

3Gb/s MSA CWDM 40km Dual Transmitters SFP Transceiver Module

CWDM-SFP3GDT-40



Application

- SMPTE 259M/292M/424M Compliant Electrical-to-Optical Interfaces
- HDTV/SDTV Fibre Channel Applications

Features

- CWDM Laser Diode Transmitter
- Up to 40 km on 9/125µm SMF
- 3.3V Power Supply
- LC Duplex Optical Interface
- CML Differential Inputs
- Support Video Pathological Patterns for SD-SDI, HD-SDI and 3G-SDI
- Class 1 Laser International Safety Standard IEC 825 Compliant
- Operating Case Temperature: 0°C to 70°C

Description

The FS CWDM-SFP3GDT-40 dual transmitter series of modules are the perfect solution for high -speed communication networks.

These transmitters are dual-channel optical emission modules. Support data rates from 270Mbps to 2.97Gbps. They are specifically designed for the application of serial rates of SMPTE 259M, SMPTE 344M, SMPTE 292M and SMPTE 424M in the presence of SDI pathological patterns. These modules comply with SMPTE 297-2006.

These transmitter modules provides the system designer with Camera, Video, Security Monitoring and other Fibre Channel applications.

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	TST	-40	85	°C	-
Power Supply Voltage	VCC	0	3.6	V	-
Relative Humidity (non-condensation)	RH	5	95	%	-

II. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Note
Supply Voltage	VCC	3.1	3.3	3.5	V	-
Supply Current Perend	ICC	-	-	360	mA	-
Operating Case Temperature	Top	0	-	70	°C	-
Data Rate	B	270	-	3000	Mbps	-

III. Transmitter Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
Data Rate	B	270	-	3000	Mbps	-
Output Center Wavelength	λ_C	Typ-3	-	Typ+3	nm	-
Output Spectral width (-20dB)	λ	-	1270~1430	1.0	nm	-
Average Optical Output Power	Po	0	-	0	dBm	1,2
Extinction Ratio	ER	5	-	-	dB	1,2
Optic Output Eye: Compliant ITU-T G.957						

Note1: The optical power is launched into 9/125μm SMF.

Note2: With a PRBS 2²³-1 test pattern@ 3000Mbps.

IV. Transmitter Electrical Characteristics

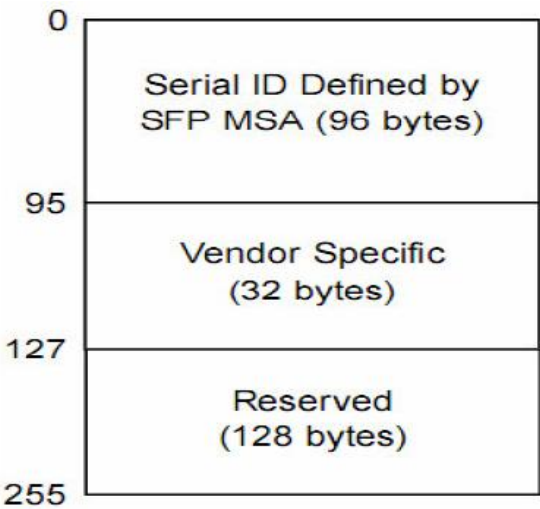
Parameter		Symbol	Min	Typical	Max	Unit	Note
Supply Voltage		VCC	3.1	3.3	3.5	V	-
Supply Current		ICC	-	-	360	mA	-
Differential Input Voltage		VOUT	400	-	1800	mV _{p,p}	-
Input Differential Impedance		ZOUT	80	100	120	Ω	-
TX_DISABLE	Disable	VD	2.0	-	VCC	V	-
	Enable	VEN	0	-	0.8	V	-
TX_Fault	Fault	VF	2.0	-	VCC	-	-
	Normal	VN	0	-	0.8	V	-

V. EEPROM Information Functions

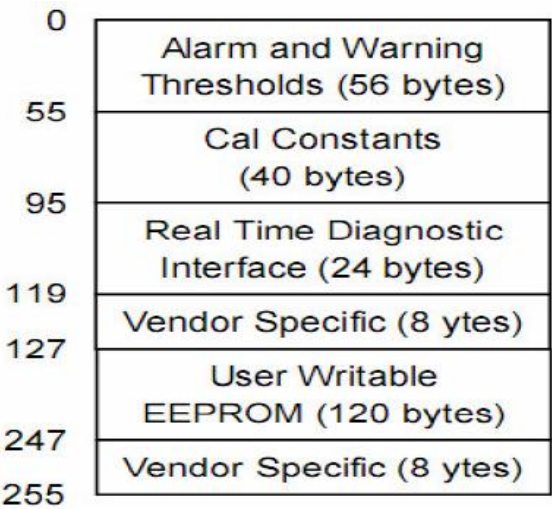
Serial ID provides access to identification information that describes the transceiver’s capabilities, standard interfaces, manufacturer, and other information.

SFF transceivers provide digital diagnostic monitoring interface, which allows real- time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, and received optical power and transceiver supply voltage.

Defines a 256 byte memory map in E2PROM that is accessible over a 2- wire serial interface at the 8 bit address 1010000X (A0h). The digital diagnostic monitoring interface makes use of the 8 bit address 1010001X (A2h), The interface is identical to, and compatible with both the GBIC Specification and the SFP Multi Source Agreement. The complete interface is described in “Digital Diagnostics Monitoring Interface for SFF Optical Transceivers”.



2 wire address 1010000x (A0h)



2 wire address 1010001x (A2h)

VI. EEPROM Serial ID Memory Contents

Data Address	Size (Byte)	Name of Field	Description
Base ID Fields			
0	1	Identifier	SFP
1	1	Ext. Identifier	SFP Function is Defined by Serial ID Only
2	1	Connector	LC Connector
3-10	8	Transceiver	Transceiver Codes
11	1	Encoding	NRZ
12	1	BR, Nominal	3000Mbps
13	1	Reserved	-
14	1	Length(9μm)km	Transceiver Transmit Distance
15	1	Length(9μm)100m	Transceiver Transmit Distance
16	1	Length(50μm)10m	Transceiver Transmit Distance
17	1	Length(62.5μm)10m	Transceiver Transmit Distance
18	1	Length(Copper)	Not Compliant
19	1	Reserved	-
20-35	16	Vendor Name	SFP Vendor Name: FS
36	1	Reserved	-
37-39	3	Vendor OUI	-
40-55	16	Vendor PN	Part Number: "CWDM-SFP3GDT-40"
56-59	4	Vendor rev	-
60-61	2	Wavelength	Transceiver Wavelength

Data Address	Size (Byte)	Name of Field	Description
62	1	Reserved	-
63	1	CC_BASE	Check Code for Base ID Fields
Extended ID Fields			
64-65	2	Options	TX_FAULT, TX_DISABLE and Loss of Signal Implemented
66	1	BR, Max	-
67	1	BR, Min	-
68-83	16	Vendor SN	Serial Number
84-91	8	Date Code	Manufactory Date Code
92	1	Diagnostic Monitoring Type	Digital Diagnostic Monitoring Implemented, "Internally Calibrated" is Implemented, RX Measurement Type is "Average Power".
93	1	Enhanced Options	Optional Alarm/Warning Flags Implemented for All Monitored Quantities, Optional Soft RX_LOS Monitoring Implemented.
94	1	SFF-8472 Compliance	Includes Functionality Described in Rev 9.3 SFF-8472.
95	1	CC_EXT	Check Sum for the Extended ID Fields
Vendor Specific ID Fields			
96-127	32	Vendor Specific	Vendor Specific EEPROM
128-255	128	Reserved	Reserved for SFF-8079

VII. Pin Definitions

Top of Board

20	TX1_DIS
19	TD1-
18	TD1+
17	VEETX1
16	VCCTX1
15	VCCTX2
14	VEETX2
13	NC
12	TX2_FAULT
11	VEETX2

Bottom of Board
(as Viewed Through
Top of Board)

1	VEETX1
2	TX1_FAULT
3	NC
4	VEETX1
5	SCL
6	SDA
7	VEETX2
8	TD2+
9	TD2-
10	TX2_DIS

VIII. Connector Pin Assignment

Pin #	Pin Name	Plug Seq.*	Description	Note
1	VEETX1	1	Transmitter 1 Ground	1
2	TX1_ FAULT	3	Transmitter 1 Fault Indication	5
3	NC	3	Not Connected	-
4	VEETX1	3	Transmitter 1 Ground	1
5	SCL	3	SCL Serial Clock Signal	3
6	SDA	3	SDA Serial Data Signal	3
7	VEETX2	3	Transmitter 2 Ground	1
8	TD2+	3	Transmit 2 Data In	6
9	TD2-	1	Inv. Transmit 2 Data In	6
10	TX2_DIS	1	Transmitter 2 Disable	4
11	VEETX2	1	Transmitter 2 Ground	1
12	TX2_ FAULT	3	Transmitter 2 Fault Indication	5
13	NC	3	Not Connected	-
14	VEETX2	1	Transmitter 2 Ground	1
15	VCCTX2	2	Transmitter Power 2 Supply	2
16	VCCTX1	2	Transmitter Power 1 Supply	2
17	VEETX1	1	Transmitter 1 Ground	1
18	TD1+	3	Transmit 1 Data In	6
19	TD1-	3	Inv. Transmit 1 Data In	6
20	TX1_DIS	1	Transmitter 1 Disable	4

Plug Seq.: Pin engagement sequence during hot plugging.

Note:

1. The module signal ground VEERX1 and VEERX2.
2. VCCR1 and VCCR2 are the receiver power supplies. They are defined as $3.3V \pm 5\%$ at the SFP connector pin.
3. SCL is the 2-wire interface clock and SDA is the 2-wire interface data line. They should be pulled up with 4.7-10 k Ω to Vcc on the host board.
4. 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~10k Ω resistor. Its states are:
 - Low (0 to 0.8V): Transmitter on
 - (0.8V to 2.0V): Undefined
 - High (2.0 to 3.465V): Transmitter Disabled
 - Open: Transmitter Disabled
5. TX Fault is an open collector output, which should be pulled up with a 4.7k~10k Ω 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 less than 0.8V.
6. TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100 Ω differential termination inside the module.

IX. Host Board Layout

Notes:

1. Datum and basic dimensions established by customer
2. Pads and vias are chassis ground, 11 places
3. Thru holes, plating optional

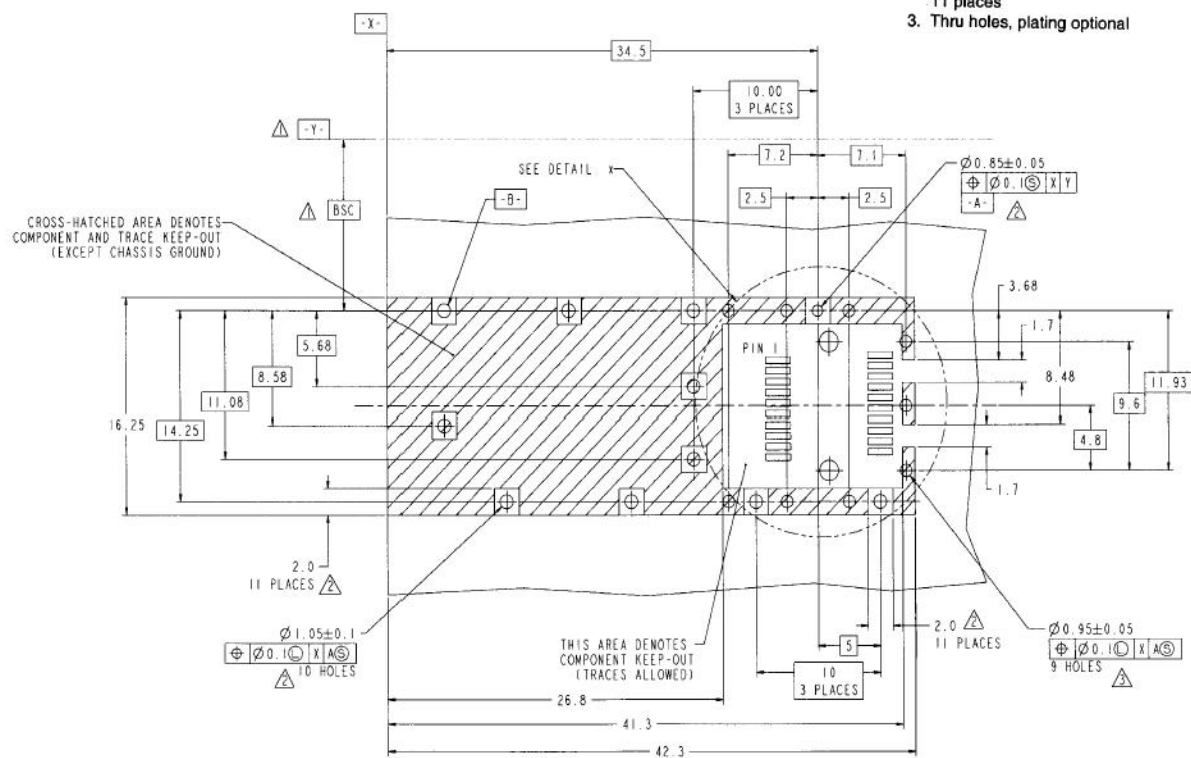


Figure1. SFP Host Board Mechanical Layout

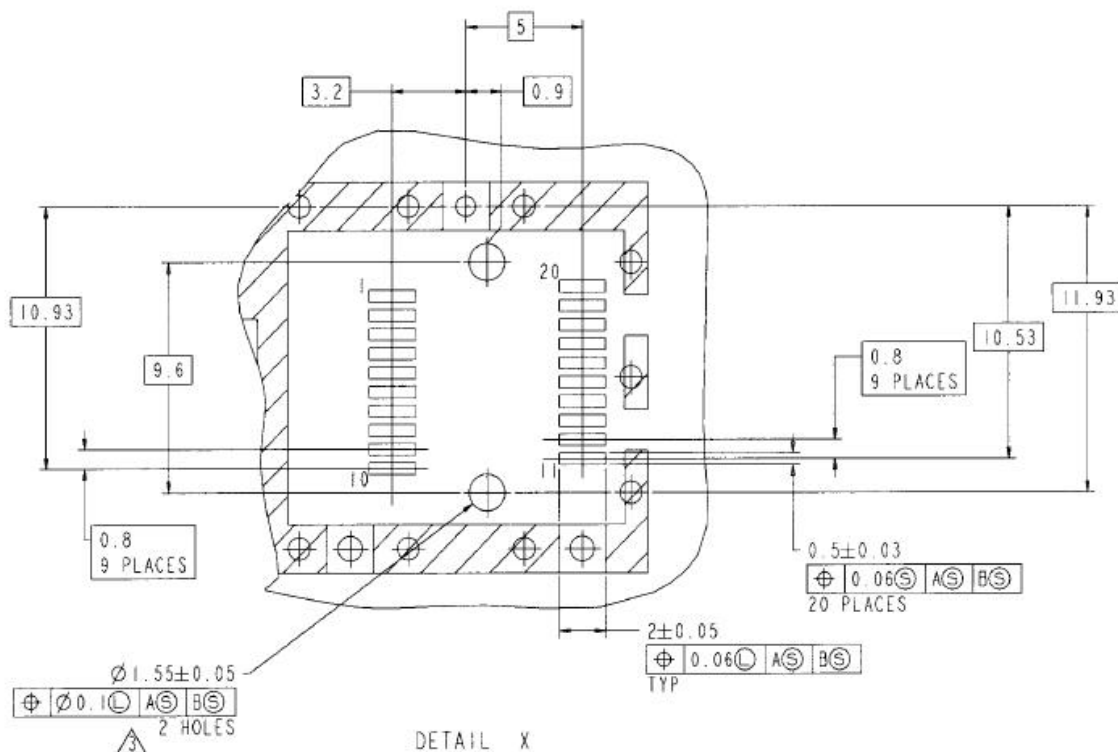


Figure2. SFP Host Board Mechanical Layout (Cont.)

X. Recommended Circuit Schematic

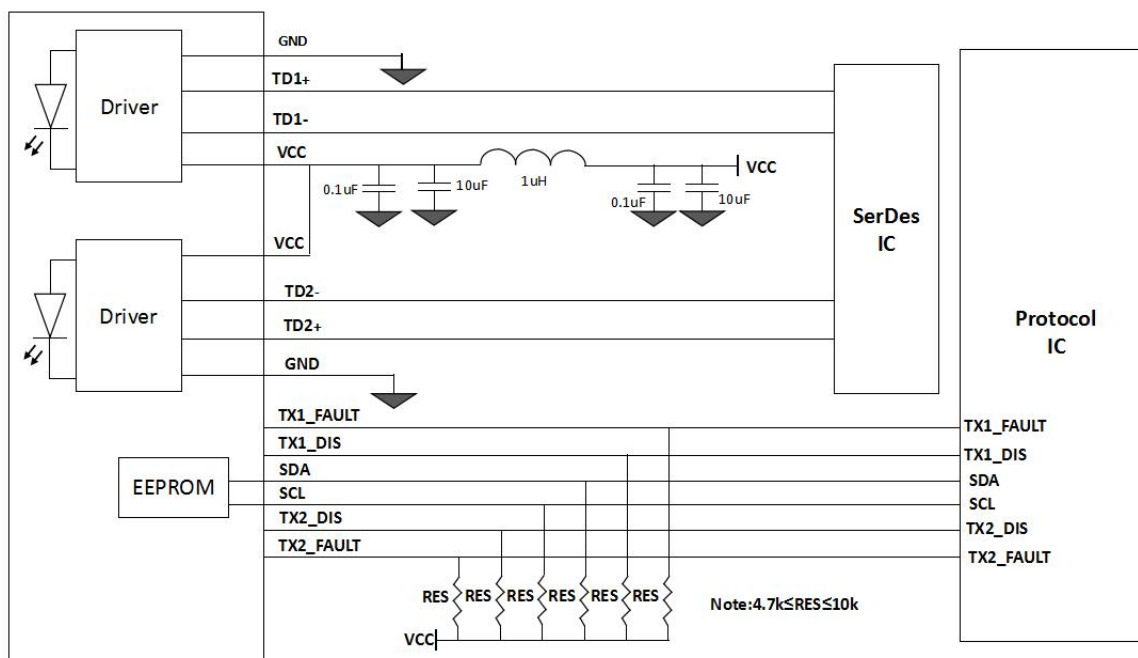
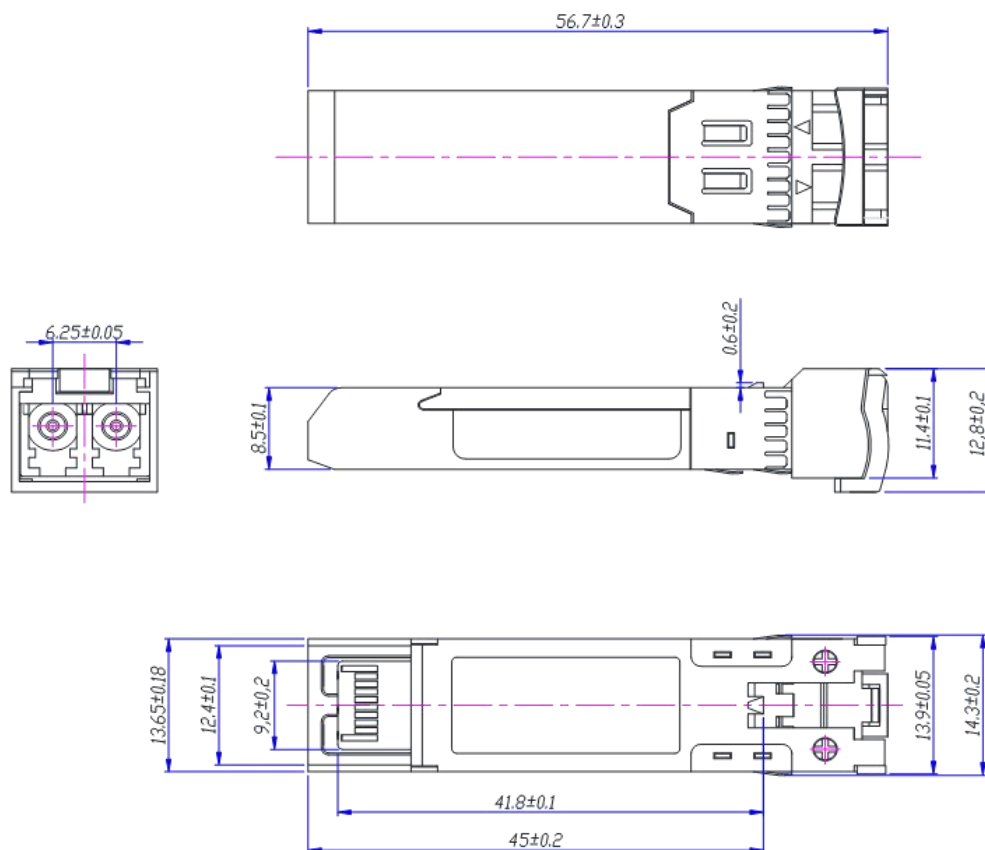


Figure3. Recommended Circuit Schematic

XI. Mechanical Dimensions (Units in mm)



XII. Ordering Information

Part Number	Product Description
CWDM-SFP3GDT-40	3Gb/s MSA CWDM SFP 1310nm 40km DOM LC SMF Dual Transmitters Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GDR-10	3Gb/s MSA CWDM SFP 10km DOM LC SMF Dual Receivers Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GDR-40	3Gb/s MSA CWDM SFP 40km DOM LC SMF Dual Receivers Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GSDT-10	3Gb/s MSA CWDM SFP 1310nm 10km DOM LC SMF Dual Transmitters Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GST-10	3Gb/s MSA CWDM SFP 10km DOM LC SMF Single Transmitter Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GSDT-10	3Gb/s MSA CWDM SFP 1310nm 10km DOM LC SMF Dual Transmitters Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GSR-10	3Gb/s MSA CWDM SFP 10km DOM LC SMF Single Receiver Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GST-40	3Gb/s MSA CWDM SFP 40km DOM LC SMF Single Transmitter Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI
CWDM-SFP3GSR-40	3Gb/s MSA CWDM SFP 40km DOM LC SMF Single Receiver Video Pathological Patterns Transceiver Module for SD/HD/3G-SDI