

## NT-QSF40G-SR4

40GBASE-SR4 QSFP+ Transceiver, MMF, 850nm, 150m, MPO

### Features

- 4 channels full-duplex transceiver modules
- Transmission data rate up to 10.5Gbps per channel
- 4 channels 850nm VCSEL array and PIN photo detector array
- Single MPO connector receptacle
- Hot Pluggable QSFP+ form factor
- Maximum link length of 100m on OM3 and 150m on OM4 Multimode
- Single +3.3V power supply
- Real Time Digital Diagnostic Monitoring
- Operating temperature range: 0 to 70°C
- RoHS Compliant and Lead-Free



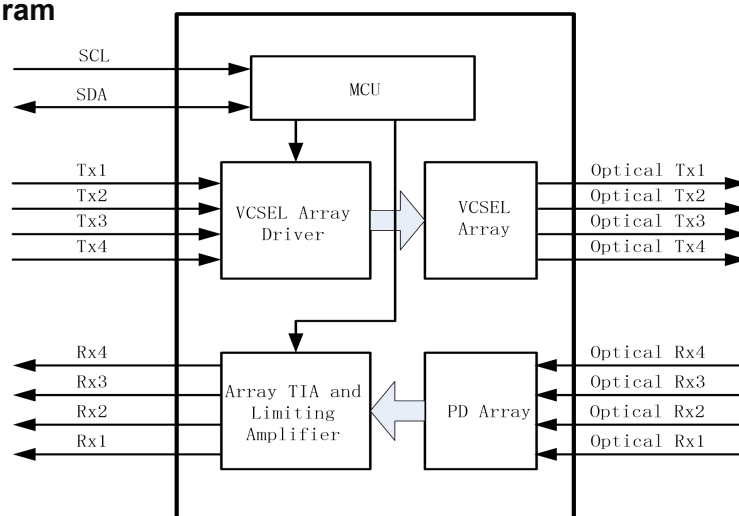
### Applications

- 40GBASE-SR4 Ethernet
- Switch, router and HBAs
- Infiniband transmission at 4 channels SDR, DDR and QDR
- High-performance Backplane Applications
- Proprietary Protocol Applications

### Description

Netiks NT-QSF40G-SR4 is designed for use in 40 Gigabit Ethernet (40GE) applications over multi-mode fiber. It is comply with QSFP+ MSA and IEEE 802.3ba 40GBASE-SR4 specifications. The QSFP+ SR4 transceiver integrates four data lanes in each direction with each lane to giving an aggregated 40 Gbps bandwidth. Each lane supports link lengths of 100m on OM3 multi-mode fiber or 150m on OM4 multi-mode fiber. The optical transmitter incorporates a 4-channel 850nm VCSEL laser, a 4-channel input buffer and laser driver, control and bias blocks. The optical receiver incorporates a 4-channel PIN photodiode, a 4-channel TIA array, a 4 channel output buffer, control blocks.

### Transceiver functional diagram



## Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Maximum Supply Voltage	V <sub>cc</sub>	-0.5	4.5	V	
Storage Temperature	T <sub>s</sub>	-40	85	°C	
Operating Humidity	RH	5	95	%	

## Recommended Operating Conditions

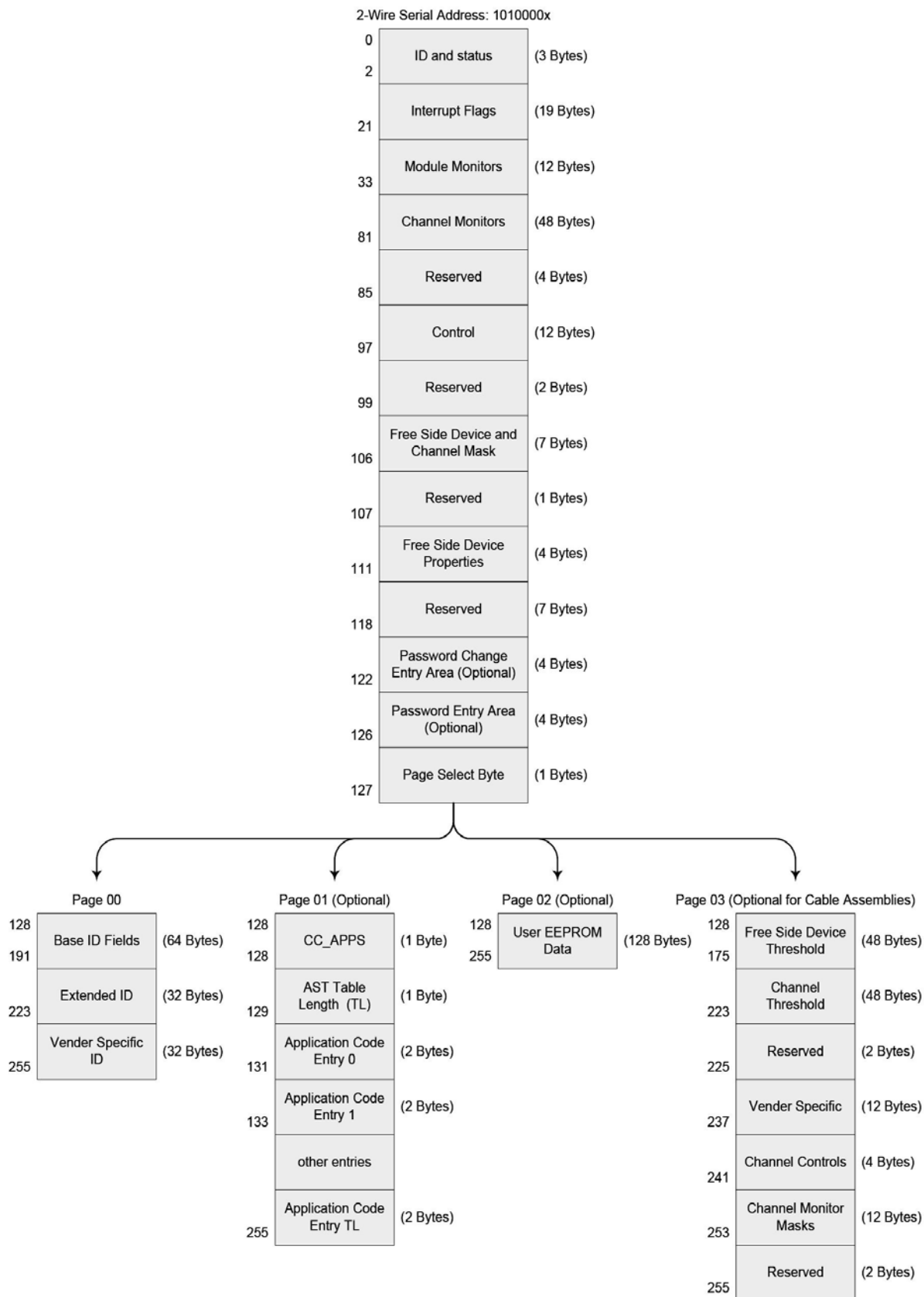
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V <sub>cc</sub>	3.13	3.3	3.47	V	
Power Dissipation	P <sub>m</sub>			1.5	W	
Case Operating Temperature	T <sub>c</sub>	0		70	°C	
Data Rate			10.3	10.5	Gbps	Each channel
Bit Error Rate	BER			10 <sup>-12</sup>		

## Optical and Electrical Characteristics

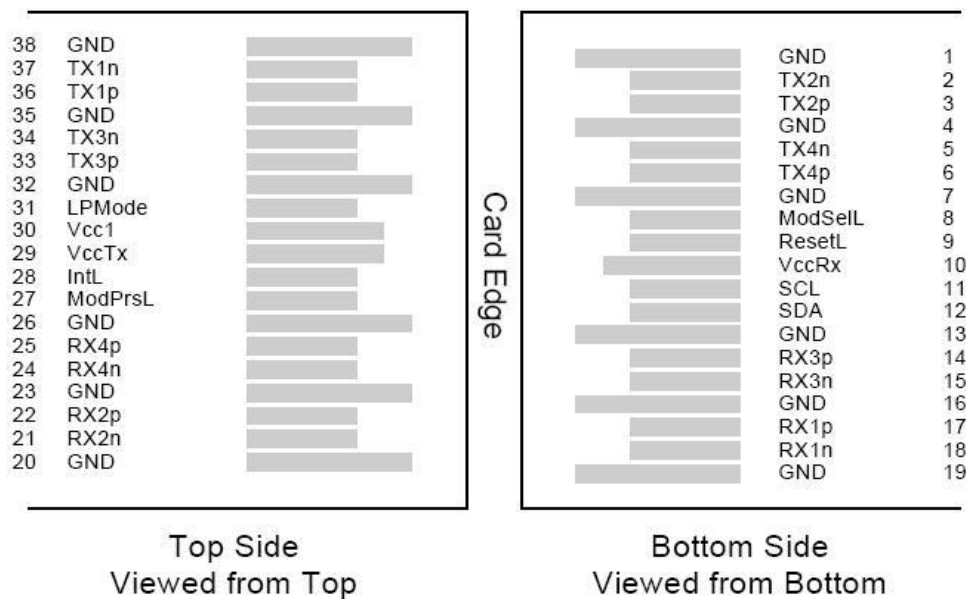
Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	λ <sub>c</sub>	840	850	860	nm	
RMS spectral width	Δλ	-	-	0.65	nm	
Average launch power, each lane	P <sub>out</sub>	-7.6		1.0	dBm	
Optical Modulation Amplitude, each lane	P <sub>oma</sub>	-5.6		3	dBm	
Extinction Ratio	ER	3.0			dB	
Average launch power of OFF transmitter, each lane	P <sub>off</sub>			-30	dBm	
Data Input Swing Differential	V <sub>IN</sub>	90		1600	mV	
Input Differential Impedance	Z <sub>IN</sub>	80	100	120	Ω	
<b>Receiver</b>						
Centre Wavelength	λ <sub>c</sub>	840		860	nm	
Damage threshold	TH <sub>d</sub>	3.4			dBm	
Average power at receiver input, each lane		-9.5		2.4	dBm	
Optical Modulation Amplitude(OMA), each lane				3	dBm	
Stressed receiver sensitivity in OMA, each lane				-5.4	dBm	
Receiver Sensitivity per Channel	SEN		-13		dBm	
LOS De-Assert	LOS <sub>D</sub>			-12	dBm	
LOS Assert	LOS <sub>A</sub>	-30			dBm	
LOS Hysteresis		0.5			dB	

## Digital Diagnostic Memory Map

The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA). The digital diagnostic memory map specific data field defines as following.



## Pin Descriptions



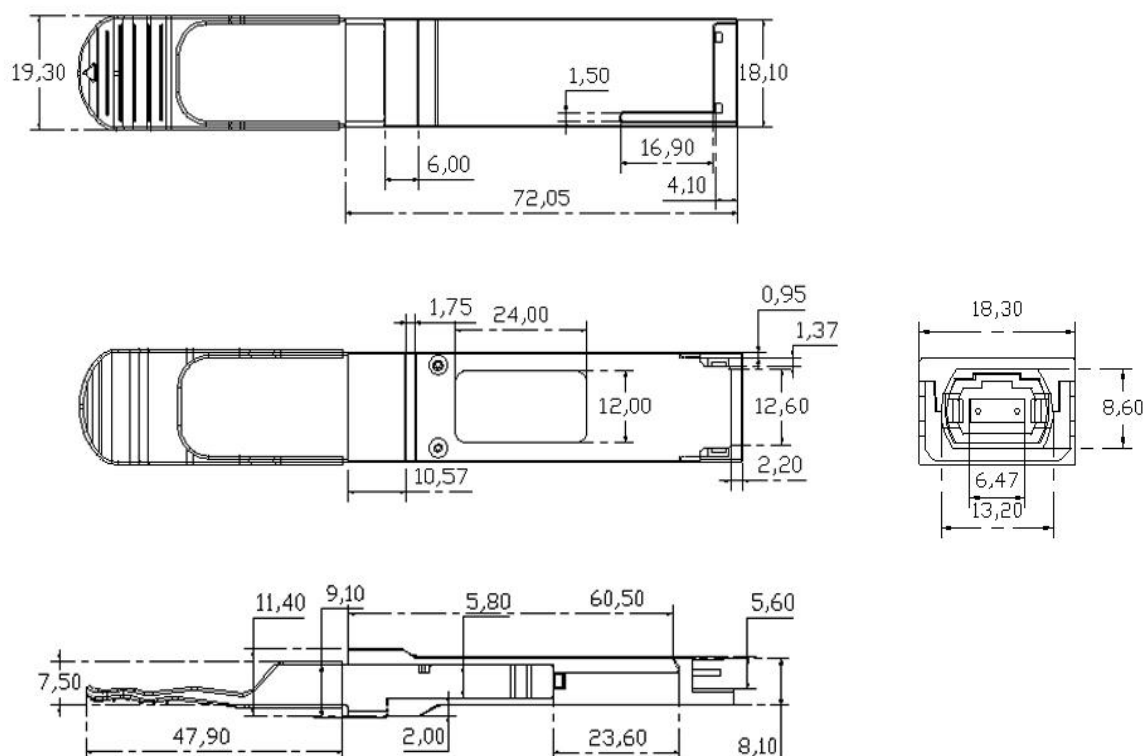
PIN	Logic	Symbol	Name/Description	Note
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data output	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data output	
7		GND	Ground	1
8	LVTLL-I	ModSelL	Module Select	
9	LVTLL-I	ResetL	Module Reset	
10		VccRx	+ 3.3V Power Supply Receiver	2
11	LVC MOS-I/O	SCL	2-Wire Serial Interface Clock	
12	LVC MOS-I/O	SDA	2-Wire Serial Interface Data	
13		GND	Ground	
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	1

25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3 V Power Supply transmitter	2
30		Vcc1	+3.3 V Power Supply	2
31	LVTTL-I	LPMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Output	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Output	
38		GND	Ground	1

#### Notes:

1. GND is the symbol for signal and supply (power) common for QSFP modules. All are common within the QSFP module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal common ground plane.
2. VccRx, Vcc1 and VccTx are the receiver and transmitter power suppliers and shall be applied concurrently. Recommended host board power supply filtering is shown below. Vcc Rx, Vcc1 and Vcc Tx may be internally connected within the QSFP transceiver module in any combination. The connector pins are each rated for a maximum current of 500mA.

#### Mechanical Dimensions



## Ordering information

Part number	Description
NT-QSF40G-SR4	40GBASE-SR4 QSFP+ Transceiver, Multimode, 850nm, 150m, MPO, DDM, 0°C~+70°C

## Warnings

### Process plug

The transceiver optics is supplied with a dust cover. This plug protects the transceiver optics during standard manufacturing processes by preventing contamination from air borne particles. It is recommended that the dust cover remain in the transceiver whenever an optical fiber connector is not inserted.

### Handling Precautions

The transceiver optics is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.

### Laser Safety

The transceiver optics is a Class 1 laser product per international standard IEC 60825-1. Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

## Standards

Netiks optical transceivers comply with the requirements set out in the Council Directive relating to Electromagnetic Compatibility Directive on (2014/30/EU). For the evaluation regarding the EMC, the following standards were applied:

**EN 55032 (2012+AC: 2013)**

**EN 61000-3-2 (2014)**

**EN 61000-3-3 (2013)**

**EN 55024 (2010)**

For more product information, visit us on the web at [www.netiks.rs](http://www.netiks.rs)



Copyright © 2021 Netiks. All rights reserved. NT-QFP and Netiks logo are registered trademarks of Netiks Co., Ltd. All other brands, product names, or trademarks mentioned are the property of their respective owners. Specifications and product availability are subject to change without notice. Netiks assumes no responsibility for inaccuracies contained herein.

