

# POWER RELAY

## 1 POLE - 5A Medium Load Control

### VE Series

#### ■ FEATURES

- UL, CSA, VDE, CQC recognized
- 1 form A (SPST-NO) or 1 form C (SPDT) contact
- Low cost, miniature relay with big performance in smal package
  - Higher surge voltage type is available (6,000 V)
  - 2,000 VAC between coil and contacts
- Slim type—meets high density mounting requirements
- Wide operating range
- Easy circuit design with completely separated terminal arrangement (coil and contact terminals)
- Plastic sealed type, RTIII
- Creepage min. 3.2 mm
- RoHS compliant.

Please see page 6 for more information



#### ■ PARTNUMBER INFORMATION

[Example]  $\frac{VE}{(a)}$  -  $\frac{12}{(*)}$   $\frac{H}{(b)}$   $\frac{M}{(c)}$   $\frac{S}{(d)}$   $\frac{E}{(e)}$  -  $\frac{K}{(f)}$  -  $\frac{HV}{(g)}$  -  $\frac{VD}{(i)}$

|     |                       |               |  |
|-----|-----------------------|---------------|--|
| (a) | Relay type            | VE            | : VE Series  |
| (b) | Coil rated voltage    | 12            | : 5...48VDC<br>Coil rating table at page 3   |
| (c) | Contact rating        | H             | : Heavy duty type  |
| (d) | Contact configuration | Nil<br>M      | : 1 form C (SPDT)<br>: 1 form A (SPST-NO)  |
| (e) | Coil type             | Nil<br>S      | : Standard type (360mW)<br>: High sensitive type (250mW)   |
| (f) | Contact material      | Nil<br>E<br>5 | : Gold overlay silver-nickel (N.C.: 3A, N.O.: 5A)<br>: Silver-nickel (N.C.: 3A, N.O.: 5A)<br>: Silver cadmium oxide (N.C.: 5A, N.O.: 5A) |
| (g) | Enclosure             | K             | : Plastic sealed type, RTIII   |
| (h) | Surge strength        | Nil<br>HV     | : Standard type (4,000V)<br>: High dielectric strength type (6,000V)   |
| (i) | Approvals             | VD            | : UL, CSA, VDE approved type   |

Note: Actual marking omits the hyphen (-) of (\*)

# VE SERIES

## ■ SPECIFICATION

|                |                                     | VE-( ) HM(S)E-K<br>VE-( ) HM(S)-K   | VE-( ) H(S)E-K<br>VE-( ) H(S)-K        | VE-( ) HM(S)5-K   | VE-( ) H(S)5-K  |              |
|----------------|-------------------------------------|---|--|---|-----------------|--------------|
| Contact Data   | Configuration                       | 1 form A (SPST-NO)  | 1 form C (SPDT)                        | 1 form A (SPST-NO)  | 1 form C (SPDT) |              |
|                | Construction                        | Single  |  |   |                 |              |
|                | Material                            | Gold overlay silver nickel, silver nickel, silver-cadmium oxide alloy (AgNi + Au, AgNi, AgCd) |  |   |                 |              |
|                | Resistance (initial) (at 6 VDC, 1A) | Max. 70mOhm (VE-HM, H)<br>Max. 100mOhm (VE-HME, HE)   |  | Max. 200mOhm  |                 |              |
|                | Contact rating (resistive)          | 5A, 250VAC  | 5A, 250VAC (N.O.)<br>3A, 250VAC (N.C.) | 5A, 250VAC  |                 |              |
|                | Max. carrying current               | 7A  |  |   |                 |              |
|                | Max. switching voltage              | 250VAC, 150 VDC   |  |   |                 |              |
|                | Max. switching power                | 1,250VA   | 1,250VA (N.O.)<br>750VA (N.C.)         | 1,250VA   |                 |              |
|                | Max. switching current              | 5A  | 5A (N.O.)<br>3A (N.C.)                 | 5A  |                 |              |
|                | Min. switching load *               | 10 mA, 5 VDC (VE-HM, H), 100 mA 5 VDC (VE-HME, HE, HM5, H5)                                   |  |   |                 |              |
| Life           | Mechanical                          | Min. 10 x 10 <sup>6</sup> operations  |  |   |                 |              |
|                | Electrical (at rating)              | Min. 100 x 10 <sup>3</sup> operations<br>Standard type  |  | Min. 50 x 10 <sup>3</sup> operations<br>High sensitive type |                 |              |
| Coil Data      | Rated power (at 20 °C)              | 360 mW standard type, 250 mW high sensitive type  |  |   |                 |              |
|                | Operate power (at 20 °C)            | 177 mW standard type, 130 mW high sensitive type  |  |   |                 |              |
|                | Operating temperature range         | Standard: -40 °C to +85 °C<br>High sensitivity: -40 °C to +90 °C (no frost)                   |  |   |                 |              |
| Timing Data    | Operate (at nominal voltage)        | Max. 10 ms (without bounce)   |  |   |                 |              |
|                | Release (at nominal voltage)        | Max. 5 ms (no diode)  |  |   |                 |              |
| Insulation     | Resistance (initial)                | Min. 1,000MOhm at 500VDC  |  |   |                 |              |
|                | Dielectric strength                 | Open contacts   | 1,000VAC 1min.                         | 750VAC 1min.  | 1,000VAC 1min.  | 750VAC 1min. |
|                |                                     | Contacts to coil  | 2,000VAC, 1min                         |   |                 |              |
| Surge strength | Coil to contacts                    | Standard: 4,000V / High sensitive: 6,000V, 1.2 x 50µs standard wave                           |  |   |                 |              |
| Other          | Vibration resistance                | Misoperation  | 10 to 55Hz double amplitude 3.3 mm     |   |                 |              |
|                |                                     | Endurance   | 10 to 55Hz double amplitude 3.3 mm     |   |                 |              |
|                | Shock                               | Misoperation  | Min. 100m/s <sup>2</sup> (11 ± 1ms)    |   |                 |              |
|                |                                     | Endurance   | Min. 500m/s <sup>2</sup> (6 ± 1ms)     |   |                 |              |
|                | Weight                              | Approximately 8 g   |  |   |                 |              |
| Sealing        | Plastic sealed RTIII                |   |  |   |                 |              |

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

# VE SERIES

## ■ COIL RATING

Standard type (360 mW)

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release-Voltage (VDC) * | Rated Power (mW) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|------------------|
| 5         | 5                        | 69                            | 3.5                          | 0.25                         | 360              |
| 6         | 6                        | 100                           | 4.2                          | 0.3                          |                  |
| 9         | 9                        | 225                           | 6.3                          | 0.45                         |                  |
| 12        | 12                       | 400                           | 8.4                          | 0.6                          |                  |
| 18        | 18                       | 900                           | 12.6                         | 0.9                          |                  |
| 24        | 24                       | 1,600                         | 16.8                         | 1.2                          |                  |
| 48        | 48                       | 6,400                         | 33.6                         | 2.4                          |                  |

High sensitive type (250 mW)

| Coil Code | Rated Coil Voltage (VDC) | Coil Resistance +/- 10% (Ohm) | Must Operate Voltage (VDC) * | Must Release-Voltage (VDC) * | Rated Power (mW) |
|-----------|--------------------------|-------------------------------|------------------------------|------------------------------|------------------|
| 5         | 5                        | 100                           | 3.6                          | 0.25                         | 250              |
| 6         | 6                        | 145                           | 4.3                          | 0.3                          |                  |
| 9         | 9                        | 325                           | 6.5                          | 0.45                         |                  |
| 12        | 12                       | 575                           | 8.6                          | 0.6                          |                  |
| 18        | 18                       | 1,300                         | 13                           | 0.9                          |                  |
| 24        | 24                       | 2,310                         | 17.3                         | 1.2                          |                  |
| 48        | 48                       | 9,220                         | 34.7                         | 2.4                          |                  |

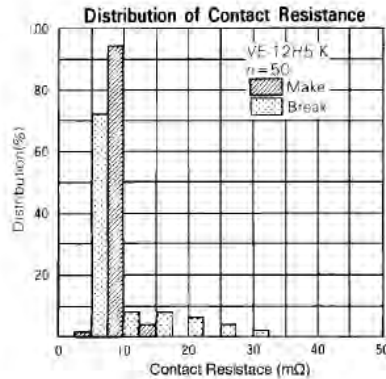
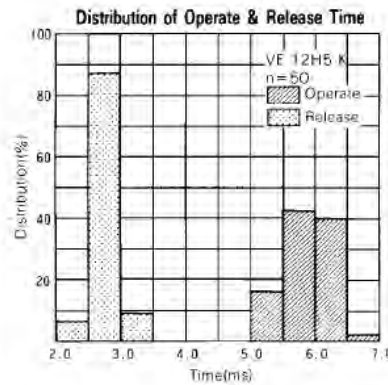
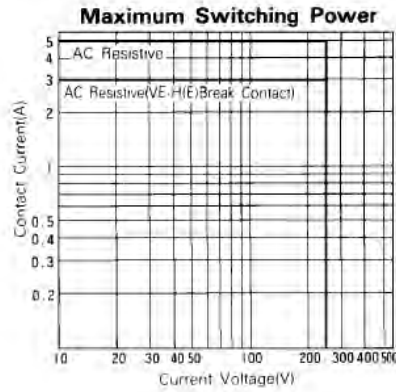
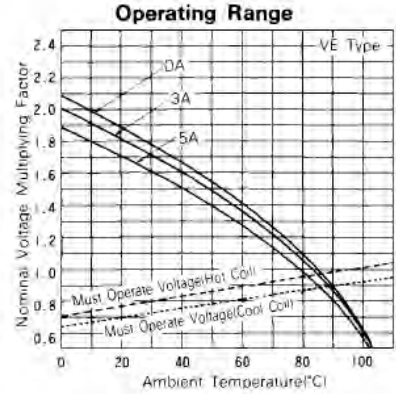
Note: All values in the table are valid for 20°C and zero contact current.

\* Specified operate values are valid for pulse wave voltage.

## ■ SAFETY STANDARDS

| Type | Compliance                | Contact rating  |
|------|---------------------------|---|
| UL   | UL 508                    | Flammability: UL 94-V0 (plastics)   |
|      | E 56149, E 45026          | VE-( )-H:<br>5A, 250VA/30VDC (N.O. resistive)<br>3A, 250VAC (N.C. resistive)<br>5A, 30VDC (N.C. resistive)<br>1/14 HP, 250VAC /125VAC                                       |
| CSA  | C22.2 No. 14<br>LR 35579  | VE-( )-HM<br>5A, 250VAC/30VDC (resistive)<br>1/12 HP, 250VAC /125VAC  |
|      |                           | VE-( )-H5<br>5A, 250VAC/30VDC (N.O. resistive)<br>1/10 HP, 250VAC /125VAC (N.O. resistive)<br>5A, 250VAC/30VDC (N.C. resistive)<br>1/14 HP, 250VAC /125VAC (N.C. resistive) |
| VDE  | 0435 part 201<br>40017070 | VE-( )-HM5<br>5A, 250VAC/30VDC (resistive)<br>1/10 HP, 250VAC /125VAC   |
|      |                           | 5A, 250VAC, cos φ 1<br>3A, 250VAC, cos φ 1  |

## CHARACTERISTIC DATA / REFERENCE DATA



# VE SERIES



## ■ DIMENSIONS

### ● Dimensions

#### VE-M type



### ● Schematics (BOTTOM VIEW)



### ● PC board mounting hole layout (BOTTOM VIEW)



#### VE type



Unit: mm



## RoHS Compliance and Lead Free Information

### 1. General Information

- All signal and power relays produced by Fujitsu Components are compliant with RoHS directive 2002/95/EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: <http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf>
- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.

### 2. Recommended Lead Free Solder Profile

- Recommended solder Sn-3.0Ag-0.5Cu.

**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 electromechanical relays, unless otherwise indicated.

### 4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. 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://us.fujitsu.com/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:fcal@fcal.fujitsu.com)  
Web: <http://www.fujitsu.com/sg/services/micro/components/>

©2010 Fujitsu Components Europe B.V. All rights reserved. All trademarks or registered trademarks are the property of their respective owners.

The contents, data and information in this datasheet are provided by Fujitsu Component Ltd. as a service only to its user and only for general information purposes.

The use of the contents, data and information provided in this datasheet is at the users' own risk.

Fujitsu has assembled this datasheet with care and will endeavor to keep the contents, data and information correct, accurate, comprehensive, complete and up to date.

Fujitsu Components Europe B.V. and affiliated companies do however not accept any responsibility or liability on their behalf, nor on behalf of its employees, for any loss or damage, direct, indirect or consequential, with respect to this datasheet, its contents, data, and information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof.

Nor do Fujitsu Components Europe B.V. and affiliated companies accept on their behalf, nor on behalf of its employees, any responsibility or liability for any representation or warrant of any kind, express or implied, including warranties of any kind for merchantability or fitness for particular use, with respect to these datasheets, its contents, data, information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Rev. July 22, 2010

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)