

SFP модули предназначены для создания дуплексного канала связи по одноволоконному одномодовому кабелю на расстояние до 80км.

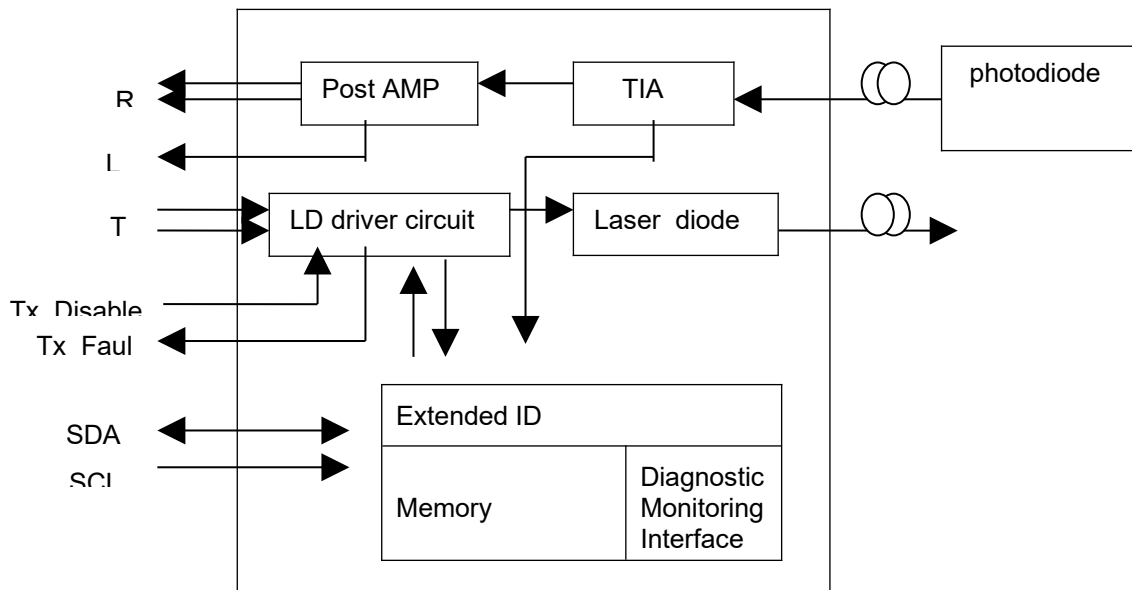
**Особенности:**

- DFB 1490 / 1550нм лазер
- LC разъем
- Digital diagnostic monitor interface (DDMI)
- соответствие спецификации SFP MSA и SFF-8472

**Область применения:**

- Fast Ethernet, Gigabit Ethernet
- STM-1, STM-4

**Функциональная схема:**



**Performance Specifications**

**Table1.** Absolute Maximum Ratings/Operating Environment

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Operating Temperature	Top	-5	+70	°C
Supply Voltage	VCC	-0.5	+3.6	V
Voltage at any Input Pin	VIN	0	Vcc	V
Power Supply Voltage	VCC	+3.1	+3.5	V

Note: Stress in excess of maximum absolute ratings can cause permanent damage to the module

**Table 2.** Transmitter electrical and optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Central Wavelength (SFP-BiDi-DDM4.80)	$\lambda_C$	1480	1490	1500	nm
Central Wavelength (SFP-BiDi-DDM5.80)	$\lambda_C$	1540	1550	1560	nm
Spectral Width	$\Delta\lambda$	-	-	1	nm
Side Mode Suppression Ratio	SMSRMIN	30	-	-	dB
Output Power	Po	<b>0</b>	-	<b>+5</b>	dBm
Extinction Ratio	ER	8.2	-	-	dB
Transmit Fault Output-Low	TX_FAULTL	0	-	0.8	V
Transmit Fault Output-High	TX_FAULTH	2.0	-	VCC	V
Power supply current	ICC	-	70	180	mA
Data Input Voltage	Vpp	300	-	1600	mV

**Table 3.** Receiver optical-electrical characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Wavelength Range (SFP-BiDi-DDM4.80)	$\lambda$	1540	1550	1560	nm
Wavelength Range (SFP-BiDi-DDM5.80)	$\lambda$	1480	1490	1500	nm
MIN. Input Power (Sensitivity)	PMIN	-	-	<b>-26</b>	dBm
MAX. Input Power (Saturation)	PMAX	<b>-3</b>	-	-	dBm
Receiver Loss of Signal Output Voltage-Low	RX_LOSL	0	-	0.8	V
Receiver Loss of Signal Output Voltage-High	RX_LOSH	2.0	-	VCC	V
Data Output Voltage	Ppp	400	800	1000	mV

**Pin Function Definitions**

Pin No.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	Note 1
3	TX Disable	Transmitter Disable	3	Note 2
4	MOD-DEF2	Module Definition 2	3	Note 3
5	MOD-DEF1	Module Definition 1	3	Note 3
6	MOD-DEF0	Module Definition 0	3	Note 3

7	Rate Select	Not Connected	3	
8	LOS	Loss of Signal	3	Note 4
9	VeeR	Receiver Ground	1	Note 5
10	VeeR	Receiver Ground	1	Note 5
11	VeeR	Receiver Ground	1	Note 5
12	RD-	Inv. Received Data Out	3	Note 6
13	RD+	Received Data Out	3	Note 6
14	VeeR	Receiver Ground	1	Note 5
15	VccR	Receiver Power	2	Note 7
16	VccT	Transmitter Power	2	Note 7
17	VeeT	Transmitter Ground	1	Note 5
18	TD+	Transmit Data In	3	Note 8
19	TD-	Inv Transmit Data In	3	Note 8
20	VeeT	Transmitter Ground	1	Note 5

## Note:

- TX Fault is an open collector/drain output, which should be pulled up with a 4.7K–10K $\Omega$  resistor on the host board. Pull up voltage between 2.0V and VccT, R+0.3V. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.
- TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7–10 K $\Omega$  resistor. Its states are:
  - Low (0 – 0.8V): Transmitter on
  - (>0.8, < 2.0V): Undefined

High (2.0 – 3.465V): Transmitter Disabled

Open: Transmitter Disabled

- Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7K – 10K $\Omega$  resistor on the host board. The pull-up voltage shall be VccT or VccR. Mod-Def 0 is grounded by the module to indicate that the module is present Mod-Def 1 is the clock line of two wire serial interface for serial ID Mod-Def 2 is the data line of two wire serial interface for serial ID
- LOS (Loss of Signal) is an open collector/drain output, which should be pulled up with a 4.7K – 10K $\Omega$  resistor. Pull up voltage between 2.0V and VccT, R+0.3V. When high, this output indicates the received optical power is below the worst-case receiver sensitivity(as defined by the standard in use). Low indicates normal operation. In the low state, the output will be pulled to < 0.8V.
- VeeR and VeeT may be internally connected within the SFP module.
- RD-/+: These are the differential receiver outputs. They are AC coupled 100 $\Omega$  differential lines which should be terminated with 100 $\Omega$  (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board.
- VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V  $\pm$ 5% at the SFP connector pin. Maximum supply current is 300mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1 $\Omega$  should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply filtering network is used, hotplugging of the SFP transceiver module will result in an inrush current of no more than 30 mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
- TD-/+: These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 $\Omega$  differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board.

Mechanical Specifications

