

OHP3G-T5540xCR

MSA Compliant 3Gb/s Digital Video SFP Single Channel Optical Transmitter Module for SDI,1310nm,40km

Features

- SMPTE 297-2006 Compatible Features
- Speed from 50 Mbps to 3 Gbps
- Distance up to 40km for 3G-SDI over Single-mode Fiber
- Support Video Pathological Patterns for SD-SDI,HD-SDI & 3G-SDI
- Single 1550nm DFB laser
- Hot-pluggable SFP
- Optional Digital Diagnostic functions available through I2C interface
- Pinout compliant with SFP MSA
- 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

Description

Optcore's OHP3G-T5540xCR are high performance, cost effective single channel optical transmitter for single channel video transmission application over single mode fiber (SMF). The optical transmitter module is designed for 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 under worst case conditions and 2.97Gbps pathological signals.

The OHP3G-T5540DCR 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.The OHP3G-T5540xCR is Class 1 laser product per FDA 21CFR 1040.10, 1040.11 and IEC-60825 standards.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Units	Note
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

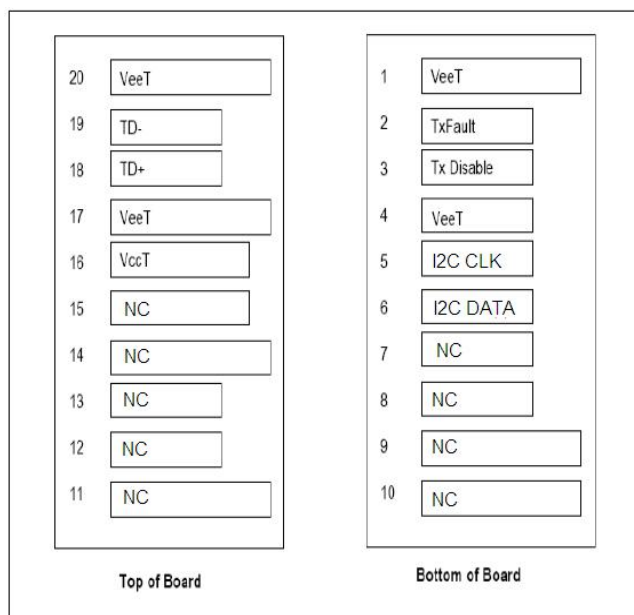
Transmitter Specifications (0°C < Top < 70°C, 3.1V < Vcc < 3.5V)

Parameter	Symbol	Min.	Typ.	Max.	Units
Optical					
Optical Transmit Power	Po	-2	-	3	dBm
Optical Center Wavelength	λ_c	1530	1550	1580	nm
Spectral Width (-20dB)	σ	-	-	1	nm
Extinction Ratio	ER	6	-	-	dB
Optical Rise Time/Fall Time	tr/ta	-	-	135	Ps (1)
Electrical					
Differential Input Voltage	V _{IH} -V _{IL}	0.3	-	2.2	V
TX Disable Input Voltage—Low	T _{DIS,L}	0	-	-0.8	V
TX Disable Input Voltage—High	T _{DIS,H}	2.0	-	V _{CC}	V
TX Disable Assert Time	T _{ASSERT}	-	-	10	μs
TX Disable Deassert Time	T _{DEASSERT}	-	-	1	ms
TX Fault Output Voltage -- Low	T _{FAULT,L}	0	-	-0.8	V
TX Fault Output Voltage -- High	T _{FAULT,H}	2.0	-	V _{CC}	V

Note:

1. 20%~80%, Measured @2.97Gb/s and differential input data

Pin Assignment



Pin Descriptions

Pin No.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	1
3	TX Disable	Transmitter Disable	3	2
4	VeeT	Transmitter Ground	3	3
5	I2C CLK	SCL Serial Clock Signal	3	3
6	I2C DATA	SDA Serial Data Signal	3	3
7	N.C.	Not Connected	3	
8	N.C.	Not Connected	3	
9	N.C.	Not Connected	1	
10	N.C.	Not Connected	1	
11	N.C.	Not Connected	1	
12	N.C.	Not Connected	3	
13	N.C.	Not Connected	3	
14	N.C.	Not Connected	1	
15	N.C.	Not Connected	2	
16	VccT	Transmitter Power	2	
17	VeeT	Transmitter Ground	1	
18	TD+	Transmit Data In	3	
19	TD-	Inv Transmit Data In	3	
20	VeeT	Transmitter Ground	1	

Notes:

1. TX Fault 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 a laser fault of some kind. In the low state, the output will be pulled to <0.8V.

2. TX Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7K~10KΩ resistor. Its states are:

Low (0~0.8V): Transmitter on

(>0.8V, <2.0V): Undefined

High (2.0~3.465V): Transmitter Disabled

Open: Transmitter Disabled.

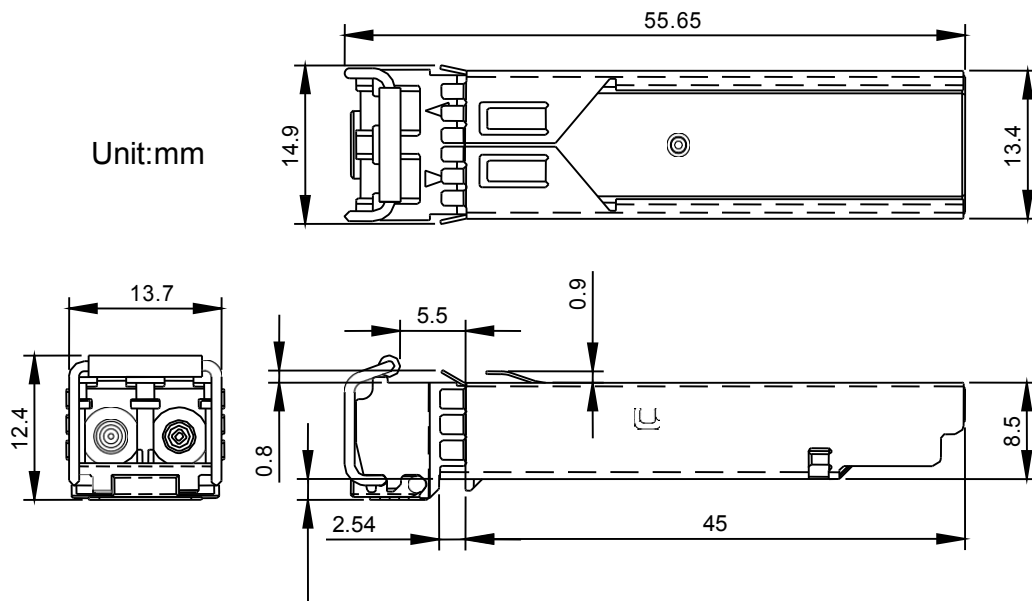
3. TD-/+ : These are the differential transmitter inputs. They are AC coupled differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on host board.

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 ID only
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	SN: xxxxxxxxx (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.

Mechanical Dimensions



Ordering information

Part number	Description
OHP3G-T5540NCR	3G Video SFP Single Channel Optical Transmitter,1550nm,SMF,40km,LC
OHP3G-T5540DCR	3G Video SFP Single Channel Optical Transmitter,1550nm,SMF,40km,LC,with DDMI

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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