
850 nm / 3 Gb/s Single Optical Multi-Mode Digital Diagnostic Receiver

FVD2-1R-MM03

Features

- SMPTE 297-2006 Compatible
- Speed from 50 Mbps to 3Gbps
- Support Video Pathological Patterns for SD-SDI, HD-SDI and 3G-SDI
- Single Receiver with Simplex LC
- Based on Industry Standard SFP
- SFF-8472 Digital Diagnostic Function
- Single 3.3V power supply
- Operating case temperature : 0°C to 70°C
- ROHS Compliant
- Hot Pluggable



Applications

- SMPTE 297-2006 Compliant Electrical-to-Optical Interfaces
- High-density Video Routers

Description

The FVD2-1R-MM03 is a single channel optical multi-mode receiver module designed to receive optical serial digital signals as defined in SMPTE 297-2006. It supports from 50 Mbps to 3 Gbps and is specifically designed for received the SMPTE 259M, SMPTE 344M, SMPTE 292M and SMPTE 424M SDI pathological patterns. It is with the SFP 20-pin connector to allow hot plug capability. Digital diagnostic functions are available via an I²C. It can receive signal from 50 Mbps to 3 Gbps with up to 1000 m of multi-mode fiber when using the SPM-9100VW-1TG/2TG as the transmitter. A maximum distance of 300 m is achievable with 3Gbps pathological signals.

I. Absolute Maximum Ratings

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Note
Storage Temperature	T _{stg}	-40	85	°C	
Operating Case Temperature	T _c	0	70	°C	
Power Supply Voltage	V _{cc}	0	4	V	
ESD Tolerance on all pins			1	KV HBM	
Relative Humidity		5	95	% RH	non-condensing

II. Recommended Operating Conditions

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	V _{cc}	3.13	3.3	3.47	V
Operating Case Temperature	T _c	0		70	°C
Baud Rate		50		3000	Mb/s
Power Supply Current	I _{cc}		120	160	mA

III. Optical and Electrical Characteristics

Receiver Specifications (0oC < T_c < 70oC, 3.13V < V_{cc} < 3.47V)

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Optical						
Wavelength of Operation		780	850	880	nm	
Sensitivity for SMPTE 424M 2.97 Gb/s	Sen	0		-15	dBm	Pathological
		0		-15	dBm	PRBS 2 ²³ -1, ER=1E-12
Sensitivity for SMPTE 292M 1.485 Gb/s	Sen	0		-16	dBm	Pathological
		0		-16	dBm	PRBS 2 ²³ -1, ER=1E-12
Signal Detect -- Asserted	Pa			-16	dBm	Transition: low to high
Signal Detect -- Deasserted	Pd	-28			dBm	Transition: low to high
Signal detect -- Hysteresis		1		6	dB	

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Electrical						
CML Output (Differential)		550	660-	850	mVp-p	AC coupled output
Optical Rise Time / Fall Time	tr / tf			135	ps	1, SMPTE 424M
				270	ps	1, SMPTE 292M
				800	ps	1, SMPTE 344M
				1.5	ps	1, SMPTE 259M
Output LOS Voltage -- Low	V _{OL}	0	-	0.5	V	IOL=-1.6mA, 1 TTL unit load
Output LOS Voltage -- High	V _{OH}	2.5		V _{CC} +0.3	V	IOL=-1.6mA, 1 TTL unit load
SCL, SDA	V _{OH}	2.5	-	V _{CC} +0.3	V	
	V _{OL}	0		0.5	V	

Notes

1.20% to 80%, unfiltered..

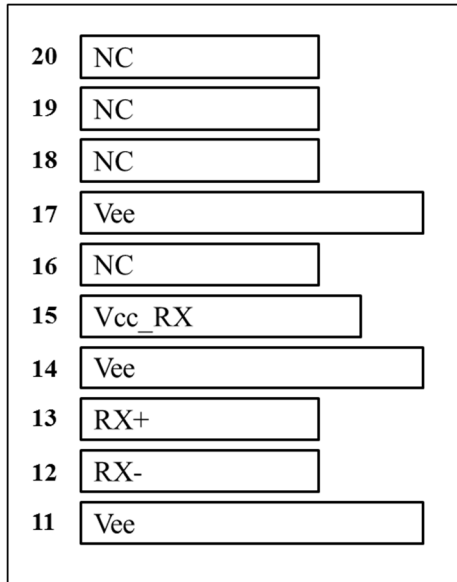
IV. Module Definition

Module Definition	PIN 5	PIN 6	Interpretation by Host
4	SCL	SDA	Serial module definition protocol

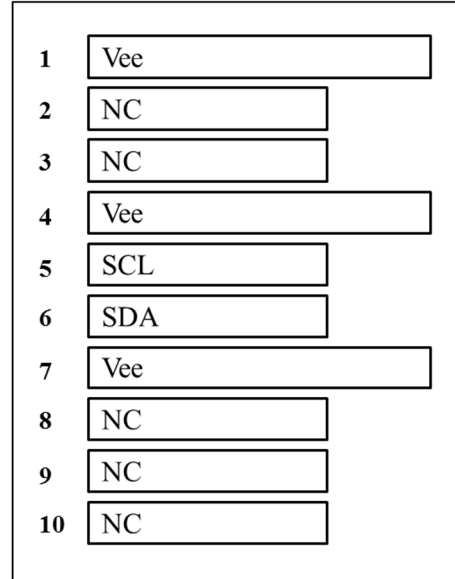
Module Definition 4 specifies a serial definition protocol. For this definition, upon power up, SCL and SDA appear as no connector(NC).

When the host system detects this condition, it activates the serial protocol. The protocol uses the 2-wire serial CMOS E^2 PROM protocol of the ATMEL AT24C01A/02/04 family of components.

V. Pin Information

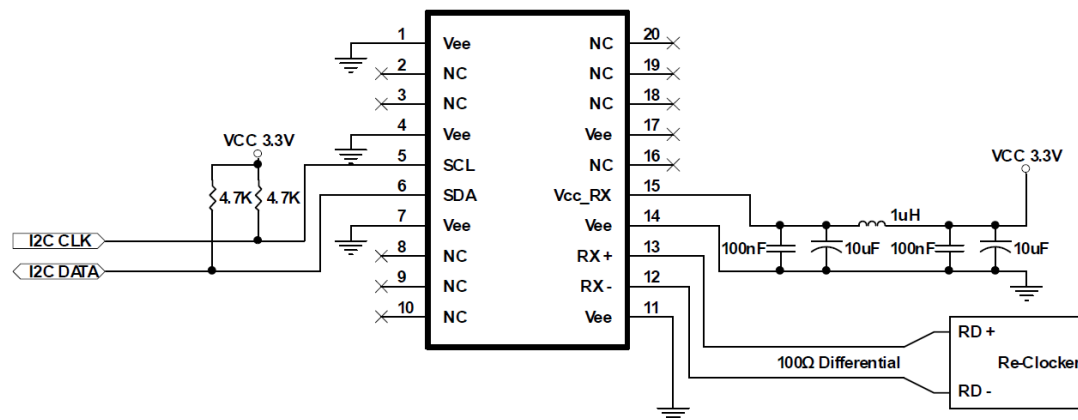


Top of Board

Bottom of Board
(as viewed thru top of board)

Pin	Name	Function	NOTE
1	Vee	Signal Ground	
2	NC	No Connection	
3	NC	No Connection	
4	Vee	Signal Ground	
5	SCL	Serial I2C Clock	
6	SDA	Serial I2C Data	
7	Vee	Signal Ground	
8	NC	No Connection	
9	NC	No Connection	
10	NC	No Connection	
11	Vee	Signal Ground	
12	RX-	Negative Differential Output	
13	RX+	Positive Differential Output	
14	Vee	Signal Ground	
15	Vcc RX	Power Supply	+3.3V±5%
16	NC	Power Supply	
17	Vee	Signal Ground	
18	NC	No Connection	
19	NC	No Connection	
20	NC	No Connection	

VI. Application Schematics



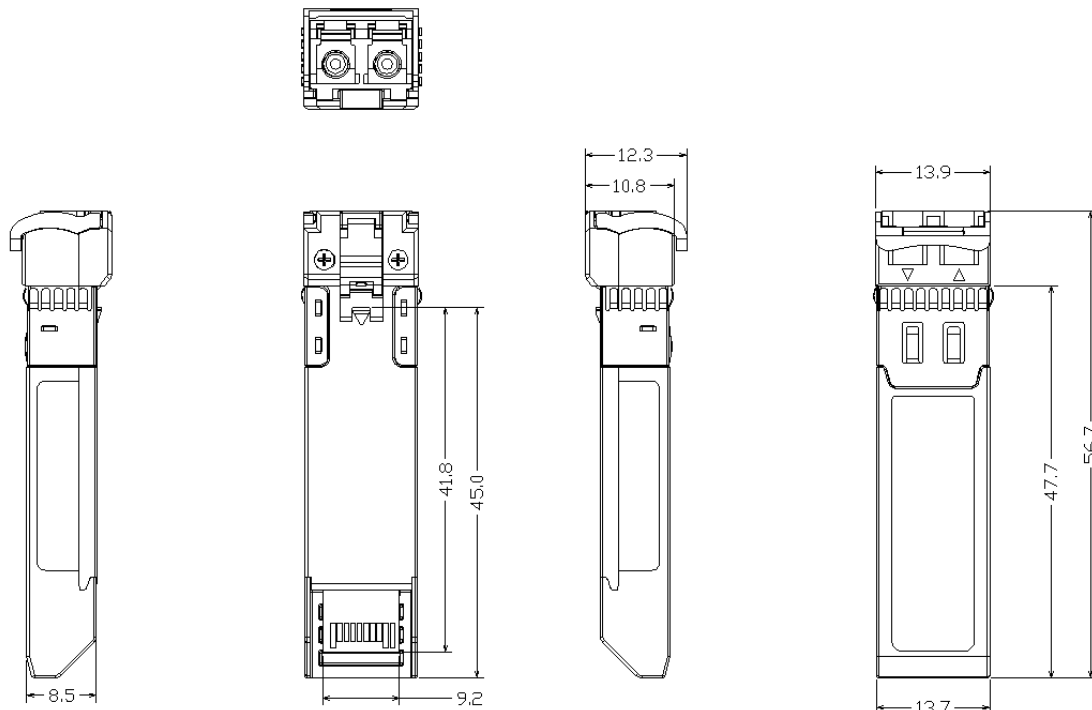
1. Consult the Chipset manufacturer's applications information for biasing required for TX outputs. Some chipset outputs are internally biased and may not need external bias resistor.

VII. Outline Diagrams

Package Outline

Dimensions are in millimeters

Tolerances are $\pm 0.2\text{mm}$, unless otherwise specified



VIII. Ordering Information

FVD	Core	-	Tx/Rx	-	Mode	Distance
FOTTU	2 : 2core		2T : 2Tx	-	MM : Multimode	03 : 300m
Video SFP	1: 1core		1T : 1Tx		SM : Single mode	10 : 10km
For SDI			2R : 2Rx			30 : 30km
			1R : 1Rx			50 : 50km
			1TR:1Tx+1Rx			80 : 80km
			1B : 1BOSA			
			2B : 2BOSA			

IX. More information

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