

**40 Gb/s (4x10 Gb/s)  
850 nm, Multimode, 300 m  
QSFP+ MPO Package**

**Description**

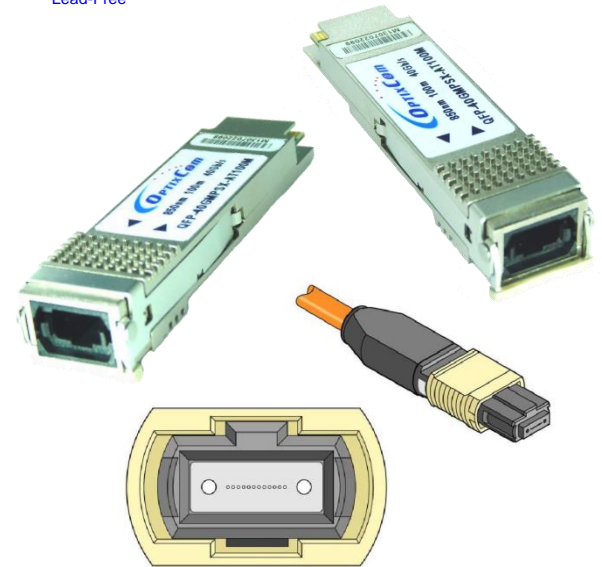
OptixCom's 40 Gb/s QSFP+ is a 4-lane parallel pluggable fiber optics transceiver designed with advanced 850 nm VCSEL laser arrays and high speed electronics to achieve the optimum performance for optical interconnect applications. It is compliant with 40G Ethernet standard and QSFP+ Multi-Source Agreement (MSA) SFF-8436 for datacom applications.

The transceiver uses an 8-fiber MPO multimode connector interface to transmit and receive 4 lanes of 10 Gb/s optical data respectively. It is hot pluggable in the z-axis with a 38-pin connector. The transceiver has 3-11 dB of power budget and reaches up to 300 meters of transmission distance with OM3 multimode fibers. The product is RoHS compliant. Total power consumption is < 0.7W.



Lead-Free

**QFP-40GSR4-AT300M**



**Key Features**

- 850 nm multimode, 40 Gb/s data rate
- 4-channel duplex transceiver; 10 Gb/s each lane
- 300 m with OM3 MMF and 400 m with OM4 MMF
- 3-11 dB power budget
- Single 8-fiber MPO connector optical interface
- 38-pin Z-axis hot pluggable connector
- Compliant with QSFP+ MSA standard
- Compliant with IEEE 802.3ba, 40GBASE-SR
- Single 3.3V power supply
- RoHS compliant

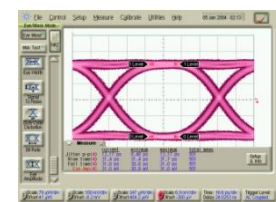
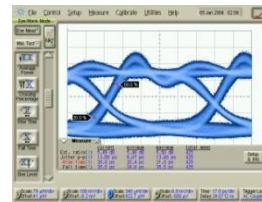
**Applications**

- ✓ 40G Fiber Channel and Ethernet
- ✓ InfiniBand 4X SDR DDR QDR
- ✓ Data Communication for SAN and LAN
- ✓ Central offices routers and switches
- ✓ Mass storage systems interconnect
- ✓ Computer cluster cross-connect

10 Gb/s, 2<sup>23</sup>-1 NRZ data eye pattern

TX

RX



**Ordering Information**

**Part Number:** QFP-40GSR4-AT300M

**Description:**

QSFP+, 850 nm 40 Gb/s, multimode MPO fiber optics transceiver, 300 m reach, 0-70°C

**Operating Conditions**

Parameter	Min.	Typical	Max.	Units
Operate Temperature	0	25	70	°C
Data Rate (Each Lane)	---	10.3	11.1	Gb/s
Supply Voltage	3.14	3.3	3.46	V
Supply Current	---	---	200	mA

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	$T_{st}$	-40	85	°C
Supply Voltage	$V_{CC}$	-0.3	4	V
Input Voltage	$V_{IN}$	$V_{CC}-0.3$	$V_{CC}+0.3$	V
Relative Humidity	$R.H.$	5	95	%
Output Current	$I_o$	---	50	mA

### Transmitter Electro-Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Units
Differential Input Voltage <sup>1</sup>	$\Delta V_i$	0.3	---	1.0	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	ohm
Optical Output Power <sup>3</sup>	$P_o$	-7.5	---	1.0	dBm
Optical Power Difference BTW Lanes (OMA)	$P_{od}$	---	---	4	dBm
Transmitter & Dispersion Penalty	$TDP$	---	---	3.5	dB
Optical Wavelength	$\lambda_o$	840	850	860	nm
Extinction Ratio	$ET$	3	---	---	dB
Spectral Width (rms)	$\Delta\lambda$	---	---	0.65	nm
Skew	$T_{sw}$	---	---	300	ps
TX Disable Asserted	$P_{OFF}$	---	---	-30	dBm
Input Voltage – Logic High	$V_{DH}$	2.0	---	$V_{CC}$	V
Input Voltage – Logic Low	$V_{DL}$	0	---	0.4	V
Reset Initial Assert Time	$T_{rsass}$	---	---	2	μs
Reset Assert Time	$T_{riass}$	---	---	2000	ms
Time to Initialize	$T_{ini}$	---	---	2000	ms
TX Fault Assert Time	$T_{fxass}$	---	---	200	ms
Flag Assert Time	$T_{fgass}$	---	---	200	ms

Notes:

1. Module is designed for AC coupling. DC voltage will be filtered by internal capacitors.
2. Single ended will be 50 ohm for each signal line.
3. Output of coupling optical power into 50/125 μm MMF.
4. Refer to OptixCom "QSFP Design Reference Guide" for more design details.

**Receiver Electro-Optical Characteristics**

Parameter	Symbol	Min.	Typical	Max.	Units
Operating Wavelength	$\lambda_c$	840	---	860	nm
Receiver Overload	$P_{max}$	2.4	---	---	dBm
Receiver Sensitivity <sup>1</sup>	$P_I$	---	---	-10	dBm
Stressed Receiver Sensitivity in OMA	$P_{IS}$	---	---	-5.4	dBm
LOS Hysteresis	$L_{hs}$	0.5	---	---	dB
Differential Output Voltage	$\Delta V_o$	0.3	---	0.8	V
Differential Input Impedance <sup>2</sup>	$Z$	---	100	---	Ohm
Optical Return Loss	OL	12	---	---	dB
Rise/Fall Time (20% - 80%)	$T_r/T_f$	---	---	40	ps
RX Signal Loss – Asserted	$P_{SD+}$	---	---	-12	dBm
RX Signal Loss – Deasserted	$P_{SD-}$	-30	---	---	dBm
Output Voltage – Logic High	$V_{RL+}$	2.0	---	$V_{CC}$	V
Output Voltage – Logic Low	$V_{RL-}$	0	---	0.4	V
RX LOS Assert Time	$T_{RL+}$	---	---	100	ms
RX LOS Deassert Time	$T_{RL-}$	---	---	100	ms
ModSel Assert Time	$T_{ModSelAss}$	---	---	100	$\mu$ s
ModSel Deassert Time	$T_{ModSelDea}$	---	---	100	$\mu$ s

Notes:

1. Test at 10 Gb/s, 2<sup>31</sup> – 1 PRBS data pattern, and > 1x10<sup>-12</sup> of Bit-Error-Rate (BER).
2. Single ended will be 50 ohm for each signal line.
3. Refer to OptixCom “QSFP Design Reference Guide” for more design details.

**Typical Transmission Distance for Multimode Fibers @ 850 nm**

Data Rate	Fiber Type	Distance (m)	Data Rate	Fiber Type	Distance (m)
10 Gb/s	OM4: 50 $\mu$ m, 3500 MHz*km	400	25 Gb/s	OM4: 50 $\mu$ m, 3500 MHz*km	150
	OM3: 50 $\mu$ m, 1500 MHz*km	300		OM3: 50 $\mu$ m, 1500 MHz*km	100
	OM1: 50 $\mu$ m, 500 MHz*km	82		OM1: 50 $\mu$ m, 500 MHz*km	---
	OM1: 62.5 $\mu$ m, 200 MHz*km	33		OM1: 62.5 $\mu$ m, 200 MHz*km	---