



Quad Small Form-factor Pluggable (QSFP) Products

DESCRIPTION

Tyco Electronics is a leading developer of Quad Small Form-factor Pluggable, a new high speed pluggable I/O interface products. This interconnect system offers 4 channels, providing 3 times the density of SFP/SFP+ ports. QSFP cages and connectors are designed for data rates up to 10 Gb/s, supporting Fibre Channel, Ethernet, SDH/SONET and INFINIBAND standards. The cage/connector system will accept optical or copper interfaces.

APPLICATIONS

- Switches, routers, and host bus adapters (HBA's)
- Enterprise storage
- High density, high speed I/O
- Multiple channel interconnects

TECHNICAL DOCUMENTS

Product Specification: 108-2286

INFINIBAND is a trademark of the InfiniBand Trade Association.
Fibre Channel is a trademark of the Fibre Channel Industry Association.

KEY FEATURES

- 4x solution featuring Tyco Electronics 38 position EVERCLEAR connector
- Light pipe and heat sink options available
- Through-bezel and behind-bezel cage options with proven EMI containment
- Direct attach copper cables for short reach applications
- Cable assemblies compatible with industry standard cages
- Quick release cable latching system
- Copper cable 360 degree braid crimp minimizes EMI
- Various specialty copper cable assemblies available
- MPO connectors plug into QSFP parallel optic transceiver modules
- Copper cable assembly performance is optimized when cable is engineered to system architecture

FOR MORE INFORMATION

Cages and Connectors
Product Manager - Mike Walmsley

Phone: 717-985-2835
Fax: 717-985-2833
Email: mjwalmsl@tycoelectronics.com

Copper Cable Assembly
Product Manager - Dave Stonfer

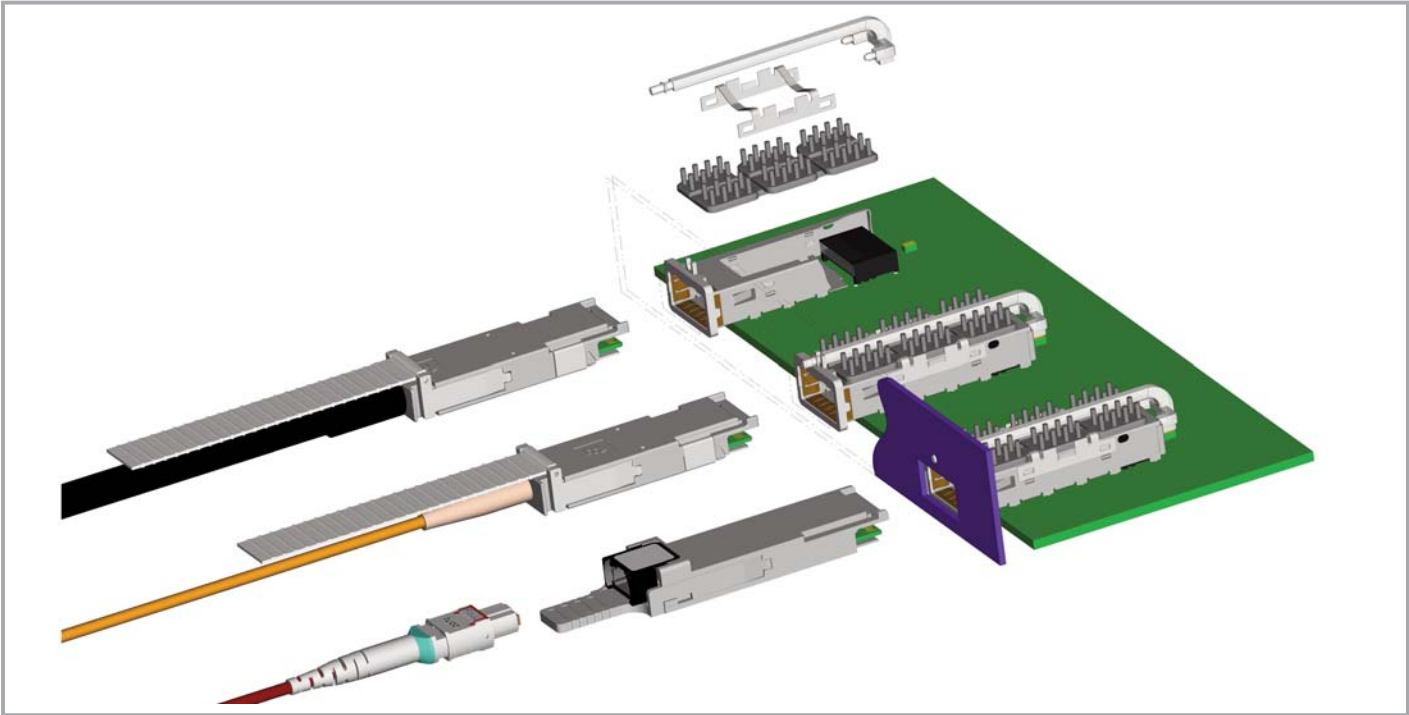
Phone: 717-986-5950
Fax: 717-986-7179
Email: david.stonfer@tycoelectronics.com

Fiber Optic Cables
Product Manager - Brent Hatfield

Phone: 717-986-7037
Fax: 717-986-592-3244
Email: brent.hatfield@tycoelectronics.com

Technical Support
Internet: <http://www.tycoelectronics.com>

USA: 1-800-522-6752
Canada: 1-905-470-4425
UK: 44-141-810-8967
Japan: 81-44-844-8013



DESCRIPTION

The QSFP application consists of:

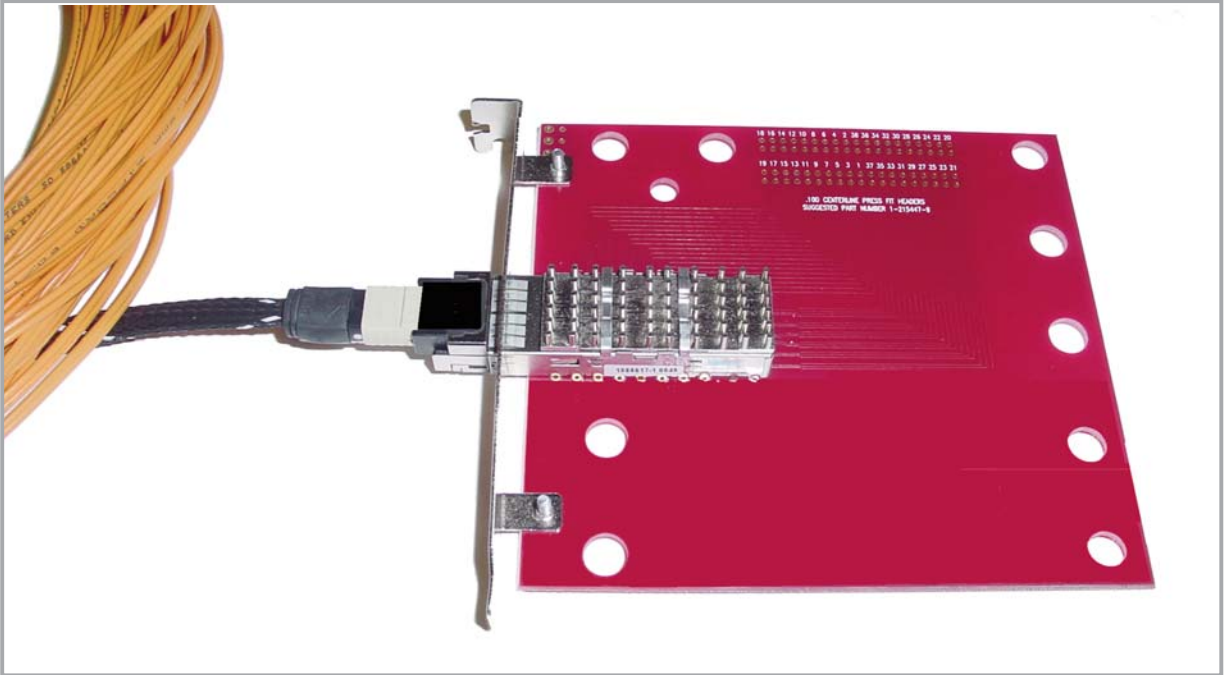
- a 38-position high speed surface mount connector for the host board
- a cage which provides EMI containment and guidance for the mating plug
- a mating plug, which may be in the form of:
 - a pluggable transceiver, which accepts an MPO optical cable
 - a direct-attach QSFP copper cable assembly
 - a direct-attach PARALIGHT active optical cable
- Cage accessories include heatsinks, lightpipes, and EMI/dust plugs.

APPLICATIONS FOR PLUGGABLE I/O INTERFACES:

Application	Data Rate	Pluggable Interface						
		SFP	XFP	X2	XPAK	Xenpak	SFP+	QSFP
Fibre Channel	1G	X						
Fibre Channel	2G	X						
Fibre Channel	4G	X					X	
Fibre Channel	8G						X	
Ethernet	1G	X						
Ethernet	10G		X	X	X	X	X	X
Ethernet	40G							X
InfiniBand Standard	2.5G	X						
InfiniBand Standard	5G	X					X	
InfiniBand Standard	10G				X		X	
InfiniBand Standard	20G							X
InfiniBand Standard	40G							X

Fibre Channel is a trademark of the Fibre Channel Industry Association.
INFINIBAND is a trademark of the InfiniBand Trade Association.

PRODUCT APPLICATION



Connector/Dust Plug/Cage Application

CONNECTOR

Part Number: 1761987-9

- Tape and reel packaged for pick and place SMT processing
- 38 position EVERCLEAR connector
- Designed to optimize signal integrity through 10 Gb/s



Connector (front)



Connector (bottom)

EMI/DUST PLUG

Part Number: 1888810-2

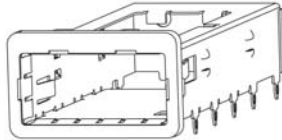
- Provides EMI containment for unused ports
- Keeps interface free of contamination or debris
- Ergonomic Design



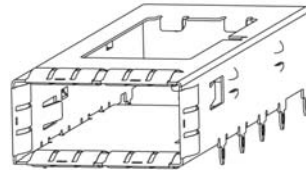
Quad Small Form-factor Pluggable (QSFP) Products

CAGES

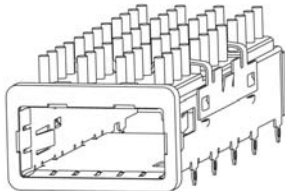
- Proven springs and gasket designs for EMI containment
- Single and dual lightpipes
- Riding heatsinks for thermal dissipation, various fin heights available
- Belly-to-belly compatible (double-sided PCB's)
- Press-fit termination
- Port-to-port spacing-21.0mm (through-bezel)/23.5 (behind-bezel)



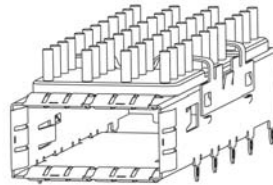
Behind-Bezel Cage



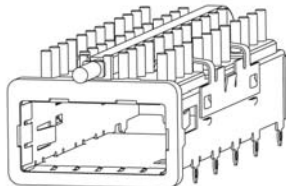
Through-Bezel Cage



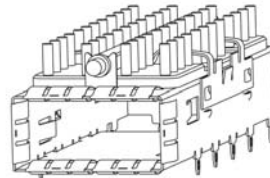
Behind-Bezel Cage with Heatsink



Through-Bezel Cage with Heatsink



Behind-Bezel Cage with Heatsink and Lightpipe



Through-Bezel Cage with Heatsink and Lightpipe

QSFP Cage Kits:	Part Number	Bezel Mount	Heatsink	Max height of heatsink above PCB	Lightpipe
	1888617-1	Through-bezel	None	--	None
	1888674-1	Through-bezel	None	--	customer applied
	1888631-1	Through-bezel	PCI	13.7 mm	None
	1888631-2	Through-bezel	SAN	16.0 mm	None
	1888631-3	Through-bezel	Networking	23.0 mm	None
	1888972-1	Through-bezel	SAN	16.0 mm	Yes
	1888972-2	Through-bezel	Networking	23.0 mm	Yes
	1888781-1	Behind-bezel	None	--	None
	1888968-1	Behind-bezel	PCI	13.7 mm	None
	1888968-2	Behind-bezel	SAN	16.0 mm	None
	1888968-3	Behind-bezel	Networking	23.0 mm	None

Quad Small Form-factor Pluggable (QSFP) Products *continued*



Ganged QSFP Cages:

	Part Number	Port Configuration	Heatsink	Max height of heatsink above PCB	Lightpipe
Cage Kits	2057042-1	1x3	PCI	13.7 mm	included
	2057042-2	1x3	SAN	16.0 mm	included
	2057042-3	1x3	Networking	23.0 mm	included
	2007456-1	1x3	PCI	13.7 mm	none
	2007456-2	1x3	SAN	16.0 mm	none
	2007456-3	1x3	Networking	23.0 mm	none
	2007473-1	1x3	none	-	option for lightpipe attachment (sold separately)
	2007474-1	1x3	none	-	none
	2057183-1	1x4	PCI	13.7 mm	included
	2057183-2	1x4	SAN	16.0 mm	included
	2057183-3	1x4	Networking	23.0 mm	included
	2007625-1	1x4	PCI	13.7 mm	none
	2007625-2	1x4	SAN	16.0 mm	none
	2007625-3	1x4	Networking	23.0 mm	none
	2007668-1	1x4	none	-	option for lightpipe attachment (sold separately)
	2007667-1	1x4	none	-	none
Dual Lightpipe	2007477-3			Recommended LED height: 0.8 - 1.1 mm	other lightpipe options available

Direct Attach Copper Cables (QSFP) Products

DIRECT ATTACH COPPER CABLES

DESCRIPTION

Tyco Electronic's QSFP direct attach copper cable assembly is a low cost alternative for short reach 4X applications. The design allows for a serial data transmission up to the QDR rate of 10Gbps/lane, for an aggregate 40Gbps. QSFP cable assemblies are hot swappable and the programmed EEPROM signature enables the host to differentiate between a copper cable assembly and a fiber optic module. The mechanical design of the braid crimp ensures that EMI radiation is suppressed. Additionally, the copper cable acts as a natural heat sink. Low power consumption assists in making the passive copper cable assembly an economic solution for within rack, or rack-to-rack applications. Standard QSFP assemblies are offered in 26AWG and 28AWG, however, other wire gauges can be engineered.



KEY FEATURES

- Assemblies available at DDR (5Gbps/lane) and QDR (10Gbps/lane) data rates
- Compatible with industry standard QSFP cages
- EEPROM signature which can be customized
- Pull tab unlatching allows compact belly-to-belly application
- Equalized and unequalized assemblies
- 360 degree cable braid crimp suppresses EMI
- Specialty and cross-over cables are available
- Optimum cable performance is obtained when cable equalization is customized to system architecture
- Uses Madison Cable's high speed TurboTwin parallel pair copper cable

Standard QSFP to QSFP:

Type	Part Number	AWG	Equalized	Assembly Length
DDR (5Gbps) PASSIVE	2074739-1	28	No	0.5 meter
	2074739-2	28	No	1 meter
	2074739-3	28	Yes	2 meter
	2074739-4	28	Yes	3 meter
	2074739-5	28	Yes	4 meter
	2074739-6	26	Yes	5 meter
	2074739-8	26	Yes	7 meter
	1-2074739-1	26	Yes	10 meter
QDR (10Gbps) PASSIVE	2015234-1	28	No	1 meter
	2015234-2	28	No	2 meter
	2015234-3	26	Yes	3 meter
	2015234-4	26	Yes	4 meter
	2015234-5	26	Yes	5 meter
	2015234-6	26	Yes	6 meter
	2015234-7	26	Yes	7 meter
	2015234-8	26	Yes	8 meter
	2015234-9	28	No	0.5 meter
QDR (10Gbps) UNEQUALIZED PASSIVE*	2053638-1	26	No	1 meter
	2053638-2	26	No	2 meter
	2053638-3	26	No	3 meter
	2053638-4	26	No	4 meter
	2053638-5	26	No	5 meter
	1-2053638-0	26	No	10 meter
QDR (10Gbps) ACTIVE (IN DEVELOPMENT)	2015446-1	26	N/A	1 meter
	2015446-2	26	N/A	2 meter
	2015446-3	26	N/A	3 meter
	2015446-4	26	N/A	4 meter
	2015446-5	26	N/A	5 meter
	1-2015446-0	26	N/A	10 meter
	1-2015446-5	26	N/A	15 meter

*Engineered for use in systems that utilize self-equalizing features (EDC).

Direct Attach Copper Cables (QSFP) Products Continued

DIRECT ATTACH COPPER CABLES

QSFP Specialty Cable Assemblies:

Type	Part Number	AWG	Equalized	Assembly Length
QSFP to 4 SFP+ 10Gbps per Channel	2053453-1	26	No	1 meter
	2053453-2	26	No	2 meter
	2053453-3	26	No	3 meter
	2053453-4	26	Yes	5 meter
QSFP to InfiniBand Standard 5Gbps per Channel	2074119-1	28	No	1 meter
	2074119-2	26	No	3 meter
	2074119-3	26	No	5 meter
QSFP to Mini SAS 3.125Gbps per Channel	2053877-1	28	No	1 meter
	2053877-2	28	No	2 meter
	2053877-3	28	No	3 meter
	2053877-4	26	No	4 meter
	2053877-5	26	Yes	5 meter
	1-2053877-1	28	No	0.5 meter
QSFP to 16 SMA RF Coax Test Assembly	2053606-1	N/A	No	0.5 meter

PARALIGHT (QSFP) Products

PARALIGHT

- 4 transmit and 4 receive channels at up to 5 Gb/s per channel
- 10 Gb/s samples available early 2009
- Industry standard (SFF-8470) electrical connector (aka InfiniBand Standard 4X, IB 4X, CX4, Fiber Channel)
- Internally terminated optics — no optical connector to clean



Length (meters)	Cable Type	Infiniband 4x Part Numbers	InfiniBand 4X to QSFP Part Numbers	QSFP to QSFP Part Numbers
2	OFNP*	1985427-9	1985554-9	1985861-9
3	OFNP*	1985427-1	1985554-1	1985861-1
5	OFNP*	1985427-2	1985554-2	1985861-2
10	OFNP*	1985427-3	1985554-3	1985861-3
15	OFNP*	1-1985427-0	1-1985554-0	1-1985861-0
20	OFNP*	1985427-4	1985554-4	1985861-4
30	OFNP*	1985427-5	1985554-5	1985861-5
40	OFNP*	1985427-6	1985554-6	1985861-6
50	OFNP*	1985427-7	1985554-7	1985861-7
100	OFNP*	1985427-8	1985554-8	1985861-8

*OFNP = Optical Fiber Nonconductive Plenum

Note: InfiniBand Standard 4x is also known as CX4 and SFF-8470.

Note: Longer lengths available upon request.

Note: All part numbers are RoHS compliant.

Quad Small Form-factor Pluggable (QSFP) Products

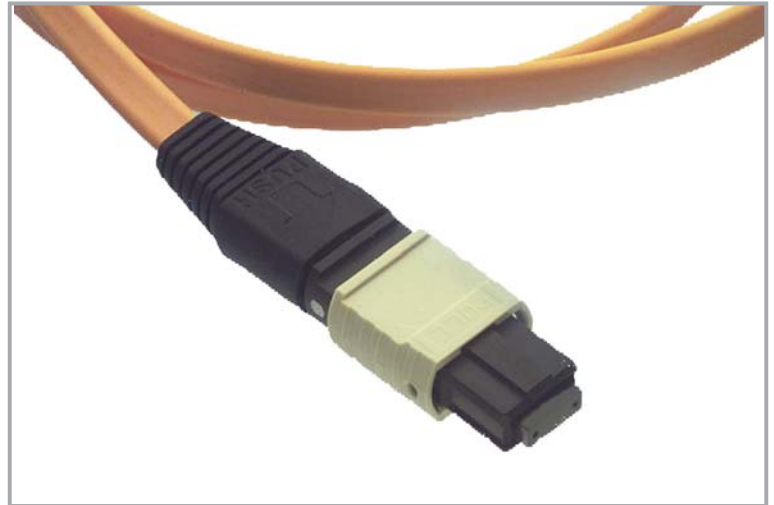
FIBER OPTIC CABLES

QSFP Optical Jumper:

- Uses 50/125um MM fiber (500MHz-km BW at 850nm and 1300nm wavelengths) with OFNR-rated jacket
- Fiber path is reversed (1 to 12, 2 to 11, 3 to 10, 4 to 9, fibers 5, 6, 7, 8 not used)

Other options include:

- Custom lengths
- High bandwidth cable (up to 2000MHz-km)
- OFNP rated jacket
- Fanout to LC for interface to SFP optical ports



MPO to MPO suitable for interface to transceiver

Part Number	Standard Length
1938208-1	1m
1938208-5	5m
1-1938208-0	10m
2-1938208-0	20m
5-1938208-0	50m

Note: See drawing for part numbers of other standard lengths

Disclaimer

While Tyco Electronics has made every reasonable effort to ensure the accuracy of the information in this catalog, Tyco Electronics does not guarantee that it is error-free, nor does Tyco Electronics make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current.

Tyco Electronics reserves the right to make any adjustments to the information contained herein at any time without notice. Tyco Electronics expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose.

The dimensions in this catalog are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Please consult Tyco Electronics for the latest dimensions and design specifications.

Restriction on the use of Hazardous Substances (RoHS)

At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

RoHS Compliant — Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

NOTE: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

NOTE: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced at right.

Getting the Information You Need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
- So whatever your questions when it comes to RoHS, we've got the answers at www.tycoelectronics.com/leadfree

RoHS
Customer
Support
Center

6-1773447-7-CC&CE_AH-PDF-01/09

© 2009 by Tyco Electronics Corporation. All Rights Reserved.

INFINIBAND is a trademark of the InfiniBand Trade Association.

EVERCLEAR, Madison Cable, PARALIGHT, TE logo, TurboTwin, and TYCO ELECTRONICS are trademarks. Other Products, logos, and company names mentioned herein may be trademarks of their respective owners. Specifications subject to change.

For more information, contact your Tyco Electronics sales engineer at the numbers listed below, or visit our website at: <http://www.tycoelectronics.com>.

USA: 1-800-522-6752

Canada: 1-905-470-4425

France: +33 (0) 1-3420-8686

Mexico and C. America: 52-55-1106-0814

S. America: 55-11-2103-6000

Germany: +49 (0) 6251-133-1999

China: +86 (0) 400-820-6015

UK: + 44 (0) 8706-080208

Netherlands: +31 (0) 73-6246-999

 **Tyco Electronics**
Our commitment. Your advantage.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А