

iSFC® Micro-OTDR Transceiver Series

Fast Fiber Fault Finder™

*SFP with integrated Micro-OTDR (**µOTDR™**) – **iSFC®***
Automatically Detects, Locates and Reports Optical Fiber Faults

Major Features and Benefits

- Integral Micro-OTDR (***µOTDR™***) - ***iSFC®***
- Reflection Immune Operation - ***RIO®***
- Full Duplex, Single Wavelength, CWDM
- -20°C to +70°C T_{OP} Commercial
- -40°C to +85°C T_{OP} Industrial *
- TIA-598-C ZonuColor™ Code
- Dead Zone of 50 meters or Less
- Resolution of 10 meters or Better
- Accuracy of ± 50 meters or Better
- Minimum 23 dB Optical Link Budget
- Up to 60 dB Dynamic Range for the ***µOTDR™***
- Automatically Transitions to ***µOTDR™***
- Reflection Immune Operation – Any Network Type

* CWDM Operation Limited by Optical Mux/Dmux Pass-Band.

Major Benefits

- Single Wavelength Operation in Legacy and UPC (Blue) Connector Networks
- Physical Layer Fault Detection
- Distributed Remote Fiber Monitoring
- Lower Mean-Time-To-Repair (MTTR)
- No Additional Special Equipment
- Half the Fiber, Passives, Splices

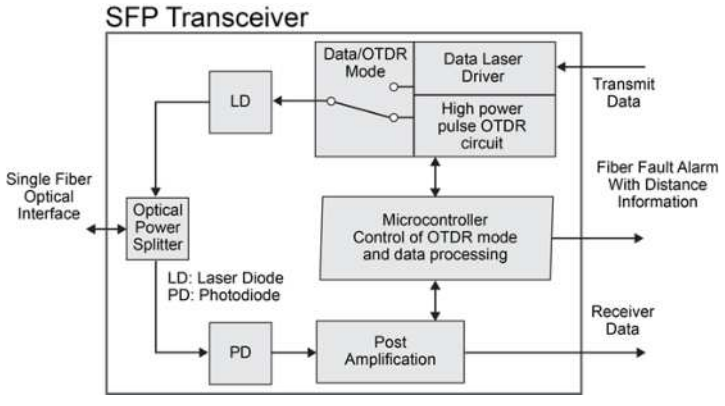
Recommended Applications

- Optical Supervisory Channel (OSC)
- Network Monitoring
- Network Maintenance
- Business Class Service
- Metro-Ethernet Direct
- Wireless Fronthaul / Backhaul

iSFC® Transceivers transmit and receive at the same wavelength, doubling the optical fiber plant capacity. Upon disruption of data link, or failure to connect, the unit switches into ***µOTDR™*** Mode, emitting optical power pulses (> +13 dBm) and detecting the reflected pulses at least down to -47 dBm optical power.

Reflection Immune Operation - *RIO®* resolves self-reflection from an open connector and/or other reflectors. Only remote data is transferred into the host equipment.

Fiber faults and intermittent connections present optical reflections of varying intensities. The reflection intensity of a fiber break has a known statistical distribution. Monitoring multiple fibers in the same trunk increases the detection probability (each fiber breaks differently). Fiber link may be monitored from one side, or both sides, when ring topology is utilized. (See Chart on last page.)



Model Selection Guide
(See Performance Specifications on next page.)

Reach Category:		EX Reach – 40 Km Class
Model Series:		F-Series (Fast Ethernet; SONET OC-3; SDH STM-1)
Part Nomenclature:	SC/UPC Receptacle:	AF6-1xxF1-SU
	LC/UPC Receptacle:	AF6-1xxF1-LU

iSFC® Transceiver Characteristics

Specific Characteristics (-20°C to +70°C)						
Reach Category:		**EX Reach – 40 Km Class**				
Model Series:		**F-Series**				
Part Nomenclature:	**SC/UPC Receptacle:**	**AF6-1xxF1-SU**				
	LC/UPC Receptacle:	**AF6-1xxF1-LU**				
Transmitter						
Parameter	**Sym**	**Min**	**Typ**	**Max**	**Units**	
Average Optical Output Power	P_O	-2	0	1	dBm	
Output Eye Conformance		IEEE 802.3-2008 SONET OC-3 SDH STM-1				
Receiver (Ethernet Sensitivity/Overload referenced to BER < 10E-12 with 2^7-1 PRBS and with PSU decoupling and bypass per MSA at optimum testing environment.)						
Parameter	**Sym**	**Min**	**Typ**	**Max**	**Units**	
Average Optical Input Power	P_{Min}	-	-	-25	dBm	
Loss Of Signal De-Asserted	P_D	-	-24	-	dBm	
Loss Of Signal Asserted	P_A	-	-25	-	dBm	
Output Eye Conformance		IEEE 802.3-2008 SONET OC-3 SDH STM-1				
Link						
Parameter at Specified Bit Rate (Mbps)	**Sym**	**125**	**-**	**156**	**Mbps**	
Minimum Data Sheet Optical Power Budget		23	-	23	dB	
Minimum Planning Optical Power Budget		20	-	20	dB	

Micro-OTDR Mode Characteristics (-20°C to +70°C)					
Parameter	**Sym**	**Min**	**Typ**	**Max**	**Units**
Dynamic Range	DR	55	60	-	dB
Dead Zone		-	30	50	m
Resolution		-	-	10	m
Accuracy		-	-	±50	m

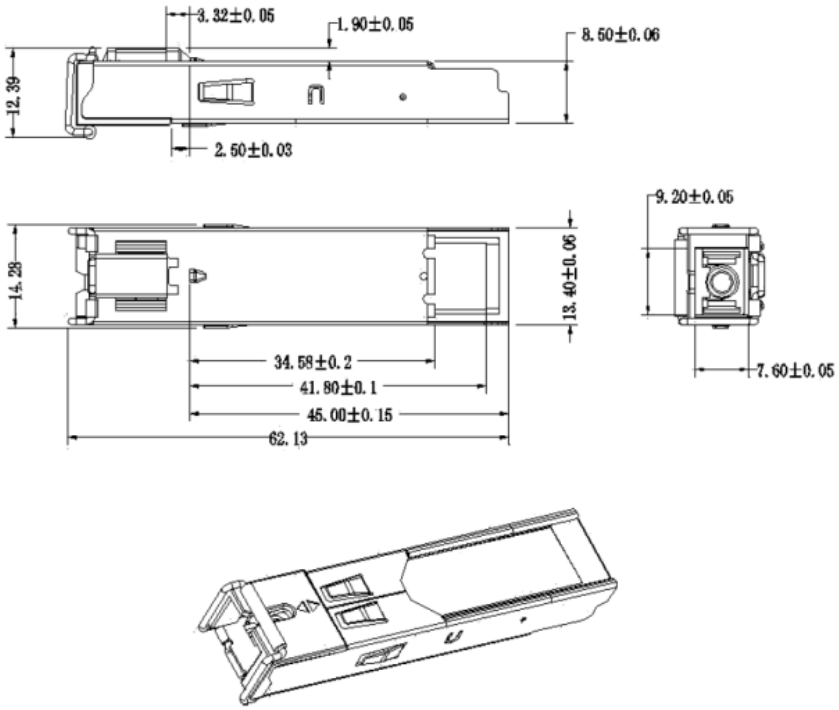
Absolute Maximum Ratings				
Parameter	**Sym**	**Min**	**Max**	**Units**
Storage Temperature (Case)	T_S	-40	85	°C
Operating Temperature (Case)	T_O	-20	70	°C
Relative Humidity	RH	5	95	%
Power Supply Voltage	Vcc	0	3.6	V
Input Voltage		GND	Vcc	V

Laser Δλ = 0.1 nm per °C			
T_{OP}	**°C**	**$\Delta\lambda_C$ (nm)**	**Δλ (nm)**
High	+ 85	λ_C + 6.0	+ 6.0
Room	+ 25	λ_C	-
Low	- 40	λ_C – 6.5	- 6.5

Common Characteristics (-20°C to +70°C)					
Transmitter					
Parameter	**Sym**	**Min**	**Typ**	**Max**	**Units**
Power Supply Voltage	Vcc_{TX}	3.15	3.3	3.45	V
Power Supply Current	Icc_{TX}	-	-	140	mA
Operating Wavelength	I	-	CC	-	nm
Spectral Width (RMS)	$\Delta\lambda_{RMS}$	-	-	0.1	nm
Optical Power When Disabled	$Po_{DISABLE}$	-	-	-30	dBm
TX Enable Timing		-	-	0.1	ms
TX Enable Voltage		-	Vcc_{TX}	-	V
TX Disable Voltage		0	-	0.8	V
TX Alarm Voltage (No Alarm Condition)		0	-	0.8	V
TX Alarm Voltage (Alarm Condition)		-	Vcc_{TX}	-	V
Optical Extinction Ratio	E_R	9	-	-	dB
Total Jitter	T_J	-	-	0.3	UI

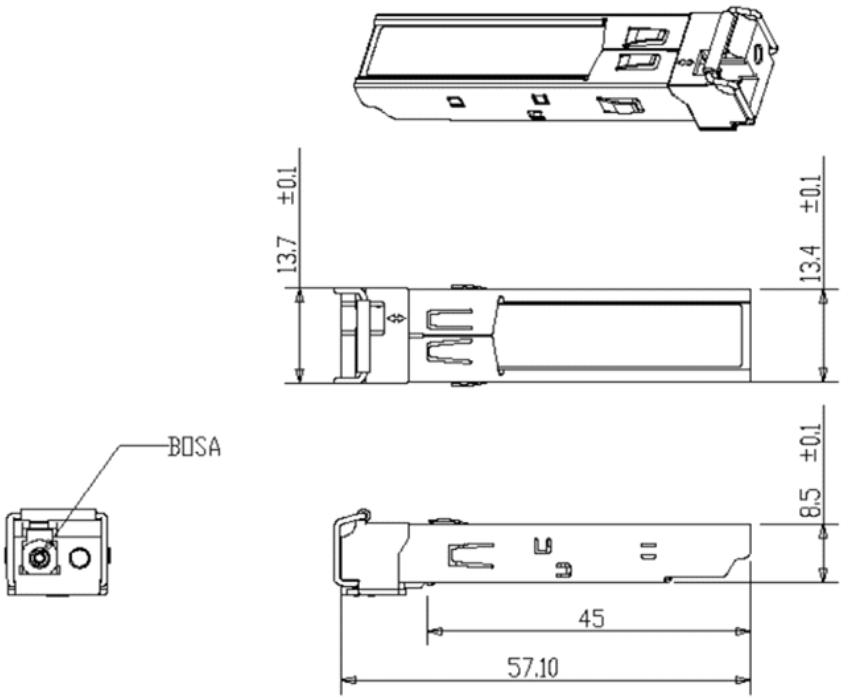
Common Characteristics (-20°C to +70°C)					
Receiver					
Parameter	**Sym**	**Min**	**Typ**	**Max**	**Units**
Power Supply Voltage	Vcc_{RX}	3.15	3.3	3.45	V
Power Supply Current	Icc_{RX}	-	-	110	mA
Operating Wavelength	λ	1260	-	1635	nm
Average Maximum Input Power	P_{MAX}	1	-	-	dBm
Loss Of Signal Hysteresis	$P_D – P_A$	1	-	-	dB
CML Data Output Level HIGH	R_D	Vcc_{RX}-0.020	Vcc_{RX}-0.005	Vcc_{RX}	V
CML Data Output Level LOW	R_D	Vcc_{RX}-0.475	Vcc_{RX}-0.400	Vcc_{RX}-0.350	V
Total Jitter	T_J	-	-	0.35	UI

SC Receptacle Configuration: AF6-1xxF1-SU



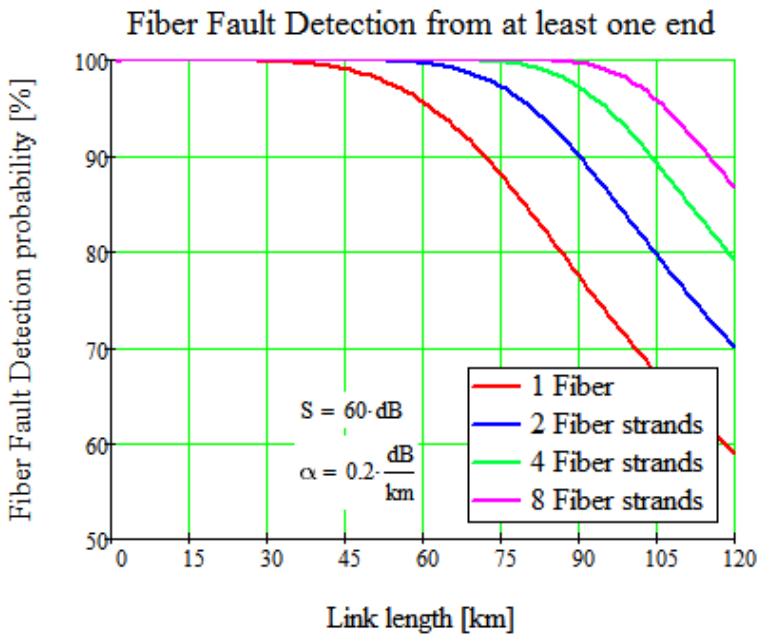
Pin Assignments		
Pin #	**Pin Name**	**Pin Function**
1	VeeT	Transmitter Ground
2	TX Fault	Transmitter Fault Indication
3	TX Disable	Transmitter Disable
4	MOD-DEF2	Module Definition 2
5	MOD-DEF1	Module Definition 1
6	MOD_DEF0	Module Definition 0
7	NC	(No Connection)
8	LOS	Loss of Signal
9	VeeR	Receiver Ground
10	VeeR	Receiver Ground
11	VeeR	Receiver Ground
12	RD-	Inverted Received Data Out
13	RD+	Received Data Out
14	VeeR	Received Ground
15	VccR	Receive Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmitted Data In
19	TD-	Inverted Transmit Data In
20	VeeT	Transmitter Ground

LC Receptacle Configuration: AF6-1xxF1-LU



Ordering Information: Part Numbers and ZonuColor™ Code – CWDM

ITU Ch	λc nm	OZC PN	Color	Verbal	Laser
-	1625	AF6-162F1-SU/LU	MA	Magenta	DFB
18	1611	AF6-161F1-SU/LU	BR	Brown	DFB
17	1591	AF6-159F1-SU/LU	YL	Yellow	DFB
16	1571	AF6-157F1-SU/LU	OR	Orange	DFB
15	1551	AF6-155F1-SU/LU	BK	Black	DFB
14	1531	AF6-153F1-SU/LU	RD	Red	DFB
13	1511	AF6-151F1-SU/LU	WH	White	DFB
12	1491	AF6-149F1-SU/LU	BL	Blue	DFB
11	1471	AF6-147F1-SU/LU	SL	Slate	DFB
10	1451	AF6-145F1-SU/LU	GR	Green w Black Tracer	DFB
9	1431	AF6-143F1-SU/LU	BR	Brown w Black Tracer	DFB
8	1411	AF6-141F1-SU/LU	YL	Yellow w Black Tracer	DFB
7	1391	AF6-139F1-SU/LU	OR	Orange w Black Tracer	DFB
6	1371	AF6-137F1-SU/LU	BK	Black w Yellow Tracer	DFB
5	1351	AF6-135F1-SU/LU	RD	Red w Black Tracer	DFB
4	1331	AF6-133F1-SU/LU	WH	White w Black Tracer	DFB
3	1311	AF6-131F1-SU/LU	GR	Green	DFB
2	1291	AF6-129F1-SU/LU	BL	Blue w Black Tracer	DFB
1	1271	AF6-127F1-SU/LU	SL	Slate w Black Tracer	DFB



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For More Information

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