

OHP3G-R40xCR

MSA 3Gb/s SDI Digital Video SFP Single Channel Optical Receiver Module, 1260~1610nm

Features

- SMPTE 297-2006 Compatible Features
- Speed from 50 Mbps to 3Gbps
- Receiver Sensitivity <-20dBm for 3G-SDI
- Support Video Pathological Patterns for SD-SDI, HD-SDI and 3G-SDI
- Single PIN photodetector Receiver
- Hot-pluggable SFP
- Digital Diagnostic functions available through the I2C interface
- Single +3.3V power supply
- Low Power Consumption
- RoHS compliant
- Operating case temperature: 0 to +70°C



Applications

- SMPTE 424M/297M (2.97Gb/s)
- SMPTE 292M/297M (1.485Gb/s)
- SMPTE 259M/297M (270/360Mb/s)
- High-density Video Router
- Broadcast cameras
- OC-48 and 2x Fiber Channel
- Gigabit Ethernet

Description

Optcore OHP3G-R40XCR is high performance, cost effective 3G-SDI optical receiver modules for single channel video transmission application over single mode fiber (SMF). It provide the data rates from 50Mbps to 2.97Gbps and is specifically designed for robust performance in the presence of SDI pathological patterns for SMPTE 259M, SMPTE 344M, SMPTE 292M and SMPTE 424M serial rates. It provide maximum transmission distance of 40km over single mode fiber at 3Gbps pathological signals (need use with OHP3G-T5540xCR or OHPC3G-Txx40xCR series). The Pin definition of OHP3G-R40XCR is MSA compliant.

The OHP3G-R40DCR provides extensive operational status monitoring (also called DDMI) through an I2C interface. Output optical power, bias current, supply voltage and operating temperature are monitored. If a parameter monitored is outside the pre-defined range, the alarm flag associated with the parameter will be raised. This 3G receiver module is Class I Laser products per FDA/CDRH and IEC-60825 standards.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units	Note
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Storage Temperature	Ts	-40	85	°C	-
Power Supply Voltage	Vcc	-0.5	4	V	-
Soldering Temperature	-	-	260	°C	10 seconds on leads only
Input Voltage	Vin	GND	Vcc	V	-

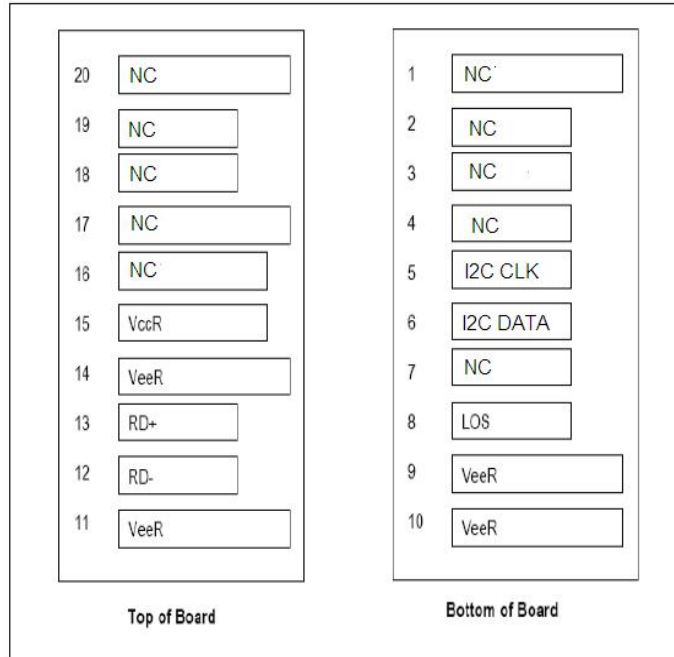
Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units
Power Supply Voltage	Vcc	3.1	3.3	3.5	V
Operating Temperature	Top	0	-	70	°C
Data Rate	-	-	2970	-	Mbps
Power Supply Current	Icc	-	200	300	mA

Receiver Specifications (0°C < Top < 70°C, 3.1V < Vcc < 3.5V)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Sensitivity for SMPTE-424M 2.97Gb/s	Sen	-	-	-20	dBm
Sensitivity for SMPTE-292M 1.485Gb/s	Sen	-	-	-22	dBm
Maximum Input Power(Saturation)	P _{MAX}	-3	-	-	dBm
Signal Detect – Asserted	P _a	-	-	-20	dBm
Signal Detect – Deasserted	P _d	-35	-	-	dBm
Signal Detect -- Hysteresis	P _{hys}	1	-	4	dB
Wavelength of Operation	λ	1260	-	1610	nm
Electrical					
Differential Output Voltage	V _{IL} –V _{CC}	0.4	-	2	V
Signal Detect Output Voltage-- Low	V _{SIL} –V _{CC}	-	-	0.8	V
Signal Detect Output Voltage-- High	V _{SIH} –V _{CC}	2.0	-	-	V

Pin Assignment



Pin Description

Pin No.	Name	Function	Plug Seq.	Notes
1	N.C.	Not Connected	1	
2	N.C.	Not Connected	3	1
3	N.C.	Not Connected	3	2
4	N.C.	Not Connected	3	
5	I2C CLK	SCL Serial Clock Signal	3	
6	I2C DATA	SDA Serial Data Signal	3	
7	N.C	Not Connected	3	
8	LOS	Loss of Signal	3	
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	
11	VeeR	Receiver Ground	1	
12	RD-	Inv. Received Data Out	3	
13	RD+	Received Data Out	3	
14	VeeR	Receiver Ground	1	
15	VccR	Receiver Power	2	
16	N.C.	Not Connected	2	
17	N.C.	Not Connected	1	
18	N.C.	Not Connected	3	
19	N.C.	Not Connected	3	

20	N.C.	Not Connected	1	
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Notes:

1. LOS is an open collector output, which should be pulled up with a 4.7K~10KΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates loss of signal. In the low state, the output will be pulled to less than 0.8V.
2. These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.

EEPROM Serial ID Memory Contents (A0h)

Data Address	Size (Bytes)	Name of Field	Contents(Hex)	Description
0	1	Identifier	03	SFP
1	1	Ext. Identifier	04	SFP function is defined by serial IDonly
2	1	Connector	07	LC Connector
3-10	8	transmitter	xx	transmitter codes
11	1	Encoding	03	NRZ
12	1	BR, nominal	1E	3Gbps
13	1	Reserved	00	
14	1	Length(9um)-km	xx	transmitter distance
15	1	Length (9um)	xx	
16	1	Length (50um)	xx	
17	1	Length (62.5um)	xx	
18	1	Length (copper)	00	
19	1	Reserved	00	
20-35	16	Vendor name	4F 50 54 43 4F 52 45 20 20 20 20 20 20 20 20 20	OPTCORE (ASC II)
36	1	Reserved	00	
37-39	3	Vendor OUI	00 00 00	
40-55	16	Vendor PN	xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	part number
56-59	4	Vendor rev	xx xx xx xx	ASC II
60-61	2	Wavelength	xx xx	transmitter wavelength
62	1	Reserved	00	
63	1	CC BASE	xx	Check sum of bytes 0-62
64-65	2	Options	00 1A	LOS, TX_FAULT and TX_DISABLE
66	1	BR, max	00	
67	1	BR, min	00	
68-83	16	Vendor SN	xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	SN: xxxxxxxxxx (ASC II)
84-91	8	Vendor date code		Year (2 bytes), Month (2 bytes), Day (2 bytes) (ASC II)

92	1	Diagnostic type	68	
93	1	Enhanced option	90	
94	1	SFF-8472	xx	
95	1	CC_EXT	xx	Check sum of bytes 64 - 94
96-127	32	Vendor specific		Vendor Specific EEPROM
128-255	128	Reserved		Reserved for future use.

Digital Diagnostic Functions

As defined by the SFP+ MSA, Optcore 3G SDI video SFP transceiver module provide optional digital diagnostic functions via a 2-wire serial interface, which allows real-time access to the following operating parameters:

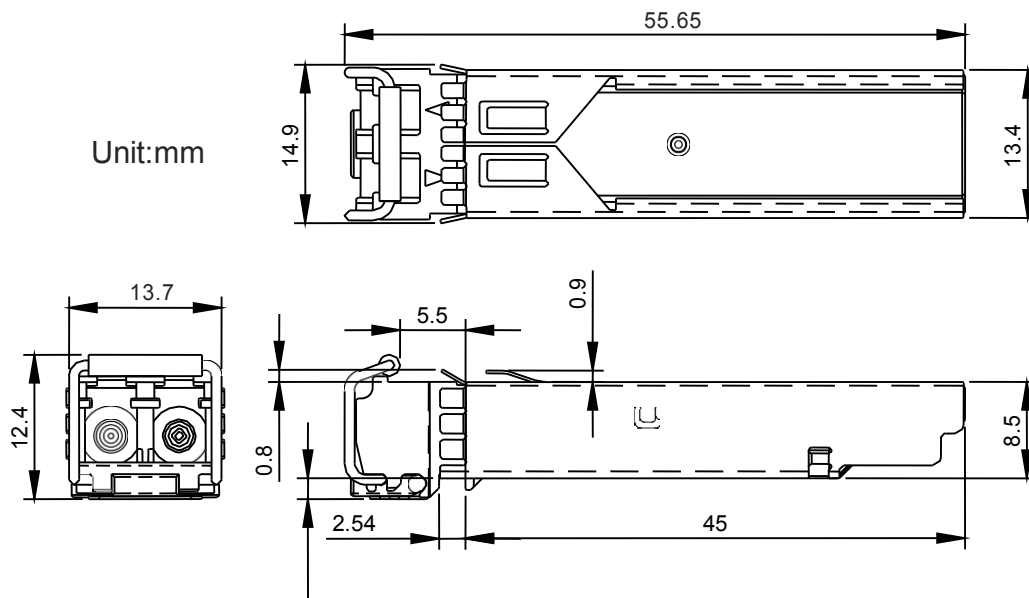
- Transceiver temperature
- Laser bias current
- Transmitted optical power
- Received optical power
- Transceiver supply voltage

It also provides a sophisticated system of alarm and warning flags, which may be used to alert end-users when particular operating parameters are outside of a factory-set normal range.

The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller (DDTC) inside the transceiver, which is accessed through the 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL pin) is generated by the host. The positive edge clocks data into the SFP+ transceiver into those segments of its memory map that are not write-protected. The negative edge clocks data from the SFP+ transceiver. The serial data signal (SDA pin) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially. The 2-wire serial interface provides sequential or random access to the 8 bit parameters, addressed from 000h to the maximum address of the memory.

For more detailed information including memory map definitions, please see the SFP+ MSA Specification.

Mechanical Dimensions



Ordering information

Part number	Description
OHP3G-R40NCR	MSA 3Gb/s SDI Single Channel Video SFP Receiver,SMF,1260~1610nm,40km,LC
OHP3G-R40DCR	MSA 3Gb/s SDI Single Channel Video SFP Receiver,SMF,1260~1610nm,40km,LC,with DDM

Warnings

Handling Precautions: This device 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: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

For more product information,visit us on the web at www.optcore.net



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