

# Plateau Head Pushbutton Switch

## A3U

### Easy connector enables less assembly and less wiring

- 50 mm body length.
- Highly reliable Major Omron basic switch, SS model built in.
- Possible cross over wiring on circuit construction.
- Easy one push to connect the Operation and Switch Units.
- 22 dia of the push button head size is suitable for operation.



### Model Number Structure

Model Number Legend....For information on combinations, refer to Ordering Information.

**A3U** (1) - **T** (2) (3) - (4) **A** (5) **C** - (6) **M**

#### (1) Lighted/Non-lighted

Symbol	Type
No symbol	Non-lighted
L	Lighted

#### (2) Flange Color

Symbol	Color
B	Black
M	Metallic*

\* Available soon.

#### (3) Color of Pushbutton and light

Symbol	Pushbutton	Lighted	Non-lighted
W	White*1	○	○
R	Red	○	○
Y	Yellow	○	○
G	Green	○	○
U	Umber*2	○	—
A	Blue	○	○
B	Black	—	○

\*1. For the lighted-type, the cap color is transparent and the LED is white.

\*2. For the lighted-type, the cap color is transparent and the LED is umber.

#### (4) Light Source

Symbol	Operating Voltage
No symbol	Non-lighted
1	5 VDC
2	12 VDC
3	24 VDC

#### (5) Contact Configuration

Symbol	Type
1	SPDT
2	DPDT

#### (6) Degree of Protection

Symbol	Protection
None	IP40
5	IP65*

\* Available soon.

### Ordering Information

Type	Lighting	Output	LED Voltage	Model	□ Pushbutton color symbol
Plateau Head Pushbutton Switch	LED	SPDT	5 VDC	A3UL-TB□-1A1C-M	W : Transparent R : Red Y : Yellow G : Green U : Umber A : Blue
			12 VDC	A3UL-TB□-2A1C-M	
			24 VDC	A3UL-TB□-3A1C-M	
		DPDT	5 VDC	A3UL-TB□-1A2C-M	
	12 VDC		A3UL-TB□-2A2C-M		
	24 VDC		A3UL-TB□-3A2C-M		
Non-lighted		SPDT	—	A3U-TB□-A1C-M	W : White R : Red Y : Yellow G : Green B : Black A : Blue
		DPDT	—	A3U-TB□-A2C-M	

### Specifications

#### Approved Standard Ratings

Certification Authority	UL (See Note: 1 and Note: 2)	TÜV (See Note: 3)
Certification no.	UL508 CSA C22.2 No.14	EN60947-5-1
Rating	30 VDC 0.1 A	12 30 VDC 0.1 A
File no.	E41515	J50236157

**Note: 1.** Only Switch Blocks are recognized by UL. (Surrounding air Temperature: 55 °C)

**Note: 2.** Please use the power supply specified in UL class 2.

**Note: 3.** Use 4A 250V as short-circuit protective device when using under EN authorized rating standard (IEC60127-2 SS1).

# A3U

## Ratings

Contacts  
30 VDC, 0.1 A (Resistive load)  
Minimum applicable load: 1 mA at 5 VDC

Rated values are obtained from tests conducted under the following conditions.

1. Load: Resistive load
2. Mounting conditions: No vibration and no shock
3. Temperature:  $20 \pm 2$  °C
4. Operating frequency: 20 operations/min

## Super-bright LED

Rated voltage	Rated current	Operating voltage
5 VDC	15 mA	5 VDC $\pm 5$ %
12 VDC		12 VDC $\pm 5$ %
24 VDC		24 VDC $\pm 5$ %

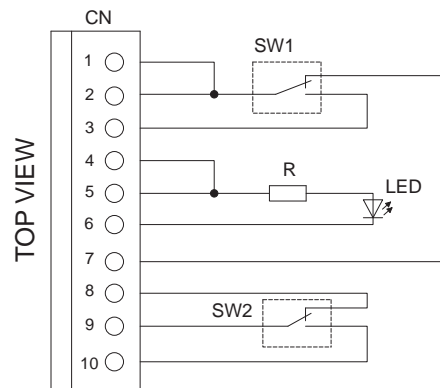
## Characteristics

Item		Pushbutton Switch
Allowable operating frequency	Mechanical	60 operations/minute max.
	Electrical	30 operations/minute max.
Insulation resistance		100 M $\Omega$ min. (at 500 VDC)
Contact resistance		250 m $\Omega$ max. (initial value)
Dielectric strength	Between terminals of same polarity	500 VAC, 50/60 Hz for 1 minute
	Between terminals of different polarity	500 VAC, 50/60 Hz for 1 minute
	Between each terminal and ground	1,500 VAC, 50/60 Hz for 1 minute
	Between all LED terminals and all the other terminals	500 VAC, 50/60 Hz for 1 minute
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)
Shock resistance	Malfunction	300 m/s <sup>2</sup> max. (malfunction within 1 ms)
Durability	Mechanical	1,000,000 operations min.
	Electrical	200,000 operations min.
Connector holding force		40 N max.
Rated insulation voltage (Ui)		30 V (EN60947-5-1)
Electric shock protection class		Class II
Degree of contamination		3 (EN60947-5-1)
Impulse withstand voltage	Between terminals of same polarity	800 V (EN60947-5-1)
	Between terminals of different polarity	
	Between each terminal and ground	
Conditional short-circuit current		100A (EN60947-5-1)
Conventional enclosed thermal current (Ithe)		0.1A (EN60947-5-1)
Weight		Approx. 30 g
Degree of protection		IP40, IP65
Ambient operating temperature		-20 °C to 70 °C (Non-lighted type) -20 °C to 70 °C (lighted type) (with no icing or condensation)
Ambient operating humidity		35 % to 85 % RH
Ambient storage temperature		-40 °C to 70 °C (with no icing or condensation)
Ambient storage humidity		35 % to 85 % RH

## Operating Characteristics

Features	A3U
Operating force (OF) max.	4.5 N
Pretravel (PT) max.	3.3 mm
Total travel (TT)	Approx. 3.7 mm

## Circuit Diagram



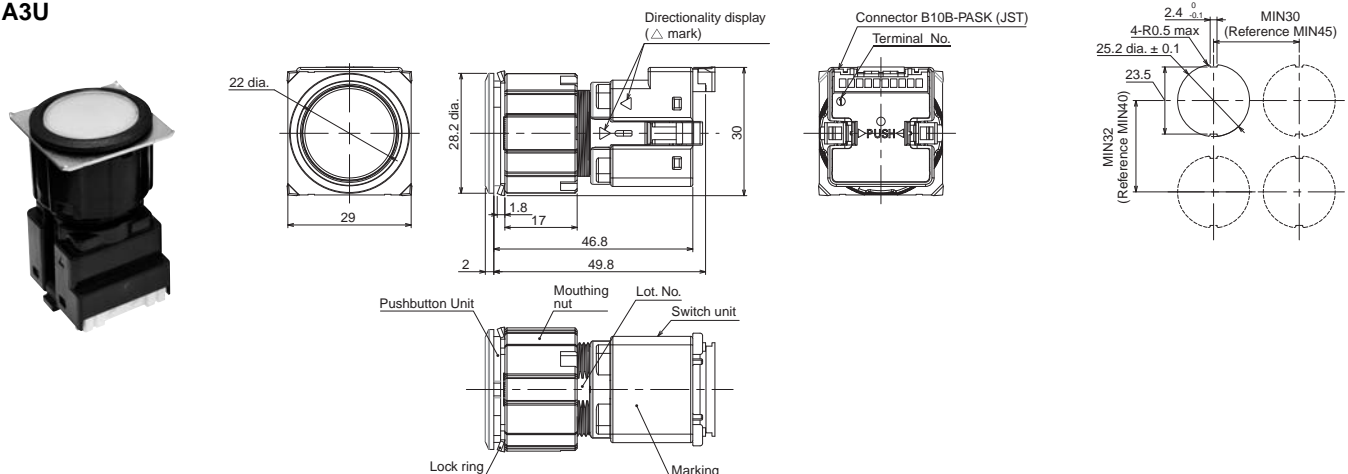
### Note3

1. This circuit shows the lighted/bipolar type.
2. SW2 isn't mounted on 1 pole type.
3. An LED and R aren't mounted on the non-lighted type.

## Dimensions

(unit: mm)

### A3U

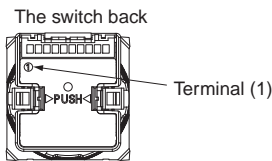


# Safety Precautions

## Refer to Safety Precautions for All Pushbutton Switches/Indicators.

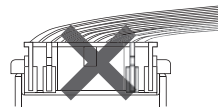
### Precautions for Safe Use

- Do not disassemble or modify the Switch under any circumstances. Doing so may cause malfunction.
- Do not drop or subject the Switch to extreme shock or force. This may prevent the Switch from functioning to its full capability.
- The durability of the Switch varies considerably depending on the switching conditions. Always test the switch under actual working conditions before application and use the Switch only for the number of switching operations allowed.
- Do not allow the load current to exceed the rated value. This may damage or burn out the Switch.
- Refer to the Circuit Diagram and make sure to wire correctly. Only the terminal (1) is printed and the right end of the terminal is read as (10).

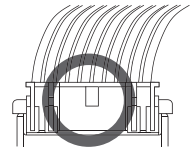


- Do not use the Switch in locations where explosive or flammable gases or liquid may be present or scattered. The electric arc or the heat caused by switching contacts may trigger off a fire or explosion.
- Do not use the Switch in locations where toxic gases, such as H<sub>2</sub>S, SO<sub>2</sub>, NH<sub>3</sub>, HNO<sub>3</sub>, and Cl<sub>2</sub>, may be present, or in locations subject to high temperature or humidity. Doing so may damage the Switch due to contact failure or corrosion.
- Do not let the Switch submerged in oil or water, or use in locations continuously subject to splashes of oil/water. Doing so may result in oil or water entering the Switch.
- Do not use the Switch in the following locations;
  - subject to severe temperature changes.
  - subject to high humidity or condensation.
  - subject to severe vibration or shock.
  - where direct rays of the sun strike.
  - where sea breeze may be present.
- When the Switch is exposed to the environment that are not required, or stored in locations where condensation presents, or damaged by fall out, or stored for more than an year, please test it under the usage conditions before application.
- Mounting and removing the Switch
  1. Insert the Operation Unit to the panel from the front. Install the lock ring and mounting nut from the terminal side and tighten the nut. Attach the Switch to the Operation Unit.
  2. Align the lock ring with the groove in the casing, and insert it so that its edge is drawn to the panel side.
  3. Tighten the nut to the torque of 0.98 to 1.96 N·m.
  4. Snap on the Switch to the Operation Unit, aligning the arrow marks inscribed on both the Operation Unit and the Switch. Push the Switch into the Operation Unit until it clicks into place.
  5. The push marks on both sides are only for detaching. Do not push them when you insert the Switch Unit to the Operation Unit. Otherwise, the Operation Unit is hooked wrongly.
  6. To remove the Switch, push to move the levers on both sides in the direction indicated by PUSH mark. Applying too much holding force may damage the Switch.
- Wiring
  1. Do not wire the Switch while power is being supplied. Doing so may result in electric shock.
  2. Make sure to insert the connector to the end. This may prevent the Switch from functioning to its full capability.
  3. Do not subject the Switch to an excessive force when wiring. Fix the cables first to avoid the connector and cables from being pulled with. Otherwise, the connector may be disassembled or damaged, resulting in the contact damages.

Too much tension to the cables.



Appropriate force to the cables.



4. Refer to specification of each connector or catalogue for details of installing or wiring the terminal side of the connector.

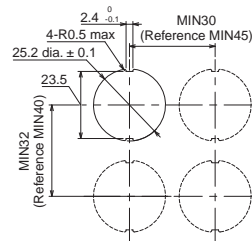
Recommended connector;

Manufacture	Name	Model	Applicable lead wire
J.S.T. Mfg Co.	Contact	SPHD-002T-P0.5	AWG#26 to 22
		SPHD-001T-P0.5	AWG#28 to 24
	Housing	PAP-10V-S	AWG#28 to 22

- Choose the applicable contact to the wire.

### Precautions for Correct Use

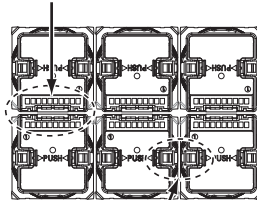
- Operating Environment
  1. This Switch is intended for indoor use only. Do not use the Switch outdoors.
  2. Do not set the Switch in locations where powders, mud, or any other substances may be piled, or subject to any splashes of oil or water. Always test the switch under actual working conditions before application.
- Mounting panels
  1. Set mounting panel thickness to be 0.8 to 3.2 mm.
  2. The panel dimension is set as below;
    - The value in ( ) indicated below is the minimum value suggested for easy detaching of the Switch.
    - Minimum panel pitch is 30/32 mm. Consider the flexibility and allowance of detaching and wiring, set the pitch to the appropriate value.



- Leave some spaces for a finger between panels, so as to pinch the levers.
- Place the panels in the same direction. Do not set the connectors face to face for easy removal.

Wrong setup :

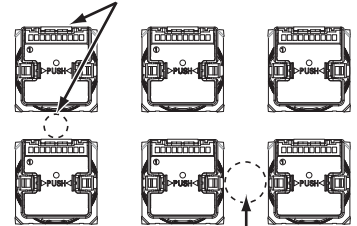
Connectors are too closely placed.



Levers are too close and cannot be pushed.

Right setup :

Same direction



Some rooms for fingers to push.

# Terms and Conditions of Sale

1. **Offer; Acceptance.** These terms and conditions (these "**Terms**") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "**Products**") by Omron Electronics LLC and its subsidiary companies ("**Omron**"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
2. **Prices; Payment Terms.** All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
3. **Discounts.** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
4. **Interest.** Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
5. **Orders.** Omron will accept no order less than \$200 net billing.
6. **Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
7. **Taxes.** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.
8. **Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
9. **Cancellation; Etc.** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
10. **Force Majeure.** Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
11. **Shipping; Delivery.** Unless otherwise expressly agreed in writing by Omron:
  - a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
  - b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
  - c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
  - d. Delivery and shipping dates are estimates only; and
  - e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. **Claims.** Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
13. **Warranties.** (a) **Exclusive Warranty.** Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) **Limitations.** OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) **Buyer Remedy.** Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://www.omron247.com> or contact your Omron representative for published information.
14. **Limitation on Liability; Etc.** OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.
15. **Indemnities.** Buyer shall indemnify and hold harmless Omron Companies and their employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Omron is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
16. **Property; Confidentiality.** Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
17. **Export Controls.** Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (iii) disclosure to non-citizens of regulated technology or information.
18. **Miscellaneous.** (a) **Waiver.** No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) **Assignment.** Buyer may not assign its rights hereunder without Omron's written consent. (c) **Law.** These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) **Amendment.** These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) **Severability.** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) **Setoff.** Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) **Definitions.** As used herein, "including" means "including without limitation"; and "Omron Companies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

## Certain Precautions on Specifications and Use

1. **Suitability of Use.** Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given: (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document. (ii) Use in consumer products or any use in significant quantities. (iii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations. (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Product. NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
3. **Performance Data.** Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
4. **Change in Specifications.** Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
5. **Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

**OMRON INDUSTRIAL AUTOMATION • THE AMERICAS HEADQUARTERS**

Schaumburg, IL USA • 847.843.7900 • 800.556.6766 • [www.omron247.com](http://www.omron247.com)

---

**OMRON CANADA, INC. • HEAD OFFICE**

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • [www.omron247.com](http://www.omron247.com)

**OMRON ELECTRONICS DE MEXICO • HEAD OFFICE**

México DF • 52.55.59.01.43.00 • 001.800.556.6766 • [mela@omron.com](mailto:mela@omron.com)

**OMRON ELECTRONICS DE MEXICO • SALES OFFICE**

Apodaca, N.L. • 52.81.11.56.99.20 • 001.800.556.6766 • [mela@omron.com](mailto:mela@omron.com)

**OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE**

São Paulo, SP, Brasil • 55.11.2101.6300 • [www.omron.com.br](http://www.omron.com.br)

**OMRON ARGENTINA • SALES OFFICE**

Cono Sur • 54.11.4783.5300

**OMRON CHILE • SALES OFFICE**

Santiago • 56.9.9917.3920

**OTHER OMRON LATIN AMERICA SALES**

54.11.4783.5300

---

**OMRON EUROPE B.V.** • Wegalaan 67-69, NL-2132 JD, Hoofddorp, The Netherlands. • Tel: +31 (0) 23 568 13 00

Fax: +31 (0) 23 568 13 88 • [www.industrial.omron.eu](http://www.industrial.omron.eu)

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](mailto:ocean@oceanchips.ru)

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

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