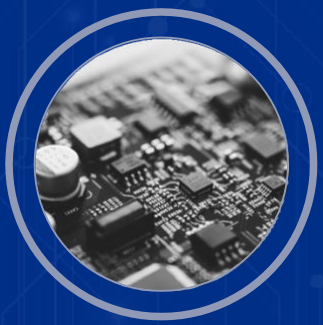


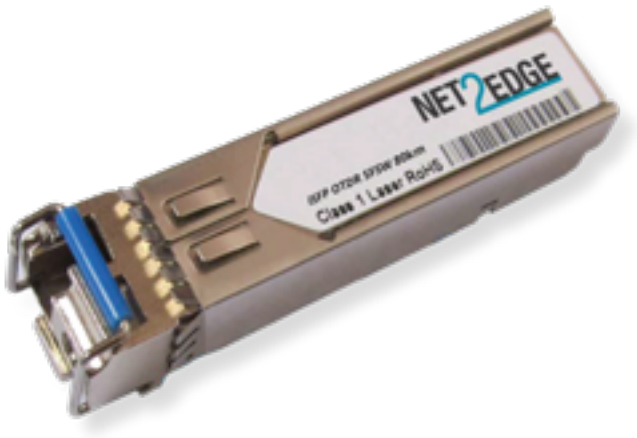
iDFC™ Micro-OTDR Transceiver Series Fast Fiber Fault Finder™

IDFC™ Series

NET2EDGE

IDFC™

Data Sheet



10 GbE SFP+ with integrated Micro-OTDR (µOTDR™) – iDFC™ Automatically Detects,

Overview

Product Features

- Integral Micro-OTDR (uOTDR) - iDFC™
- 10GBASE-LR at 10.3125 Gbps
- Conforms to SFF-8431, SFF-8432 and IEE802.3-2015
- -20°C to +70°C TOP
- TIA-598-C ZonuColor™ Code
- Dead Zone of 50 meters or Less
- Resolution of 10 meters or Better
- Accuracy of ± 2% at 10 Km
- Minimum 8 dB Optical Link Budget for Data Transport
- Minimum 53 dB Dynamic Range for µOTDR™
- Automatically Transitions to µOTDR™

Product Benefits

- Physical Layer Fault Detection
- Distributed Remote Fiber Monitoring
- Lower Mean-Time-To-Repair (MTTR)
- No Additional Special Equipment

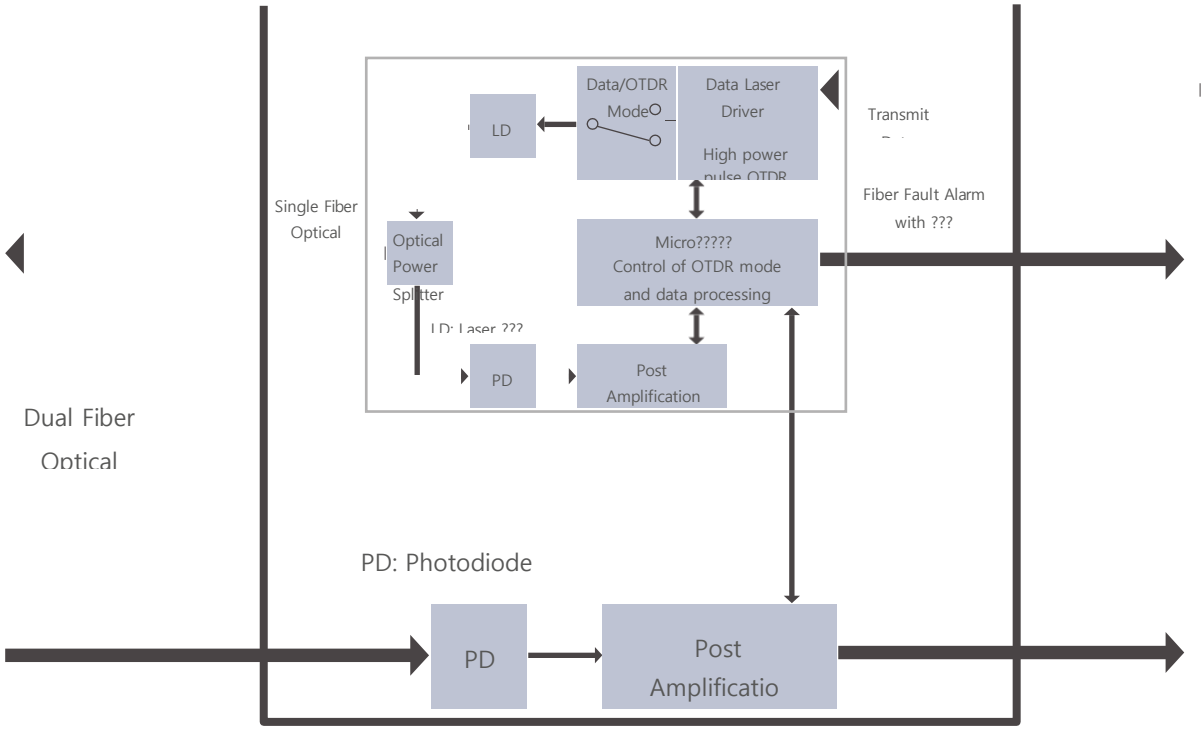
Recommended Applications

- Network Monitoring
- Network Maintenance
- Business Class Service
- Metro-Ethernet Direct
- Wireless Backhaul

iDFC™ Series SFP Transceivers transmit and receive full duplex data over conventional two-fiber optical communication links. Upon disruption of the data link, or failure to connect, the Transmitter Section of the SFP unit switches into TxOTDR™ Mode, emitting optical power pulses (> +10 dBm) and detecting the reflected pulses at least down to -50 dBm optical power.

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

SFP+ Transceiver



Model Selection Guide

(See Performance Specifications on next page.)

Specific Characteristics (-20°C to +70°C)		
Reach Category:		Long Reach – 10 Km Class
Model Series:		X-Series (10 GbE)
Part Nomenclature:	Duplex LC/UPC Receptacle	AF6-DxxXL-LU-NE

iDFC™ Transceiver Characteristics

Specific Characteristics (-20°C to +70°C)		
Reach Category:		Long Reach – 10 Km Class
Model Series:		X-Series (10 GbE)
Part Nomenclature:	SC/UPC Receptacle:	AF6-DxxXL-LU-NE

Transmitter					
Parameter	Sym	Min	Typ	Max	Units
Average Optical Output Power – 10 GbE	PO	-2	-	0	dBm
Output Eye Conformance		IEEE 802.3-2015			

Receiver (10 GbE Sensitivity/Overload referenced to BER < 10E-12 with 2^31-1 PRBS)					
Parameter	Sym	Min	Typ	Max	Units
Average Optical Input Power – 10 GbE	PMin	-	-	-10	dBm
Loss Of Signal De-Asserted – 10 GbE	PD	-	-	-12	dBm
Loss Of Signal Asserted – 10 GbE	PA	-	-	-13	dBm
Output Eye Conformance		IEEE 802.3-2015			

Link					
Parameter at Specified Bit Rate (Mbps)	Sym	2.4576	-	10.3125	Gbps
Minimum Data Sheet Optical Power Budget		8	-	8	dBm
Minimum Planning Optical Power Budget	PD	6	-	6	dBm
Minimum Required Optical Return Loss	ORL	24	-	24	dBm

Ordering Information

Net2Edge Part No.	ITU Ch	λc nm	Colour	Verbal	Laser
AF6-D27XL-LU-NE	1	1271	SL	Red w Black Tracer	DFB
AF6-D29XL-LU-NE	2	1291	BL	Blue w Black Tracer	DFB
AF6-D31XL-LU-NE	3	1311	GR	Green	DFB
AF6-D33XL-LU-NE	4	1331	WH	White w Black Tracer	DFB
AF6-D35XL-LU-NE	5	1351	RD	Red w Black Tracer	DFB

iDFC™ Transceiver Characteristics

Micro-OTDR Mode Characteristics (-20°C to +70°C)					
Parameter	Sym	Min	Typ	Max	Units
Dynamic Range	DR	53	-	-	-
Dead Zone		-	-	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	V_{CC}	0	3.6	V
Input Voltage		GND	Vcc	V

iDFC™ Transceiver Characteristics

Common Characteristics (-20°C to +70°C)

Transmitter

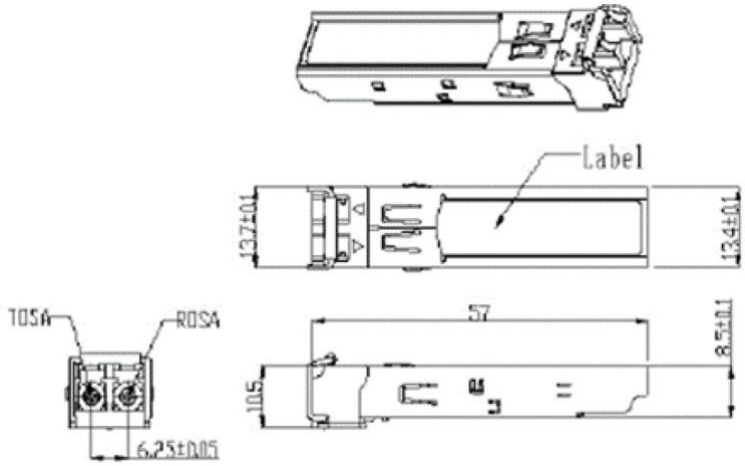
Parameter	Sym	Min	Typ	Max	Units
Power Supply Voltage	V_{CCTX}	3.15	3.3	3.45	V
Power Supply Current	I_{CCTX}	-	-	140	mA
Operating Wavelength	l	-	1311	-	nm
Spectral Width (RMS)	$\Delta\lambda_{RMS}$	-	-	0.1	nm
Optical Power When Disabled	$Po_{DISABLE}$	-	-	-30	dBm
TX Enable Timing		-	-	0.1	ms
TX Enable Voltage		-	V_{CCTX}	-	V
TX Disable Voltage		0	-	0.8	V
TX Alarm Voltage (No Alarm Condition)		0	-	0.8	V
TX Alarm Voltage (Alarm Condition)		-	V_{CCTX}	-	V
Optical Extinction Ratio	E_R	6.5	-	-	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	V_{CCRX}	3.15	3.3	3.45	V
Power Supply Current	I_{CCRX}	-	-	110	mA
Operating Wavelength	λ	1280	-	1620	nm
Average Maximum Input Power	P_{MAX}	0	-	-	dBm
Loss Of Signal Hysteresis	P_D - P_A	1	-	-	dB
LVPECL Data Output Level HIGH	R_D	V_{CCRX}-1.09	-	V_{CCRX}-0.88	V
LVPECL Data Output Level LOW	R_D	V_{CCRX}-1.83	V_{CCRX}-1.83	V_{CCRX}-1.55	V
Total Jitter	T_J	-	-	0.35	UI

Duplex LC Receptacle Configuration: AF6-DxxXL-LU-NE



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

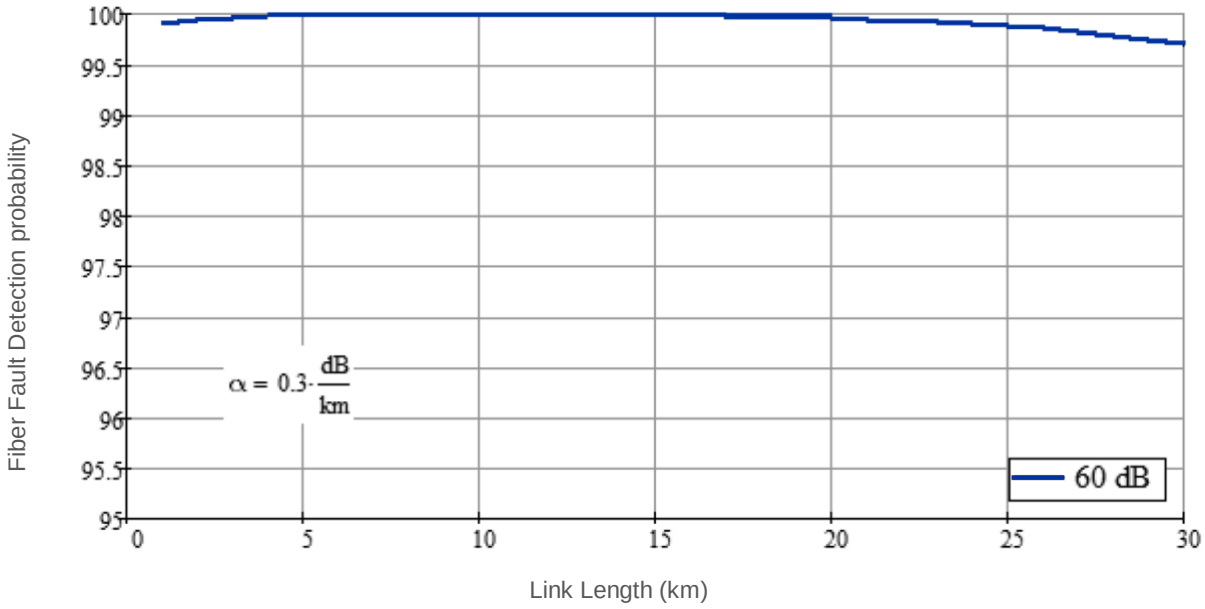
Pin Assignments		
Pin #	Pin Name	Pin Function
11	VeeR	Receiver Ground
12	RD-	Inverted Received Data Out
13	RD+	Received Data Out
14	VeeR	Received Ground
15	VccR	Receive Power
16	VccT	Transmitter Power
17	VeeT	Transmitter Ground
18	TD+	Transmitted Data In
19	TD-	Inverted Transmit Data In
20	VeeT	Transmitter Ground

Ordering Information: Part Numbers and ZonuColor™ Code – CWDM

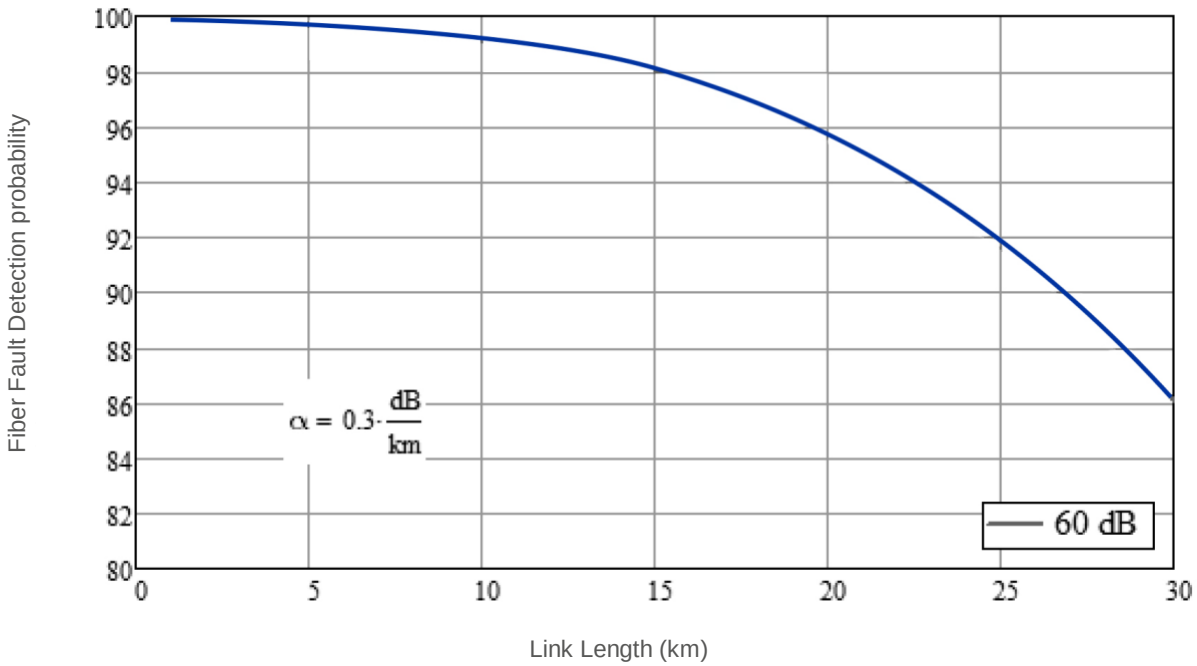
ITU Ch	λc nm	Colour	Verbal	Laser
5	1351	Red	Red w Black Tracer	DFB
4	1331	White	White w Black Tracer	DFB
3	1311	Green	Green	DFB
2	1291	Blue	Blue w Black Tracer	DFB
1	1271	Slate	Slate w Black Tracer	DFB

Fiber Fault Detection – Randomly Distributed Faults

Fiber Fault Detection from at least one end - randomly distributed fault



Fiber Fault Detection from at least one end - randomly distributed fault



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