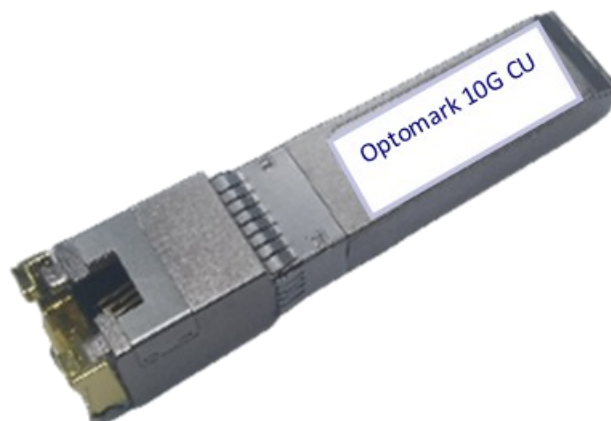


SPP-CU-XX up to 10Gb/s 80meters multirate Ethernet and 80m SFP+ RJ-45 Transceiver



Optomark's SPP-CU-xx SFP+ transceivers, according to Enhanced 8.5 and 10 Gigabit Small Form Factor Pluggable "SFP+" Multi-Sourcing Agreement (MSA) SFF-8431 and SFF-8472, revision 11, are designed for multirate standards over 30 meters and 80 meters of CAT cable

Product Features

- Compliant with IEEE Std 802.3-2005 10G Ethernet
- Electrical interface specifications per SFF-8431
- Management interface specifications per SFF-8431 and SFF-8472
- SFP+ MSA package RJ-45.
- 10.3Gb/s bi-directional data links downward to 10M Ethernet
- Single +3.3V power supply
- Case operating temperature range: 0 to +70 °C

Applications

- USXGMII, XFI, RXAUI, 2500BASE-X, 5GBASE-X, and SGMII to
- support full backward compatibility with lower speed legacy Ethernet rates including: 1Gbps, 100Mbps and 10Mbps.

Part Numbers (xx = equipment compatibility)

	Data Rate	Temperature
SPP-CU--xx	10G Ethernet 30 meters	0-70°C
SPP-CU80-xx	10G Ethernet 80 meters CAT 6a/7	0-70°C

NOTE

For operation over 30m at 10G, CAT 6a/7 is needed. Otherwise CAT 5e should be adequate

SPECIFICATIONS

Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Unit	Notes
Storage Temperature	T _s	-40	85	°C	
Relative Humidity	RH	5	95	%	
Supply Voltage	V _{CC}		4.0	V	>3.7V disallowed continuously

Recommended Operating Conditions

Parameter	Symbol	Minimum	Typ	Maximum	Unit	Notes
Operating Case Temperature	T _c	0	25	70	°C	
Supply Voltage	V _{CC}	3.135	3.3	3.465	V	R T Ground
Data Rate	-	10M	10.3125G	-	b/s	
Surge Current	I _{surge}			30	mA	Hot Plug

Caution Power Consumption and surge current exceed the MSA values.

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Module Supply Current	I _{CC}	-	-	750	mA	-
Power Dissipation	P _D	-	-	3	W	-
Low Speed						
SFP Output LOW	VOL	0		0,5	V	4.7k to 10k pull-up to host V _{CC} ,@ host side of connector
SFP Output HIGH	VOH	Host V _{CC} -0.5		Host V _{CC} +0.3	V	As above
SFP Input LOW	VIL	0		0,8	V	4.7k to 10k pull-up to host V _{CC} ,@ SFPt side of connector
SFP Input HIGH	VIH	2		V _{CC} +0.3		As above
High Speed. Internally Coupled AC (1)High-speed Electrical Interface Transmission Line-SFP						
Line Frequency	f _L	10	125	1000	MHz	5-level encoding,per IEEE 802.3
TX Output and Rx Input Impedances	Z _{out} TX Z _{in} RX		100		Ohm	Differential,for all frequencies between 1MHz and 125MHz
Data Output Rise Time, Fall Time	t _{tr} , t _{fr}	25			ps	As above
High Speed. Internally Coupled AC (2)High-speed Electrical Interface,Host-SFP						
Single ended data input swing	V _{in} sw	250		1200	mV	Single Ended
Single ended data output swing	V _{out} sw	350		850	mV	Single Ended
Data Rise Time, Fall Time	t _r , t _f		175	-	ps	20-80%
TX Output and Rx Input Impedances	Z _{out} TX Z _{in} RX		50		Ohm	Single Ended

General Specifications

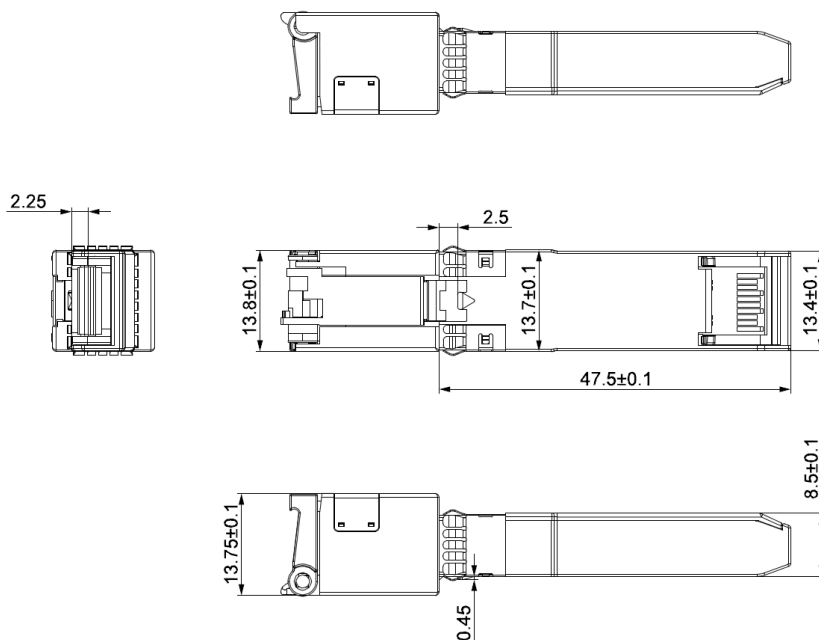
Parameter	Symbol	Min	Typ	Max	Unit	Notes
Data rate	BR	10M		1G	b/s	IEEE 802.3 compatible. See Notes 2~4 below
Reach	L			00	Meter	-Category 5 UTP. BER<10 ⁻¹²
Operating Temp	Top	0		70	°C	Case
Storage temp	Tsto	-40		85	°C	Ambient
Clock rate		0		10000	MHz	

Note:

1. Clock tolerance is +/- 50 ppm
2. By default, the CLSFP10GETX80 is a full duplex device in preferred master mode
3. Automatic crossover detection is enabled. External crossover cable is not required
4. Multi- BASE-T operation requires the host system to have an SGMII interface with no clocks, and the module PHY to be configured per Applications Note AN-

Notes:

- 8.1 Circuit ground is connected to chassis ground.
- 8.2 PHY disabled on TDIS>2.0V or open, enabled on TDIS<0.8V.
- 8.3 Should be pulled up with 4.7k - 10k Ohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.
- 8.4 LVTTTL compatible with a maximum voltage of 2.5V.



The SFP+ supports the 2-wire serial communication protocol outlined in the SFP MSA. The physical layer IC can also be accessed via the 2-wire serial bus at address Ach. For details interfacing with the PHY IC, please contact us

SPECIFICATIONS

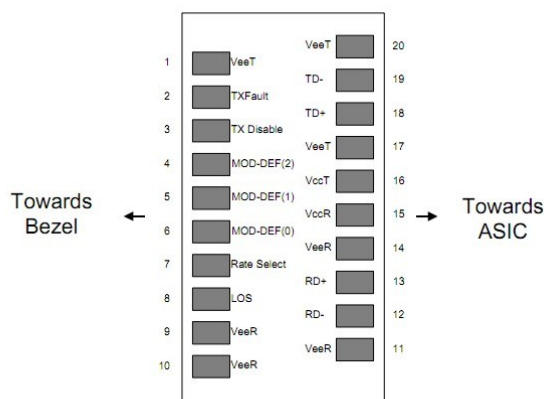


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	8.1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	8.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	8.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	8.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	8.3
7	Rate Select	No connection required	
8	LOS	High indicates no linked. low indicates linked.	8.4
9	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
10	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
11	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
12	RD-	Receiver Inverted DATA out. AC Coupled.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
14	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	8.1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	8.1

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