Model : ATZ FO-SFP-SMDPxxK-LC-D (xx=dist: 20/40/60/80)
Description: SFP Transceiver: 1.25G/1310nm/Dual Fiber/Singlemode
LC (Compatible with Cisco switch/ DDMI)-20km/40km/60km/80km

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Your Trusted Connectivity Solutions!

Features

-AutoCross™: Automatically detects and configures the twisted pair port on the converter to the correct MDI or MDI-X configuration.
-Link Pass Through: Link Pass Through is a troubleshooting feature that allows the media converter to monitor both the fiber and copper RX ports for loss of signal.
-Automatic Link Restoration: The media converters will automatically re-establish link in all network conditions.
-Selectable speed setting: The converter can be set to 10Mbps or 100Mbps or 1000Mbps . Both copper and fiber ports are automatically set to the same speed. Devices connect to duplex mode of link partner. Jumbo Frames is available for the 10/100/1000M media converter with 1 RJ45 port + 1 fiber port.
-10/100/1000Mbps auto-negotiation Supports IEEE 802.3x full-duplex flow control and back pressure half-duplex flow control
-Supports MAC
self-learning Standards: IEEE802.3, IEEE802.3u, IEEE802.3x, 10/100Base-TX, 100Base-FX, 10/100/1000Base-TX, 1000Base-FX/LX LED status of Link, activity, Full/half duplex, speed and power on diagnostic function Extremely low power consumption and low heat Reliable and stable performance

General

ATZ Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA).The transceiver consists of five sections: the LD driver, the limiting amplifier, the digital diagnostic monitor, the 1310nm FP laser and the PIN photo-detector .The module data link up to 80KM in 9/125um single mode fiber.
The optical output can be disabled by a TTL logic high-level input of Tx Disable, and the system also can disable the module via I2C. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner. The system can also get the LOS (or Link)/Disable/Fault information via I2C register access.

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Product Features

- Up to 1.25Gb/s data links
- FP laser transmitter and PIN photo-detector
- Up to 80km on 9/125μm SMF
- Interface:

-1x Ethernet
-2x 1000Base-LX—LC

- Hot-pluggable SFP footprint
- Duplex LC/UPC type pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single +3.3V power supply
- Support Digital Diagnostic Monitoring interface
- Compliant with SFF-8472
- Case operating temperature:

-Commercial: 0°C to +70°C
-Extended: -10°C to +80°C
-Industrial: -40°C to +85°C

- With DDM Function
- Cisco compatible

I. Pin Descriptions

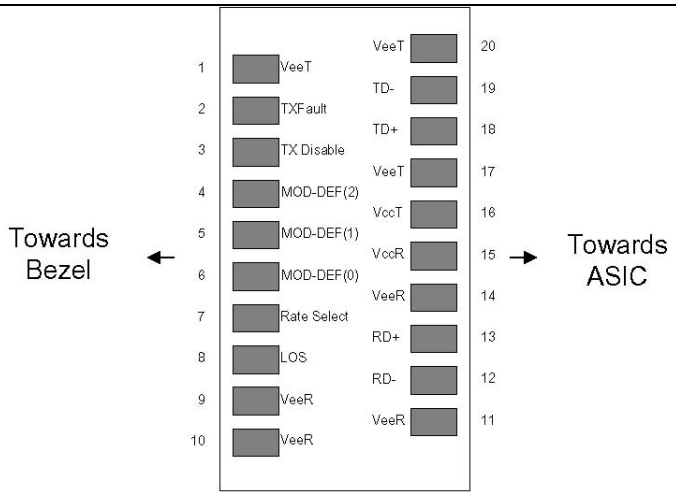
Pin	Symbol	Name/Description	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground)	1
2	TX Fault	Transmitter Fault.	
3	TX Disable	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4

9	VeeR	Receiver Ground (Common with Transmitter Ground)	1
10	VeeR	Receiver Ground (Common with Transmitter Ground)	1
11	VeeR	Receiver Ground (Common with Transmitter Ground)	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)	1
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground (Common with Receiver Ground)	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)	1

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TX Disable >2.0V or open, enabled on TX Disable<0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.
   MOD_DEF(0) pulls line low to indicate module is plugged in.

4. LOS is LVTTL output. Should be pulled up with 4.7k – 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.



Pinout of Connector Block on Host Board

II. Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	-0.5		+4.0	V	
Storage Temperature	TS	-40		+100	°C	
Case Operating Temperature	TOP	0		+70	°C	
Relative Humidity	RH	0		85	%	1

III. Electrical Characteristics (TOP=25°C, Vcc=3.3Volts)

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Supply Voltage	Vcc	3.00		3.60	V	
Supply Current	Icc		160	300	mA	
Transmitter						
Input differential impedance	Rin		100		Ω	2
Single ended data input swing	Vin, pp	250		1200	mV	
Transmit Disable Voltage	VD	Vcc – 1.3		Vcc	V	

Transmit Enable Voltage	VEN	Vee		Vee+ 0.8	V	
Transmit Disable Assert Time				10	us	
Receiver						
Single ended data output swing	Vout, pp	300	400	800	mV	3
Data output rise time	tr			300	ps	4
Data output fall time	tf			300	ps	4
LOS Fault	VLOS fault	Vcc – 0.5		VccHOST	V	5
LOS Normal	VLOS norm	Vee		Vee+0.5	V	5
Deterministic Jitter Contribution	RXΔDJ			80	ps	6
Total Jitter Contribution	RXΔTJ			122.4	ps	

Notes:

1. Non condensing.
2. AC coupled.
3. Into 100 ohm differential termination.
4. 20 – 80 %
5. LOS is LVTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
6. Measured with DJ-free data input signal. In actual application, output DJ will be the sum of input DJ and ΔDJ.

IV. Optical Characteristics (TOP=25°C, Vcc=3.3 Volts)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Ref.**
Transmitter						
Output Opt. Power	PO	-15	-	-8	dBm	1
Optical Wavelength	λ	1275	1310	1350	nm	
Spectral Width	σ	-	-	3	nm	

Optical Rise/Fall Time	tr/tf	-	170	260	ps	2
Deterministic Jitter Contribution	TXΔDJ	-	-	0.07	UI	3
Total Jitter Contribution	TXΔTJ	-	-	0.007	UI	
Optical Extinction Ratio	ER	9	-	-	dB	
Receiver						
Average Rx Sensitivity	RSENS	-	-	-24	dBm	4
Maximum Received Power	RXMAX	0	-	-	dBm	
Optical Center Wavelength	λC	1270	-	1600	nm	
LOS De-Assert	LOSD	-	-	-25	dBm	
LOS Assert	LOSA	-36	-	-	dBm	
LOS Hysteresis		0.5	-	-	dB	

Notes:
1. Class 1 Laser Safety, Tested with 9/125μm SM fiber.
2. Unfiltered, 20-80%.
3. Measured with DJ-free data input signal .In actual application, output DJ will be the sum of input DJ and ΔDJ.
4. Measured with PRBS 2^7-1 at 10^{-12} BER .

V. General Specifications

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Data Rate	BR	-	-	1250	Mb/sec	1
Bit Error Rate	BER	-	-	10^{-12}		2
Max. Supported Link Length on 50/125μm MMF @ Gigabit	LMAX	-	-	2	km	3,4

Ethernet

Notes:

1. Gigabit Ethernet and 1x Fibre Channel compliant.
2. Tested with a PRBS 2^7-1 data pattern.
3. Dispersion limited per FC-PI-2 Rev. 10.
4. Attenuation of 0.55 dB/km is used for the link length calculations. Please refer to the Optical Specifications in Table IV to calculate a more accurate link budget based on specific conditions in your application.

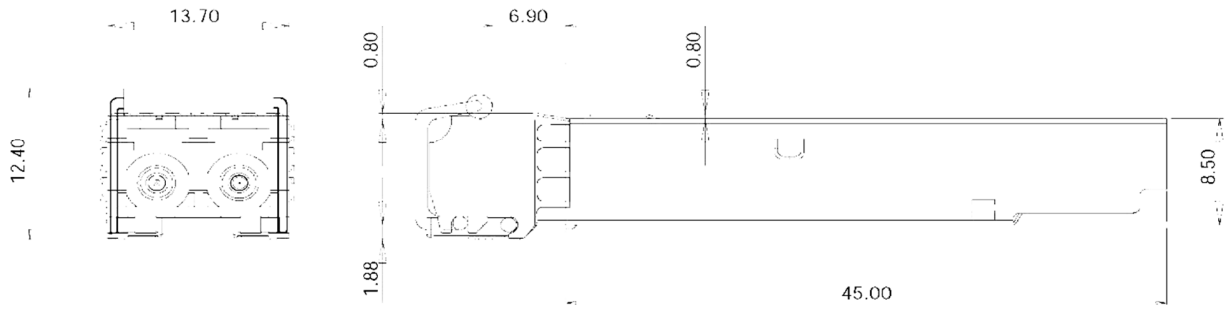
VI. Environmental Specifications

ATZ 1310nm Commercial Temperature SFP transceivers have an operating temperature range from 0°C to +70°C case temperature.

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Case Operating Temperature	Top	0		+70	°C	
Storage Temperature	Tsto	-40		+100	°C	

VII. Mechanical Specifications

ATZ Small Form Factor Pluggable (SFP) transceivers are compatible with the dimensions defined by the SFP Multi-Sourcing Agreement (MSA).



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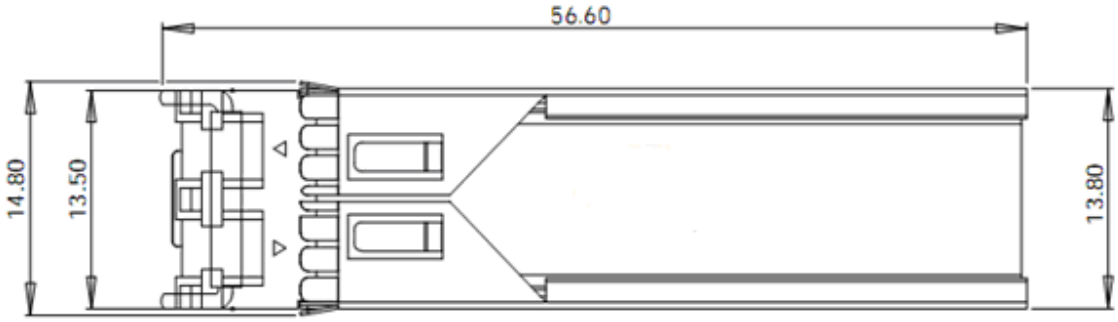
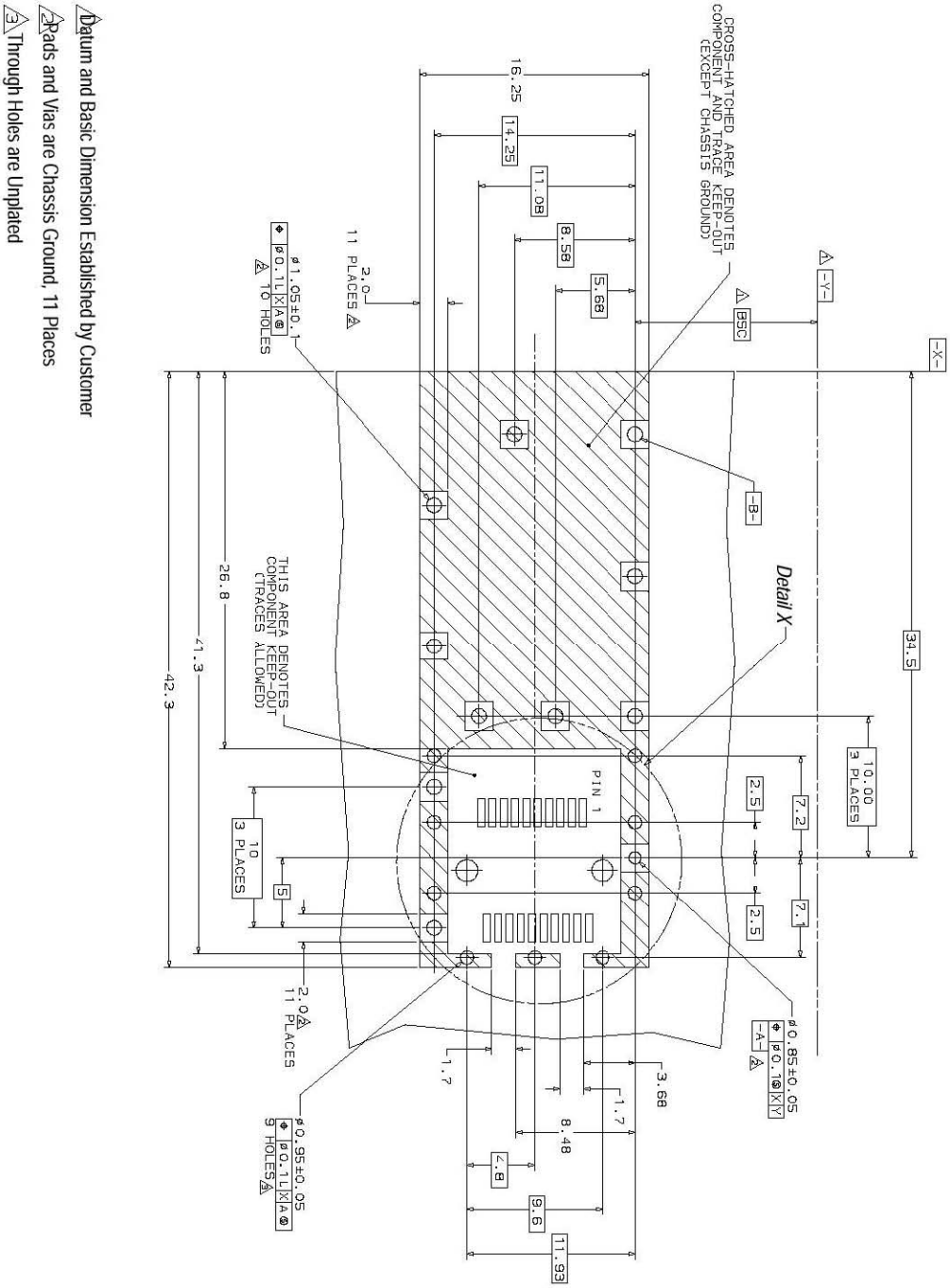


ATZ FO-SFP-SMDP20K-LC-D

IX. PCB Layout and Bezel Recommendations



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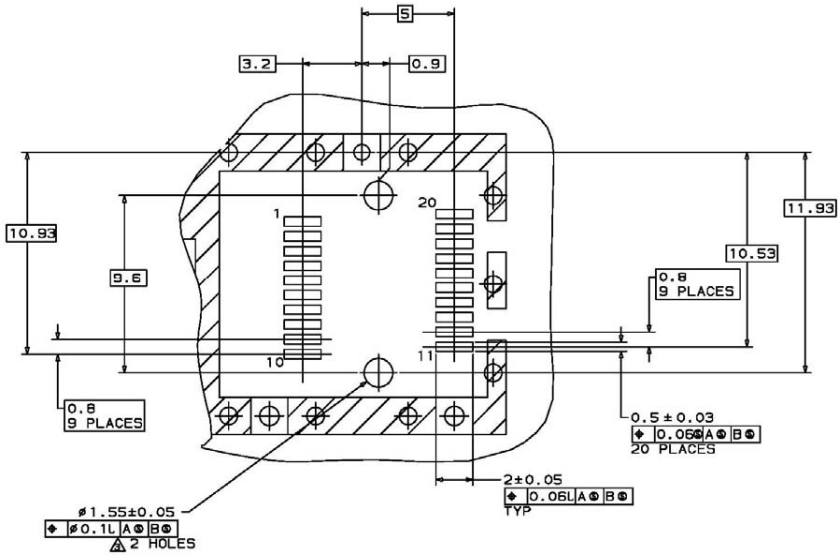

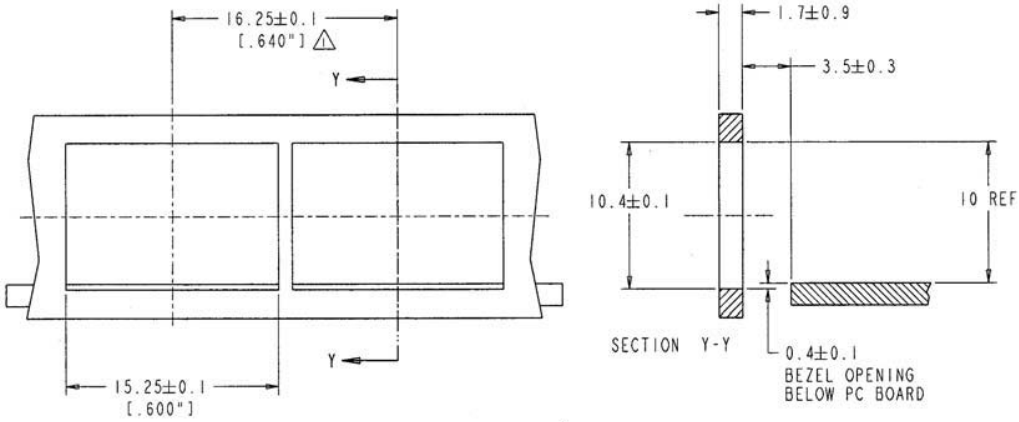

NOTES:

1. MINIMUM PITCH ILLUSTRATED, ENGLISH DIMENSIONS ARE FOR REFERENCE ONLY
2. NOT RECOMMENDED FOR PCI EXPANSION CARD APPLICATIONS