



Datasheet

No.

DS10-F009

Initial Date

2012-07-29

OF

OFB6Cxx412

Written Team

R&D Dept.

GH Zheng

### I Preview


PN	OFB6Cxx412
Description	XFP Bi-Di 1270nm/1310nm 20KMLC DDMI 0~70 °C

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### III Revision History

No.	Date	Items	Change Recording	Ver.	Rev.	Customer
1	2012-07-29	All	Initial registration	000	000	Standard
2						
3						
4						
5						
6						

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## 1. Features

- ◆ Supports 8.0Gb/s to 11.1Gb/s bit rates
- ◆ Hot-pluggable XFP footprint, Built-in digital diagnos
- ◆ Maximum link length of 20km with SMF
- ◆ 1270/1330nm DFB laser and PIN photodiode
- ◆ XFP MSA package with duplex LC connector
- ◆ No reference clock required
- ◆ Single +3.3V power supply
- ◆ Power dissipation <1.5W
- ◆ Compatible with RoHS
- ◆ Temperature range: 0 to +70°C

## 2. Applications

- ◆ SONET OC-192&SDH STM-64 at 9.953Gbps
- ◆ 10GBASE-LR/LW 10G Ethernet
- ◆ 1200-SM-LL-L 10G Fibre Channel
- ◆ 10GE over G.709 at 11.09Gbps
- ◆ OC192 over FEC at 10.709Gbps
- ◆ Other optical links, up to 11.1Gbps

## 3. Description

OFB6Cxx412 is compliant with the 10G Small Form-Factor Pluggable (XFP) Multi-Source Agreement (MSA), supporting data-rate of 8.0~11.1Gbps, and transmission distance up to 20km on SMF. The transceiver module comprises a transmitter with 1270/1330nm DFB laser and a receiver with a PIN photodiode. Transmitter and receiver are separate within a wide temperature range and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10 GbE systems.


## 4. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	95	%

## 5. Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Tc	0		+70	°C

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Power Supply Voltage	V <sub>cc</sub>	3.135	3.30	3.465	V
Power Supply Current	I <sub>cc</sub>			600	mA
Data Rate		8	10.3	11.1	Gbps


## 6. Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	$\lambda_c$	1260/1320	1270/1330	1280/1340	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	P <sub>out</sub>	-2		3	dBm	1
Extinction Ratio	ER	3.5			dB	
Data Input Swing Differential	V <sub>IN</sub>	180		950	mV	2
Input Differential Impedance	Z <sub>IN</sub>	90	100	110	$\Omega$	
TX Disable	Disable	2.0		V <sub>cc</sub>	V	
	Enable	0		0.8	V	
<b>Receiver</b>						
Centre Wavelength	$\lambda_c$	1320/1260	1330/1270	1340/1280	nm	
Receiver Sensitivity				-16	dBm	3
Receiver Overload		0.5			dBm	3
LOS De-Assert	LOS <sub>D</sub>			-15.5	dBm	
LOS Assert	LOS <sub>A</sub>	-26			dBm	
LOS Hysteresis		0.5		4	dB	
Data Output Swing Differential	V <sub>out</sub>	400	600	800	mV	2
LOS	High	2.0		V <sub>cc</sub>	V	
	Low			0.8	V	

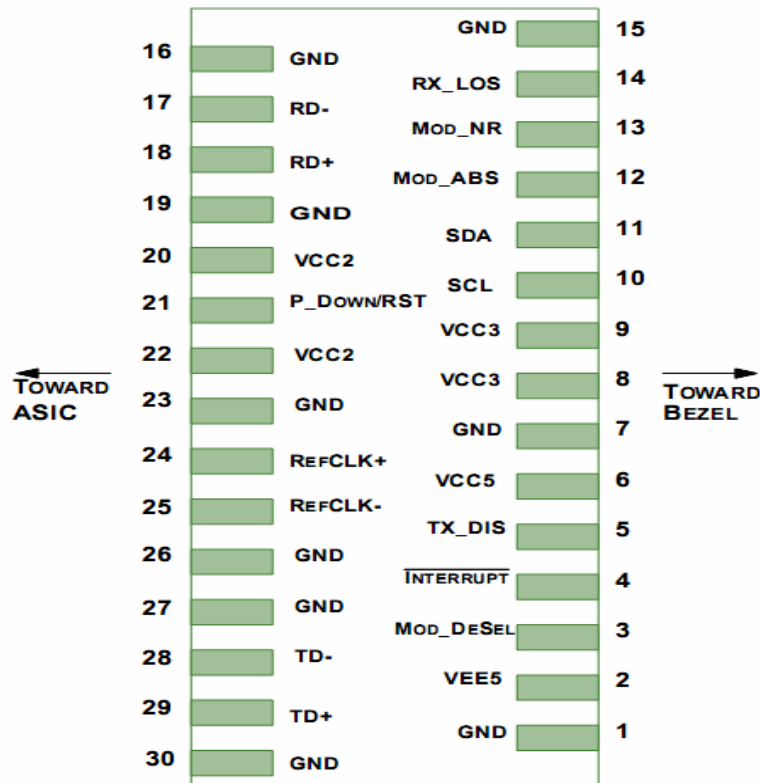
### Notes:

1. The optical power is launched into SMF.
2. Internally AC-coupled.
3. Measured with a PRBS 2<sup>31</sup>-1 test pattern @9953Mbps, BER ≤ 1 × 10<sup>-12</sup>.

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## 7. Pin information



Pin	Logic	Symbol	Name/Description	Ref
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – <b>Not required</b>	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to, respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		VCC5	+5 Power Supply – <b>Not required</b>	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTL-IO	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module.	2
13	LVTTL-O	Mod_NR	Module Not Ready;	2
14	LVTTL-O	RX_LOS	Receiver Loss of Signal indicator	2
15		GND	Module Ground	1

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16		GND	Module Ground	1
17	CML-O	RD-	Receiver inverted data output	
18	CML-O	RD+	Receiver non-inverted data output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply – <b>Not required</b>	
21	LVTTIL-I	P_Down/RS T	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset	
			Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply – <b>Not required</b>	
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – <b>Not required</b>	3
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board – <b>Not required</b>	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	
30		GND	Module Ground	1

#### Notes:

1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector, should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
3. A Reference Clock input is not required.

#### 8. Management Interface

The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA). The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals. Alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented.

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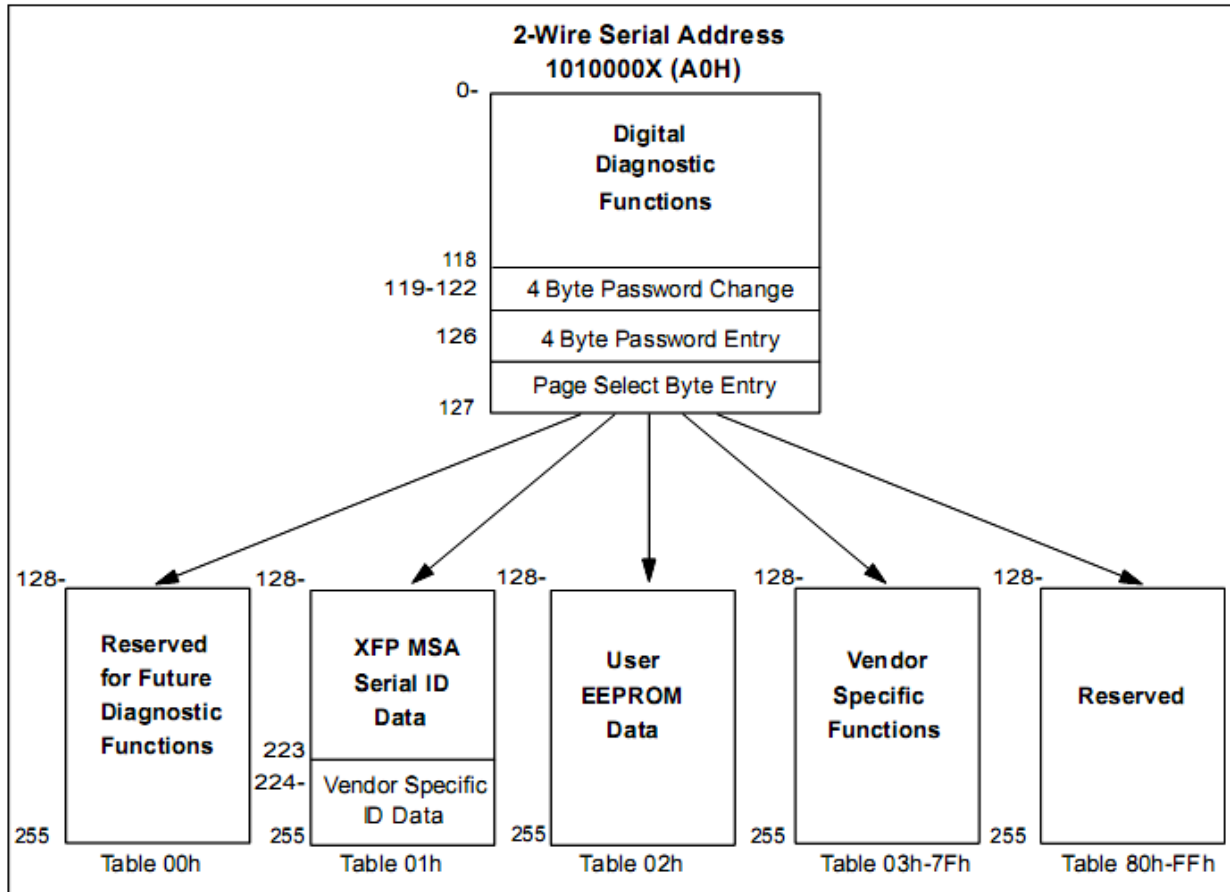
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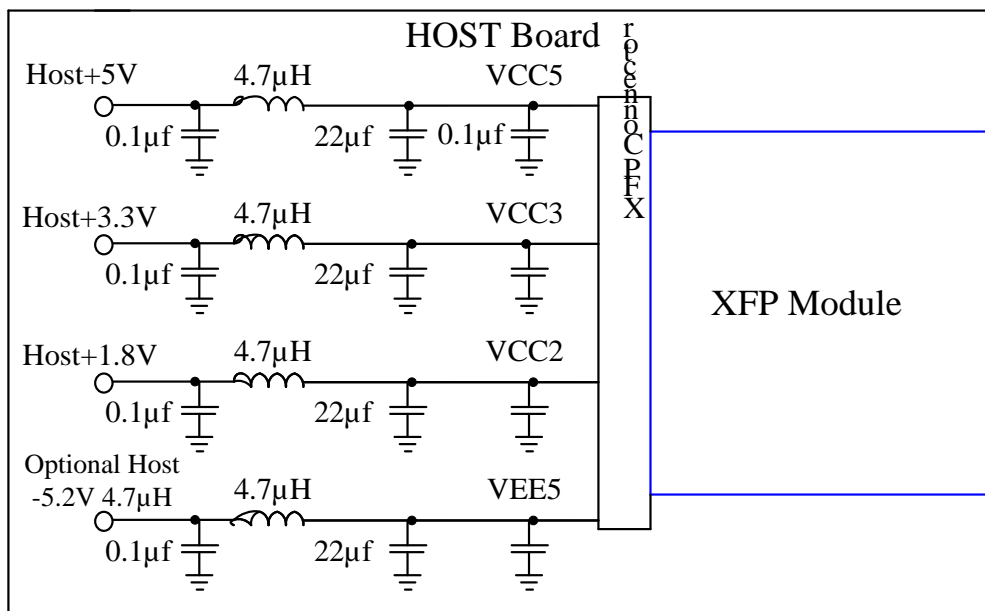
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### 9. Digital Diagnostic Memory Map



### 10. Recommended Host Board Power Supply Circuit



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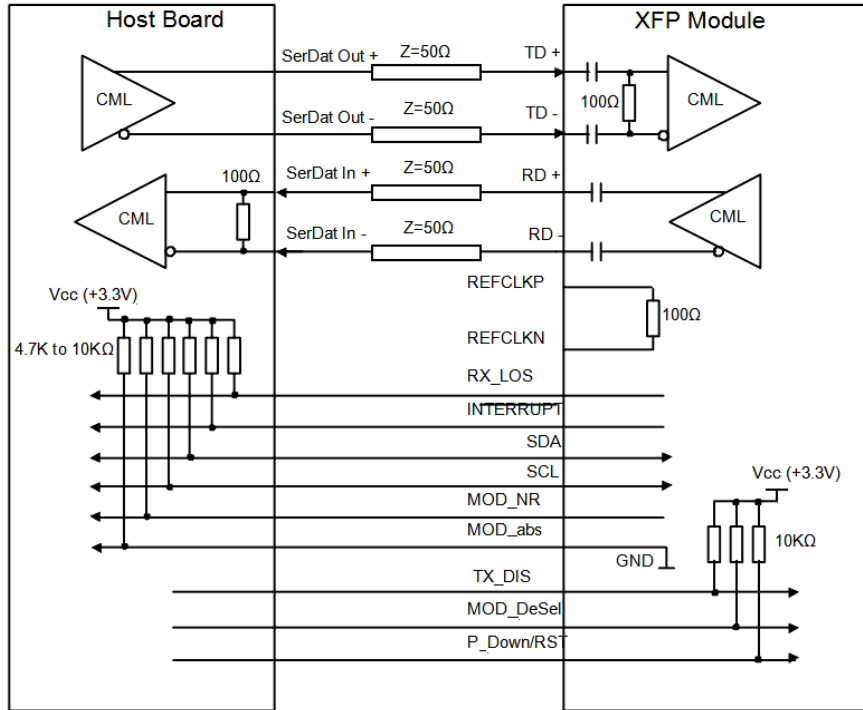
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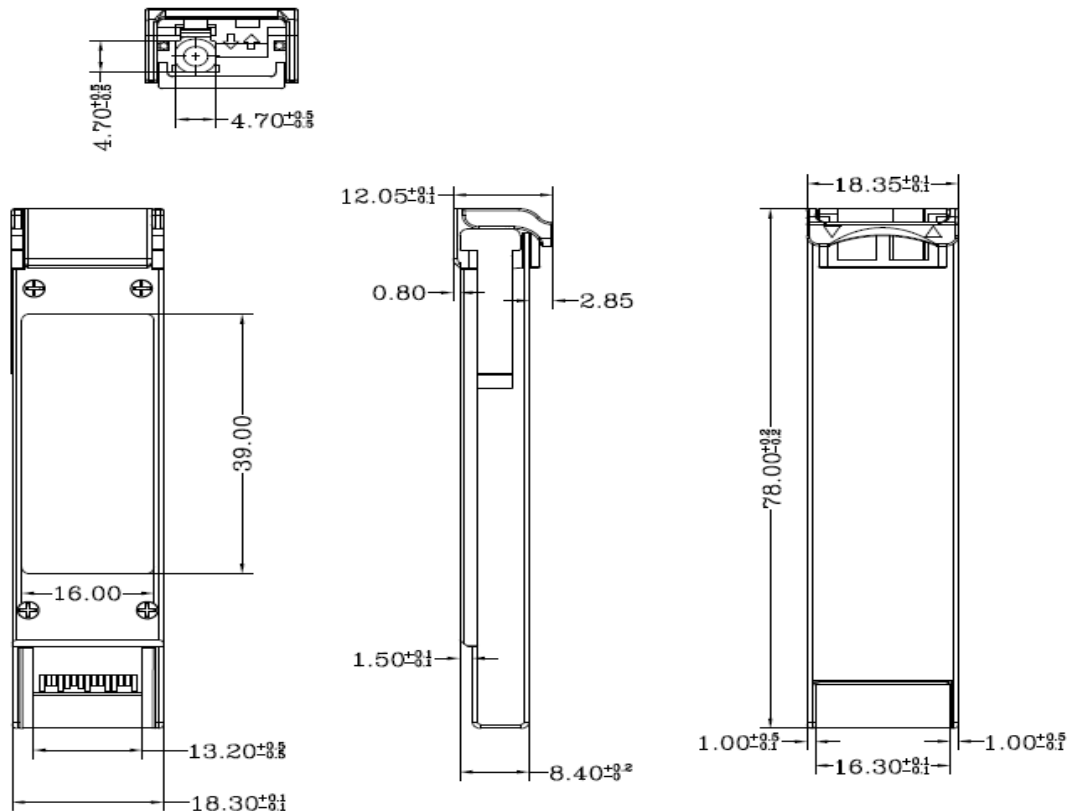
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11. Recommended High-speed Interface Circuit




12. Mechanical Dimensions



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### 13. Model Name information

PN	Description
OFB6C03412	XFP Bi-Di Tx1270nm/Rx1310nm 20KMLC DDMI 0~70 °C
OFB6C30412	XFP Bi-Di Tx1330nm/Rx1270nm 20KMLC DDMI 0~70 °C
OFB6C03422	XFP Bi-Di Tx1270nm/Rx1310nm 20KMLC DDMI -40~85 °C
OFB6C30422	XFP Bi-Di Tx1330nm/Rx1270nm 20KMLC DDMI -40~85 °C

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