SG4000 Modular Optical Node

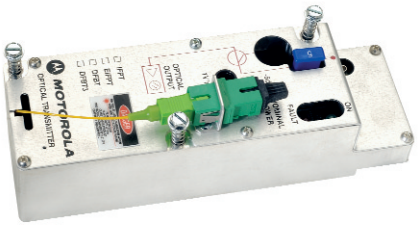
SG4-IFPT, SG4-EIFPT, SG4-DFBT, SG4-DFBT3, SG4-1550-DFBT6

Analog Return Path Optical Transmitters

MOTOROLA
intelligence everywhere™

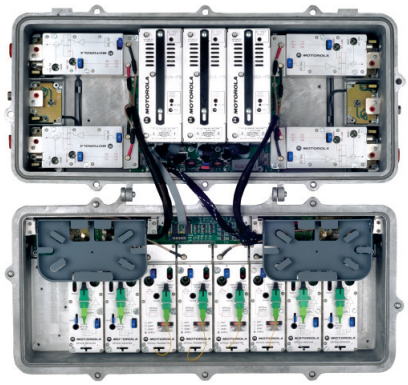
The SG4000 scalable optical node offers five different analog return path transmitter modules to address the increasing demand for complete two-way interactive broadband communications systems. The SG4-IFPT and SG4-EIFPT modules use an isolated, un-cooled Fabry-Perot laser while the SG4-DFBT, SG4-DFBT3, and SG4-1550-DFBT6 modules use a state-of-the-art isolated, un-cooled, Distributed Feedback (DFB) laser for improved link performance. An integrated optical bulkhead connector provides simple, quick connect module installation and allows for easy connector cleaning. All five transmitters are available in either SC/APC or E2000 versions. Up to four transmitters can be used in a single SG4000 node providing additional flexibility for multiple segmentation and redundancy applications.

These transmitters have an integrated RF amplifier and all the active circuitry required to provide RF drive to the laser enabling optimized performance while minimizing set-up time. They all support a channel loading capacity of 35 MHz of digital data or up to two analog video channels or a mixture of both. All transmitters incorporate a microprocessor controlled circuit to minimize any variation in the optical modulation index (OMI) as the laser slope efficiency changes due to ambient temperature variations. An automatic power control (APC) circuit is also included to minimize the change in optical output power due to module temperature variations and laser aging effects.



Featuring broad power ranges and performance; the integrated SG4 Return Path Transmitters compliment various network architectures.

The SG4-* transmitters can be hot-swapped in the field, providing true plug and play functionality. Module status indicators help reduce troubleshooting time. An optical output power DC voltage test point is provided along with an RF input test point. Laser RF drive level adjustments are accomplished with a JXP style pad attenuator.



BENEFITS INCLUDE:

- 1310 and 1550 nm models accommodate a variety of performance needs
- Modular design supports multiple architecture configurations
- Automatic Power Control
- Integrated RF amplifier
- Thermal slope efficiency compensation
- SC/APC or E2000 connector options
- Plug-n-Play installation and operation

SPECIFICATIONS

PARAMETER	SG4-IFPT	SG4-EIFPT	SG4-DFBT	SG4-DFBT3	SG4-1550-DFBT6
OPTICAL CHARACTERISTICS					
Laser Type	Fabry-Perot, Isolated, Uncooled		Distributed Feedback, Isolated, Uncooled		
Optical Wavelength	1310 nm				1550 nm
Optical Output Power	0.4 mW (-4 dBm)	1.0 mW (0 dBm)	1.0 mW (0 dBm)	2.0 mW (+3 dBm)	4.0 mW (+6 dBm)
Optical Power Test Point Scale Factor	1.0 V/mW				
Optical Connector Types	SC/APC or E2000				
RF CHARACTERISTICS					
Operational Bandwidth	5 – 65 MHz				
Maximum Payload	35 MHz digital data or 2 video channels plus limited data channels				
Recommended Total Input Power [1]	+22 dBmV				
Optical Modulation Index (OMI), @ 25 ± 5°C	0.35 ± 0.020		0.20 ± 0.020		
OMI Change Over Temperature	+ 2.0 dB Max.				
Flatness	1.0 dB P-V Max.				
RF Input Return Loss	18 dB Min., 5 – 65 MHz				
RF Input Impedance	75 Ohms				
PERFORMANCE					
Noise Power Ratio (NPR) [2]	30 dB over 10 dB dynamic range	40 dB over 9 dB dynamic range	40 dB over 11 dB dynamic range	40 dB over 15 dB dynamic range	40 dB over 15 dB dynamic range
Single Second Order Distortion (SSO)	-36 dBc	-35 dBc	-39 dBc	-45 dBc	-45 dBc
Single Third Order Distortion (STO)	-52 dBc	-52 dBc	-55 dBc	-65 dBc	-65 dBc
Spurious Noise	-52 dBc				
GENERAL					
Dimensions	2.1" W x 6.5" L x 2.4" H (5.3 cm x 16.5 cm x 6 cm)				
Weight	0.65 lbs.				
Operating Temperature Range	-40°C to +85°C (-40°F to +185°F)				
Current Draw @ 24 VDC	330 mA Max.				360 mA Max.
Current Draw @ 5 VDC	51 mA Max.				135 mA Max.
Power Consumption	8 W Max.				9 W Max.
LED Indicators	Power (Green), Fault (Red)				

[1] All SG4 transmitters operate with a nominal 28 dBmV total power at the node housing inputs.

[2] Specified at 25ºC, 20km fiber, 9 dB total loss.

Specifications are subject to change without notice.

ORDERING INFORMATION

Model Number	Part Number	Transmitter Module Description
SG4-IFPT/SC	505640-001-00	1310 nm Isolated Fabry-Perot, SC/APC, 0.4 mW
SG4-IFPT/E	505640-002-00	1310 nm Isolated Fabry-Perot, SC to E2000 Adapter, 0.4 mW
SG4-EIFPT/SC	505641-001-00	1310 nm Enhanced Isolated Fabry-Perot, SC/APC, 1.0 mW
SG4-EIFPT/E	505641-002-00	1310 nm Enhanced Isolated Fabry-Perot, SC to E2000 Adapter, 1.0 mW
SG4-DFBT/SC	505642-001-00	1310 nm Distributed Feedback, SC/APC, 1.0 mW
SG4-DFBT/E	505642-002-00	1310 nm Distributed Feedback, SC to E2000 Adapter, 1.0 mW
SG4-DFBT3/SC	505643-001-00	1310 nm Distributed Feedback, SC/APC, 2.0 mW
SG4-DFBT3/E	505643-002-00	1310 nm Distributed Feedback, SC to E2000 Adapter, 2.0 mW
SG4-1550-DFBT6/SC	504698-001-00	1550 nm Distributed Feedback, SC/APC, 4.0 mW
SG4-1550-DFBT6/E	504698-001-00	1550 nm Distributed Feedback, SC to E2000 Adapter, 4.0 mW

MGBI

MOTOROLA

Motorola, Inc.
Broadband Communications Sector
101 Tournament Drive
Horsham, PA 19044
1.800.523.6678
www.motorola.com/broadband

506443-001

5571 - 0104 - 1K