

# POWER RELAY

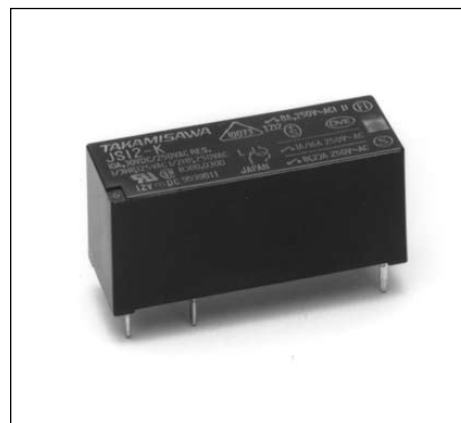
## 1 POLE—8 A (MEDIUM LOAD CONTROL)

### JS SERIES

RoHS compliant

#### ■ FEATURES

- UL, CSA, VDE, SEV, SEMKO, FIMKO, NEMKO, DEMKO, ÖVE, CQC, BSI compliance
- UL class B (130°C) coil wire insulation
- 1 form A (SPST-NO) or 1 form C (SPDT) contact
- Low profile and space saving—Height: 12.5 mm  
—Mounting space: 290 mm<sup>2</sup>
- High sensitivity in small package  
—Operating power ..... 110 to 140 mW  
—Nominal power ..... 220 to 290m W
- High isolation in small package  
—Insulation distance : 8 mm (between coil and contacts)  
—Dielectric strength : 5,000 VAC  
—Surge strength : 10,000 V
- Plastic materials  
—UL 94 flame class V-0  
—UL CTI level class 2
- Plastic sealed type
- Various contact material options
- RoHS compliant since date code: 0438B9, 0434R - Please see page 7 for more information



#### ■ ORDERING INFORMATION

[Example] JS - 12 M E - K T -(V3)\*  
 (a) (\*) (b) (c) (d) (e) (f) (j)

|     |                     |   |
|-----|---------------------|---|
| (a) | Series Name         | JS : JS Series  |
| (b) | Nominal Voltage     | Refer to the COIL DATA CHART  |
| (c) | Contact Arrangement | Nil : 1 form C (SPDT)<br>M : 1 form A (SPST-NO)<br>B : 1 form B   |
| (d) | Contact Material    | Nil : Gold plate silver cadmium oxide<br>B : Silver cadmium oxide<br>D : Silver nickel<br>E : Silver cadmium oxide<br>F : Gold plate silver nickel<br>N : Gold plate silver tin oxide |
| (e) | Enclosure           | K : Plastic sealed type   |
| (f) | Construction        | Nil: 3.2 mm<br>T : 5.0 mm (only JS-MN, MD, MF)  |
| (j) | Gold plating        | Nil: 0.3μ gold overlay (available with Nil, N and F contact)<br>V3: 3μ gold overlay for lower current applications (available with Nil, N) and not available for T (5.0mm type)       |

Note: Actual marking omits the hyphen (-) of (\*)  
 \*: V3 is marked at different place from P/N.

# JS SERIES

## ■ PART NUMBERS

### 1. Terminal Pitch: 3.2mm

| Order P/N         | Series | Voltage | Contact Arrangement | Contact material  | Enclosure       | Terminal Pitch | Special                               |
|-------------------|--------|---------|---------------------|---|-----------------|----------------|---------------------------------------|
| JS-5M ( )-K(-V3)  | JS     | 5       | M: 1 form A         | Nil: Gold plate + silver cadmium oxide<br><br>E: Silver cadmium oxide                     | K: Plastic Seal | 3.2 mm         | Gold plate<br>Nil: 0.3 μm<br>V3: 3 μm |
| JS-6M ( )-K(-V3)  |        | 6       |                     |   |                 |                |                                       |
| JS-9M ( )-K(-V3)  |        | 9       |                     |   |                 |                |                                       |
| JS-12M ( )-K(-V3) |        | 12      |                     |   |                 |                |                                       |
| JS-18M ( )-K(-V3) |        | 18      |                     |   |                 |                |                                       |
| JS-24M ( )-K(-V3) |        | 24      |                     |   |                 |                |                                       |
| JS-48M ( )-K(-V3) |        | 48      |                     |   |                 |                |                                       |
| JS-60M ( )-K(-V3) |        | 60      |                     |   |                 |                |                                       |
| JS-5 ( )-K(-V3)   |        | 5       | Nil: 1 form C       | N: Gold plate silver tin oxide<br><br>F: Gold plate silver nickel<br><br>D: Silver nickel |                 |                |                                       |
| JS-6 ( )-K(-V3)   |        | 6       |                     |   |                 |                |                                       |
| JS-9 ( )-K(-V3)   |        | 9       |                     |   |                 |                |                                       |
| JS-12 ( )-K(-V3)  |        | 12      |                     |   |                 |                |                                       |
| JS-18 ( )-K(-V3)  |        | 18      |                     |   |                 |                |                                       |
| JS-24 ( )-K(-V3)  |        | 24      |                     |   |                 |                |                                       |
| JS-48 ( )-K(-V3)  |        | 48      |                     |   |                 |                |                                       |
| JS-60 ( )-K(-V3)  |        | 60      |                     |   |                 |                |                                       |
| JS-5 ( )B-K(-V3)  |        | 5       | B : 1 form B        | B: Silver cadmium oxide   |                 |                |                                       |
| JS-6 ( )B-K(-V3)  |        | 6       |                     |   |                 |                |                                       |
| JS-9 ( )B-K(-V3)  |        | 9       |                     |   |                 |                |                                       |
| JS-12 ( )B-K(-V3) |        | 12      |                     |   |                 |                |                                       |
| JS-18 ( )B-K(-V3) |        | 18      |                     |   |                 |                |                                       |
| JS-24 ( )B-K(-V3) | 24     |         |                     |   |                 |                |                                       |
| JS-48 ( )B-K(-V3) | 48     |         |                     |   |                 |                |                                       |
| JS-60 ( )B-K(-V3) | 60     |         |                     |   |                 |                |                                       |

### 2. Terminal Pitch: 5.0mm

| Order P/N | Series | Voltage | Contact Arrangement | Contact material                 | Enclosure | Terminal Pitch |
|-----------|--------|---------|---------------------|----------------------------------|-----------|----------------|
| JS-5MN-K  | JS     | 5       | M: 1 form A         | N: Gold plate silver + tin oxide | K         | T: 5.0 mm      |
| JS-6MN-K  |        | 6       |                     |                                  |           |                |
| JS-9MN-K  |        | 9       |                     |                                  |           |                |
| JS-12MN-K |        | 12      |                     |                                  |           |                |
| JS-18MN-K |        | 18      |                     |                                  |           |                |
| JS-24MN-K |        | 24      |                     |                                  |           |                |
| JS-48MN-K |        | 48      |                     |                                  |           |                |
| JS-60MN-K |        | 60      |                     |                                  |           |                |

# JS SERIES

## ■ COIL DATA CHART

| Coil voltage | Nominal voltage | Maximum voltage*1 | Coil resistance (±10%) | Must operate voltage*2 | Must release voltage*2 | Nominal Power |
|--------------|-----------------|-------------------|------------------------|------------------------|------------------------|---------------|
| 5            | 5 VDC           | 11.8 VDC          | 112 Ω                  | 3.5 VDC                | 0.5 VDC                | 225 mW        |
| 6            | 6 VDC           | 14.1 VDC          | 160 Ω                  | 4.2 VDC                | 0.6 VDC                | 225 mW        |
| 9            | 9 VDC           | 21.2 VDC          | 360 Ω                  | 6.3 VDC                | 0.9 VDC                | 225 mW        |
| 12           | 12 VDC          | 28.3 VDC          | 660 Ω                  | 8.5 VDC                | 1.2 VDC                | 220 mW        |
| 18           | 18 VDC          | 42.4 VDC          | 1,455 Ω                | 12.7 VDC               | 1.8 VDC                | 225 mW        |
| 24           | 24 VDC          | 56.6 VDC          | 2,350 Ω                | 16.8 VDC               | 2.4 VDC                | 245 mW        |
| 48           | 48 VDC          | 105.6 VDC         | 8,000 Ω                | 33.4 VDC               | 4.8 VDC                | 290 mW        |
| 60           | 60 VDC          | 132.0 VDC         | 12,500 Ω               | 41.7 VDC               | 6.0 VDC                | 290 mW        |

Note : All values in the table are measured at 20°C.

\*1: No contact current at 20°C.

\*2: Specified values are subject to pulse wave voltage.

## ■ SPECIFICATIONS

| Item                 |                                 | Non-V3 type  |  | V3 type             |  |
|----------------------|---------------------------------|--|--|---------------------|--|
|                      |                                 | JS ( )-E-K, JS ( )-K, JS ( )B-K<br>JS ( )-N-K, JS ( )-F-K,<br>JS ( )-D-K |  | JS ( )-K, JS ( )N-K |  |
| Contact              | Arrangement                     | 1 Form C (SPDT), 1 Form A (SPST-NO)                                      |  |                     |  |
|                      | Material                        | 0.3μ Ag plated   |  | 3μ Ag plated        |  |
|                      | Resistance (initial)            | Max. 100mΩ 1A, 6VDC)   |  | Max. 30mΩ (1A 6VDC) |  |
|                      | Rating                          | 8A 250 VAC / 24 VDC  |  |                     |  |
|                      | Max. carrying current           | 10A  |  |                     |  |
|                      | Max. switching power            | 2,000 VA / 192 W   |  |                     |  |
|                      | Max. switching voltage          | 400 VAC/ 150 VDC   |  |                     |  |
|                      | Min. switching load             | 100 mA 5 VDC   |  | 10 mA 5 VDC         |  |
| Coil                 | Nominal power (at 20°C)         | 220 to 290 mW  |  |                     |  |
|                      | Operate power (at 20°C)         | 110 to 140 mW  |  |                     |  |
|                      | Operating temperature (at 20°C) | -40°C to +85°C (no frost)  |  |                     |  |
| Time value           | Operate                         | Max. 10 ms (at nominal voltage, without bounce)                          |  |                     |  |
|                      | Release (without diode)         | Max. 5 ms (at nominal voltage, without bounce)                           |  |                     |  |
| Life                 | Mechanical                      | Min. 20x10 <sup>6</sup> operations                                       |  |                     |  |
|                      | Electrical                      | AC rated load  | Min. 100x10 <sup>3</sup> operations (JS-( )N-K min. 50x10 <sup>3</sup> ops.) |                     |  |
|                      |                                 | DC rated load  | Min. 100x10 <sup>3</sup> operations (JS-( )N-K min. 50x10 <sup>3</sup> ops.) |                     |  |
| Vibration resistance | Misoperation ≥ 1μs              | 10 to 55 Hz at double amplitude of 1.65 mm                               |  |                     |  |
|                      | Endurance                       | 10 to 55 Hz at double amplitude of 3.3 mm                                |  |                     |  |
| Shock resistance     | Misoperation ≥ 1μs              | Min. 100 m/s <sup>2</sup> (11±1 ms)                                      |  |                     |  |
|                      | Endurance                       | Min. 1,000 m/s <sup>2</sup> (6±1 ms)                                     |  |                     |  |
| Weight               | Approx. 8 g                     |  |  |                     |  |

\* Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

## ■ INSULATION

|  |                   |                                      |
|--|-------------------|--------------------------------------|
| Items  |                   |                                      |
| Resistive (at 500 VDC)                             |                   | Min. 1,000 MΩ                        |
| Dielectric Strength                                | Open contacts     | 1,000 VAC (50/60 Hz) 1 min.          |
|  | Coil and contacts | 5,000 VAC (50/60 Hz) 1 min.          |
| Surge strength (coil and contacts)                 |                   | 10,000 V (1.2 x 50 μs standard wave) |
| Clearance / crepage                                |                   | 6 mm / 8 mm                          |
| Isolation (DIN EN 61810-1 VDE 0435)                |                   |                                      |
| Voltage  |                   | 250 V                                |
| Pollution  |                   | 3                                    |
| Isolation material group                           |                   | III a                                |
| Isolation category / Reference voltage (VDE 01106) |                   | C / 250V                             |

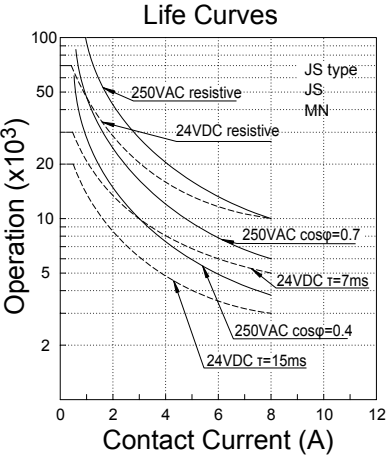
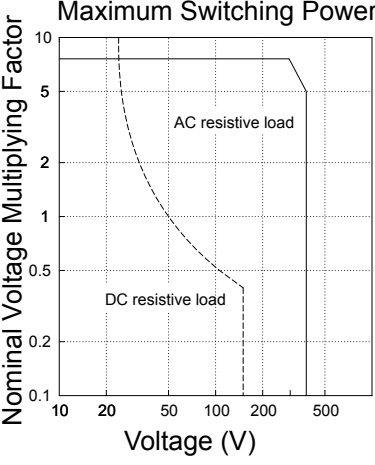
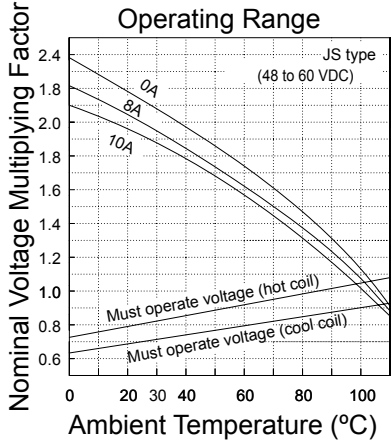
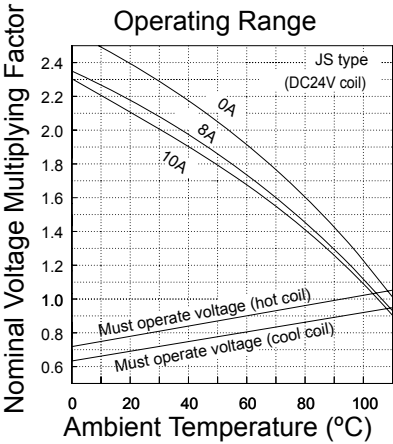
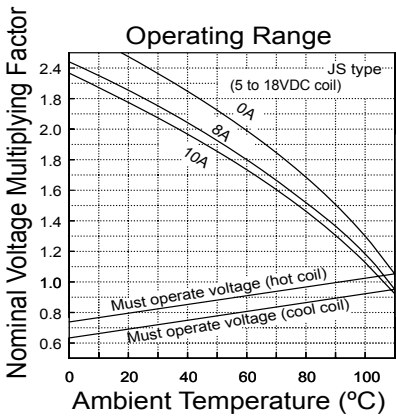
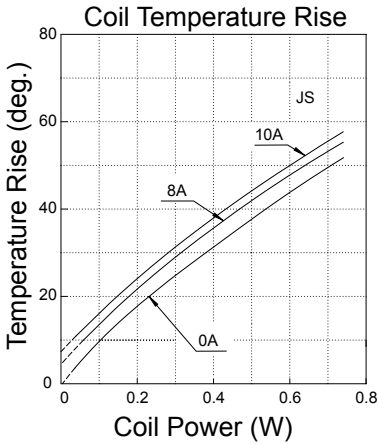
## ■ SAFETY STANDARD (VDE 01106)

| Type  | Compliance                                   | Contact rating   |                               |
|-------|--|--|-------------------------------|
| UL    | UL 508<br>E 56140                            | Flammability: UL 94-V0 (plastics)                          |                               |
|       |  | Contact material: Nil, E                                   | N                             |
| CSA   | C22.2 No. 14<br>LR 35579                     | 8 A 24 VDC (resistive) 100k                                | 8 A 24 VDC (resistive) 100k   |
|       |  | 8 A, 250 VDC (resistive) 100k                              | 8 A, 250 VDC (resistive) 100k |
|       |  | 10 A, 30 VDC (resistive)                                   | 10 A, 30 VDC (resistive)      |
|       |  | 10 A, 250 VAC (resistive)                                  | 10 A, 250 VAC (resistive)     |
|       |  | 1/4 HP, 125 V/ 250 VAC                                     | 1/4 HP, 125 V/ 250 VAC        |
|       |  | 1/3 HP, 125 VAC  | 1/3 HP, 125 VAC               |
|       |  | 1/2 HP, 250 VAC  | 1/2 HP, 250 VAC               |
|       |  | Pilot duty: C150, B300                                     | Pilot duty: A300, B300        |
|       |  | Pilot duty: 0.27A, 250VDC                                  | C150, R300                    |
| VDE   | 0435, 0631, 0700,<br>40013847                | 8 A 250 VAC (cos Ø=1)                                      |                               |
|       |  | 8 A 24 VDC (0 ms)  |                               |
| SEMKO | EN 61058-1 + A1: 1993<br>EN 61095:1993 + A11 | Rated Voltage (V): 250<br>Rated Current (A): 8 (2)<br>or 8 |                               |

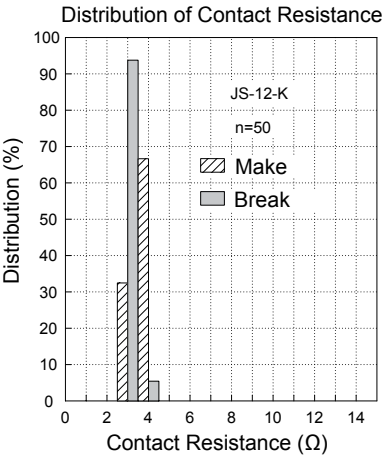
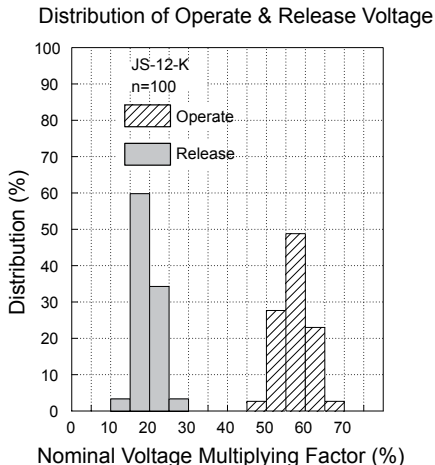
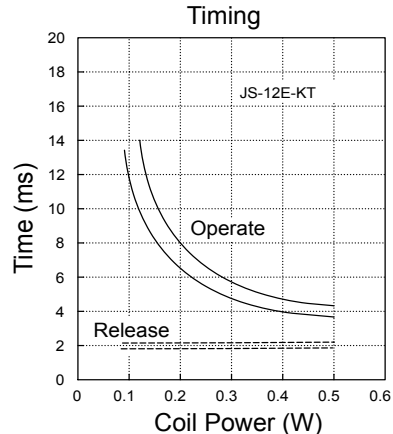
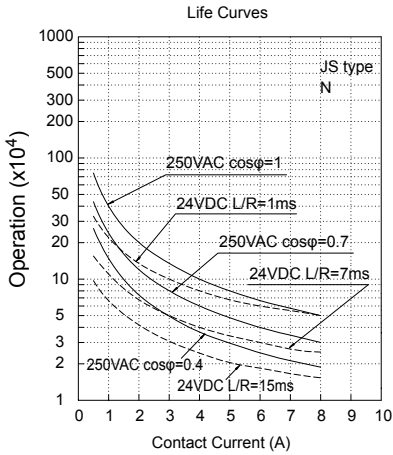
Also complies with SEV, ÖVE, FIMKO, BSI, CQC, NEMKO, DEMKO

# JS SERIES

## CHARACTERISTIC DATA



## ■ REFERENCE DATA



# JS SERIES

## ■ DIMENSIONS

- Dimensions

JS-MK type



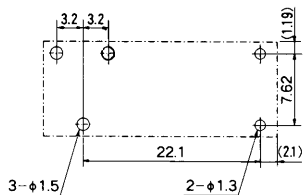
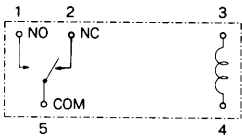
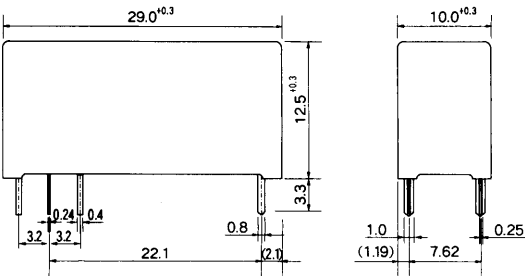
- Schematics (BOTTOM VIEW)



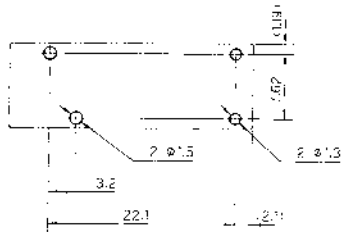
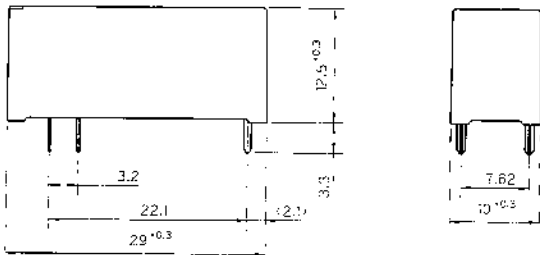
- PC board mounting hole layout (BOTTOM VIEW)



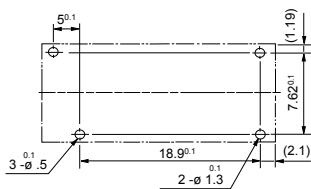
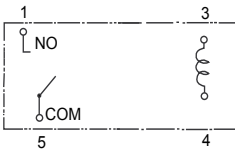
JS-K type



JS-B-K type



JS-MN( )-KT type



Unit: mm

## RoHS Compliance and Lead Free Relay Information

### 1. General Information

- Relays produced after the specific date code that is indicated on each data sheet are lead-free now. All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info. (<http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>)
- Lead free solder plating currently used in relays is Sn-3.0Ag-0.5Cu.
- All signal and power relays also comply with RoHS. Please refer to individual data sheets. Relays that are RoHS compliant do not contain the 5 hazardous materials above the threshold level that are restricted by RoHS directive (lead, mercury, chromium IV, PBB, PBDE).
- It has been verified that using lead-free relays in leaded assembly process will not cause any problems (compatible).
- "LF" is marked on each outer and inner carton. (No marking on individual relays).
- To avoid leaded relays (for lead-free sample, etc.) please consult with area sales office.

Note: Cadmium was exempted from RoHS on October 21, 2005. (Amendment to Directive 2002/95/EC)

### 2. Recommended Lead Free Solder Profile

- Recommended solder paste Sn-3.0Ag-0.5Cu.

#### Solder condition

**Flow Solder condition:**

Pre-heating: maximum 120°C  
Soldering: dip within 5 sec. at  
260°C solder bath

**Solder by Soldering Iron:**

Soldering Iron  
Temperature: maximum 360°C  
Duration: maximum 3 sec.

**We highly recommend that you confirm your actual solder conditions**

### 3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to through hole electromechanical relays.

### 4. Tin Whisker

- Dipped SnAgCu solder is known as low risk tin whisker. No considerable length whisker was found by our in house test.



## Fujitsu Components International Headquarter Offices

**Japan**

Fujitsu Component Limited  
Gotanda-Chuo Building  
3-5, Higashigotanda 2-chome, Shinagawa-ku  
Tokyo 141, Japan  
Tel: (81-3) 5449-7010  
Fax: (81-3) 5449-2626  
Email: [promothq@ft.ed.fujitsu.com](mailto:promothq@ft.ed.fujitsu.com)  
Web: [www.fcl.fujitsu.com](http://www.fcl.fujitsu.com)

**North and South America**

Fujitsu Components America, Inc.  
250 E. Caribbean Drive  
Sunnyvale, CA 94089 U.S.A.  
Tel: (1-408) 745-4900  
Fax: (1-408) 745-4970  
Email: [components@us.fujitsu.com](mailto:components@us.fujitsu.com)  
Web: <http://www.fujitsu.com/us/services/edevices/components/>

**Europe**

Fujitsu Components Europe B.V.  
Diamantlaan 25  
2132 WV Hoofddorp  
Netherlands  
Tel: (31-23) 5560910  
Fax: (31-23) 5560950  
Email: [info@fceu.fujitsu.com](mailto:info@fceu.fujitsu.com)  
Web: [emea.fujitsu.com/components/](http://emea.fujitsu.com/components/)

**Asia Pacific**

Fujitsu Components Asia Ltd.  
102E Pasir Panjang Road  
#01-01 CitiLink Warehouse Complex  
Singapore 118529  
Tel: (65) 6375-8560  
Fax: (65) 6273-3021  
Email: [fcal@fcal.fujitsu.com](mailto:fcsl@fcal.fujitsu.com)  
Web: <http://www.fujitsu.com/sg/services/micro/components/>

©2008 Fujitsu Components America, Inc. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

Fujitsu Components America or its affiliates do not warrant that the content of datasheet is error free. In a continuing effort to improve our products Fujitsu Components America, Inc. or its affiliates reserve the right to change specifications/datasheets without prior notice.  
Rev. August 6, 2008.

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