

SV-QSFP-400G-ZR+

Starview QSFP56-DD Single rate
 400Gbps DCO module single channel
 tunable coherent 400G-ZR+



Features

- Support Flex-grid channel spacing DWDM in C-band
- Support Client-side Interfaces: 1*400GAUI-8/4*100GAUI-2
- Support Line-side DP-16QAM with oFEC(OpenZR+)
- Standard QSFP-DD Type 2 form factor
- 76pin QSFP-DD MSA compliant connector
- Compliant to CMIS 4.0
- Compliant to OIF Implementation Agreement for Coherent CMIS, Rev 01.1
- OpenZR+ Specifications
- RoHS compliant

Applications

- Data Center Interconnect
- 400G Ethernet

Part number	Description
SV-QSFP-400G-ZR+	Starview QSFP56-DD Single-rate 400Gbps DCO module, Single Channel tuneable coherent DWDM C-Band 400G-ZR+ oFEC SM (LC) with Digital Diagnostic Monitoring (DDM), distance up to 480km, support 400GAUI-8 / 100GUI-2

Absolute Maximum Ratings

Parameter	Min	Max	Unit	Note
Storage Temperature	-40	85	°C	
Storage Humidity (Relative)	-	85	%	no-Condensing
Case Temperature	0	75	°C	
Operating Humidity (Relative)	-	85	%	no-Condensing
Short term Operating Case Temperature		80	°C	<24 hours
Power Supply Absolute Range	-0.3	3.63	V	
RX Optical Maximum Input Power	-	10	dBm	

Recommended Operating Conditions

Parameter	Min	Max	Unit	Note
Operating Case Temperature	0	70	°C	
Operating Humidity (Relative)	-	85	%	no-Condensing
Power Supply Operating Range	3.135	3.465	V	
RX Optical Input Power	-	0	dBm	

Power Supply Specifications

Parameter	Min	Typ.	Max	Unit	Note
3.3V DC Power Supply Voltage	3.135	3.3	3.465	V	
3.3V DC Power Supply Current			7	A	
Power Dissipation			21	W	
Module Inrush Current			100	mA/us	
Turn-off Current	-100			mA/us	
Power Supply Noise			25	mV	

Low Speed Control and Sense Signals

Parameter	Symbol	Min	Max	Unit	Condition
SCL and SDA	VOL	0	0.4	V	IOL(max)=3 mA for fast mode, 20 mA for Fast-mode plus
SCL and SDA	VIL	-0.3	Vcc * 0.3	V	
	VIH	Vcc * 0.7	Vcc + 0.5	V	
Capacitance for SCL and SDA I/O signal	Ci		14	pF	
Total bus capacitive load for SCL and SDA	Cb		100	pF	For 400 kHz clock rate use 3.0k Ohms Pull-up resistor, max.
			200	pF	For 400 kHz clock rate use 1.6k Ohms Pull-up resistor,

					max.
LPMode, ResetL, ModSelL and ePPS	VIL	-0.3	0.8	V	
	VIH	2	V _{cc} + 0.3	V	
LPMode, ResetL and ModSelL	I _{in}		360	uA	0V<V _{in} <V _{cc}
	ePPS		TBD	uA	0V<V _{in} <V _{cc}
IntL	VOL	0	0.4	V	IOL=2.0 mA
	VOH	V _{cc} - 0.5	V _{cc} + 0.3	V	10k Ohms pull-up to Host V _{cc}
ModPrsL	VOL	0	0.4	V	IOL=2.0 mA
	VOH			V	ModPrsL can be implemented as a short-circuit to GND on the module

Electrical Characteristics

Parameter	Min	Typ.	Max	Unit	Note
Electrical Characteristics for Transmitter					
Signal Rate, each Lane		26.5625±100ppm		GBaud	
Differential Peak-Peak Input Voltage Tolerance			900	mVpp	
Electrical Characteristics for Transmitter					
Signal Rate, each Lane		26.5625±100ppm		GBaud	
Differential Peak-Peak Input Voltage Tolerance		750	900	mVpp	
Transition Time, 20% to 80%		9.5		ps	

Optical Transmitter Specifications

Parameter	Min	Typ.	Max	Unit	Notes
Transmitter Frequency Range	191.3	193.7	196.1	THz	C band 75GHz ITU-T grid. Frequency range over which the specifications hold unless noted otherwise.
Laser Frequency Stability	-1.8		1.8	GHz	Frequency stability relative to ITU grid.
Laser Frequency Accuracy	-1.8		1.8	GHz	
Laser Frequency Fine Tuning Range	-6.0		6.0	GHz	
Fine Tuning Resolution		100		MHz	
Channel Tuning Speed	-		60	s	
Laser LineWidth			100	kHz	
Transmitter Output Power Range	-10		-6	dBm	

Transmitter Laser Disable Time		180	ms	
Output Power Stability	-0.5	0.5	dB	Difference over temperature, time, wavelength and aging.
Output Power Accuracy	-2	2	dB	Difference between the set value and actual value over aging.
Transmitter Turn-up Time from Cold Start	-	120	s	
Transmitter OSNR (Inband)	34	-	dB/0.1nm	
Transmitter Back Reflectance	-	-24	dB	
Transmitter Output Power with TX Disabled	-	-20	dBm	
Transmitter Polarization Dependent Power	-	1.5	dB	Power difference between X and Y polarization

Optical Receiver Specifications

Parameter	Min	Typ.	Max	Unit	Notes
Receiver Frequency Range	191.3	193.7	196.1	THz	
Input Power Range	-12		0	dBm	Signal power of the channel at the OSNR Penalty < 0.5dB
OSNR Sensitivity		22	24	dB/0.1nm	
Receiver Sensitivity			-20	dBm	Input power needed to achieve post FEC BER < 1E-15 when OSNR Tolerance > 26dB/0.1nm
Los Assert	-24		-20	dBm	
Los Hysteresis	1.0		2.5	dB	
CD Tolerance	9000			ps/nm	Tolerance to Chromatic Dispersion.
PMD Tolerance	20			ps	Tolerance to PMD with < 0.5 dB penalty to OSNR sensitivity.
Peak PDL Tolerance	3.5			dB	Tolerance to peak PDL with < 1.3 dB penalty to OSNR sensitivity when change in SOP is < =1 rad/ms.
Tolerance to Change in SOP	50		-	rad/ms	
Input Power Transient Tolerance	-2		2	dB	Tolerance to change in input power with < 0.5 dB penalty to OSNR sensitivity.
Input Power Reading Accuracy	-2		2	dB	
Optical Return Loss	-20			dB	Optical reflectance at Rx connector input.
Receiver Turn-up Time from Cold Start	-		120	s	From module reset, with valid optical input signal present.