BROADCOM®

Data Sheet

BCM957508-N2100G

Dual-Port 100 Gb/s Ethernet PCI Express 4.0 x16 OCP 3.0 SFF Network Adapter

General Description

The Broadcom® BCM957508-N2100G is a dual-port 100 Gb/s PCI Express 4.0 x16 Network Adapter designed to the Open Compute Project (OCP) 3.0 Design Specification in small form factor with two QSFP56 network connectors. The adapter supports QSFP56/QSFP28/QSFP+ optical modules and copper direct-attach cables. The network adapter uses the Broadcom BCM57508 200GbE MAC controller with an integrated dual-channel 100GbE SFI transceiver.

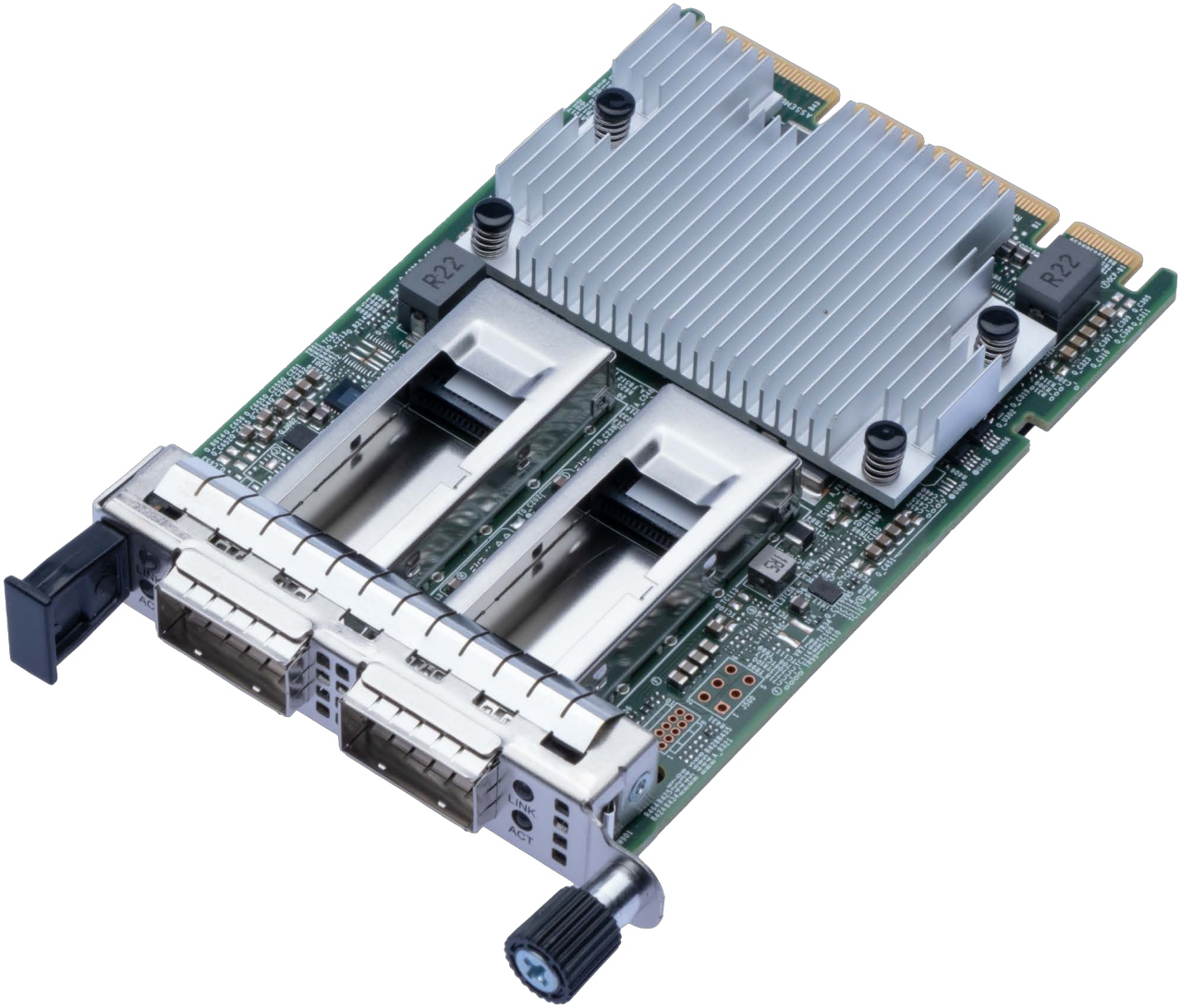
Features

- Dual-port pluggable media interface, which is compatible with a QSFP56/QSFP28/QSFP+ optical transceiver or a copper direct-attach cable.
- Industry's most secure PCIe adapter solution leveraging Broadcom's BroadSAFE® technology
- Supports Ethernet 50G PAM-4, 25G NRZ, and 10G NRZ signaling.
- Multi-Host up to four hosts.
- Fully compliant with the SFF-8402 standard.
- x16 PCI Express 4.0 compliant.
- SR-IOV with up to 1k virtual functions (VFs).
- Function-Level Reset (FLR) support.
- TruFlow™ flow processing engine.
- Virtual Network Termination – VXLAN, NVGRE, Geneve, GRE encap/decap.
- vSwitch Acceleration.
- Tunnel-aware stateless offloads.
- DCB support – PFC, ETS, QCN, DCBx.
- RDMA over Converged Ethernet (RoCE)
- Network Controller Sideband Interface (NC-SI).
- SMBus 2.0.
- MCTP over SMBus.
- Jumbo frames up to 9 KB.
- Advanced congestion avoidance.
- Multiqueue, NetQueue, and VMQ.
- IPv4 and IPv6 offloads.
- TCP, UDP, and IP checksum offloads.
- Large send offload (LSO).
- Large receive offload (LRO).
- TCP segmentation offload (TSO).
- Receive-side scaling (RSS).
- Transmit-side scaling (TSS).
- VLAN insertion/removal.
- Interrupt coalescing.
- Network boot—PXE, UEFI.
- iSCSI boot.
- Wake-on-LAN (WOL).
- MSI and MSI-X.
- OCP 3.0 FRU support.
- Conforms to the OCP 3.0 Design Specification Version 1.0.

Applications

Dual-port 100-Gigabit Ethernet adapter for OCP systems.

Figure 1: BCM957508-N2100G OCP 3.0 SFF Network Adapter



NOTE: Figure 1 shows the pull-tab bracket installed by default. The surface markings of the component may not reflect the product upon receipt. Broadcom reserves the right to change any component on the printed circuit board with the same functionality.

Table of Contents

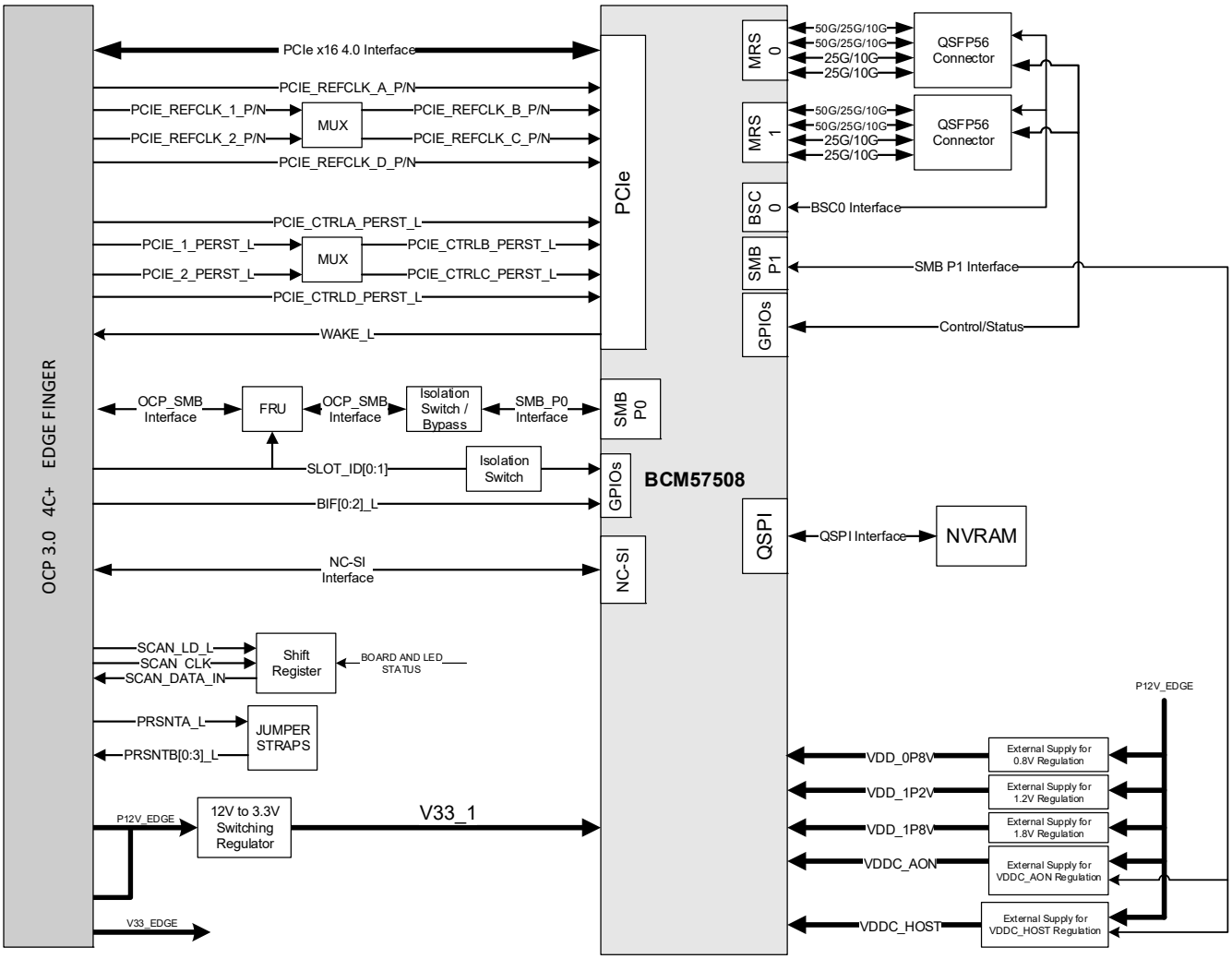
1 Functional Description

This section provides the functional description of the BCM957508-N2100G Network Adapter.

1.1 Block Diagram

Figure 2 shows the main functional blocks on the BCM957508-N2100G Network Adapter.

Figure 2: BCM957508-N2100G Block Diagram



1.2 Host Interface Connector

The BCM957508-N2100G OCP network adapter interfaces with the system baseboard via the gold fingers compliant with the SFF-TA-1002 specification.

1.3 BCM57508 Ethernet Controller

The BCM57508 Ethernet controller is configured as a dual-port 100 Gb/s interface to the line side and x16 PCI Express v4.0 interface to the system host.

1.4 PCI Express Interface

PCIe is a high-bandwidth serial bus providing a low pin-count interface as an alternative to parallel PCI. It is part of the host interface connector. The BCM57508 complies with the PCI Express Base Specification Revision 4.0, and supports a 16-lane PCIe 4.0 interface via the host interface connector.

1.5 NC-SI Interface

The BCM57508 Ethernet controller supports the Network Controller Sideband Interface (NC-SI) Specification version 1.1.0. The NC-SI provides a standardized interface between the system baseboard management controller (BMC) and the integrated NC-SI module of the BCM57508.

1.6 SMBus Interface

The BCM57508 Ethernet Controller SMB0 interface supports serial communications between the BCM57508 and the system. The interface allows the Ethernet controller to act as a SMBus primary or a secondary device.

1.7 Non-Volatile RAM

The BCM57508 Ethernet controller requires a non-volatile serial flash memory (NVRAM) to store the device firmware, PCI configuration space settings (for example, device ID, vendor ID), MAC address, and so on. After power-up, the firmware is downloaded into the device memory and executed by the on-chip processor.

1.8 Heat Sink

The passive heat sink is attached to the Ethernet controller using four spring-loaded push pins that are inserted into four mounting holes.

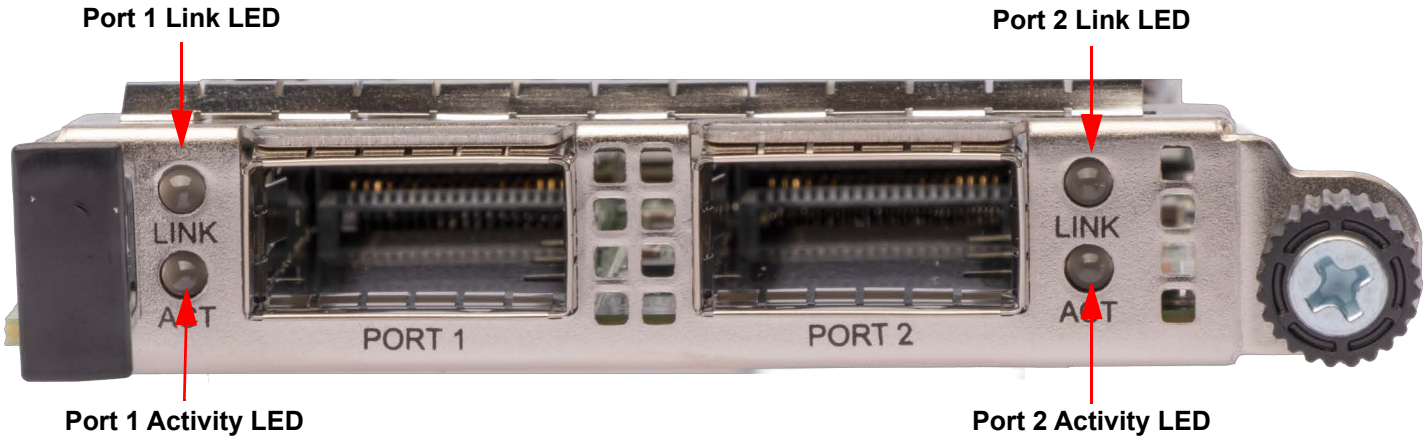
1.9 Power Supplies

All power is derived from the network adapter host interface connector 12V and 3.3V supply which feeds the onboard regulators that provide the necessary power to the various components on the network adapter. The network adapter has six switching voltage regulators that power the adapter’s VDDC_AON, VDDC_HOST, +0.8V, +1.2V, +1.8V, and +3.3V loads.

1.10 LED Functions and Locations

The QSFP56 port supports two LEDs to indicate traffic activities and link speed. The LEDs are visible as shown in Figure 3. Its locations and form factors conform to the OCP 3.0 Design Specification.

Figure 3: Activity and Link LED Locations



NOTE: Figure 3 shows the pull-tab bracket installed by default. The surface markings of the component may not reflect the product upon receipt. Broadcom reserves the right to change any component on the printed circuit board with the same functionality.

Table 1: LED Functions

LED Type	Color/Behavior	Note
Activity	Off	No Activity
	Green (blinking)	Link up (traffic flowing)
Link	Off	No Link
	Green	Linked at 100 Gb/s
	Amber	Linked at lower speed

1.11 PCIe Plug-N-Play Identification

Table 2 provides the PCIe PNP IDs for the adapter.

Table 2: PCIe PNP IDs

Field	Value
Vendor ID	0x14E4
Device ID	0x1750
Sub-Vendor ID	0x14E4
Sub-Device ID	0x5208

2 Board Power and Environmental Specifications

Table 3 provides the adapter power consumption.

Table 3: Adapter Power Consumption

Adapter Power[a]	Passive DAC Cable	Optical Transceiver[b]
Typical – 50% Ethernet traffic	15.3W	19.8W
Max – 100% Ethernet traffic	16.4W	21.0W

a. Power consumption of adapter at 55°C ambient temperature.

b. Power consumption of adapter is measured using a Broadcom AFBR-89CDHZ power class 3 optical transceiver. The total adapter power adapter may vary with different optical transceivers.

Table 4: Adapter Environmental Specifications

Airflow	Ambient Temperature	Passive DAC Cable	Optical Transceiver[a]
Cold Aisle	45°C	Tier 7, 210 LFM	Tier 7, 240 LFM
Hot Aisle	55°C	Tier 5, 245 LFM	Tier 8, 400 LFM
Storage Humidity	Relative Humidity Range (Non-condensing) maximum 90% at 35°C		
Storage Temperature	–40°C to 70°C		
Operating Temperature	0°C to 55°C		

a. Airflow requirements are measured using a Broadcom AFBR-89CDHZ (power class 3, commercial temp [70°C]) optical transceiver. Check the airflow requirements of the selected optical transceivers to ensure adequate cooling to the optical transceivers.

3 Package Weight

Table 5 shows the BCM957508-N2100G package weight with the pull-tab bracket installed by default (excluding the optical module).

Table 5: Package Weight

Parameter	Symbol	Value	Unit
BCM957508-N2100G weight	g	110	gram

4 Physical Specifications

The physical board dimensions are compliant with the OCP 3.0 Design Specification, Small Form Factor (SFF) network adapter, and faceplate. See the mechanical dimensions in the OCP 3.0 Design Specification for additional information.

The BCM957508-N2100G supports all three faceplates, for example, pull tab, ejector latch, and internal lock. The pull tab is installed by default. For additional mechanical dimensions, see the OCP 3.0 Design Specification.

5 Regulatory and Safety Approvals

The following sections detail the Regulatory, Safety, Electromagnetic Compatibility (EMC), and Electrostatic Discharge (ESD) standard compliance for the BCM957508-N2100G network interface card.

5.1 Regulatory

Table 6: Regulatory Approvals

Item	Applicable Standard	Approval (A)/Certificate (C)
CE/European Union	EN 62368-1:2014	CB report and certificate
UL/USA	IEC 62368-1 (ed. 2)	CB report and certificate

5.2 Safety

Table 7: Safety Approvals

Country	Certification Type/Standard	Compliance
International	CB Scheme ICES 003 – Digital Device UL 1977 (connector safety) UL 796 (PCB wiring safety) UL 94 (flammability of parts)	Yes

5.3 Electromagnetic Compatibility (EMC)

Table 8: Electromagnetic Compatibility

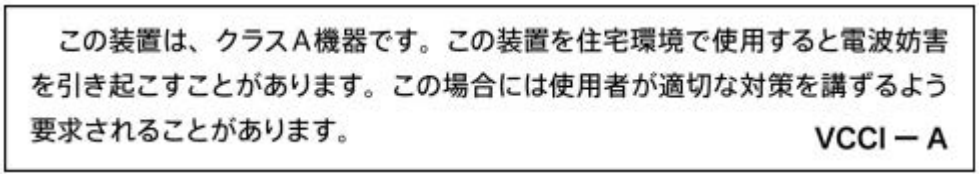
Standard/Country	Certification Type	Compliance
CE/EU	EN 55032:2012/AC:2013 Class A EN 55024:2010 EN 61000-3-2:2014 EN 61000-3-3:2013	CE report and CE DoC
UKCA/UK	EN 55032:2012/AC:2013 Class A EN 55024:2010 EN 61000-3-2:2014 EN 61000-3-3:2013	CE report and UKCA DoC
FCC/USA	CFR47 Part 15 Subpart B Class A	FCC and EMC report.
IC/Canada	ICES-003 Class A	Report referencing IC standards.
ACA/Australia, New Zealand	AS/NZS CISPR 22:2009 +A1 :2010 Class A	ACA certificate
BSM/Taiwan	CNS 13438 (2006) Class A	BSMI certificate
BSMI/Taiwan	CNS 15663	BSMI certificate/RoHS table
MSIP/S. Korea	KN32 Class A KN35	Korea certificate MSIP mark
VCCI/Japan	VCCI V-3 (2015-04)	Copy of VCCI online certificate

5.4 Electrostatic Discharge (ESD) Compliance

Table 9: ESD Compliance Summary

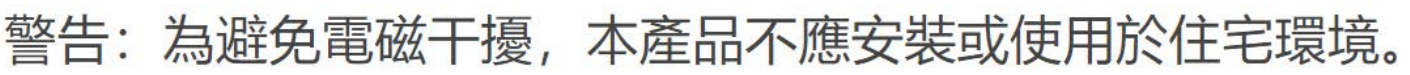
Standard	Certification Type
EN55035 (EN 61000-4-2)	Air/Direct discharge

5.5 VCCI – Japan



This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures. VCCI—A.

5.6 Taiwan BSMI Compliance



Warning: To avoid electromagnetic interference, this product should not be installed or used in residential environments.

5.7 FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

5.7.1 Information to User

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

6 Ordering Information

Table 10: Ordering Information

Part Number	Description
BCM957508-N2100G	Dual-Port 100 Gb/s Ethernet PCI Express 4.0 x16 OCP 3.0 Network Adapter, Halogen-Free

Revision History

957508-N2100G-DS107; November 3, 2025

Updated:

- Figure 1, BCM957508-N2100G OCP 3.0 SFF Network Adapter – Updated photo.
- Figure 3, Activity and Link LED Locations – Updated photo.

957508-N2100G-DS106; September 22, 2022

Updated:

- Features – Added 25G NRZ and 10G NRZ support.
- QSFP56 Connector – Added 25G NRZ and 10G NRZ support.

957508-N2100G-DS105; February 7, 2022

Updated:

- SMBus Interface – Updated description.
- Table 2, LED Functions – Changed Link to Activity.

957508-N2100G-DS104; August 20, 2021

Updated:

- Board Power and Environmental Specifications – Updated the entire section.

957508-N2100G-DS103; November 24, 2020

Updated:

- Board Airflow Requirement and Power Consumption – Updated the entire section.

957508-N2100G-DS102; January 3, 2020

Updated:

- Features – Updated OCP 3.0 Design Specification Version to 1.0
- Airflow Requirements – Updated airflow requirements.

957508-N2100G-DS101; October 24, 2019

Updated:

- Host Interface Connector – Updated version number.
- Board Power Consumption – Updated power consumption.

957508-N2100G-DS100; February 18, 2019

Initial release.

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