OVERVIEW QSFP28, SFP28 AND QSFP+
Optical transceivers and DAC for services between 25Gbps and 100Gbps

OVERVIEW 100G TRANSCEIVERS

For further technical details, see respective datasheet.

	Form-factor	QSFP28										DAC					
	Part number	SO-QSFP28-SR4	SO-QSFP28-LR4	SO-QSFP28-ER4	SO-QSFP28-LR4-2L	SO-QSFP28-LR4-10L	SO-QSFP28-LR4-20L	SO-QSFP28-SWDM4	SO-QSFP28-SR-BD	SO-QSFP28-CWDM4	SO-QSFP28-PSM4	SO-QSFP28-PCUxM	SO-QSFP28-4SFP28-PCUxM	SO-QSFP28-AOCxM	SO-QSFP28-4XSFP28-AOCxM	SO-CFP2-QSFP28-xM	SO-CFP2-QSFP28-xM-2
Transm. media	Electrical											x	x			x	x
	Multimode	x						x	x					x	x		
	Singlemode		x	x	x	x	x			x	x						
Cable type	Ribbon-fiber	x									x						
	Fiber-pair		x	x	x	x	x	x	x	x							
	Breakout cable												x		x		
Connector (nbr of)	MPO/MTP	1									1						
	LC		2	2	2	2	2	2	2	2							
	CFP2															1	1
	QSFP28											2	1		1	1	1
	SFP28												4	2	4		
Typical reach	3m											x	x			x	x
	70m													x	x		
	100m	x															
	150m							x	x								
	2km				x					x	x						
	10km		x			x											
	20km						x										
	40km			x													
Protocol — Eth	25GbE												x		x		
	100GbE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Protocol — OTN	OTU4		x			x										x	x
i/f standards — Eth	100GBASE-SR10																
	100GBASE-SR4	x															
	100GBASE-LR4		x			x											
	100GBASE-ER4			x													
	100GBASE-CR											x					
	100GBASE SWDM4							x									
	100GBASE PSM4										x						
	100G CWDM4 MSA									x							
i/f standards — OTN	4I1-9D1F		x			x											
	4L1-9C1F																
FEC required		x		x		x	x		x	x						x	x

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OVERVIEW 40G, 32G AND 25G TRANSCEIVERS

For further technical details, see respective datasheet.

Form-factor grouping:
- **40G Transceivers** — QSFP+ (Grey): SO-QSFP-SR4, SO-QSFP-SR-BD, SO-QSFP-LX4, SO-QSFP-LR4-PSM, SO-QSFP-LR4, SO-QSFP-LR4-20, SO-QSFP-ER4. DAC: SO-QSFP-4SFP-PCUxM, SO-QSFP-4SFP-ACUxM, SO-QSFP-40G-PCUxM, SO-QSFP-40G-ACUxM, SO-QSFP-4X10G-AOCxM, SO-QSFP-40G-AOCxM.
- **25G/32G Transceivers** — SFP28 Grey: SO-SFP28-SR, SO-SFP28-LR, SO-SFP28-32GFC-SD, SO-SFP28-32GFC-LD, SO-SFP28-32GFC-LR10-Cxx. SFP28 BiDi: SO-SFP28-BX10D-2733/3327-I, SO-SFP28-BX20D-2733/3327-I, SO-SFP28-BX40D-2731/3127-I. DAC: SO-SFP28-PCUXM, SO-SFP28-AOCXM.

Part number	SO-QSFP-SR4	SO-QSFP-SR-BD	SO-QSFP-LX4	SO-QSFP-LR4-PSM	SO-QSFP-LR4	SO-QSFP-LR4-20	SO-QSFP-ER4	SO-QSFP-4SFP-PCUxM	SO-QSFP-4SFP-ACUxM	SO-QSFP-40G-PCUxM	SO-QSFP-40G-ACUxM	SO-QSFP-4X10G-AOCxM	SO-QSFP-40G-AOCxM	SO-SFP28-SR	SO-SFP28-LR	SO-SFP28-32GFC-SD	SO-SFP28-32GFC-LD	SO-SFP28-32GFC-LR10-Cxx	SO-SFP28-BX10D-2733/3327-I	SO-SFP28-BX20D-2733/3327-I	SO-SFP28-BX40D-2731/3127-I	SO-SFP28-PCUXM	SO-SFP28-AOCXM
Transm. media — Electrical								x	x	x	x											x	
Multimode	x	x	x									x	x	x		x							x
Singlemode			x	x	x	x	x								x		x	x	x	x	x		
Channel count	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	1	1	1	1
Cable type — Ribbon-fiber	x			x									x										
Fiber-pair		x	x		x	x								x	x	x	x	x					
Single-fiber																			x	x	x		
Breakout cable								x	x			x											
Connector (nbr of) — MPO/MTP	1			1																			
LC		2	2		2	2	2							2	2	2	2	2	1	1	1		
QSFP+								1	1	2	2	1	2										
SFP28																						2	2
SFP+								4	4			4											
Typical reach — 5m								x		x												x	
10m									x		x												
20m																							x
70m														x									
100m	x	x										x	x	x		x							
150m	x	x	x																				
2km			x																				
10km				x	x										x		x	x	x				
20km						x														x			
40km							x														x		
Protocols — Eth — 10GbE LAN	x		x					x	x			x			x			x					
10GbE WAN															x			x					
25GbE														x	x	x	x	x	x	x	x	x	x
40GbE	x	x	x	x	x	x	x	x	x	x	x	x	x										
SDH/SONET — STM-256/OC-768																							
OTN — OTU3				x		x																	
SAN — 32G FC																x	x	x					
16G FC																	x						
8G FC																	x						
QDR InfiniBand								x	x	x	x												x
CPRI — opt 10 (24.33 Gbps)															x				x	x	x		
i/f stand — Eth — 25GBASE-SR4														x									
40GBASE-SR4	x												x										
40GBASE-IR4			x																				
40GBASE-LR4					x																		
SAN — 3200-SN (FC-PI-6)																x							
FEC required (25GbE & 32G FC)														x	x	x	x	x				x	x

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DEFINITIONS

Transm. Media:	Type of transmission media. Electrical: Connection is made over LAN cable or coax cable. Multimode: Connection is made over multimode fiber cable. Singlemode: Connection is made over singlemode fiber cable.
Channel count:	Number of services carried. Client to client connections are typically 1 channel. For CWDM and DWDM transceivers the number indicates number of available wavelength versions.
Cable type:	Ribbon-fiber: Optical cable with multiple fibers and MPO (Multi-fiber Push On) connectors. Fiber-pair: One fiber used for transmit and one fiber for receive direction. Single-fiber: One fiber used for both transmit and receive direction. Breakout cable: Special cable to separate individual flows contained in one connector to individual connectors. Can be optical or electrical.
Connector:	Optical transceivers have one or two optical connectors, e.g. LC. Cable solutions have connectors of a transceiver form-factor, e.g. SFP+.
Typical reach:	The nominal bridgeable distance. For optical transceivers the value is without optical path penalties, e.g. chromatic dispersion. For cable solutions where multiple distance options exist, the given distance is the max length.
Protocols:	Protocols supported by the transceiver/cable.
i/f standards:	Indicates if a product complies with an interface standard.
I-temp:	The product is available in a version that supports the Industrial temperature range (-40 to +85ºC). The normal temperature range is 0 to +70ºC.
E-temp:	The product is available in a version that supports extended temperature range. There is no standard for the supported temperature range. The normal temperature range is 0 to +70ºC.
FEC required:	Some protocols require Forward Error Correction to provide transmission with required quality. This is an informative remark since this is stipulated in the respective standards.
DAC:	Direct Attach Cable (coax). Can be active (ACU in item number) or passive (PCU in item number).
AOC:	Active Optical Cable (fiber). AOC in item number.

Subject to change without notice.
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