USERS GUIDE

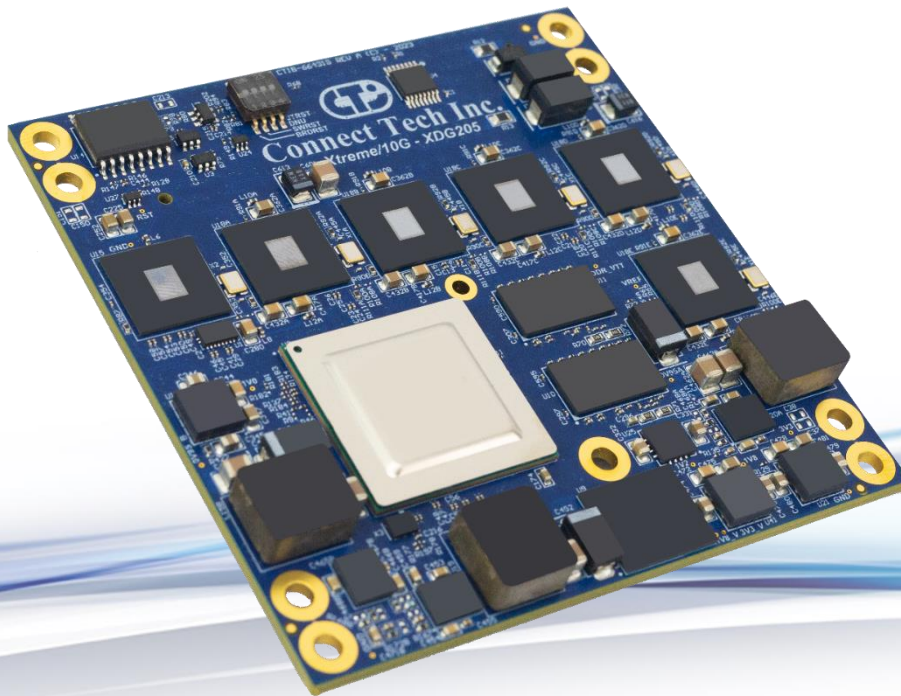**Connect Tech Inc.**
Embedded Computing Experts

www.connecttech.com

Xtreme/10G XDG205
Users Guide

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CTIM-00090 Revision 0.00 2023/04/12

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Preface

Disclaimer

The information contained within this user's guide, including but not limited to any product specification, is subject to change without notice.

Connect Tech assumes no liability for any damages incurred directly or indirectly from any technical or typographical errors or omissions contained herein or for discrepancies between the product and the user's guide.

Customer Support Overview

If you experience difficulties after reading the manual and/or using the product, contact the Connect Tech reseller from which you purchased the product. In most cases the reseller can help you with product installation and difficulties.

In the event that the reseller is unable to resolve your problem, our highly qualified support staff can assist you. Our support section is available 24 hours a day, 7 days a week on our website at: http://connecttech.com/support/resource-center/. See the contact information section below for more information on how to contact us directly. Our technical support is always free.

Contact Information

Mail/Courier
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N1L 0H7 Canada

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support@connecttech.com
www.connecttech.com

Note:
Please go to the Connect Tech Resource Center for product manuals, installation guides, device drivers, BSPs and technical tips. Submit your technical support questions to our support engineers.

Telephone/Facsimile
Technical Support representatives are ready to answer your call Monday through Friday, from 8:30 a.m. to 5:00 p.m. Eastern Standard Time. Our numbers for calls are:

Toll Free: 800-426-8979 (North America only)
Telephone: 519-836-1291 (Live assistance available 8:30 a.m. to 5:00 p.m. EST, Monday to Friday)
Facsimile: 519-836-4878 (on-line 24 hours)

Limited Product Warranty

Connect Tech Inc. provides a one-year Warranty for the Xtreme/10G XDG205. Should this product, in Connect Tech Inc.'s opinion, fail to be in good working order during the warranty period, Connect Tech Inc. will, at its option, repair or replace this product at no charge, provided that the product has not been subjected to abuse, misuse, accident, disaster or non-Connect Tech Inc. authorized modification or repair.

You may obtain warranty service by delivering this product to an authorized Connect Tech Inc. business partner or to Connect Tech Inc. along with proof of purchase. Product returned to Connect Tech Inc. must be pre-authorized by Connect Tech Inc. with an RMA (Return Material Authorization) number marked on the outside of the package and sent prepaid, insured, and packaged for safe shipment. Connect Tech Inc. will return this product by prepaid ground shipment service.

The Connect Tech Inc. Limited Warranty is only valid over the serviceable life of the product. This is defined as the period during which all components are available. Should the product prove to be irreparable, Connect Tech Inc. reserves the right to substitute an equivalent product if available or to retract the Warranty if no replacement is available.

The above warranty is the only warranty authorized by Connect Tech Inc. Under no circumstances will Connect Tech Inc. be liable in any way for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use, such product.

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ESD Warning

Electronic components and circuits are sensitive to Electrostatic Discharge (ESD). When handling any circuit board assemblies including Connect Tech carrier assemblies, it is recommended that ESD safety precautions be observed. ESD safe best practices include, but are not limited to:

- Leaving circuit boards in their antistatic packaging until they are ready to be installed.
- Using a grounded wrist strap when handling circuit boards, at a minimum you should touch a grounded metal object to dissipate any static charge that may be present on you.
- Only handling circuit boards in ESD safe areas, which may include ESD floor and table mats, wrist strap stations and ESD safe lab coats.
- Avoiding handling circuit boards in carpeted areas.
- Try to handle the board by the edges, avoiding contact with components.

Revision History

Revision	Date	Changes
0.00	2023-04-12	Initial Release

Introduction

Connect Tech's Xtreme/10G XDG205 provides high density, high port count Layer 2 switching and Layer 3 routing with 10G uplinks. A total of 36 switchable ports, in an extremely small form factor **85mm x 85mm**. The devices target managed Layer 2 and Layer 3 equipment in SMB, SME, and industrial applications where high port count 2.5G switching with 10G aggregation/uplinks are required.

The XDG205 is a **Network Switching Module** of a proprietary form factor and contains a board-to-board connector that allows it to be integrated into an off the shelf carrier like the XBG301 or another application specific carrier.

Product Features and Specifications

Feature	Description
Ethernet Switch Engine	Microsemi SparX-5i L2/L3 TSN-Enabled Industrial Ethernet Switch
I/O Connectors	High-Density 440-pin Board-to-Board Connector
Ports	• 36 Total Switching Ports • 12x 10G SERDES Ports 　　　SFP+/SFP/PHY capable: 　　　-10G-SFI/5G-SGMII/2.5G-SGMII/1G-SGMII 　　　Backplane capable: 　　　-10GBASE-KR/5GBASE-KR/2.5GBASE-KX/1000BASE-KX • 24x 2.5G/1G Copper Ports 　　　-2.5GBASE-T/1000BASE-T 　　　-Integrated PHYs (No External Copper PHYs required)
Memories	• 2GB DDR4 SDRAM • 128Mb Serial NOR Flash • 32GB eMMC Flash
Industrial Ethernet	• TSN feature set: 802.1Qbv, 802.1Qch, 802.1Qci, • 802.1AS-Rev, 802.1CB, 802.1Qbu • Integrated timing: VeriTime™ (1588v2) and SyncE • Ethernet Ring Protection Switching (ERPS)
Layer 2 & Layer 3 Forwarding	• IEEE 802.1Q VLAN switch with 32K MACs and 4K VLANs • Secure MAC addressing • Push/pop/translate up to two VLAN tags on ingress and egress • Policing with storm control and MC/BC protection • RSTP and MSTP support • Independent and shared VLAN learning (IVL, SVL) • Hardware-based and software-based learning • TCAM-based classification and VCAP-II security • Layer 3 unicast and multicast routing
Layer 2 Switching Parameters	• Packet Buffer: 32Mb • MAC Table Size: 32k • Layer 2 Multicast Port Masks: 1k • Super VCAP blocks: 8 • VCAP CLM entries: 4k • VCAP LPM entries: 4k/1k (IPv4/IPv6) • VCAP IS2 entries: 4k/1k (IPv4/IPv6)
Layer 3 Switching Parameters	• Router Legs: 128 • IP unicast routes/hosts: 4k/1k (IPv4/IPv6) • Next -hop/ ARP table entries: 2k • IP multicast groups: 2k/512 • Multicast router leg masks: 1k • ECMPs: 16
Security	• Vitesse Content Aware Processor (VCAP™) packet filtering engine using ACLs for ingress and egress packet inspection • Storm controllers for flooded broadcast, flooded multicast, and-flooded unicast traffic • Per-port, per-address registration for copying/redirecting/discarding 32 VCAP single-rate policers
Management Access	• Web Interface • CLI via UART • Software API • SMNP
Operating Temperature	40°C to +85°C (-40°F to +185°F)
Warranty and Support	Limited One-Year Warranty and Free Technical Support

Upgrading to the XDG205 from the XDG201

Overview:

This section contains important information on upgrading an existing XDG201 system with the XDG205.

	XDG201	XDG205
Maximum Bandwidth	80 Gbps	200 Gbps
Serdes Ports	4x10G, 8x1G	12x10G
Copper Ports	24x1G Base T	24x2.5G Base T
Power Idle	14 Watts	18 Watts
Power All Links Active*	21.72 Watts	50.40 Watts
Time-Sensitive Networking	Not available.	Complete feature set offered.
PPS Pins	Not broken out.	2 GPIO pins broken out.
Mechanical Dimensions	85x85 mm	85x85mm

Power with all links active* this was measured with all 24 of the 2.5G copper ports linked and 8 of the 10G SFP+ optical modules (approximate 3 Watts per module for each SFP+ 10G link) linked. This was tested using the XBG301 as the breakout board.

Pin-Compatibility and Mechanical Footprint Considerations:

The XDG205 is a pin-compatible drop-in replacement of the XDG201. It is also features a matching mechanical footprint when mated with the XDG205's new Thermal Transfer Plate (TTP).

Power and Thermal Considerations:

It is important to note that the XDG205's improved bandwidth and ethernet chipset capability result in a substantial increase in power consumption and system thermal requirements.

If you are using the XBG301 or your own custom breakout with your XDG201, you will need to check your power supply's maximum rated power and adjust appropriately.

It is also recommended to re-validate and tune your thermal solution to account for the additional power dissipation consumed by the XDG205.

XBG301 Revision C or Older Compatibility:

XBG301 breakout boards of REV A, B, or C must have the ECN CTIE-00433 fix applied or you risk catastrophic damage to your equipment. Please reach out to CTI's technical support representatives if you are unsure of your current XBG301 revision ECN status. This warning also applies to end users that have their own custom breakout boards that were built based on the XBG301 REV C or older.

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Product Overview

Block Diagram

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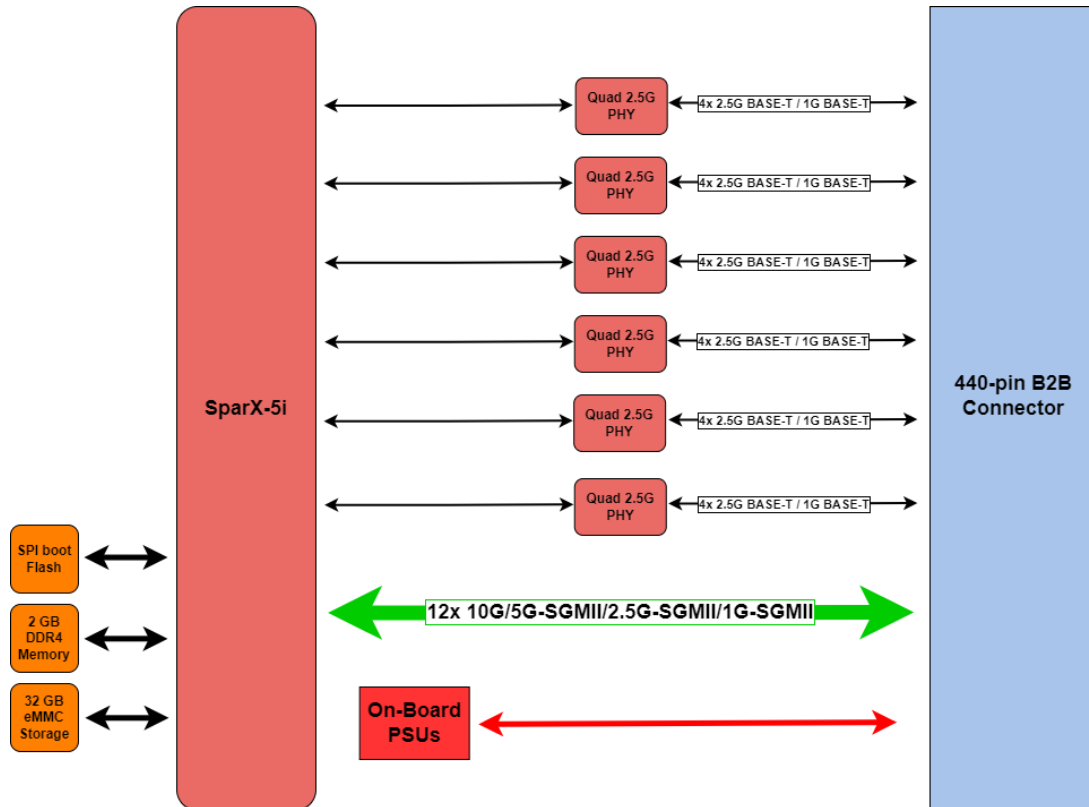
Connector Locations

Front Side

Configuration Switch (S1)
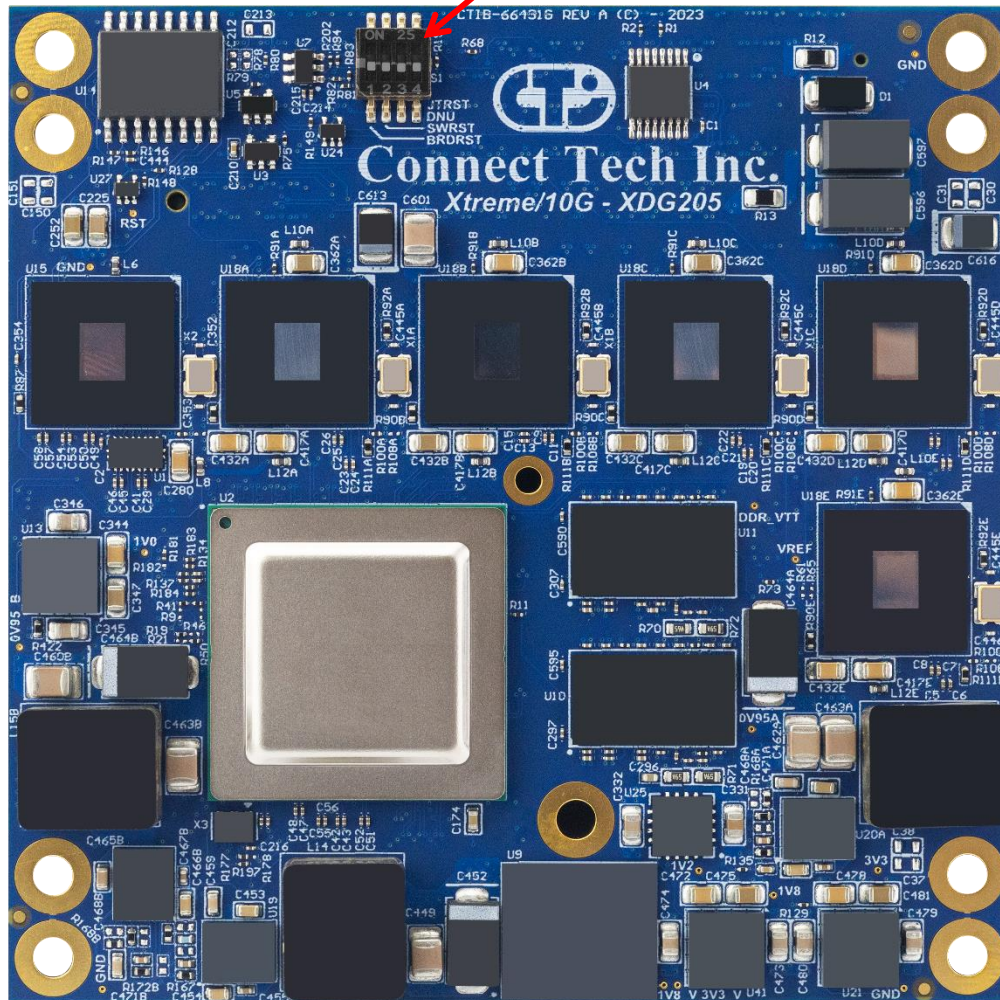
Back Side

Main Board-to-Board (P1)
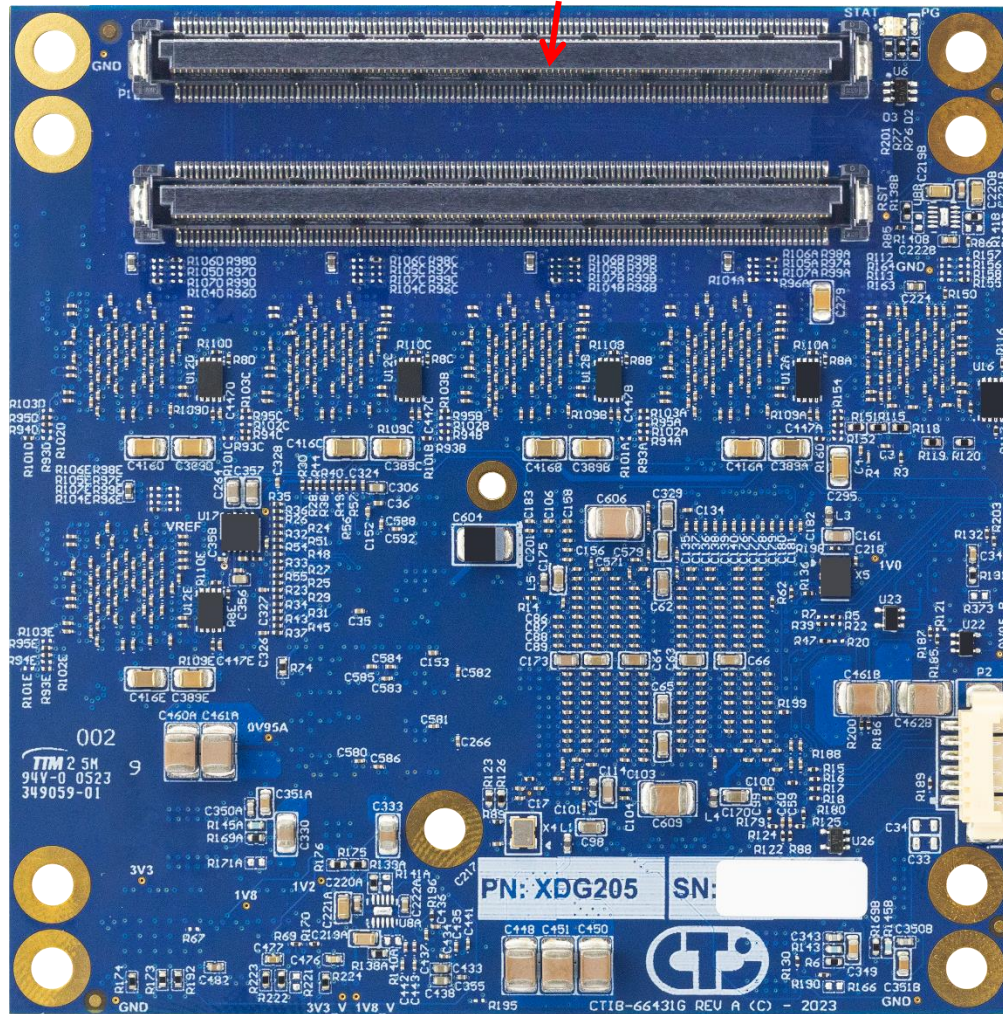
Connector Summary

Designator	Connector	Description/Note
P1	Main Board-to-Board	Primary Signal and Power Breakout Connector. (2 Rows)
P2	Engineering Connection	Engineering test access. Not used during normal operation.

Switch Summary & Locations

Designator	Function	Description/Note
S1	Configuration Switch	Used to Put Switch in to Manual Reset Mode.
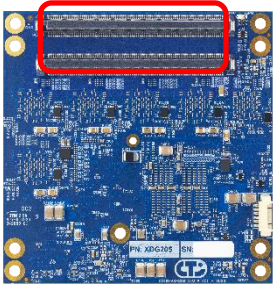
Detailed Feature Description

Main Board-to-Board Connector

The Main Board-to-Board connector carries:
- Input power from the carrier to the module
- Power control and reset signals
- **24x 2.5G** copper pairs, for termination to RJ-45s on carrier board
- **12x 10G** for connection to SFP+ on the carrier board
- LED management signal chain
- SFP detection and control chain

LED and SFP management signals chains required specific circuitry on the carrier; see the reference design for details.

Function	Primary Signal and Power Breakout	
Location	P1	
XDG205 Module Connector	**Primary Part** Manufacturer: TE Connectivity Part Number: 3-1827231-6	
Carrier Board Mating Connector	**Primary Part** Manufacturer: TE Connectivity Part Number: 3-5353652-6	

Signal A	A	B	Signal B	Signal C	C	D	Signal D
GND	A110	B110	GND	GND	C110	D110	GND
10G-P12-RXD_P	A109	B109	10G-P12-TXD_P	GND	C109	D109	GND
10G-P12-RXD_N	A108	B108	10G-P12-TXD_N	10G-P4-RXD_P	C108	D108	10G-P4-TXD_P
GND	A107	B107	GND	10G-P4-RXD_N	C107	D107	10G-P4-TXD_N
10G-P11-RXD_P	A106	B106	10G-P11-TXD_P	GND	C106	D106	GND
10G-P11-RXD_N	A105	B105	10G-P11-TXD_N	GND	C105	D105	GND
GND	A104	B104	GND	10G-P3-RXD_P	C104	D104	10G-P3-TXD_P
10G-P10-RXD_P	A103	B103	10G-P10-TXD_P	10G-P3-RXD_N	C103	D103	10G-P3-TXD_N
10G-P10-RXD_N	A102	B102	10G-P10-TXD_N	GND	C102	D102	GND
GND	A101	B101	GND	GND	C101	D101	GND
GND	A100	B100	GND	GND	C100	D100	GND
10G-P9-RXD_P	A99	B99	10G-P9-TXD_P	GND	C99	D99	GND
10G-P9-RXD_N	A98	B98	10G-P9-TXD_N	10G-P2-RXD_P	C98	D98	10G-P2-TXD_P
GND	A97	B97	GND	10G-P2-RXD_N	C97	D97	10G-P2-TXD_N
10G-P8-RXD_P	A96	B96	10G-P8-TXD_P	GND	C96	D96	GND
10G-P8-RXD_N	A95	B95	10G-P8-TXD_N	GND	C95	D95	GND
GND	A94	B94	GND	10G-P1-RXD_P	C94	D94	10G-P1-TXD_P
10G-P7-RXD_P	A93	B93	10G-P7-TXD_P	10G-P1-RXD_N	C93	D93	10G-P1-TXD_N
10G-P7-RXD_N	A92	B92	10G-P7-TXD_N	GND	C92	D92	GND
GND	A91	B91	GND	GND	C91	D91	GND
GND	A90	B90	GND	GND	C90	D90	GND
10G-P6-RXD_P	A89	B89	10G-P6-TXD_P	SGPIO2_DI	C89	D89	I2C_SDA
10G-P6-RXD_N	A88	B88	10G-P6-TXD_N	SGPIO2_LD	C88	D88	I2C_SCL
GND	A87	B87	GND	SGPIO2_DO	C87	D87	MUX_SEL2
10G-P5-RXD_P	A86	B86	10G-P5-TXD_P	SGPIO2_CLK	C86	D86	MUX_SEL1
10G-P5-RXD_N	A85	B85	10G-P5-TXD_N	SFP+D_SCL	C85	D85	MUX_SEL0
GND	A84	B84	GND	SFP+C_SCL	C84	D84	SLED1_DO
RESET#_IN	A83	B83	UART_TX	SFP+B_SCL	C83	D83	SLED1_CLK
RESET#_OUT	A82	B82	UART_RX	SFP+A_SCL	C82	D82	SLED0_DO
PWROK_IN	A81	B81	PWROK_OUT	PUSHBUTTON#	C81	D81	SLED0_CLK
GND	A80	B80	GND	GND	C80	D80	GND
EE_WP#	A79	B79	MDC_1	Reserved	C79	D79	Reserved
NAND_WP#	A78	B78	MDIO_1	Reserved	C78	D78	Reserved
Reserved	A77	B77	MDC_3	Reserved	C77	D77	Reserved
Reserved	A76	B76	MDIO_3	Reserved	C76	D76	Reserved
Reserved	A75	B75	SCL_S17	Reserved	C75	D75	Reserved
Reserved	A74	B74	SCL_S18	PPS_IN	C74	D74	Reserved
Reserved	A73	B73	SCL_S21	PPS_OUT	C73	D73	Reserved
Reserved	A72	B72	SCL_S21	Reserved	C72	D72	Reserved
Reserved	A71	B71	Reserved	Reserved	C71	D71	Reserved
GND	A70	B70	GND	GND	C70	D70	GND
2G5-P16-D3_P	A69	B69	2G5-P13-D3_P	2G5-P4-D3_P	C69	D69	2G5-P1-D3_P
2G5-P16-D3_N	A68	B68	2G5-P13-D3_N	2G5-P4-D3_N	C68	D68	2G5-P1-D3_N
2G5-P16-D2_P	A67	B67	2G5-P13-D2_P	2G5-P4-D2_P	C67	D67	2G5-P1-D2_P
2G5-P16-D2_N	A66	B66	2G5-P13-D2_N	2G5-P4-D2_N	C66	D66	2G5-P1-D2_N
2G5-P16-D1_P	A65	B65	2G5-P13-D1_P	2G5-P4-D1_P	C65	D65	2G5-P1-D1_P
2G5-P16-D1_N	A64	B64	2G5-P13-D1_N	2G5-P4-D1_N	C64	D64	2G5-P1-D1_N
2G5-P16-D0_P	A63	B63	2G5-P13-D0_P	2G5-P4-D0_P	C63	D63	2G5-P1-D0_P
2G5-P16-D0_N	A62	B62	2G5-P13-D0_N	2G5-P4-D0_N	C62	D62	2G5-P1-D0_N
GND	A61	B61	GND	GND	C61	D61	GND
GND	A60	B60	GND	GND	C60	D60	GND
2G5-P17-D3_P	A59	B59	2G5-P14-D3_P	2G5-P5-D3_P	C59	D59	2G5-P2-D3_P
2G5-P17-D3_N	A58	B58	2G5-P14-D3_N	2G5-P5-D3_N	C58	D58	2G5-P2-D3_N
2G5-P17-D2_P	A57	B57	2G5-P14-D2_P	2G5-P5-D2_P	C57	D57	2G5-P2-D2_P
2G5-P17-D2_N	A56	B56	2G5-P14-D2_N	2G5-P5-D2_N	C56	D56	2G5-P2-D2_N
2G5-P17-D1_P	A55	B55	2G5-P14-D1_P	2G5-P5-D1_P	C55	D55	2G5-P2-D1_P
2G5-P17-D1_N	A54	B54	2G5-P14-D1_N	2G5-P5-D1_N	C54	D54	2G5-P2-D1_N
2G5-P17-D0_P	A53	B53	2G5-P14-D0_P	2G5-P5-D0_P	C53	D53	2G5-P2-D0_P
2G5-P17-D0_N	A52	B52	2G5-P14-D0_N	2G5-P5-D0_N	C52	D52	2G5-P2-D0_N
GND	A51	B51	GND	GND	C51	D51	GND
2G5-P18-D3_P	A50	B50	2G5-P15-D3_P	2G5-P6-D3_P	C50	D50	2G5-P3-D3_P
2G5-P18-D3_N	A49	B49	2G5-P15-D3_N	2G5-P6-D3_N	C49	D49	2G5-P3-D3_N
2G5-P18-D2_P	A48	B48	2G5-P15-D2_P	2G5-P6-D2_P	C48	D48	2G5-P3-D2_P
2G5-P18-D2_N	A47	B47	2G5-P15-D2_N	2G5-P6-D2_N	C47	D47	2G5-P3-D2_N
2G5-P18-D1_P	A46	B46	2G5-P15-D1_P	2G5-P6-D1_P	C46	D46	2G5-P3-D1_P
2G5-P18-D1_N	A45	B45	2G5-P15-D1_N	2G5-P6-D1_N	C45	D45	2G5-P3-D1_N
2G5-P18-D0_P	A44	B44	2G5-P15-D0_P	2G5-P6-D0_P	C44	D44	2G5-P3-D0_P
2G5-P18-D0_N	A43	B43	2G5-P15-D0_N	2G5-P6-D0_N	C43	D43	2G5-P3-D0_N
GND	A42	B42	GND	GND	C42	D42	GND
GND	A41	B41	GND	GND	C41	D41	GND
2G5-P19-D3_P	A40	B40	2G5-P22-D3_P	2G5-P7-D3_P	C40	D40	2G5-P10-D3_P
2G5-P19-D3_N	A39	B39	2G5-P22-D3_N	2G5-P7-D3_N	C39	D39	2G5-P10-D3_N
2G5-P19-D2_P	A38	B38	2G5-P22-D2_P	2G5-P7-D2_P	C38	D38	2G5-P10-D2_P
2G5-P19-D2_N	A37	B37	2G5-P22-D2_N	2G5-P7-D2_N	C37	D37	2G5-P10-D2_N
2G5-P19-D1_P	A36	B36	2G5-P22-D1_P	2G5-P7-D1_P	C36	D36	2G5-P10-D1_P
2G5-P19-D1_N	A35	B35	2G5-P22-D1_N	2G5-P7-D1_N	C35	D35	2G5-P10-D1_N
2G5-P19-D0_P	A34	B34	2G5-P22-D0_P	2G5-P7-D0_P	C34	D34	2G5-P10-D0_P
2G5-P19-D0_N	A33	B33	2G5-P22-D0_N	2G5-P7-D0_N	C33	D33	2G5-P10-D0_N
GND	A32	B32	GND	GND	C32	D32	GND
GND	A31	B31	GND	GND	C31	D31	GND
2G5-P20-D3_P	A30	B30	2G5-P23-D3_P	2G5-P8-D3_P	C30	D30	2G5-P11-D3_P
2G5-P20-D3_N	A29	B29	2G5-P23-D3_N	2G5-P8-D3_N	C29	D29	2G5-P11-D3_N
2G5-P20-D2_P	A28	B28	2G5-P23-D2_P	2G5-P8-D2_P	C28	D28	2G5-P11-D2_P
2G5-P20-D2_N	A27	B27	2G5-P23-D2_N	2G5-P8-D2_N	C27	D27	2G5-P11-D2_N
2G5-P20-D1_P	A26	B26	2G5-P23-D1_P	2G5-P8-D1_P	C26	D26	2G5-P11-D1_P
2G5-P20-D1_N	A25	B25	2G5-P23-D1_N	2G5-P8-D1_N	C25	D25	2G5-P11-D1_N
2G5-P20-D0_P	A24	B24	2G5-P23-D0_P	2G5-P8-D0_P	C24	D24	2G5-P11-D0_P
2G5-P20-D0_N	A23	B23	2G5-P23-D0_N	2G5-P8-D0_N	C23	D23	2G5-P11-D0_N
GND	A22	B22	GND	GND	C22	D22	GND
GND	A21	B21	GND	GND	C21	D21	GND
2G5-P21-D3_P	A20	B20	2G5-P24-D3_P	2G5-P9-D3_P	C20	D20	2G5-P12-D3_P
2G5-P21-D3_N	A19	B19	2G5-P24-D3_N	2G5-P9-D3_N	C19	D19	2G5-P12-D3_N
2G5-P21-D2_P	A18	B18	2G5-P24-D2_P	2G5-P9-D2_P	C18	D18	2G5-P12-D2_P
2G5-P21-D2_N	A17	B17	2G5-P24-D2_N	2G5-P9-D2_N	C17	D17	2G5-P12-D2_N
2G5-P21-D1_P	A16	B16	2G5-P24-D1_P	2G5-P9-D1_P	C16	D16	2G5-P12-D1_P
2G5-P21-D1_N	A15	B15	2G5-P24-D1_N	2G5-P9-D1_N	C15	D15	2G5-P12-D1_N
2G5-P21-D0_P	A14	B14	2G5-P24-D0_P	2G5-P9-D0_P	C14	D14	2G5-P12-D0_P
2G5-P21-D0_N	A13	B13	2G5-P24-D0_N	2G5-P9-D0_N	C13	D13	2G5-P12-D0_N
GND	A12	B12	GND	GND	C12	D12	GND
GND	A11	B11	GND	GND	C11	D11	GND
+3V3_OUT	A10	B10	+3V3_OUT	+3V3_OUT	C10	D10	+3V3_OUT
+3V3_OUT	A9	B9	+3V3_OUT	+3V3_OUT	C9	D9	+3V3_OUT
GND	A8	B8	GND	GND	C8	D8	GND
+VIN	A7	B7	+VIN	+VIN	C7	D7	+VIN
+VIN	A6	B6	+VIN	+VIN	C6	D6	+VIN
+VIN	A5	B5	+VIN	+VIN	C5	D5	+VIN
+VIN	A4	B4	+VIN	+VIN	C4	D4	+VIN
+VIN	A3	B3	+VIN	+VIN	C3	D3	+VIN
+VIN	A2	B2	+VIN	+VIN	C2	D2	+VIN
GND	A1	B1	GND	GND	C1	D1	GND

Board-to-Board Reference Design Package

Connect Tech Product a complete reference design package for the XBG301 breakout board. This details how to properly interface to the XDG205 Switch.

This package contains the following for the XBG301 Breakout Board:
- Altium Designer ECAD Source Files
- PDF Schematic Files
- Gerbers / Manufacturing Files
- Bill of Materials
- Tech Data / B2B Pinout Information
- 3D Models (as well for the Switch Module and Thermal Transfer Plate / Heat Spreader)

The Reference Design Package can be downloaded here:
http://www.connecttech.com/ftp/Reference_Designs/XBG301_Reference_Design_Package.zip

SFP and SFP+ CU Transceiver Support

The XDG205 has support for the CISCO Compatible/ Equivalent GLC-T, additional support for CU transceivers can be found in the following link.

http://connecttech.com/resource-center/kdb360-xtreme10g-managed-ethernet-switchrouter-sfpsfp-transceiver-modules/

Switch Details

DIP Switch Details (S1)

Ensure S1 all dips are in the lower position for normal operation (as depicted by the red arrow, all switches should be closer to the center / inner section of the PCB)
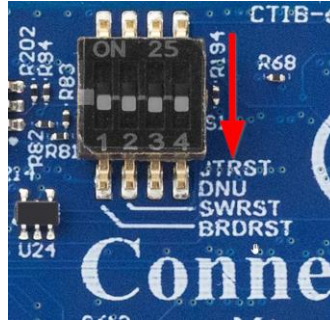
DIP Switch	Function	Note
(1) BRDRST	Board Reset	Holds board in HW reset when in upper position. Lower for normal operation.
(2) SWRST	Software Reset	Holds SW in reset (for SPI flash)
(3) DNU	Reserved Engineering Functions	Must leave in lower position
(4) JTRST	JTAG Reset	Must leave in lower position

Typical Installation

1. Install the XHG205 (TTP) to XDG205 module.
2. Prepare breakout/carrier board with 4 x M3 8mm standoffs.
3. Ensure breakout/carrier board will be supplying module with +12V DC.
4. Mate board-to-board connector from XDG205 module to that of the breakout/carrier board.
5. Turn power ON to breakout/carrier board, XDG205 will now boot up.

On-Board Indicator LED's

The XDG205 has 2 on-board indicator LEDs.

LED Designator	Description
PWR	**Power Good Indicator** - If this LED is ON, this indicates that all on-board power supplies are ON and at the proper level.
Status	**System Status Indicator** - Function TBD

CLI Management Interface

CLI Access via External Serial Port

To use the CLI management on the XDG you must connect to the external management serial port. Only TX, RX and GND connections are needed for operation. You then must open the serial port in a terminal program such as: RealTerm, Putty, HyperTerminal, minicom, etc. The COM port must be set up to run with a baud rate of **115200, 8 data bits, 1 stop bit and no parity**.

RS-232 Serial Parameter	Value
Baud Rate	115200 bps
Data Bits	8
Parity	None
Stop Bit	1

CLI Basics

Once opening the COM port attached to the management port, after boot up your terminal output should look like the output below. The **default login** is **admin** and **password** is **blank("")**. **So after typing admin** hit <ENTER> then hit <ENTER> again to login and "?" will display a list of the available commands.

Below is a list of common quick CLI commands. For a complete CLI reference please see the documents described below.

Common Task	CLI Command Syntax
What are the IP addresses used by my switch?	`show ip int br`
What ports are linked and at what speed?	`show int * status`
What software version is on my switch?	`show ver`
How do I save my configuration?	`copy running-config startup-config`

How do I setup my IP address for vlan1?	`conf t`
	`int vlan 1`
	`ip add xxx.xxx.xxx.xxx 255.255.255.0`
	`end`

Complete CLI and Protocol Configuration Reference Guide

The complete CLI and Protocol Configuration reference guide from Microsemi for the VSC7448 device can be **downloaded here**.

The following documents:
- **AN1104-Software_Configuration_Guide_ICLI**
- **AN1115Layer2ProtocolConfigurationGuide**
Will have the below mentioned copyright notice.

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Web Management Interface

The Xtreme/10G Managed Ethernet Switch/Router allows users to configure and monitor the device from any web enabled device. Below describes how to access this management interface as well as provides on overview on the web GUI itself.

Accessing the Web Management Interface

There are two ways to access the web interface for first time use.

Method #1 - Using the default shipping IP
This method DOES NOT require having access to the CLI interface. By default the Xtreme/10G will have an IP address of **10.10.10.1**, if you would like to connect to this address follow the steps below:
- Directly connect any port of Xtreme/10G to your host PC using a standard Cat5e ethernet cable
- Setup your host PC's IP address to be on the same subnet as Xtreme/10G (10.10.10.X)
- Open a web browser and go to the 10.10.10.1 address.
- Now you should see the login screen and from here you can setup the Xtreme/10G to an IP address on your network.

Method #2 – Changing the Xtreme/10G IP to one on your network via the CLI
This method requires having access to the CLI interface through means of the external management serial port or the PCIe/104 bus
- Login to the CLI interface
- Type in the following commands
- configure terminal
- interface vlan 1
- ip address xxx.xxx.xxx.xxx 255.255.255.0
- end
- Now connect Xtreme/10G to any place on your network.
- Once the system is up simply go to your specified address of xxx.xxx.xxx.xxx in a web browser of your choice and you will see the login screen for the web interface

Login Screen of Web Management Interface

To login into the web management interface, the default login is **admin** and the password is blank. (See below)
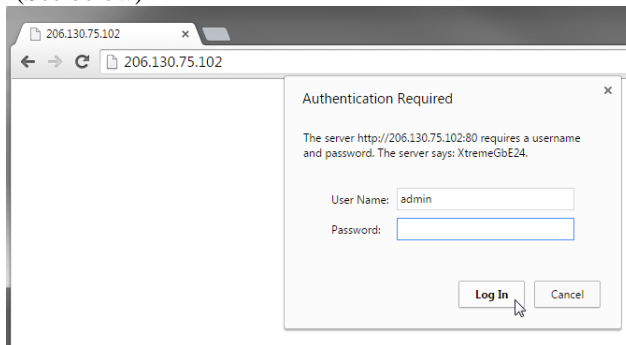
Web Management Interface Overview
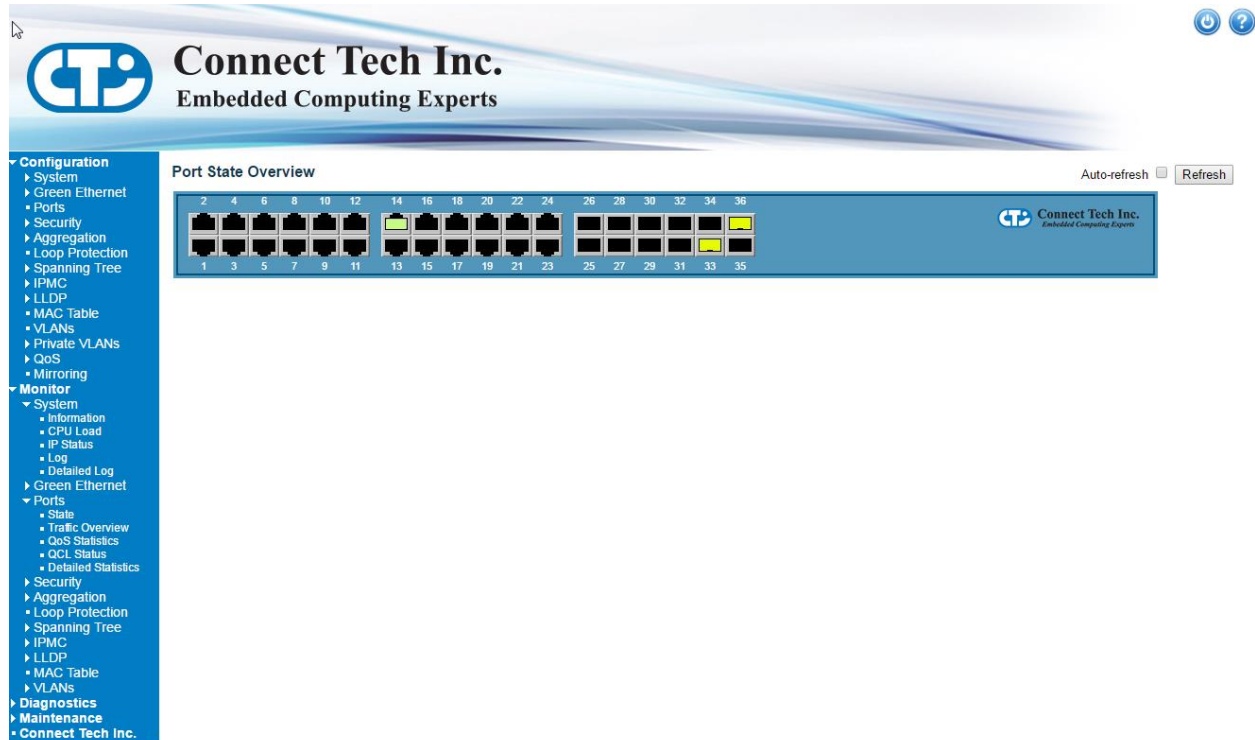
Complete Web Protocol Configuration Reference Guide

As mentioned in the CLI section, the complete Protocol Configuration reference guide from Microsemi for the VSC7429 device can be **downloaded here**. It will have CLI and Web configuration methods listed.

The following document:
- AN1115Layer2ProtocolConfigurationGuide
Will have the below mentioned copyright notice.

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Breakout Boards

The XDG205 product can be integrated into any custom designed motherboard, or custom design breakout specifically for the XDG205. It can also be used with CTI's line of COTS breakout boards as well, so that no additional development is needed. These COTS breakout boards can be used for proof of concept or for direct field deployment.

XBG301 – Embedded Carrier

CTI has developed the XBG301, which is a COTS breakout board solution for the XDG205 switch. This breakout board is also meant to serve as a Reference Design platform for customers to use for their own development purposes. CTI provides full Bill of Materials, Schematics, Layout files and user documentation for the XBG301 embedded carrier in a Reference Design Package.

The Reference Design Package for this breakout board be downloaded here:
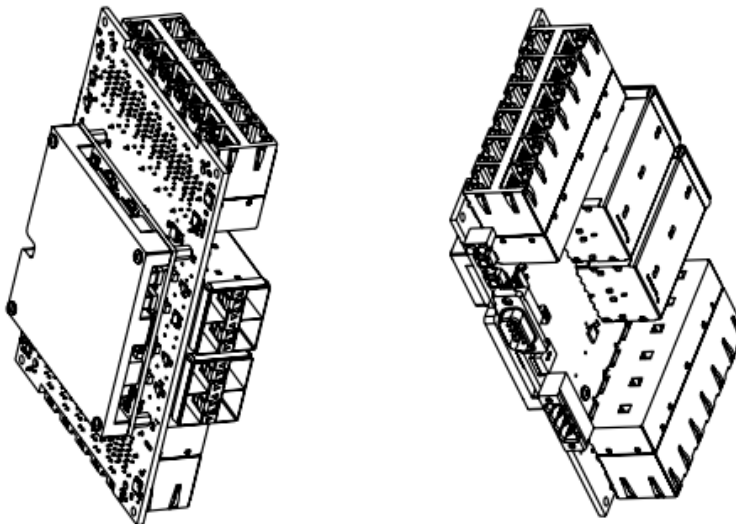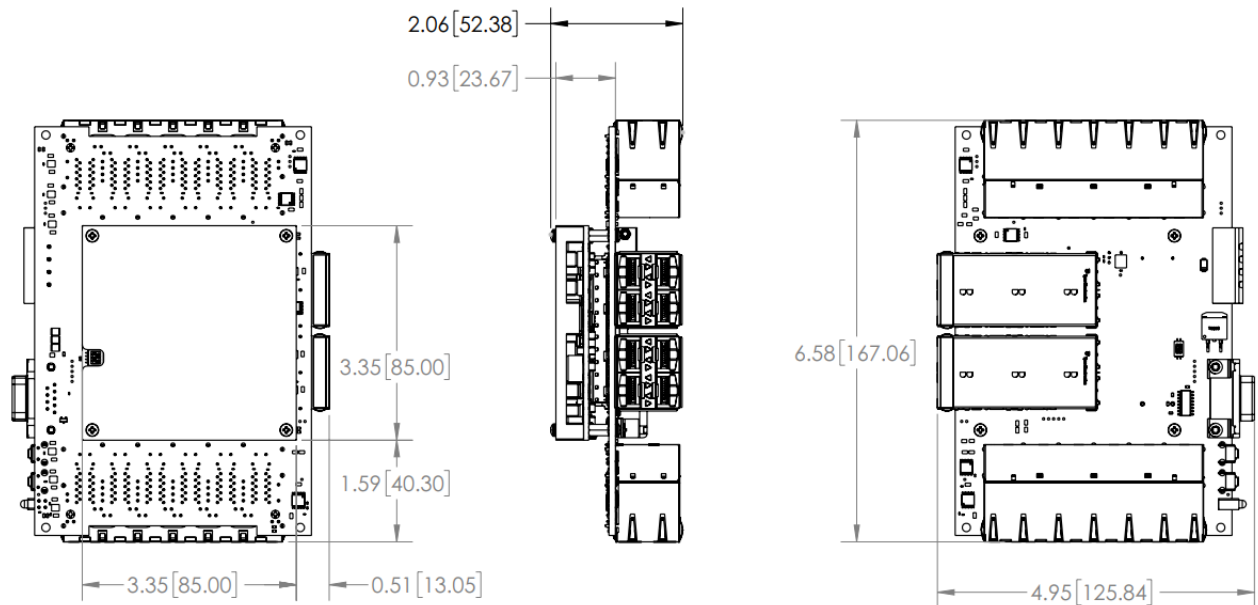**http://www.connecttech.com/ftp/Reference_Designs/XBG301_Reference_Design_Package.zip**
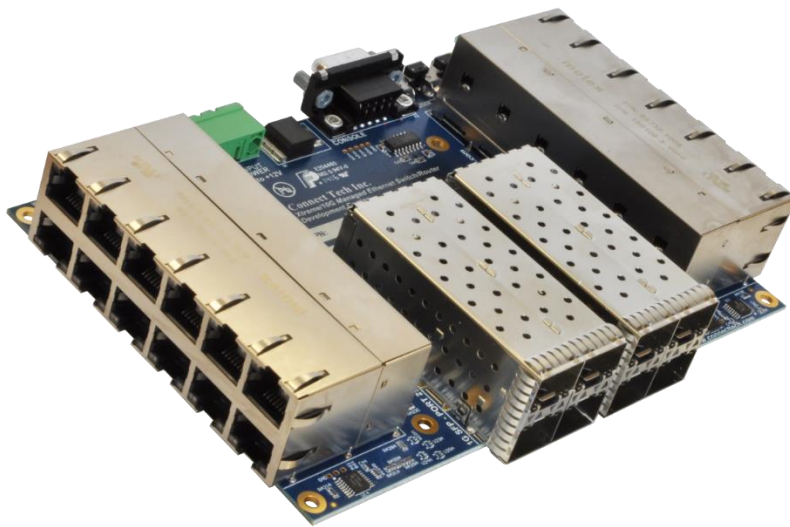
XBG301 – Embedded Carrier Specifications

Feature	Description
Ports	8x 10G (SFP+) 24x 2.5G/1G (RJ-45)
Console	1x RS-232 (via DB-9)
Input Voltage	**+5V to +14V DC** (4-pin 5mm pitch terminal header)
Dimensions	167.07mm x 125.84mm x 49.10mm (when XDG205 + XHG201 heat spreader are installed)
Console	1x RS-232 (via DB-9)

Connect Tech Inc.
Embedded Computing Experts

XBG301 +XDG205 + XHG205 – Dimensioned Drawing

XBG301 +XDG205 + XHG205 – Assembly Drawing

90116A107 SCREW, M2.5X0.45, PPHMS, 5mm Lg, SS
APPLY DROP OF 21464 THREADLOCKER TO THREADS
TORQUE 3.1 in-lb; 4 PLACES

XBG301, XDG GEN III BREAKOUT BOARD

M1255-2545-AL STANDOFF, FF, 4.5 HEX, M2.5X0.45,
8mm Lg, AL; 4 PLACES

92000A116 SCREW, M3.0X0.5, PPHMS, 6mm Lg, SS
APPLY DROP OF 21464 THREADLOCKER TO THREADS
TORQUE 5.2 in-lb; 5 PLACES

92000A013 SCREW, M2.0X0.4, PPHMS, 6mm Lg, SS
APPLY DROP OF 21464 THREADLOCKER TO THREADS
TORQUE 1.5 in-lb;

XDG205 GEN3.5(0.00) CARRIER BOARD

CTIA-01290(0.00) HEAT PLATE, XDG GEN3.5
w/THERMAL PADS

92000A109 SCREW, M2.5X0.45, PPHMS, 16mm Lg, SS
APPLY DROP OF 21464 THREADLOCKER TO THREADS
TORQUE 3.1 in-lb; 4 PLACES

Thermal Details

XDG205 Thermal Parameters

Thermal Parameter	Value
Minimum Ambient Operating Temperature	-40 °C
Maximum Operating Junction Temperature of all chipsets	110 °C
Total Solution TDP	65 W
Die junction to package case top (SoC/PHY)	0.91 °C/W
Die junction to PCB (SoC/PHY)	8.10 °C/W
Die junction to Ambient (SoC/PHY)	19.8 °C/W
Die junction to moving air @ 1 m/s (SoC/PHY)	14.5 °C/W

XHG205 – Conduction Cooled Heatplate / TTP

The XHG205 is a flat heat plate that can be used to interface the XDG205 to another thermal extraction layer (chassis wall, finned heat sink etc). It is not intended to be used in a standalone application. View the heat plate drawing.

Current Consumption Details

Below are the maximum ratings of the XDG205 Switch.

Theoretical Maximum	Amps	Watts
Theoretical absolute maximum total draw of all functionality on the board	5.4	65

Below are measurements taken with the XDG205 Switch running in various configurations.
All measurements below are used with **+12V applied** to the Input Power Connector. These values are provided as **typical-use-case** only. They will vary depending on your thermal conditioning and the rated wattage of your user-selected SFP+ modules.
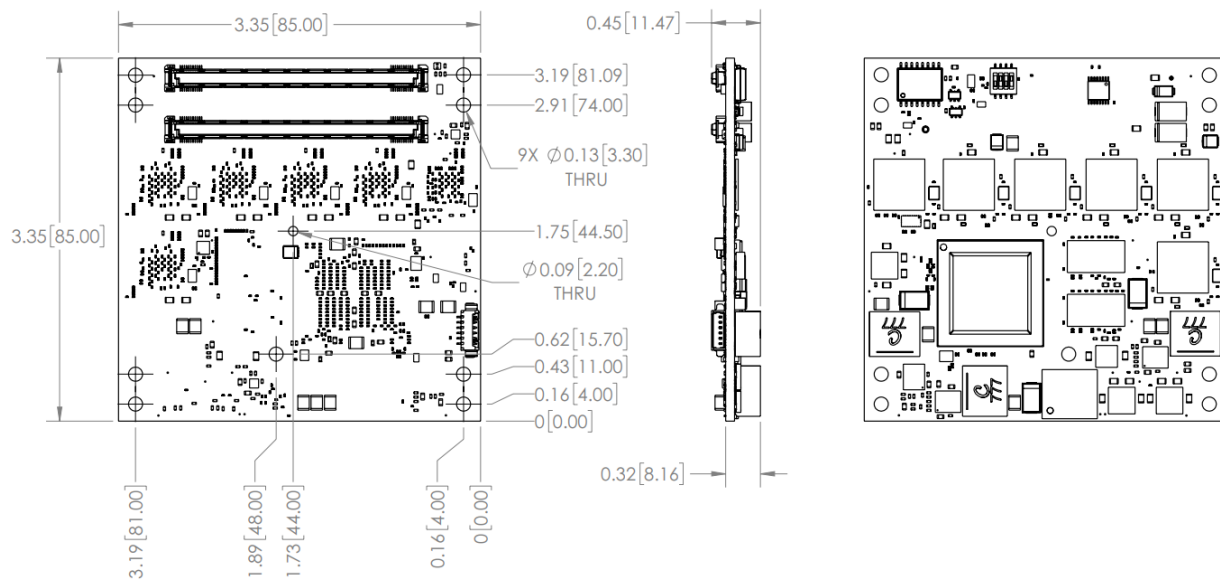
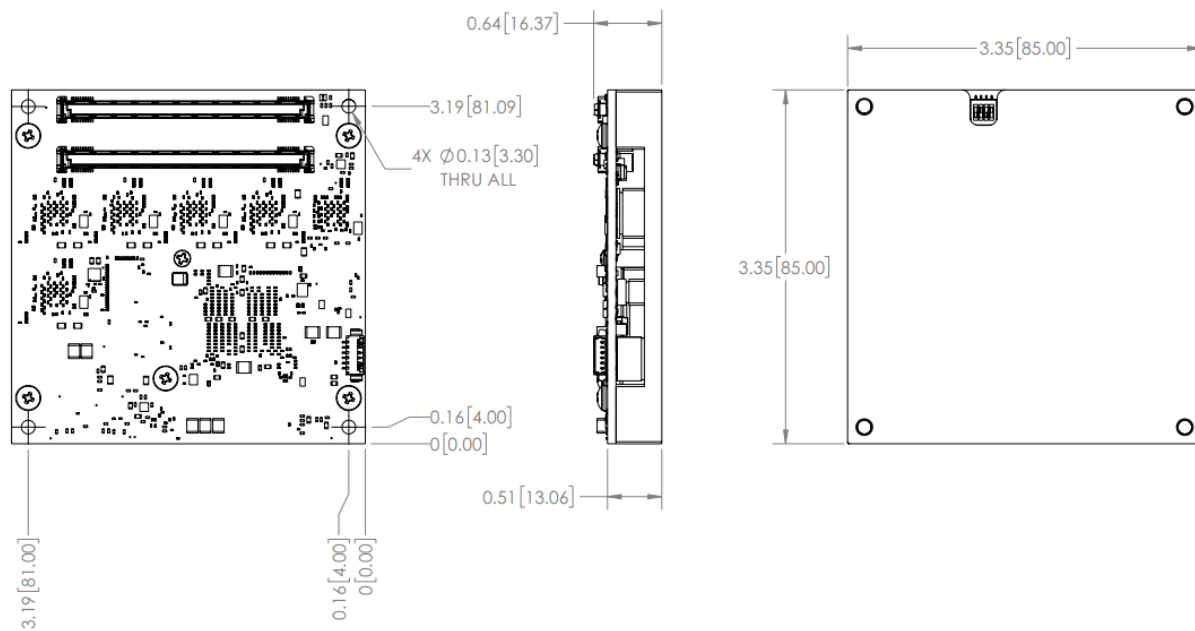| Actual Measurements	Amps	Watts
Idle No Links Up	1.55	18.6
1x 2.5G Link Up	1.60	19.2
24 x 2.5G Links Up	2.76	33.12
24 x 2.5G, 8 x 10G SFP+ Up	4.2	50.4

Mechanical Details

3D Model

https://connecttech.com/ftp/3d_models/XDG205_3DMODEL.zip

2D Drawing (Standalone Module)

2D Drawing (TTP Installed)

2D Drawing (XDG205 Integrated with XBG301)