

XFP optical transceivers for 10G serial applications

IGF Series

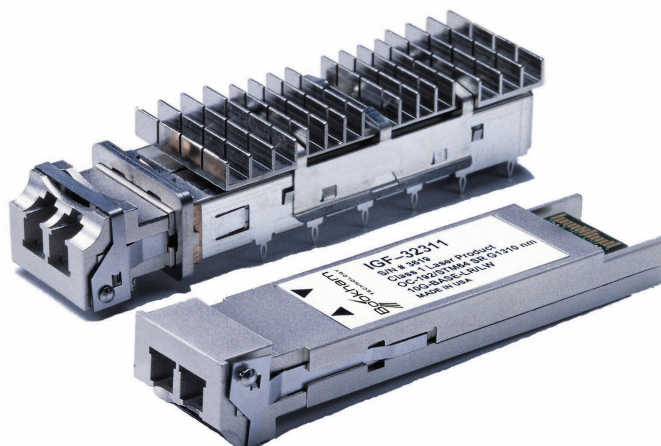
The Bookham Technology IGF Series optical transceiver modules are high-performance, cost-effective modules for serial optical data communication applications at 10Gb/s. They are designed to provide SONET/SDH (with or without FEC), 10Gb/s Ethernet and 10Gb/s Fiber Channel 10km compliant links.

The modules are designed for single mode fiber and operate at a nominal wavelength of 1310nm. They incorporate the exclusive Bookham Technology IO-PKG optical packaging platform that scales with networking equipment platform upgrades.

The modules aid system hardware engineers in implementing low-cost single-mode PMD solutions that are protocol-transparent. The "hot pluggable" feature built into every module reduces manufacturing cost, inventory costs and allows optical port upgrades at the customer premise. Built-in remote monitoring via digital diagnostics allows user access to static and dynamic data as well as module condition.

IGF-32311 and IGF-17311 use a Distributed Feedback (DFB) laser packaged in conjunction with an optical isolator for excellent back reflection performance. The transmitter has full IEC 825 and CDRH Class 1 eye safety.

The Bookham IGF-3000 series of modules have been extensively tested utilizing industry standard single mode fibers in order to ensure compatibility with enterprise and carrier-grade optical networking systems.



Features

- Multi-Protocol compliant
 - SONET OC-192/SDH STM-64
 - IEEE 802.3 10 Gigabit Ethernet
 - 10G Fiber Channel
- Compliant with the XFP MSA
- Ultra small form factor
- 10Gb/s serial operation
- Hot pluggable
- Supports 10km link distances
- Data rates up to 10.75Gb/s
- XFI electrical interface
- On board Enhanced Digital Diagnostics providing I²C remote monitoring capability
- Less than 2.5W power dissipation
- Integral Signal Conditioning ICs enabling FR4 host board PCB traces up to 8 inches
- Duplex LC connector
- Low EMI
- Transmit disable and loss-of-signal functions

Applications

- SONET / SDH OC-192 w or w/o FEC
- 10Gb/s Gigabit Ethernet Networking
- 10G Fiber Channel
- Telecom, Datacom and Storage
- Rack-to-rack connectivity
- Client side interconnection

Optical Specifications - transmitter

$$T_{case} = 0^{\circ}C + 70^{\circ}C$$

DFB Laser

Parameter	Symbol	Value			Units	Notes
		min	typ	max		
Center Wavelength	λ_c	1290	1310	1330	nm	
Optical Transmit Power	P_o	-6.0		-1.0	dBm	EoL
Side mode suppression	SMSR	30			dB	
Extinction Ratio	ER	6			dB	
Jitter Generation	TJ_{rms}			0.01	UI	RMS
Jitter Generation	TJ_{p-p}			0.075	UI	Peak-to-Peak
Transmitter and Dispersion Penalty	TDP			1.2	dB	10km SMF
Output Optical Eye	Compliant with Bellcore GR-253-CORE & ITU G.691 and 802.3 clause 52					

Optical Specification – Receiver

$$T_{case} = 0^{\circ}C + 70^{\circ}C$$

Parameter	Symbol	Value			Units	Notes
		min	typ	max		
Input Operating Wavelength	λ	1260		1360	nm	
Receiver Sensitivity	P_{IN-MIN}			-13.4	dBm	Avg. power at ER=6 dB
Maximum Input Power	P_{IN-MAX}	0.5			dBm	Ave. power
Reflectance				-14	dB	
Loss of Signal						
Loss of Signal Assert (Off to On)	P_A			-20	dBm	
Loss of Signal Deassert (On to Off)	P_D	-15			dBm	
Hysteresis	$P_A - P_D$	0.5		6	dB	

Power rail requirements

+1.8V, +3.3V, +5.0V, GND

Management Interface

Digital diagnostics is an available interface on all Bookham XFP transceivers. A 2-wire Serial ID interface provides user access to vendor/module identification, customer specific data, link type, static and dynamic monitor hooks, and a check code mechanism for verifying accuracy in the data registers. These “static” and “dynamic” diagnostics allow users to remotely and accurately identify modules and their vendors, make determinations about its compatibility with the system, verify which “Enhanced” diagnostics are supported, and monitor module parameters to determine the module and link condition.

The module’s “Enhanced Digital Diagnostics” features provide real-time monitoring of receiver input power, transmitter power, internal module temperature, laser bias current, and supply voltage parameters.



Ordering information

IGF-17311 TRx 10.3G 10KM XFP LC STD TEMP (10GBASE-LR)
IGF-32311 TRx 10G 2/7/10KM XFP LC STD TEMP (Multi-Protocol)

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