot-pluggable SFP+ form factor
- Up to 11.3Gbps data rate
- Duplex LC receptacle
- Maximum link length of 40km / 80km on SMF
- Aligned with IEEE 802.3ae
- Single 3.3V power supply
- Power consumption  $\leq 1.8W$
- Cooled DWDM EML / TDM EML transmitter and PIN / APD receiver
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 10GBASE-ER / EW Ethernet
- 10GBASE-ZR / ZW Ethernet
- 10G SONET / SDH
- 10G DWDM Network

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMKP-155ERNx	10.3125	EML	-4.7~+4	PIN	-16	0~70 / -40~85	40	1.7
ZMKP-155ZRNx	10.3125	EML	-1~+4	APD	-24	0~70 / -40~85	80	1.8
ZMKP-CxxERNx	10.3125	DWDM	-4.7~+4	PIN	-16	0~70 / -40~85	40	1.7
ZMKP-CxxZRNx	10.3125	DWDM	-1~+4	APD	-24	0~70 / -40~85	80	1.8



# 10G SFP+ BIDI



## Product Features

- Hot-pluggable SFP+ form factor
- Up to 11.3Gbps data rate
- Single LC receptacle, Bi-directional
- Maximum link length of 10km / 20km / 40km on SMF
- Aligned with IEEE 802.3ae
- Single 3.3V power supply
- Power consumption  $\leq 1.5W$
- 1270nm / 1330nm DFB transmitter
- PIN receiver for 10km / 20km / 40km, and APD receiver for 40km / 60km
- Case temperature range: 0~70°C or -40~85°C
- RoHS compliance

## Applications

- 10GBASE Ethernet
- CPRI
- 10G SONET/SDH, OTU2/2e

Part Number	Date Rate (Gbps)	LD Type	Po (dBm)	Rx Type	Sensitivity (dBm)	Temperature (°C)	Reach (km)	Power Consumption (W)
ZMKP-B03(30) LRNx	10.3125	DFB	-8.2~+0.5	PIN	-14.4	0~70 / -40~85	10	1
ZMKP-B03(30) L1Nx	10.3125	DFB	-5.2~+3	PIN	-14.4	0~70 / -40~85	20	1
ZMKP-B03(30) ERNx	10.3125	DFB	+1~+7	PIN / APD	-15 / -19	0~70 / -40~85	40	1 / 1.5
ZMKP-B03(30) E1Nx	10.3125	DFB	+1~+7	APD	-19	0~70 / -40~85	60	1.5

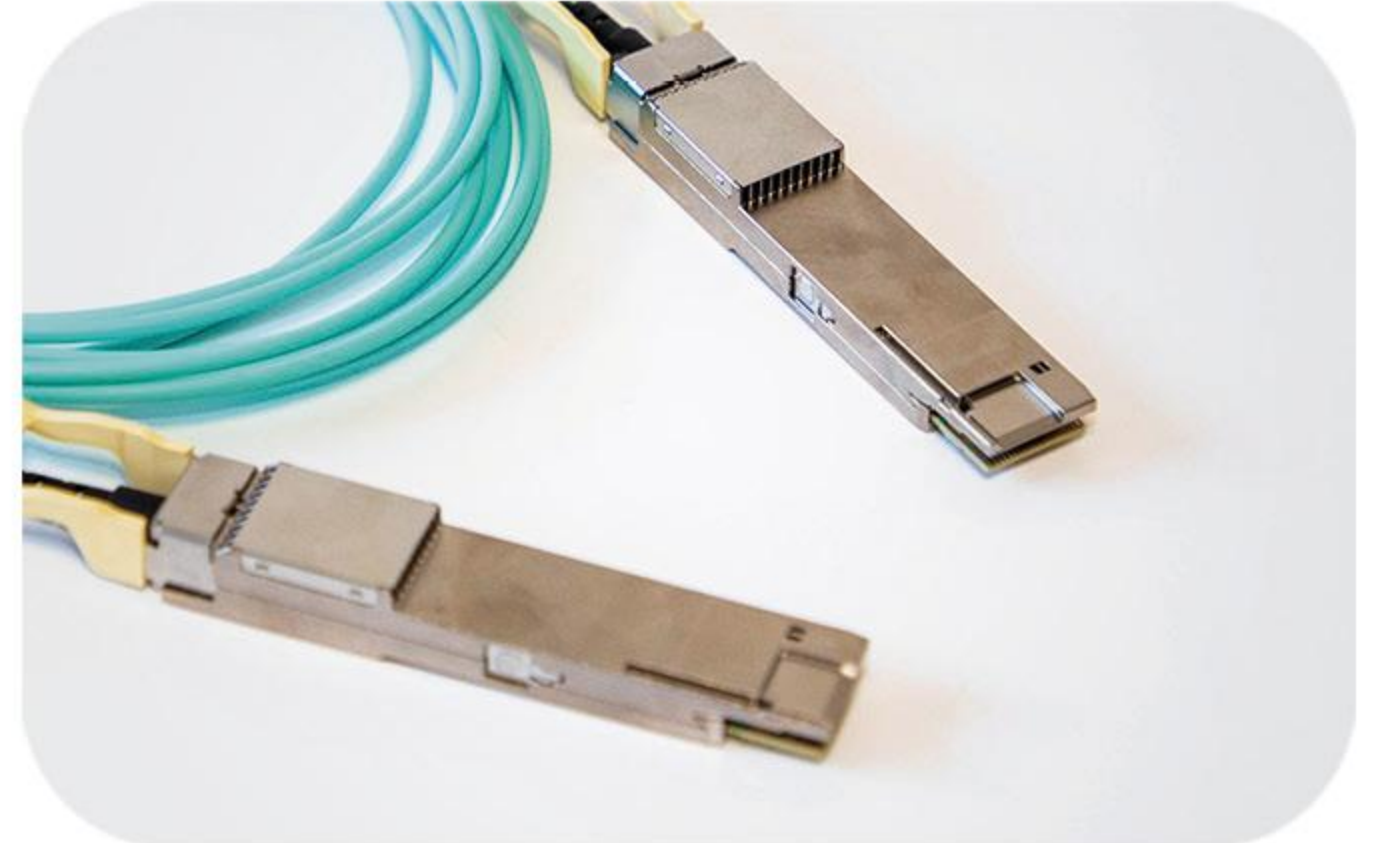
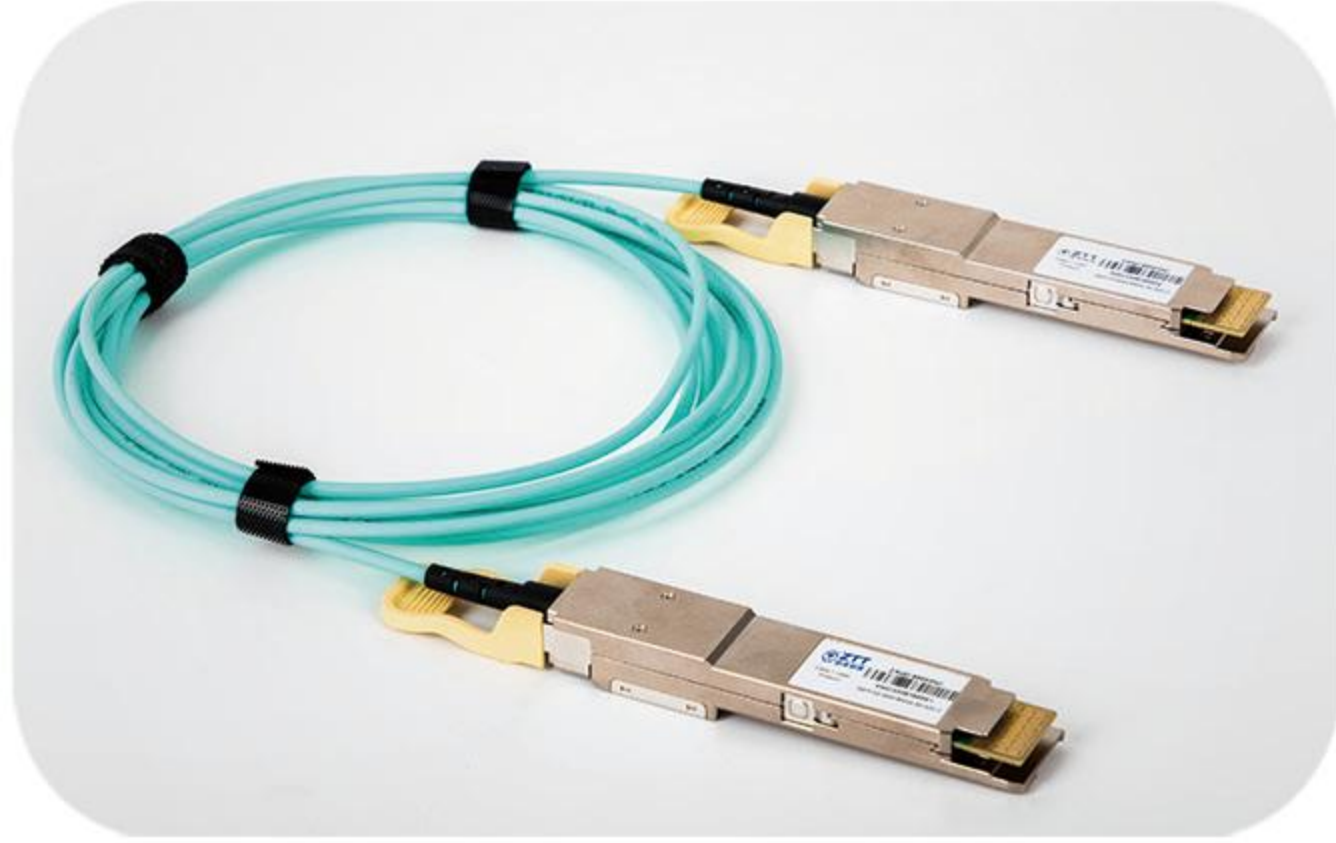


# 1.25G / 2.5G SFP

Part Number	Date Rate (Gbps)	Wavelength (nm)	LD Type	Rx Type	Temperature (°C )	Reach (km)
ZMGP-85055NC	1.25	850	VCSEL	PIN	0~70	0.55
ZMGP-131L1Nx	1.25	1310	FP	PIN	0~70 /-40~85	20
ZMGP-131ERNx	1.25	1310	DFB	PIN	0~70 /-40~85	40
ZMGP-155ZRNC	1.25	1550	DFB	PIN	0~70	80
ZMGP-155EXNC	1.25	1550	DFB	APD	0~70	120
ZMGP-B2CL1Nx	1.25	1310 BIDI	FP	PIN	0~70 /-40~85	20
ZMGP-BC2L1Nx	1.25	1550 BIDI	DFB	PIN	0~70 /-40~85	20
ZMGP-B2CERNc	1.25	1310 BIDI	DFB	PIN	0~70	40
ZMGP-BC2ERNc	1.25	1550 BIDI	DFB	PIN	0~70	40
ZMGP-B9CZRNC	1.25	1490 BIDI	DFB	PIN	0~70	80
ZMGP-BC9ZRNC	1.25	1550 BIDI	DFB	PIN	0~70	80
ZMGP-1xxL1Nx	1.25	CWDM	DFB	PIN	0~70 /-40~85	20
ZMGP-1xxERNx	1.25	CWDM	DFB	PIN	0~70 /-40~85	40
ZMGP-CxxZRNC	1.25	DWDM	EML	PIN	0~70 /-40~85	80
ZMHP-131L1Nx	2.5	1310	DFB	PIN	0~70 /-40~85	20
ZMHP-131ERNx	2.5	1310	DFB	PIN	0~70 /-40~85	40
ZMHP-155ERNc	2.5	1310	DFB	PIN	0~70	40
ZMHP-155ZRNC	2.5	1550	DFB	APD	0~70	80
ZMHP-155EXNC	2.5	1550	EML	APD	0~70	120
ZMHP-B2CL1Nx	2.5	1310 BIDI	DFB	PIN	0~70 /-40~85	20
ZMHP-BC2L1Nx	2.5	1550 BIDI	DFB	PIN	0~70 /-40~85	20
ZMGP-B2CERNc	2.5	1310 BIDI	DFB	PIN	0~70	40
ZMGP-BC2ERNc	2.5	1550 BIDI	DFB	PIN	0~70	40
ZMGP-B9CZRNC	2.5	1490 BIDI	DFB	PIN	0~70	80
ZMGP-BC9ZRNC	2.5	1550 BIDI	DFB	PIN	0~70	80
ZMHP-1xxL1Nx	2.5	CWDM	DFB	PIN	0~70 /-40~85	20
ZMHP-1xxERNx	2.5	CWDM	DFB	PIN	0~70 /-40~85	40
ZMHP-CxxZRNC	2.5	DWDM	EML	APD	0~70 /-40~85	80



# 400G AOC



## Product Features

- Hot-Pluggable QSFP-DD form factor
- Up to 425Gb/s data rate
- Maximum link length of 20m on MMF
- Aligned with IEEE 802.3cm
- Single 3.3V Power supply
- Power consumption  $\leq$  5W/each port
- 8x50G PAM4 VCSEL-based 850nm transmitter
- Case Operating temperature ranges: 0~70°C
- RoHS compliance

## Applications

- Data Center
- Infiniband EDR

Part Number	Date Rate (Gbps)	Form Factor	LD Type	Rx Type	Temperature (°C)	Reach (m)	Power Consumption (W)
ZAQD-850xxPC	400	QSFP-DD to QSFP-DD	VCSEL	PIN	0~70	1/3/5/10/15/20	5W/each port



# AOC



Part Number	Date Rate (Gbps)	Form Factor	LD Type	Rx Type	Temperature (°C)	Reach (m)	Power Consumption
ZAPQ-850xxPC	200	QSFP56	VCSEL	PIN	0~70	1/3/5/10/15/20	5W/each port
ZAPQ2-850xxPC	200	QSFP56 to 2x100G QSFP56	VCSEL	PIN	0~70	1/3/5/10/15/20	5W/200G port and 3W/100G port
ZAPD2-850xxNC	200	200G QSFP-DD to 2x100G QSFP28	VCSEL	PIN	0~70	1/3/5/10/15/20	5W/200G port and 2.5W/100G port
ZAUQ-850xxNC	100	QSFP28	VCSEL	PIN	0~70	1/3/5/10/15/20	2.5W/each port
ZAUQ2-850xxNC	100	QSFP28 to 2x50G QSFP28	VCSEL	PIN	0~70	1/3/5/10/15/20	2.5W/100G port and 2W/50G port
ZAUQ4-850xxNC	100	QSFP28 to 4xSFP28	VCSEL	PIN	0~70	1/3/5/10/15/20	2.5W/QSFP28 port and 1W/SFP28 port
ZANQ2-850xxNC	50	50G QSFP28 to 2xSFP28	VCSEL	PIN	0~70	1/3/5/10/15/20	2W/QSFP28 port and 1W/SFP28 port
ZAMQ-850xxNC	40	QSFP+	VCSEL	PIN	0~70	1/3/5/10/15/20	1.5W/each port
ZAMQ4-850xxNC	40	QSFP+ to 4xSFP+	VCSEL	PIN	0~70	1/3/5/10/15/20	1.5W/QSFP+ port and 1W/SFP+ port
ZALP-850xxNC	25	SFP28	VCSEL	PIN	0~70	1/3/5/10/15/20	1W/each port
ZAKP-850xxNC	10	SFP+	VCSEL	PIN	0~70	1/3/5/10/15/20	1W/each port





# Connecting Wonderful Life with Optic-Electric Network



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