**реле тонкие Минск т.80447584780**
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**реле, тонкие, ультратонкие, дин, рейку, din, Радиодетали, электронные, компоненты, каталог, описание, реле, фотореле, технические, характеристики, datasheet, параметры, маркировка,габариты, фото, даташит, аналог, замена**


тонкие, реле, 5мм,

12vac ,24vac ,36vac ,48vac, 110vac ,127vac ,220vac ,230vac , 240vac 250в 250 vac, 30a, 40a

Габаритные размеры, мм

Диапазон рабочих напряжений катушки, В

Конфигурации контактной системы

Максимальная коммутационная способность, А

Максимальное коммутируемое напряжение, В

Электрическая прочность изоляции, кВ

Максимальная частота коммутации, мин-1

Время срабатывания/отпускания, мс

Рабочая температура окружающей среды, °С

Зазор между контактной группой и катушкой, мм

Количество срабатываний контактной группы, ресурс

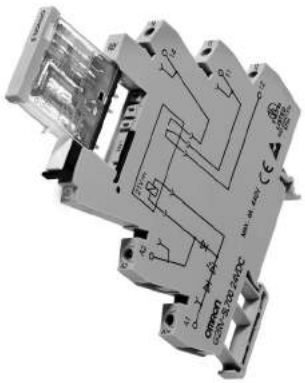
Материал контактной группы

Вибро- и ударостойкость NO/NC

# Тонкое реле
## G2RV

### Первое в мире тонкое промышленное реле

- Выводы большего размера для надежного электрического соединения при установке в монтажную колодку.
- Механический и светодиодный индикаторы для контроля работы реле.
- Прозрачный корпус для визуального наблюдения за состоянием реле.
- Тонкий корпус для экономии пространства.
- Безвинтовые клеммы и аксессуары для упрощения электрического монтажа.



# Структура номера модели

## ■ Расшифровка номера модели

**G2RV-SL** □ □ □ **-** □
**1 2 3 4 5**

1. **Дополнительное обозначение модели**
   SL: Тонкое реле + монтажная колодка
2. **Конструкция клемм**
   7: Винтовые клеммы
   5: Безвинтовые клеммы (push-in)
3. **Встроенный в реле светодиод**
   0: Без светодиода
4. **Встроенная в реле кнопка**
   0: Без кнопки
5. **Управляющее напряжение**

**Примечание:** Светодиодный индикатор встроен в монтажную колодку.



# Информация для заказа

## ■ Перечень моделей

| Классификация | | Степень защиты корпуса | Управляющее напряжение | Конструкция клемм | Тип контактов |
|---|---|---|---|---|---|
| | | | | | 1 перекл. контакт (SPDT) |
| Выводы для установки в монт. колодку | Реле общего назначения | Негерметичный корпус | В ~/= | Винтовые клеммы | G2RV-SL700 |
| | | | | Безвинтовые клеммы (Push-in) | G2RV-SL500 |

### Выбор комбинации реле и монтажной колодки

| Управляющее напряжение | Винтовые клеммы | Безвинтовые клеммы (Push-in) |
|---|---|---|
| 12 В= | G2RV-SL700-12 VDC | G2RV-SL500-12 VDC |
| 24 В= | G2RV-SL700-24 VDC | G2RV-SL500-24 VDC |
| 24 В~/= | G2RV-SL700-24 VAC/DC | G2RV-SL500-24 VAC/DC |
| 48 В~/= | G2RV-SL700-48 VAC/DC | G2RV-SL500-48 VAC/DC |
| 110 В~ | G2RV-SL700-110 VAC | G2RV-SL500-110 VAC |
| 230 В~ | G2RV-SL700-230 VAC | G2RV-SL500-230 VAC |

# Технические характеристики

## ■ Номинальные параметры

| Номинальное напряжение | Номинальный ток | | | Напряжение срабатывания | Напряжение отпускания | Потребляемая мощность | | Управляющее напряжение |
|---|---|---|---|---|---|---|---|---|
| | В~ | | В= | % от номинального напряжения | | В~ (ВА) приблиз. | В= (мВт) приблиз. | % от номинального напряжения |
| | 50 Гц | 60 Гц | | | | | | |
| 12 В= | --- | --- | 27,2 | 80% | 10% | --- | 300 мВт | ±10% |
| 24 В= | --- | --- | 13,3 | | | --- | 300 мВт | |
| 24 В~/= | 21,1 | 22,5 | 13,0 | | | 0,5 ВА | 300 мВт | |
| 48 В~/= | 8,5 | 9,0 | 5,2 | | | 0,4 ВА | 250 мВт | |
| 110 В~ | 7,1 | 7,5 | --- | | | 0,8 ВА | --- | |
| 230 В~ | 7,3 | 7,9 | --- | | | 1,7 ВА | --- | |

## ■ Номинальные параметры контактов

| | | |
|---|---|---|
| **Кол-во полюсов** | 1 полюс | |
| **Нагрузка** | Резистивная нагрузка ($\cos\phi$ = 1) | Индуктивная нагрузка ($\cos\phi$ = 0,4; L/R = 7 мс) |
| **Номинальная нагрузка** | 6 А при 250 В~;<br>6 А при 30 В= | 2,5 А при 250 В~;<br>2 А при 30 В= |
| **Номинальный выдерживаемый ток** | 6 А | |
| **Макс. коммутируемое напряжение** | 400 В~, 125 В= | |
| **Макс. коммутируемый ток** | 6 А | |
| **Макс. коммутируемая мощность** | 1500 ВА<br>180 Вт | 500 ВА<br>60 Вт |
| **Минимальная нагрузка (справочное значение)** | 10 мА при 5 В= (р-уровень) | |

**Примечание:** Р-уровень: $\lambda_{60}$ = 0,1 x $10^{-6}$/коммутац. цикл

# ■ Характеристики

| Параметр | 1-полюсное реле |
|---|---|
| **Контактное сопротивление** | Макс. 100 мОм |
| **Время срабатывания** | Макс. 20 мс |
| **Время отпускания** | Макс. 40 мс |
| **Макс. частота переключений** | Механический ресурс: 18 000 перекл./час<br>Электрический ресурс: 1800 перекл./час (при номинальной нагрузке) |
| **Сопротивление изоляции** | Миним. 1000 МОм (при 500 В=) |
| **Электрическая прочность диэлектрика** | 4000 В~, 50/60 Гц в течение 1 мин. между катушкой и контактами*;<br>1000 В~, 50/60 Гц в течение 1 мин. между контактами одной полярности |
| **Виброустойчивость** | Разрушение: 10 - 55 - 10 Гц, с одинарной амплитудой 0,50 мм (с двойной амплитудой 1,0 мм)<br>Отказ: 10 - 55 - 10 Гц, с одинарной амплитудой 0,50 мм (с двойной амплитудой 1,0 мм) |
| **Ударопрочность** | Разрушение: 1000 м/с$^2$<br>Отказ: 200 м/с$^2$ при поданом напряжении управления; 100 м/с$^2$ при снятом напряжении управления |
| **Долговечность** | Механический ресурс: не менее 5 000 000 переключений<br>Электрический ресурс: 100 000 (типовой); НР: не менее 70 000 переключений;<br>НЗ: не менее 50 000 переключений |
| **Температура окружающей среды** | Эксплуатация: от –40°С до 55 °С (без обледенения или конденсации) |
| **Влажность окружающей среды** | Эксплуатация: от 5% до 85% |
| **Вес** | Приблиз. 35 г |
| **Категория перенапряжения** | III |
| **Класс загрязнения** | 2 |
| **Материал контактов** | AgSnIn |
| **Расстояние утечки** | 7,0 мм |
| **Электрический зазор** | 5,5 мм |

**Примечание:** Значения, приведенные в таблице, являются исходными.

# ■ Соответствие стандартам

## UL 508 (рег. № E41643)

| Модель | Тип контактов | Параметры катушки | Параметры контактов | Число переключений |
|---|---|---|---|---|
| Серия G2RV-SL | 1 перекл. контакт (SPDT) | 12 ... 48 В=<br>24 … 230 В~ | 6 А / 250 В~ (резистивная нагрузка)<br>6 А / 30 В= (резистивная нагрузка)<br>2 А / 400 В~ (резистивная нагрузка) | 6 000 |

## IEC/VDE (EN 61810)

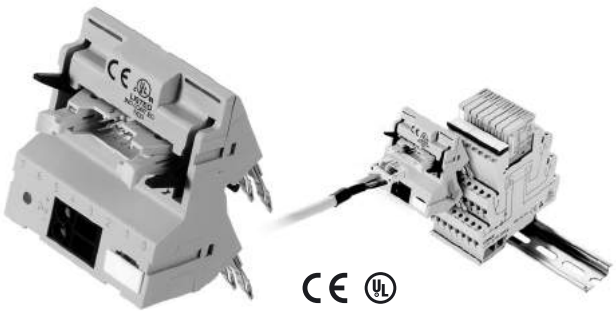
| Тип контактов | Параметры катушки | Параметры контактов | Число коммутационных циклов |
|---|---|---|---|
| 1 полюс | 12, 24 В=<br>24, 48 В~/=<br>110, 230 В~ | 6 А / 250 В~ (резистивная нагрузка)<br>6 А / 30 В= (резистивная нагрузка)<br>2 А / 400 В~ (резистивная нагрузка) | 50 000<br>50 000<br>6 000 |

# Дополнительные принадлежности

## ■ Интерфейсный модуль (только для серии G2RV-SL700)

### Перечень моделей

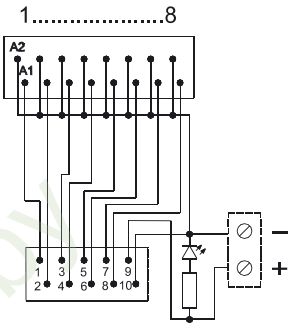
| Номер модели | Описание | Подключение |
|---|---|---|
| P2RVC-8-O-F | Интерфейсный модуль для подключения выходов ПЛК к 8-ми реле серии G2RV-SL700 PNP-типа | Разъем ленточного кабеля 10-конт., IEC603/1 |



### Технические характеристики

| | | |
|---|---|---|
| **Входы** | **Номинальное напряжение** | Макс. 30 В ~/= |
| | **Потребляемый ток** | 0,5 А на канал |
| | | Общий ток 2,0 А (на выходе источника питания) |
| **Характеристики** | **Температура окружающей среды** | Эксплуатация: от 0 до 55°C<br>Хранение: от –20 до 85°C |
| | **Категория перенапряжения** | III |
| | **Класс загрязнения** | 2 |

### Электрическая схема P2RVC-O-8-F




## ■ Запасные реле (без монтажной колодки)

### Расшифровка номера модели

**G2RV-□ - □ □ □ - □- □**
**1 2 3 4 5 6**

1. **Количество полюсов**
   1: 1 полюс
2. **Клеммы**
   S: Безвинтовые (Push-In)
3. **Встроенный светодиод**
   Пропуск: Без светодиода
4. **Встроенная в реле кнопка**
   Пропуск: Без кнопки
5. **Материал контактов**
   Пропуск: AgSnIn
6. **Номинальное напряжение катушки**
   11 В=, 21 В= и 48 В=

### Перечень моделей

| Номер модели | Заменяемое реле |
|---|---|
| G2RV-1-S DC11 | G2RV-SL7□□/5□□ DC12 |
| G2RV-1-S DC21 | G2RV-SL7□□/5□□ DC24 |
| | G2RV-SL7□□/5□□ AC/DC24 |
| G2RV-1-S DC48 | G2RV-SL7□□/5□□ AC/DC48 |
| | G2RV-SL7□□/5□□ AC110 |
| | G2RV-SL7□□/5□□ AC230 |

# Дополнительные принадлежности (заказываются отдельно)

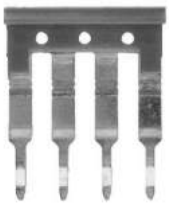
## ■ Соединительные мостики

### Расшифровка номера модели

**P2RVM -□ □**
**1 2**

**1. Количество выводов**
020: 2 вывода
030: 3 вывода
040: 4 вывода
100: 10 выводов
200: 20 выводов

**2. Цвет**
R: Красный
S: Синий
B: Черный

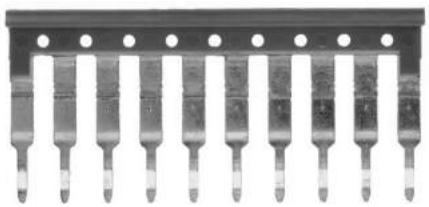


| Номер модели | Кол-во выводов | Количество | Цвет |
|---|---|---|---|
| P2RVM-020□ | 2 | 60 шт. / коробка (минимальный заказ) | Красный (R) Синий (S) Черный (B) |
| P2RVM-030□ | 3 | 60 шт. / коробка (минимальный заказ) | |
| P2RVM-040□ | 4 | 60 шт. / коробка (минимальный заказ) | |
| P2RVM-100□ | 10 | 20 шт. / коробка (минимальный заказ) | |
| P2RVM-200□ | 20 | 20 шт. / коробка (минимальный заказ) | |

□ выберите цвет: R = красный, S = синий, B = черный

### Характеристики

| | |
|---|---|
| Макс. ток (EN60947-7-1, Раздел 8.3.3 / 1991) | 32 A |
| Макс. напряжение | 400 В~ |
| Макс. напряжение при обрезке соединительного мостика без применения разделительной пластины или концевой скобы | 250 В~ |





## ■ Пластиковые этикетки для монтажных колодок G2RV

| Номер модели | Количество в коробке | Цвет |
|---|---|---|
| R99-15 для G2RV | 5 листов × 120 этикеток = 600 этикеток (минимальный заказ) | Белый |

## ■ Этикетки (наклейки) для монтажных колодок G2RV

| Номер модели | Количество в коробке | Цвет |
|---|---|---|
| R99-16 для G2RV | 10 листов × 484 этикетки = 4840 этикеток (минимальный заказ) | Белый |

## ■ Разделительные пластины

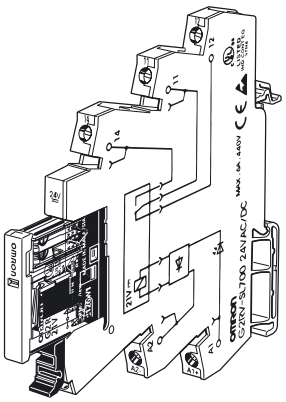
| Номер модели | Количество | Описание |
|---|---|---|
| P2RV-S | 50 пластин (минимальный заказ) | Обеспечивает напряжение изоляции 400 В между двумя соседними реле. |

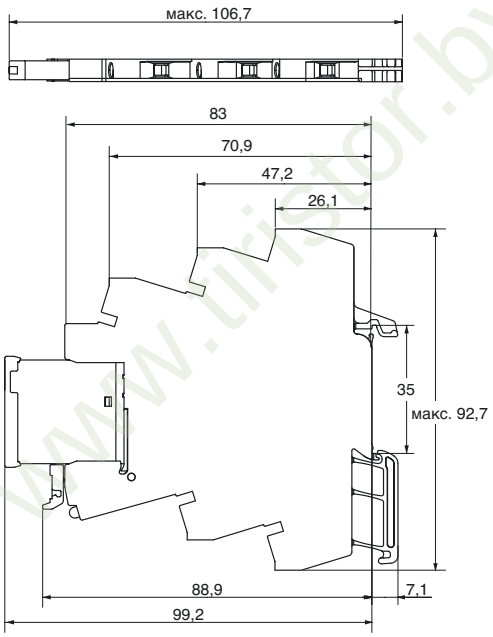
# Размеры

**Примечание:** Все значения представлены в миллиметрах, если не указано иное.

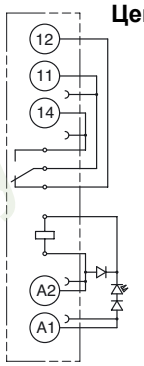
## Модуль в сборе

### G2RV-SL700

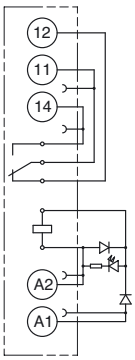


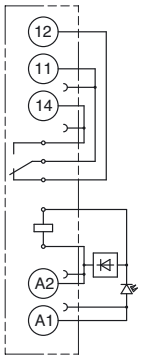

**Цепь управления**




**24 В=**
**Расположение выводов/ Внутренние соединения (вид сверху)**

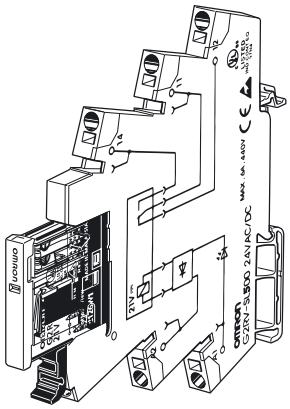


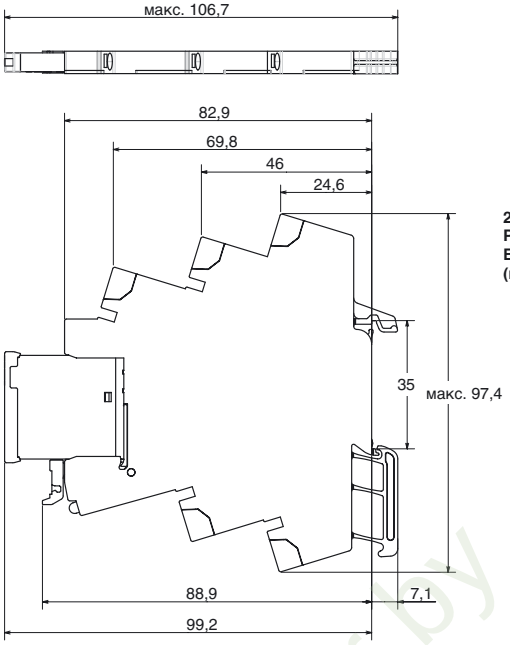

**12 В=**
**Расположение выводов/ Внутренние соединения (вид сверху)**



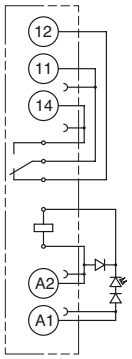

**Другое напряжение катушки**
**Расположение выводов/ Внутренние соединения (вид сверху)**

## G2RV-SL500

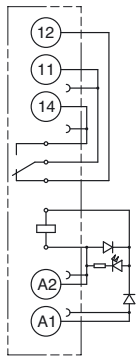




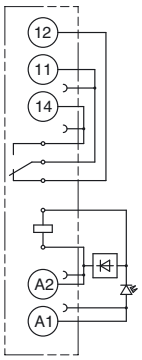

**Цепь управления**




**24 В=**
**Расположение выводов/ Внутренние соединения (вид сверху)**



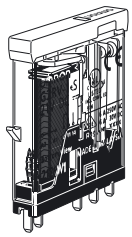

**12 В=**
**Расположение выводов/ Внутренние соединения (вид сверху)**

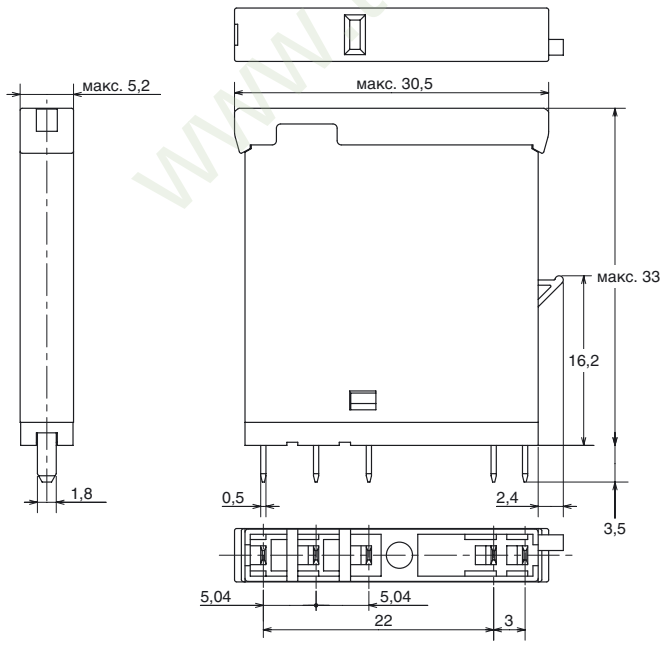



**Другое напряжение катушки**
**Расположение выводов/ Внутренние соединения (вид сверху)**

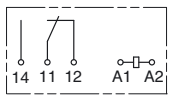
## Отдельное реле

### G2RV-1-S






**Цепь управления**




**Расположение выводов/ Внутренние соединения (вид снизу)**

# Установка

## ■ Инструменты

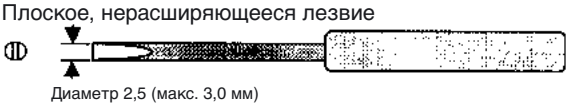
Серия G2RV-SL700: Для подсоединения и/или отсоединения проводов должна использоваться отвертка с плоским лезвием.

Серия G2RV-SL500: Для подсоединения многожильных проводов без обжимных наконечников и/или отсоединения проводов должна использоваться отвертка с плоским лезвием.

### Применимая отвертка

● Плоское, нерасширяющееся лезвие, диаметр 2,5 мм (макс. 3,0 мм)

● Плоское, нерасширяющееся лезвие



Диаметр 2,5 (макс. 3,0 мм)

● Плоское, расширяющееся лезвие

**Не подходит.**

Примеры: FACOM AEF.2.5×75E (AEF. 3×75E)
VESSEL № 9900-(-)2.5×75 (№ 9900-(-)3×100)
WAGO 210-119
WIHA 260/2.5×40 (260/3×50)

*Чтобы отвертка вставлялась легче, можно обточить ее лезвие.

## ■ Применимые провода

### Допустимые сечения проводов

#### Серия G2RV-SL700

**Клеммы с винтовым зажимом (Box Clamp)**

| Тип провода | Допустимое сечение провода | Длина зачистки |
|---|---|---|
| Многожильный провод без обжимного наконечника | 0,5 ... 2,5 мм$^2$ | 7 мм |
| Многожильный провод с обжимным наконечником, с пластмассовой трубкой | 0,5 ... 2,5 мм$^2$ | 7 мм |
| Многожильный провод с обжимным наконечником, без пластмассовой трубки | 0,5 ... 2,5 мм$^2$ | 7 мм |
| Одножильный провод | 0,5 ... 4,0 мм$^2$ | 7 мм |

#### Серия G2RV-SL500

**Безвинтовые клеммы с пружинным зажимом (Push-in)**

| Тип провода | Допустимое сечение провода | Длина зачистки |
|---|---|---|
| Многожильный провод без обжимного наконечника | 0,5 ... 2,5 мм$^2$ | 12 мм |
| Многожильный провод с обжимным наконечником, с пластмассовой трубкой | 0,5 ... 2,5 мм$^2$ | 12 мм |
| Многожильный провод с обжимным наконечником, без пластмассовой трубки | 0,5 ... 2,5 мм$^2$ | 12 мм |
| Одножильный провод | 0,5 ... 4,0 мм$^2$ | 12 мм |

# ■ Подключение цепей

Используйте провода с допустимым сечением (см. выше). Для подключения к G2RV-SL700 зачищайте провода на длину 7 мм, а для подключения к G2RV-SL500 – на длину 12 мм.

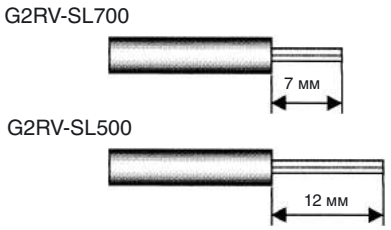
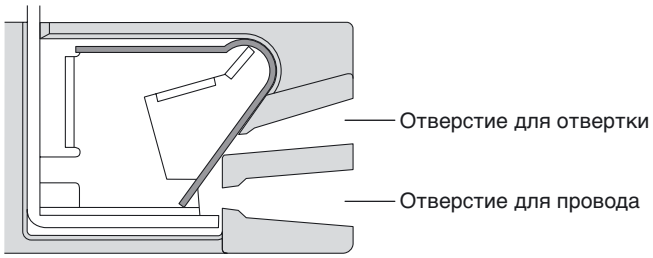
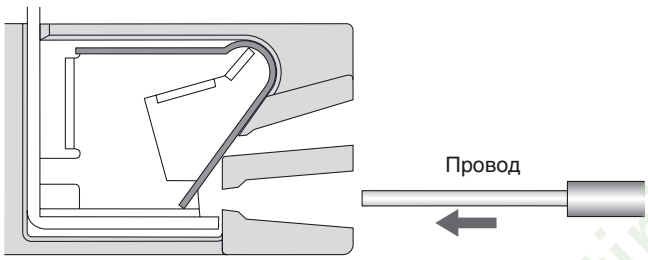



**Рис. 1 Длина зачистки провода**

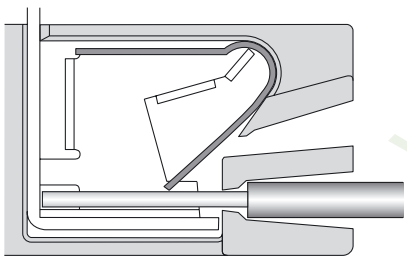
## Последовательность действий для серии G2RV-SL500




### ● Подсоединение провода



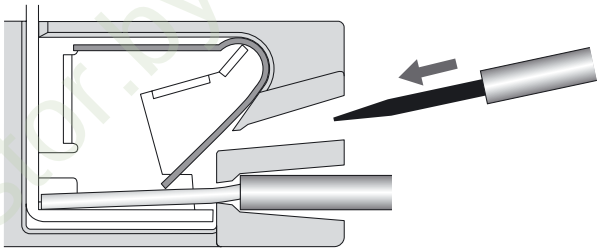

Вставьте зачищенный конец проводника в отверстие для провода.



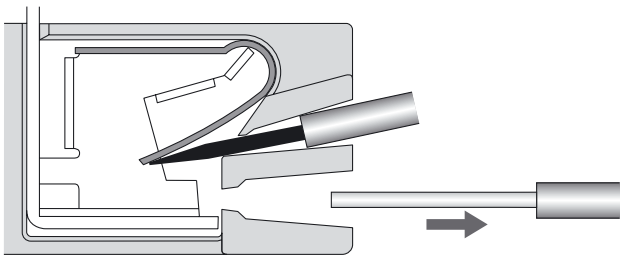
Другие инструменты не требуются.

**Примечание:** Если в качестве проводников применяются многожильные провода без обжимных наконечников, прежде чем вставить провод, необходимо вставить отвертку.
Извлекайте отвертку только после того, как провод полностью вставлен.

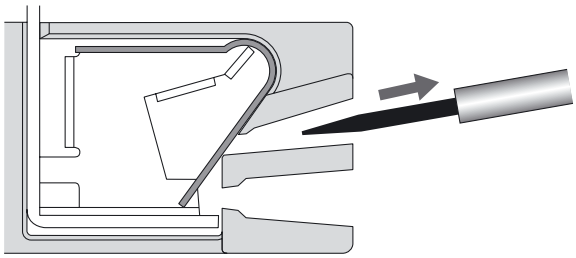
### ● Отсоединение провода



Вставьте рекомендованную отвертку в отверстие ослабления зажима.



Извлеките провод.



Извлеките отвертку.

**Product Families**

- Automation
- Hazardous Location
- Industrial Components
  - Circuit Breakers
  - IEC Contactors
  - Power Supplies
  - Switches & Pilot Devices
  - Relays And Sockets
    - RF Series
    - RH Series
    - RJ Series
    - RJ Bifurcated Series
    - RJ PCB Series
    - RL Series
    - RQ Series
    - RR Series
    - RR2KP Series
    - RU Series
    - RV8 Interface Series
    - RY2KS Series
    - RY-RM Series
  - Solid State Relays
  - Terminal Blocks
  - Timers
- LED Lighting & Signaling
- Machine Safety
- Sensing

# Relays And Sockets

Designed with attention to every detail, IDEC relays are manufactured to ensure precision and quality. Correlating sockets include multiple features for ease-of-use and can be DIN rail, panel or PCB mounted. Each socket is designed to work with IDEC timers and relays, but will work equally well with any fitting component.

## General Purpose Relays

### RV8 Interface Series

6mm Interface relay ideal for space saving for PLC interfacing and other automation applications. 6A contact rating in SPDT configuration.

### RL Series

Designed with a 1- and 2-pole 3HP/277V AC rating in an economical and compact package

### RJ Series

Available in both Plug-in blade or PCB type, SPDT or DPDT (Form A or Form C) configuration, and up to 16A rated contact.

### RJ Bifurcated Series

High contact reliability with bifurcated contacts (minimum applicable load: 1V DC, 100μA).

### RU Series

Robotic assembled, compact plug in relays with 6A or 10A contacts, in DPDT or 4PDT. Bifurcated contacts for less than 20mA switching available.

### RR Series

Traditional power relays with 10A silver contacts, octal pin or blade type, in SPDT, DPDT, or 3PDT

### RH Series

Compact 10A ice-cube plug in relays, SPDT, DPDT, 3PDT or 4PDT, blade or PCB type. DPDT modle UL rated for 500K life cycles.

### RY/RM Series

Compact plug in blade or PCB relay with 3A or 5A gold contacts. Bifurcated contacts for less than 20mA switching available.

## PCB Relays

### RJ PCB Series

Quality, high contact relays ideal for appliance or electronic PCB manufacturing. 8A, 12A or 16A rated contacts. SPDT, SPST-NO, DPDT or DPST-NO formats.

### RQ Series

SPDT and DPDT PCB low profile Relay ideal for compact, high current applications.

## Latching Relays

### RR2KP Series

10A, 11-pin octal base permanent magnet, dual coil latching relay.

### RY2KS Series

5A miniature ice cube permanent magnet, dual coil latching relay.

### Force Guided Relays

#### RF Series

Slim relays with mechanically linked contacts adhering to EN50205. Ideal for safety circuits and available in 4 pole and 6 pole models.

# Solid State Relays
# G3PA

### Extremely Thin Relays Integrated with Heat Sinks

- Downsizing achieved through optimum design of heat sink.
- Mounting possible via screws or via DIN track.
- Close mounting possible for linking terminals. (Except for G3PA-260B-VD and G3PA-450B-VD-2.)
- Applicable with 3-phase loads.
- Replaceable power element cartridges.
- Comply with VDE 0160 (finger protection), with a dielectric strength of 4,000 V between input and load.
- Comply with VDE 0805, IEC 950.
- Certified by UL, CSA, and VDE (reinforced insulation).

## Model Number Structure

### ■ Model Number Legend

**G3PA-□□□□-□-□**
**1 2 3 4 5 6 7**

1. **Basic Model Name**
   G3PA: Solid State Relay
2. **Rated Load Power Supply Voltage**
   2: 200 VAC
   4: 400 VAC
3. **Rated Load Current**
   10: 10 A
   20: 20 A
   30: 30 A
   40: 40 A
   50: 50 A
   60: 60 A
4. **Terminal Type**
   B: Screw terminals
5. **Zero Cross Function**
   Blank: Equipped with zero cross function
   L: Not equipped with zero cross function
6. **Certification**
   VD: Certified by UL, CSA, and VDE
7. **Special Specifications**
   Blank: Standard models
   2: 480-V models

# Ordering Information

## ■ List of Models

| Model | Isolation | Zero cross function | Indicator | Rated output load | Rated input voltage |
|---|---|---|---|---|---|
| G3PA-210B-VD | Phototriac coupler | Yes | Yes | 10 A at 24 to 240 VAC | 5 to 24 VDC |
| G3PA-220B-VD | | | | 20 A at 24 to 240 VAC | |
| G3PA-240B-VD | | | | 40 A at 24 to 240 VAC | |
| G3PA-260B-VD | | | | 60 A at 24 to 240 VAC | |
| G3PA-210BL-VD | | No | | 10 A at 24 to 240 VAC | |
| G3PA-220BL-VD | | | | 20 A at 24 to 240 VAC | |
| G3PA-240BL-VD | | | | 40 A at 24 to 240 VAC | |
| G3PA-260BL-VD | | | | 60 A at 24 to 240 VAC | |
| G3PA-210B-VD | | Yes | | 10 A at 24 to 240 VAC | 24 VAC |
| G3PA-220B-VD | | | | 20 A at 24 to 240 VAC | |
| G3PA-240B-VD | | | | 40 A at 24 to 240 VAC | |
| G3PA-260B-VD | | | | 60 A at 24 to 240 VAC | |
| G3PA-420B-VD | | | | 20 A at 180 to 400 VAC | 12 to 24 VDC |
| G3PA-430B-VD | | | | 30 A at 180 to 400 VAC | |
| G3PA-420B-VD-2 | | | | 20 A at 200 to 480 VAC | |
| G3PA-430B-VD-2 | | | | 30 A at 200 to 480 VAC | |
| G3PA-450B-VD-2 | | | | 50 A at 200 to 480 VAC | |

**Note:** When ordering, specify the rated input voltage.

### Replacement Parts

| Name | Carry current | Load voltage range | Model | Applicable SSR | VDE certification |
|---|---|---|---|---|---|
| **Power Device Cartridge** | 10 A | 19 to 264 VAC | G32A-A10-VD DC5-24 | G3PA-210B-VD DC5-24 | Yes |
| | | | G32A-A10L-VD DC5-24 | G3PA-210BL-VD DC5-24 | |
| | | | G32A-A10-VD AC24 | G3PA-210B-VD AC24 | |
| | 20 A | | G32A-A20-VD DC5-24 | G3PA-220B-VD DC5-24 | |
| | | | G32A-A20L-VD DC5-24 | G3PA-220BL-VD DC5-24 | |
| | | | G32A-A20-VD AC24 | G3PA-220B-VD AC24 | |
| | 40 A | | G32A-A40-VD DC5-24 | G3PA-240B-VD DC5-24 | |
| | | | G32A-A40L-VD DC5-24 | G3PA-240BL-VD DC5-24 | |
| | | | G32A-A40-VD AC24 | G3PA-240B-VD AC24 | |
| | 60 A | | G32A-A60-VD DC5-24 | G3PA-260B-VD DC5-24 | |
| | | | G32A-A60L-VD DC5-24 | G3PA-260BL-VD DC5-24 | |
| | | | G32A-A60-VD AC24 | G3PA-260B-VD AC24 | |
| | 20 A | 150 to 440 VAC | G32A-A420-VD DC12-24 | G3PA-420B-VD DC12-24 | |
| | 30 A | | G32A-A430-VD DC12-24 | G3PA-430B-VD DC12-24 | |
| | 20 A | 180 to 528 VAC | G32A-A420-VD-2 DC12-24 | G3PA-420B-VD-2 DC12-24 | |
| | 30 A | | G32A-A430-VD-2 DC12-24 | G3PA-430B-VD-2 DC12-24 | |
| | 50 A | | G32A-A450-VD-2 DC12-24 | G3PA-450B-VD-2 DC12-24 | |

## ■ Other Units (Order Separately)

### Units that Enable 2-line Switching of 3-phase Power

| Name | Current flow | Model | Applicable SSR |
|---|---|---|---|
| Short-circuit Unit | 10 A | G32A-D20 | G3PA-210B-VD, G3PA-210BL-VD |
| | 20 A | | G3PA-220B-VD, G3PA-220BL-VD<br>G3PA-420B-VD, G3PA-420B-VD-2 |
| | 30 A | G32A-D40 | G3PA-430B-VD, G3PA-430B-VD-2 |
| | 40 A | | G3PA-240B-VD, G3PA-240BL-VD |

# Specifications

## ■ Ratings (at an Ambient Temperature of 25°C)

### Input

| Model | Rated voltage | Operating Voltage range | Input current impedance | Voltage level | |
|---|---|---|---|---|---|
| | | | | Must operate voltage | Must release voltage |
| **G3PA-210B-VD** | 5 to 24 VDC | 4 to 30 VDC | 7 mA max. | 4 VDC max. | 1 VDC min. |
| **G3PA-220B-VD** | | | | | |
| **G3PA-240B-VD** | | | | | |
| **G3PA-260B-VD** | | | | | |
| **G3PA-210BL-VD** | 5 to 24 VDC | 4 to 30 VDC | 20 mA max. | 4 VDC max. | 1 VDC min. |
| **G3PA-220BL-VD** | | | | | |
| **G3PA-240BL-VD** | | | | | |
| **G3PA-260BL-VD** | | | | | |
| **G3PA-210B-VD** | 24 VAC | 19.2 to 26.4 VAC | 1.4 kΩ±20% | 19.2 VAC max. | 4.8 VAC min. |
| **G3PA-220B-VD** | | | | | |
| **G3PA-240B-VD** | | | | | |
| **G3PA-260B-VD** | | | | | |
| **G3PA-420B-VD** | 12 to 24 VDC | 9.6 to 30 VDC | 7 mA max. | 9.2 VDC max. | 1 VDC min. |
| **G3PA-430B-VD** | | | | | |
| **G3PA-420B-VD-2** | | | | | |
| **G3PA-430B-VD-2** | | | | | |
| **G3PA-450B-VD-2** | | | | | |

### Output

| Model | Applicable load | | | |
|---|---|---|---|---|
| | Rated load voltage | Load voltage range | Load current | Inrush current |
| **G3PA-210B(L)-VD** | 24 to 240 VAC (50/60 Hz) | 19 to 264 VAC (50/60 Hz) | 0.1 to 10 A | 150 A (60 Hz, 1 cycle) |
| **G3PA-220B(L)-VD** | | | 0.1 to 20 A | 220 A (60 Hz, 1 cycle) |
| **G3PA-240B(L)-VD** | | | 0.5 to 40 A | 440 A (60 Hz, 1 cycle) |
| **G3PA-260B(L)-VD** | | | 0.5 to 60 A | 440 A (60 Hz, 1 cycle) |
| **G3PA-420B-VD** | 180 to 400 VAC (50/60 Hz) | 150 to 440 VAC (50/60 Hz) | 0.5 to 20 A | 220 A (60 Hz, 1 cycle) |
| **G3PA-430B-VD** | | | 0.5 to 30 A | 440 A (60 Hz, 1 cycle) |
| **G3PA-420B-VD-2** | 200 to 480 VAC (50/60 Hz) | 180 to 528 VAC (50/60 Hz) | 0.5 to 20 A | 220 A (60 Hz, 1 cycle) |
| **G3PA-430B-VD-2** | | | 0.5 to 30 A | 440 A (60 Hz, 1 cycle) |
| **G3PA-450B-VD-2** | | | 0.5 to 50 A | 440 A (60 Hz, 1 cycle) |

Refer to *Engineering Data* for further details.

## ■ Characteristics

| Item | G3PA-210B(L)-VD | G3PA-220B(L)-VD | G3PA-240B(L)-VD | G3PA-260B(L)-VD | G3PA-420B-VD | G3PA-420B-VD-2 | G3PA-430B-VD | G3PA-430B-VD-2 | G3PA-450B-VD-2 |
|---|---|---|---|---|---|---|---|---|---|
| Operate time | 1/2 of load power source cycle + 1 ms max. (DC Input, -B models)<br>1 1/2 of load power source cycle + 1 ms max. (AC Input)<br>1 ms max. (-BL models) | | | | | | | | |
| Release time | 1/2 of load power source cycle + 1 ms max. (DC Input)<br>1 1/2 of load power source cycle + 1 ms max. (AC Input) | | | | | | | | |
| Output ON voltage drop | 1.6 V (RMS) max. | | | | 1.8 V (RMS) max. | | | | |
| Leakage current | 5 mA max. (at 100 VAC)<br>10 mA max. (at 200 VAC) | | 10 mA max. (at 100 VAC)<br>20 mA max. (at 200 VAC) | | 20 mA max. (at 400 VAC) | 20 mA max. (at 480 VAC) | 20 mA max. (at 400 VAC) | 20 mA max. (at 480 VAC) | |
| $I^2t$ | 260 $A^2s$ | | 1,260 $A^2s$ | | 260 $A^2s$ | 1,800 $A^2s$ | 1,800 $A^2s$ | | 1,800 $A^2s$ |
| Insulation resistance | 100 MΩ min. (at 500 VDC) | | | | | | | | |
| Dielectric strength | 4,000 VAC, 50/60 Hz for 1 min | | | | | | | | |
| Vibration resistance | Destruction: 10 to 55 to 10 Hz, 0.375–mm single amplitude (Mounted to DIN track) | | | | | | | | |
| Shock resistance | Destruction: 300 $m/s^2$ (mounted to DIN track) | | | | | | | | |
| Ambient temperature | Operating: –30°C to 80°C (with no icing or condensation)<br>Storage: –30°C to 100°C (with no icing or condensation) | | | | | | | | |
| Certified standards | UL508, CSA C22.2 (No.14, No.950), EN60950 File No. 5915ÜG | | | | UL508, CSA C22.2 (No.14), EN60947-4-3 File No. 6642ÜG | UL508, CSA C22.2 (No.14), EN60947-4-3 File No. 133127ÜG | UL508, CSA C22.2 (No.14), EN60947-4-3 File No. 6642ÜG | UL508, CSA C22.2 (No.14), EN60947-4-3 File No. 133127ÜG | |
| Ambient humidity | Operating: 45% to 85% | | | | | | | | |
| Weight | Approx. 260 g | Approx. 340 g | Approx. 460 g | Approx. 900 g | Approx. 290 g | Approx. 290 g | Approx. 410 g | Approx. 410 g | Approx. 900 g |

# Operation

## ■ Replacement Parts

### G32A-A Power Device Cartridge

The G32A-A Power Device Cartridge (a Triac Unit) can be replaced with a new one. When the temperature indicator has changed from pink to red, the triac circuitry may have malfunctioned possibly by an excessive flow of current, in which case, dismount the damaged cartridge for replacement.

The damaged cartridge can be replaced with a new one without disconnecting the wires from the G3PA.

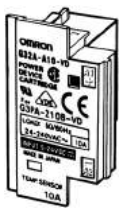
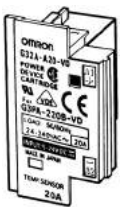
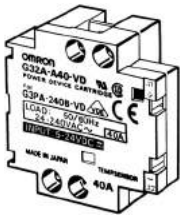
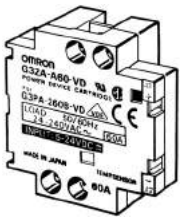
Improve the heat radiation efficiency of the G3PA before replacing the cartridge.

The G32A-A Power Device Cartridge can withstand an excessive current for a short period of time, such as may be caused accidentally by the short circuitry of the load, in which case the temperature indicator will not turn red.

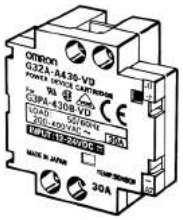
Be sure to turn OFF the power supply when replacing the Cartridge. Supplying power with the Cartridge removed may result in malfunction.

#### Appearance

**G32A-A10(L)-VD** **G32A-A20(L)-VD** **G32A-A40(L)-VD** **G32A-A60(L)-VD**

**G32A-A420-VD(-2)** **G32A-A430-VD(-2)** **G32A-A450-VD-2**


#### Replacing Power Device Cartridges

When replacing Power Device Cartridges, use the specified model. Using a Power Device Cartridge other than the specified one will result in faulty operation and destruction of the elements.

# ■ Replacement Procedure

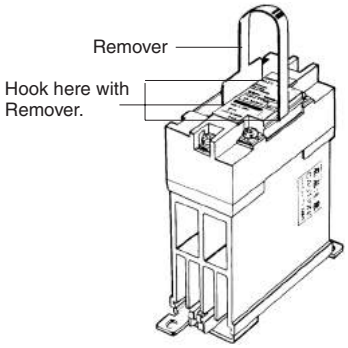
## G32A-A10(L)-VD/G32A-A20(L)-VD/G32-A420-VD(-2)

Use the special tool (provided) to extract the cartridge for replacement with a new one.

### Extraction

Follow the procedures below to dismount the Power Device Cartridge from the G3PA.

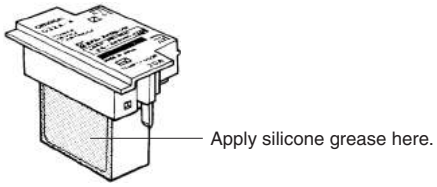
1. **Switch off the power.**
2. Remove the terminal cover.
3. Hook the indented part of the cartridge with the tool and pull up on the cartridge to remove it.



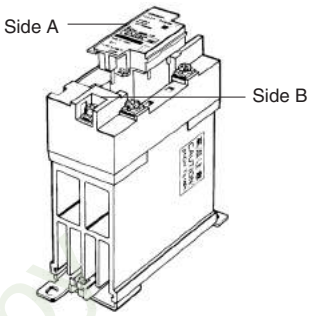

### Mounting

Follow the procedures below to mount the Power Device Cartridge on the G3PA.

1. Apply silicone grease (provided with the G32A-A) to the entire surface of the heat sink.




2. Make sure that there is no dust or pieces of wire on the heat sink of the G32A-A or the G3PA.
3. Insert the cartridge into the opening of the G3PA so that the letters on the cartridge and those on the G3PA are in the same direction and side A and side B are even.




4. Attach the terminal cover.
5. Switch on the power and check the G3PA to be sure it works properly.

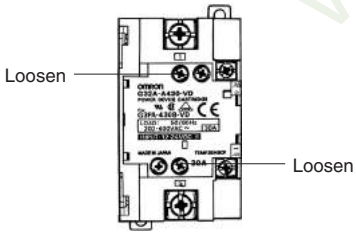
## G32A-A40(L)-VD/G32A-A60(L)-VD/G32A-A430-VD(-2)/G32A-A450-VD-2

The G32A Power Device Cartridge is mounted and secured with screws to the G3PA Unit.

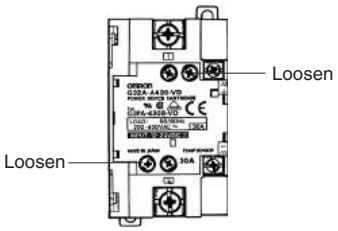
### Extraction

Follow the procedures below to dismount the G32A-A Power Device Cartridge from the G3PA.

1. **Switch off the power.**
2. Remove the terminal cover.
3. Loosen the two centered screws on the sides to dismount the cartridge. The screws are connected to terminals 1 and 2.



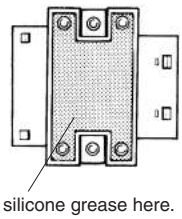

4. Loosen the screws on both the corners.




5. Hold the indented part of both the corners to dismount the cartridge.

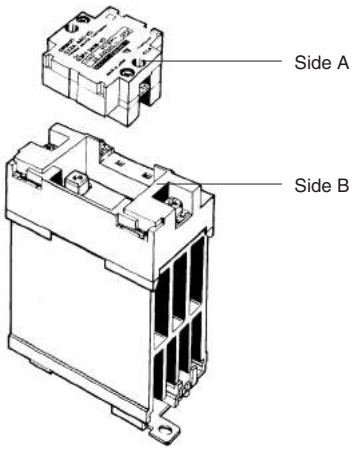
### Mounting

1. Apply silicone grease to the entire surface of the heat sink.




2. Make sure that there is no dust or pieces of wire on the heat sink of the G32A-A or the G3PA.

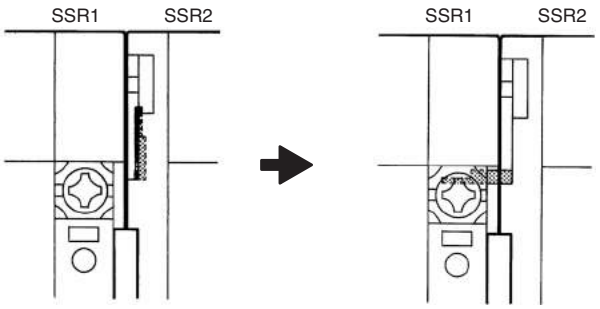
3. Insert the cartridge into the opening of the G3PA so that side A and side B are even.




4. Tighten the screws on both the corners with a tightening torque of 0.59 to 0.78 N·m.
5. Tighten the screws on both the sides with a tightening torque of 0.59 to 0.78 N·m.
6. Attach the terminal cover.
7. Switch on the power and check the G3PA to be sure it works properly.

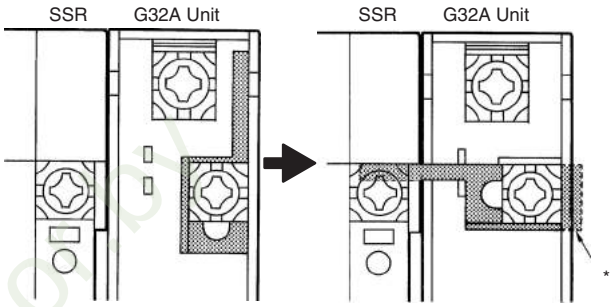
## ■ Linking Terminal Connection

• Connecting with linking terminal for G3PA-210B(L)-VD, -220B(L)-VD, -240B(L)-VD and G3PA-420B-VD(-2), G3PA-430B-VD(-2).



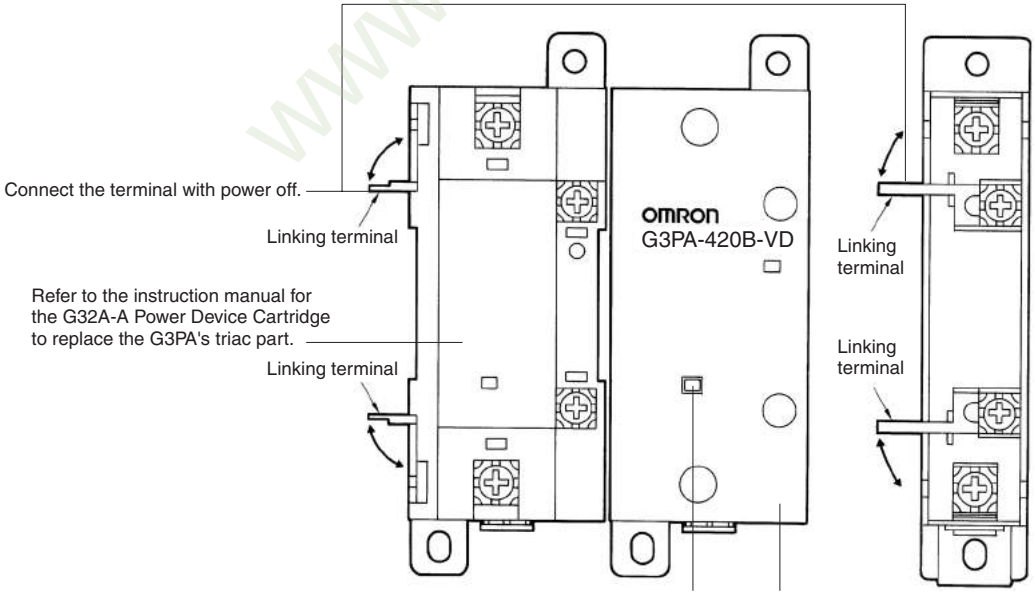

1. When SSRs are close mounted, loosen the M3.5 Sems screw and flip the linking terminal down.
2. Insert the linking terminal securely into the center of the screw and tighten the screw.

• Connecting with linking terminal for G32A.




* The cover will not fit if the terminal protrudes.

1. When SSR are close mounted, loosen the M3.5 Sems screw on the G32A and flip the linking terminal down.
2. Insert the linking terminal securely into the center of the screw and tighten the screw. Ensure that the linking terminal does not protrude.



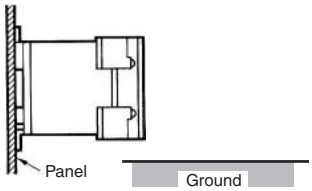

When the temperature indicator has turned from pink to red, the G32-A-A Power Device Cartridge may have malfunctioned, in which case the cartridge must be replaced with a new one.

Use the terminal cover to prevent accidents due to electric shock.

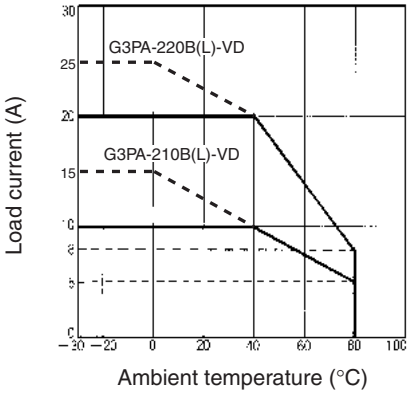
# Engineering Data

## Load Current vs. Ambient Temperature

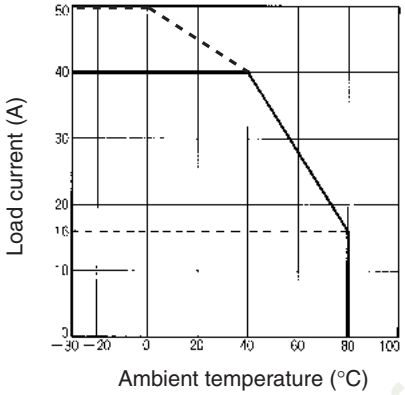
### Vertical Mounting



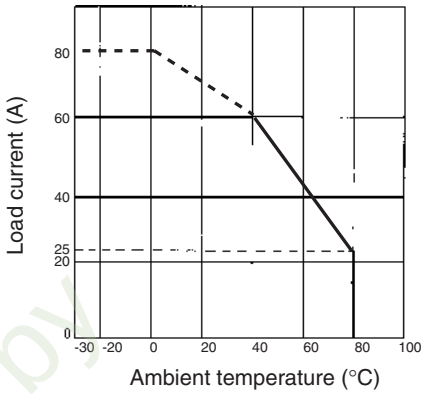

**G3PA-210B(L)-VD, G3PA-220B(L)-VD**



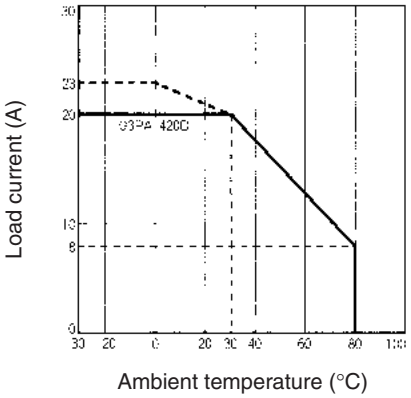

**G3PA-240B(L)-VD**



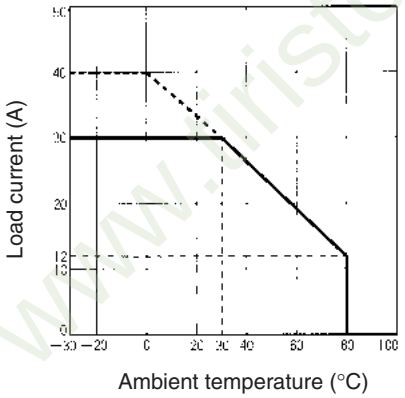

**G3PA-260B(L)-VD**



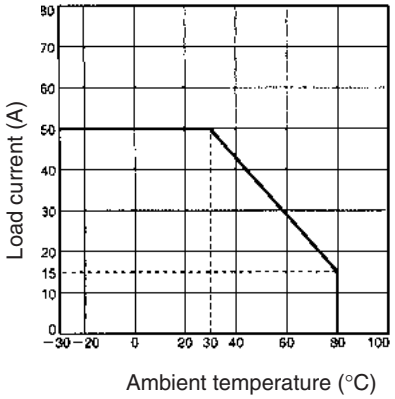

**G3PA-420B-VD, G3PA-420B-VD-2**




**G3PA-430B-VD, G3PA-430B-VD-2**



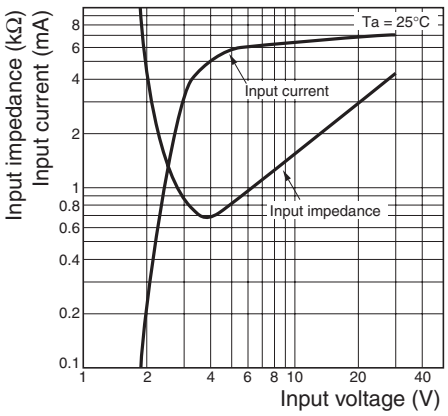

**G3PA-450B-VD-2**



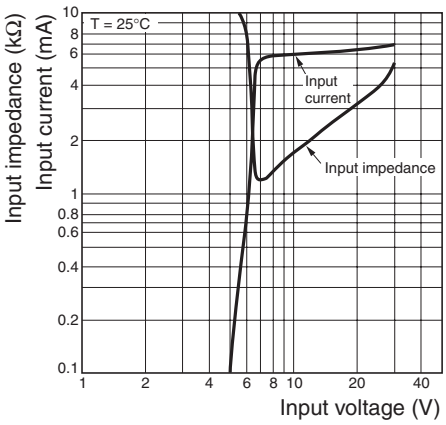

**Note:** Close mounting is possible for a maximum of three Units by reducing the load current by 20%. (A minimum clearance of 10 mm must be provided when mounting four or more Units.)

## Input Voltage vs. Input Current

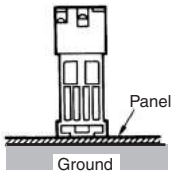
**G3PA-2□0B-VD**



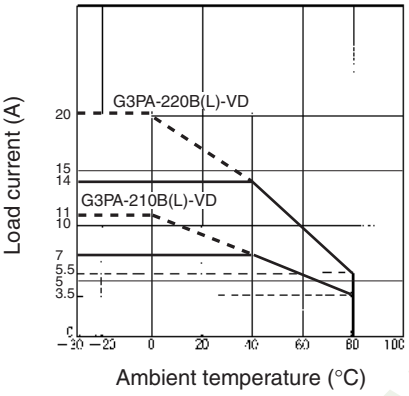

**G3PA-4□0-VD, G3PA-4□-VD-2**



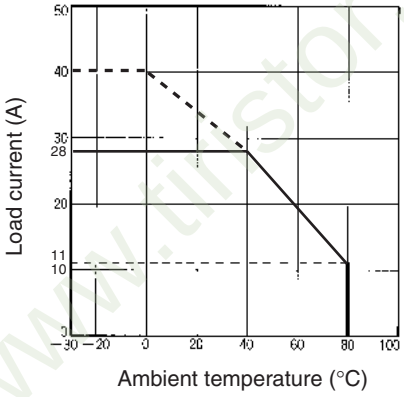

### Horizontal Mounting



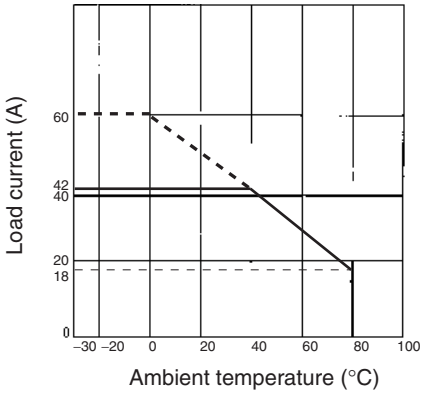

**G3PA-210B(L)-VD, G3PA-220B(L)-VD**



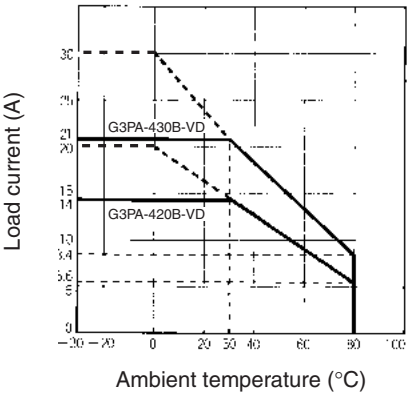

**G3PA-240B(L)-VD**



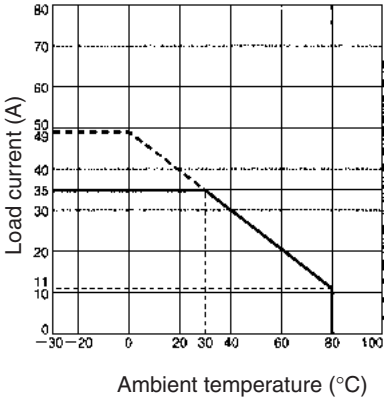

**G3PA-260B(L)-VD**



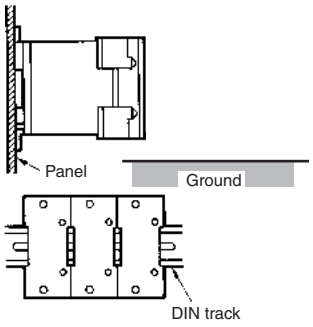

**G3PA-420B-VD, G3PA-430B-VD**
**G3PA-420B -VD-2, G3PA-430B-VD-2**



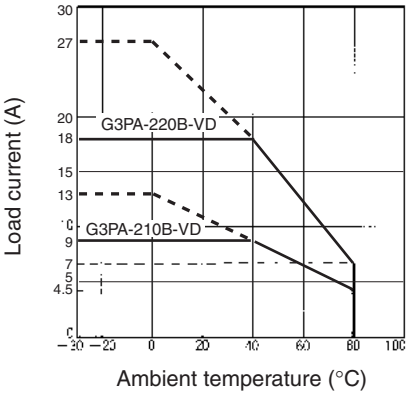

**G3PA-450B-VD-2**



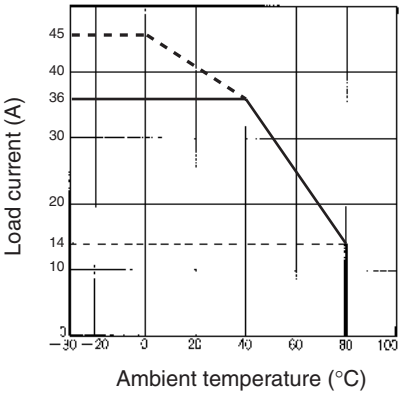
## Close Mounting (Up to Three)



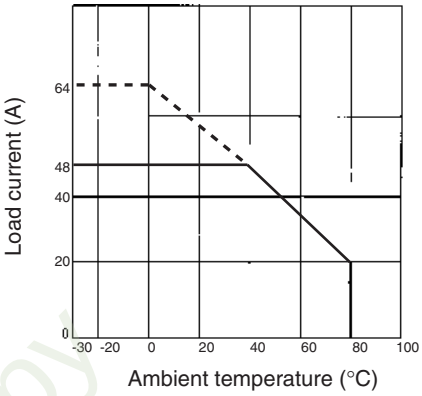

**G3PA-210B(L)-VD, G3PA-220B(L)-VD**



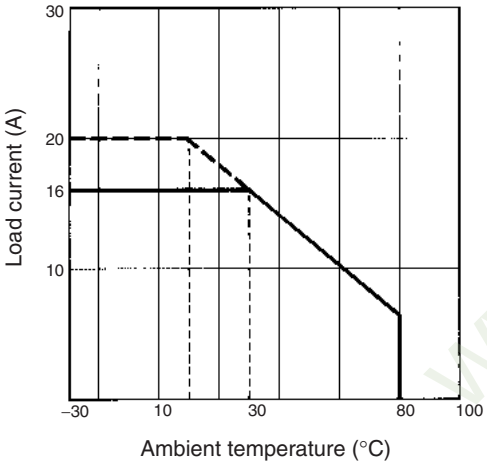

**G3PA-240B(L)-VD**



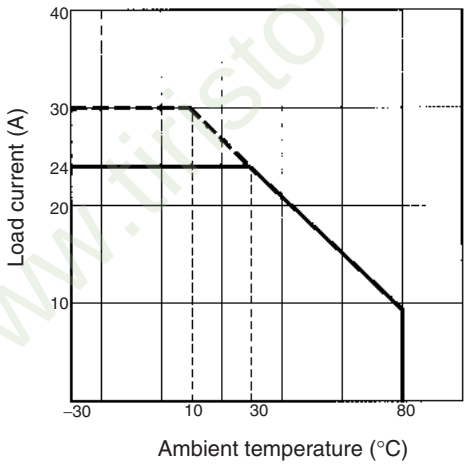

**G3PA-260B(L)-VD**



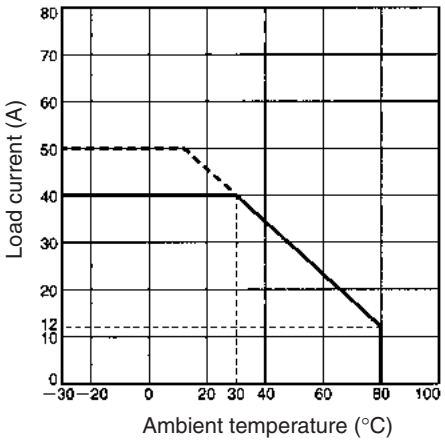

**G3PA-420B-VD, G3PA-420B-VD-2**




**G3PA-430B-VD, G3PA-430B-VD-2**



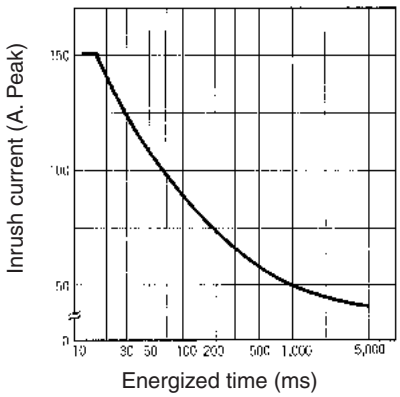

**G3PA-450B-VD-2**



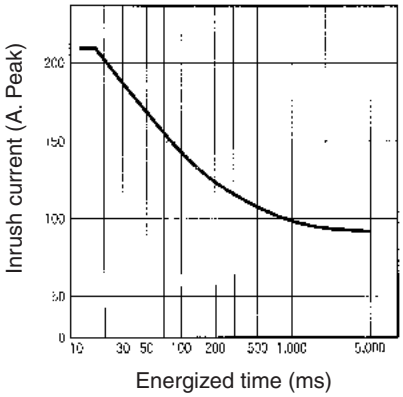
## One Cycle Surge Current: Non-repetitive

**Note:** Keep the inrush current to half the rated value if it occurs repetitively.

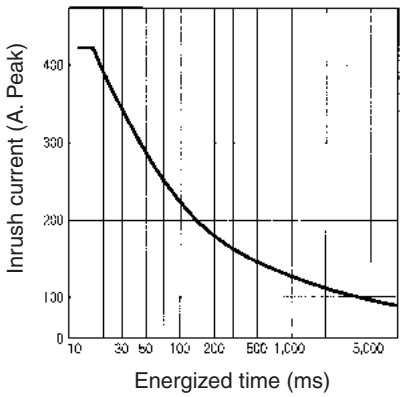
**G3PA-210B(L)-VD**




**G3PA-220B(L)-VD, G3PA-420B-VD, G3PA-420B-VD-2**




**G3PA-240B(L)-VD/260B(L)-VD, G3PA-430B-VD, G3PA-430B-VD-2, G3PA-450B-VD-2**

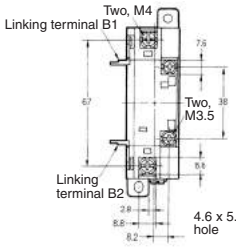


# Dimensions

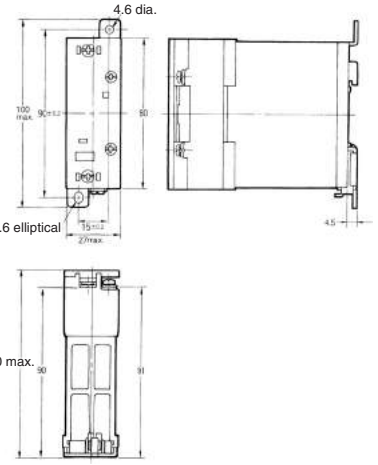
**Note:** All units are in millimeters unless otherwise indicated.

## G3PA-210B(L)-VD

### Without Terminal Cover

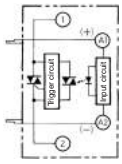



### With Terminal Cover

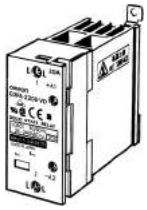



### Mounting Holes

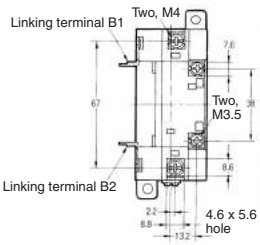

### Terminal Arrangement/ Internal Connections



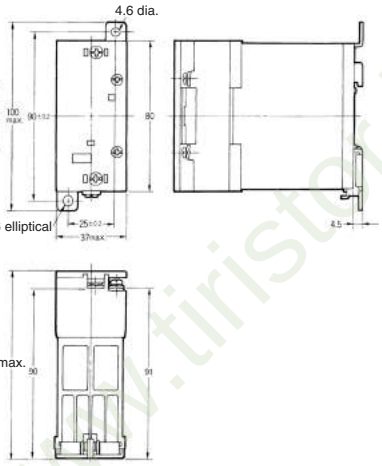

## G3PA-220B(L)-VD



### Without Terminal Cover

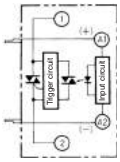



### With Terminal Cover

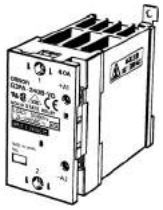



### Mounting Holes

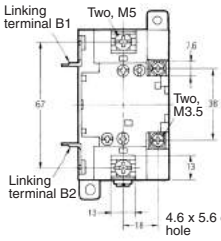

### Terminal Arrangement/ Internal Connections



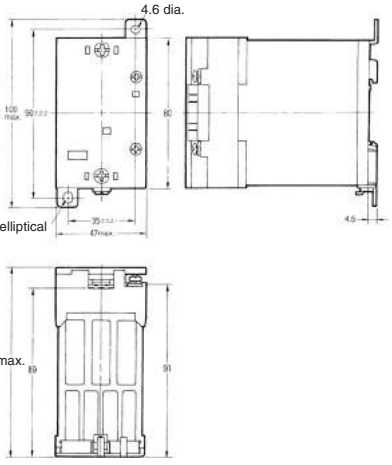

## G3PA-240B(L)-VD



### Without Terminal Cover

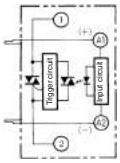



### With Terminal Cover



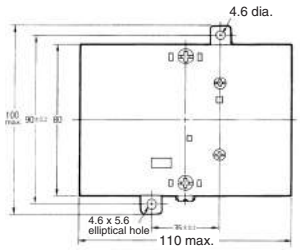

### Mounting Holes


### Terminal Arrangement/ Internal Connections

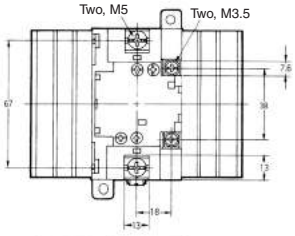


## G3PA-260B(L)-VD
## G3PA-450B-VD-2

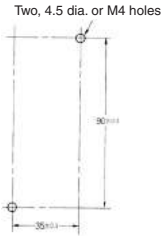
### With Terminal Cover



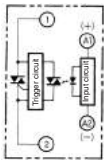

### Without Terminal Cover

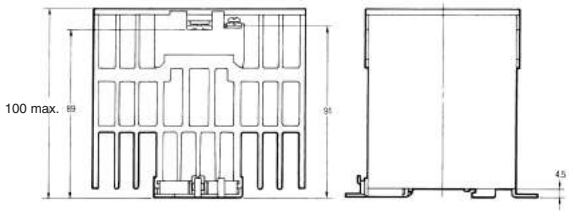



### Mounting Holes

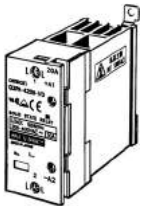



### Terminal Arrangement/ Internal Connections

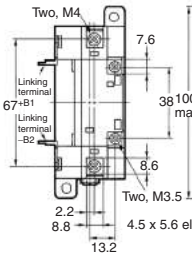


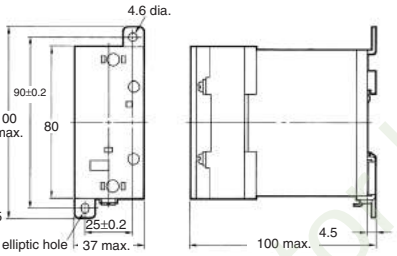

## G3PA-420B-VD, G3PA-420B-VD-2

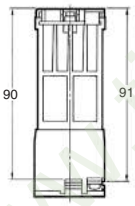


### Without Terminal Cover

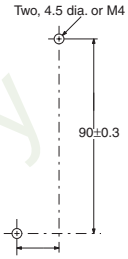



### With Terminal Cover

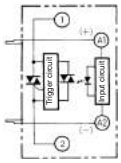


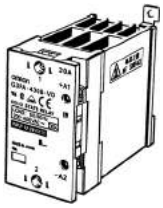

### Mounting Holes



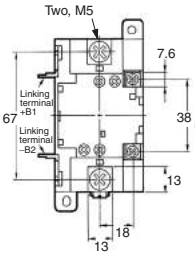

### Terminal Arrangement/ Internal Connections



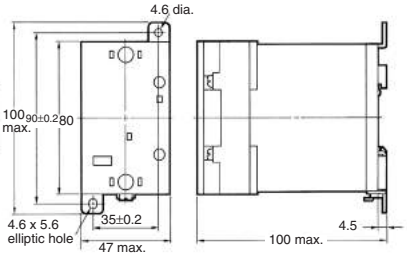

## G3PA-430B-VD, G3PA-430B-VD-2

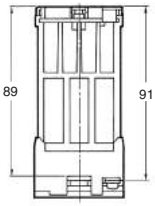


### Without Terminal Cover

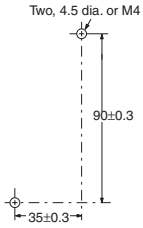



### With Terminal Cover

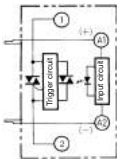



### Mounting Holes




### Terminal Arrangement/ Internal Connections



# Safety Precautions

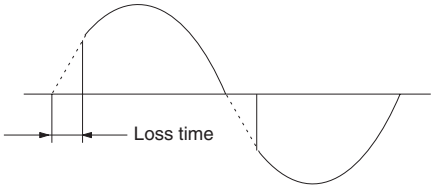
## ■ Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effect on product performance.

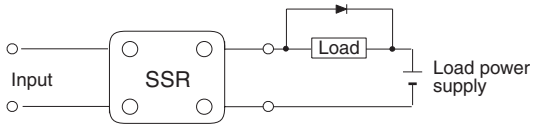
### Load Connection

For an AC load, use a power supply rated at 50 or 60 Hz.
The maximum operating frequency is 10 Hz.
The G3PA-(VD) has a built-in varistor for overvoltage protection.

At a low applied voltage, such as 24 VAC, the load current is not fully supplied. When the Unit is switched ON, the voltage required to power the Unit deprives the output signal of the necessary voltage level and thus creates loss time. The lower the load voltage is, the greater the loss time is. This condition, however, will not create any serious problems.




For a DC or L load, a diode should be connected in parallel the load to absorb the counter electromotive force of the load.

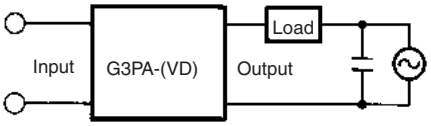



When attaching a heat sink to the G3PA-(VD), in order to facilitate heat dissipation, apply silicone grease or equivalent heat-conductive grease on the heat sink. (Toshiba Silicone, Shinetsu Silicone, etc.)

Tighten the mounting screws of the heat sink with a torque of 0.78 to 0.98 N·m.

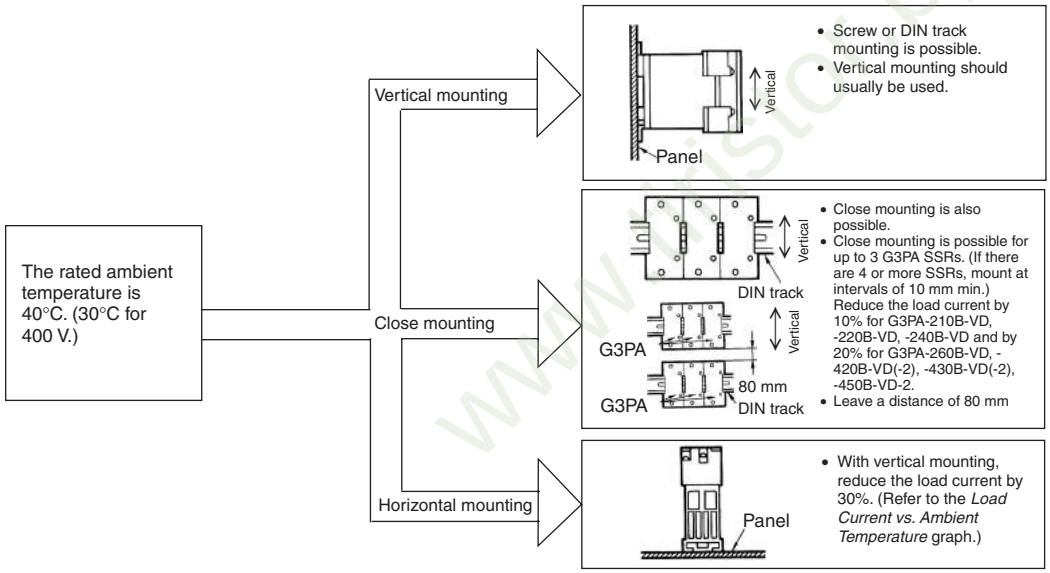
### Noise Terminal Voltage according to EN55011

The G3PA-(VD) complies with EN55011 standards when a capacitor is connected to the load power supply as shown in the following circuit diagram.




Recommended Capacitor: 1 μF, 250 VAC

### Mounting

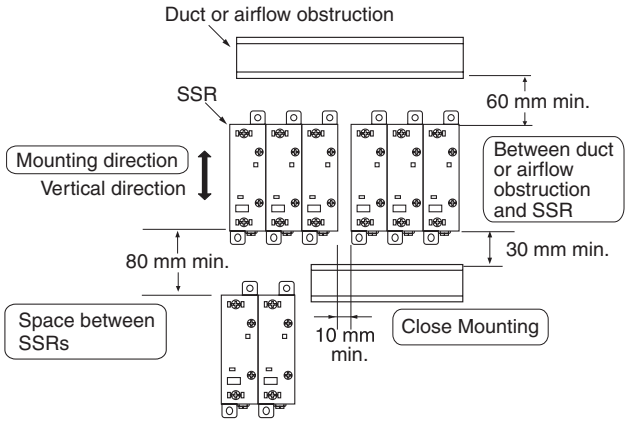



**Note:** Leave a distance of 60 mm min. between SSRs and ducts (especially above the SSR).

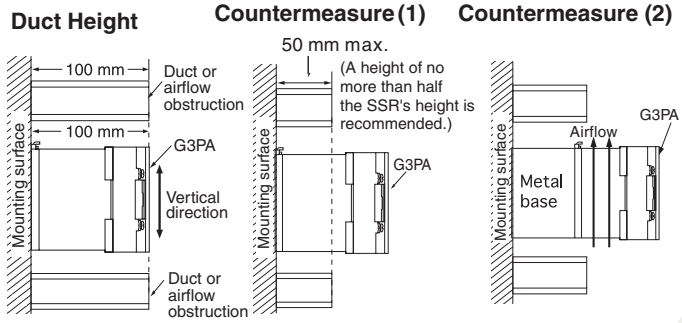
# Close Mounting

## SSR Mounting Pitch

**Panel Mounting** (At a rated ambient temperature of 40°C).




## Relationship between SSRs and Ducts

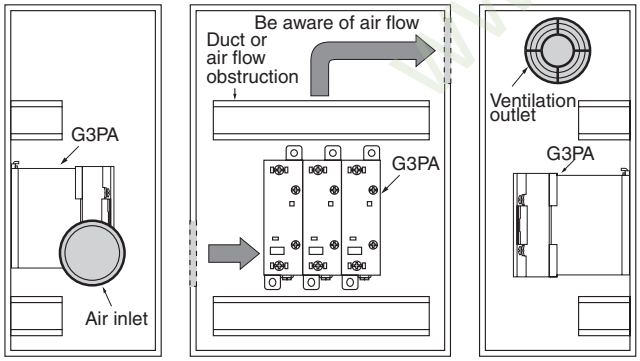



Do not surround the SSR with ducts, otherwise the heat radiation of the SSR will be adversely affected.

Use short ducts.

If the ducts cannot be shortened, place the SSR on a metal base so that it is not surrounded by the ducts.

## Ventilation




If the air inlet or air outlet has a filter, clean the filter regularly to prevent it from clogging and ensure an efficient flow of air.

Do not locate any objects around the air inlet or air outlet, otherwise the objects may obstruct the proper ventilation of the control panel.

A heat exchanger, if used, should be located in front of the SSR Units to ensure the efficiency of the heat exchanger.

**Please reduce the ambient temperature of SSRs.**

**The rated load current of an SSR is measured at an ambient temperature of 25 or 40 °C.**

An SSR uses a semiconductor in the output element. This causes the temperature inside the control panel to increase due to heating resulting from the passage of electrical current through the load. To restrict heating, attach a fan to the ventilation outlet or air inlet of the control panel to ventilate the panel. This will reduce the ambient temperature of the SSRs and thus increase reliability. (Generally, each 10 °C reduction in temperature will double the expected life.)

| Load current (A) | 10 A | 20 A | 30 A | 40 A | 60 A |
|---|---|---|---|---|---|
| **Required number of fans per SSR** | 0.16 | 0.31 | 0.47 | 0.62 | 0.93 |

Example: For 10 SSRs with load currents of 20 A,
0.31 x 10 = 3.1
Thus, 4 fans would be required.

Size of fans: 92 $mm^2$, Air volume: 0.7 $m^3$/min,
Ambient temperature of control panel: 30 °C

**If there are other instruments that generate heat in the control panel other than SSRs, additional ventilation will be required.**

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

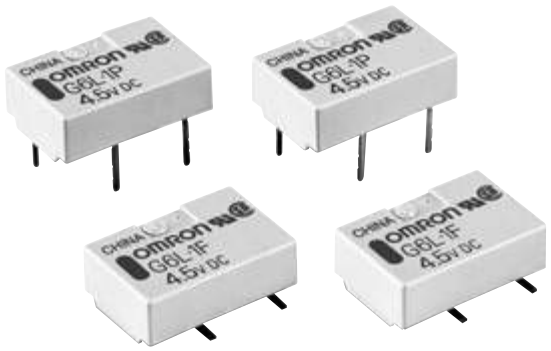
Cat. No. K094-E1-06

In the interest of product improvement, specifications are subject to change without notice.

# Ultra-thin Low Signal Relay
# G6L

## Extremely Thin SPST-NO Flat Relay, One of the Thinnest Relays in the World

- For high-density mounting and slim finished packaging, G6L uses 20% less mounting area and 67% less volume in comparison with the G5V-1 relay.
- Measures just 7.0 (W) x 10.6 (L) x 4.2 (H) mm for surface-mount or 3.8 (H) for through-hole.
- High dielectric strength: 1,000 VAC between coil and contacts and 750 VAC between contacts of the same polarity.
- Conforms to FCC Part 68 impulse withstand voltage rating of 1.5kV for 10 x 160 μs.
- Conforms to UL60950 (File No. E41515) / CSA C22.2 No. 60950 (File No. LR31928).
- Use of lead completely eliminated.




# Ordering Information

| Contact form | Construction | Mounting type | Model |
|---|---|---|---|
| SPST-NO | Fully sealed | Through-hole terminal | **G6L-1P** |
| | | Surface-mount terminal | **G6L-1F** |

**Note: 1.** When ordering, add the rated coil voltage to the model number.
Example: G6L-1P 12 VDC
Rated coil voltage

**2.** When ordering tape packing, add "-TR" to the model number.
Example: G6L-1F-TR 12 VDC
Tape packing

Be sure since "-TR" is not part of the relay model number, it is not marked on the relay case.

### Model Number Legend:

**G6L□-1□-□**
1 2 3 4

1. **Relay function**
   None: Non-latching
2. **Contact form**
   1: SPST-NO
3. **Terminal shape**
   P: PCB terminals
   F: Surface-mount terminals
4. **Packaging**
   None: Tube packaging
   TR: Tape and reel packaging

# ■ Application Examples

- Peripherals of MODEM/PC
- Telephones
- Office automation machines
- Audio-visual products
- Communications equipment
- Measurement devices
- Amusement equipment
- Security equipment

# Specifications

## ■ Contact Ratings

| Item | Resistive load |
|---|---|
| **Contact mechanism** | Single crossbar |
| **Rated load** | 0.3 A at 125 VAC, 1 A at 24 VDC |
| **Carry current** | 1 A |
| **Max. operating voltage** | 125 VAC, 60 VDC |
| **Max. operating current** | 1 A |

## ■ Coil Ratings

| Item | Voltage Rating | | | | |
|---|---|---|---|---|---|
| **Rated voltage** | 3 VDC | 4.5 VDC | 5 VDC | 12 VDC | 24 VDC |
| **Rated current** | 60.0 mA | 40.0 mA | 36.0 mA | 15.0 mA | 9.6 mA |
| **Coil resistance** | 50.0 Ω | 112.5 Ω | 139.0 Ω | 800.0 Ω | 2,504.0 Ω |
| **Pick-up voltage** | 75% max. of rated voltage | | | | |
| **Dropout voltage** | 10% min. of rated voltage | | | | |
| **Maximum voltage** | 150% of rated voltage | | | | 130% of rated voltage |
| **Power consumption** | Approx. 180 mW | | | | Approx. 230 mW |

**Note: 1.** The rated current and coil resistance are measured at a coil temperature of 23°C with a tolerance of ±10%.

**2.** The operating characteristics are measured at a coil temperature of 23°C.

**3.** The maximum voltage is the highest voltage that can be imposed on the relay coil.

## ■ Characteristics

| Item | | Non-latching Relays |
|---|---|---|
| | | **G6L-1P, G6L-1F** |
| **Contact resistance (See Note 1)** | | 100 mΩ max. |
| **Operate time (See Note 2)** | | 5 ms max. (approx. 1.1 ms) |
| **Release time (See Note 2)** | | 5 ms max. (approx. 0.4 ms) |
| **Insulation resistance (See Note 3)** | | 1,000 MΩ min. (at 500 VDC) |
| **Dielectric strength** | **Coil and contacts** | 1,000 VAC, 50/60 Hz for 1 min |
| | **Contacts of same poles** | 750 VAC, 50/60 Hz for 1 min |
| **Surge withstand voltage** | **Coil and contacts** | 1,500 VAC, 10 × 160 μs |
| **Vibration** | **Mechanical durability** | 10 to 55 Hz, 1.65-mm single amplitude (3.3-mm double amplitude) |
| | **Malfunction durability** | 10 to 55 Hz, 1.65-mm single amplitude (3.3-mm double amplitude) |
| **Shock** | **Mechanical durability** | 1,000 $m/s^2$ |
| | **Malfunction durability** | 100 $m/s^2$ |
| **Service life** | **Mechanical** | 5,000,000 operations min. (at 36,000 operations/hour) |
| | **Electrical** | 100,000 operations min. (with a rated load at 1,800 operations/hour) |
| **Failure rate (P level) (See Note 4)** | | 1 mA at 5 VDC |
| **Ambient temperature** | | Operating: -40°C to 70°C (with no icing or condensation) |
| **Humidity** | | Operating: 5% to 85% RH |
| **Weight** | | Approx. 0.6 g |

**Note: 1.** The contact resistance was measured with 10 mA at 1 VDC with a fall-of-potential method.

**2.** Values in parentheses are actual values.

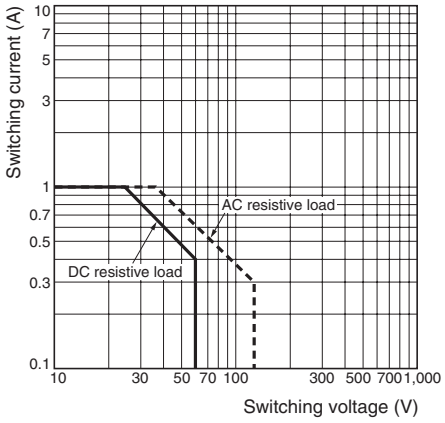
**3.** The insulation resistance was measured with a 500-VDC Megger Tester applied to the same parts as those used for checking the dielectric strength.

**4.** This value was measured at a switching frequency of 120 operations/min. This value may vary, depending on switching frequency, operating conditions, expected reliability level of the relay, etc. It is always recommended to double-check relay suitability under actual load conditions.

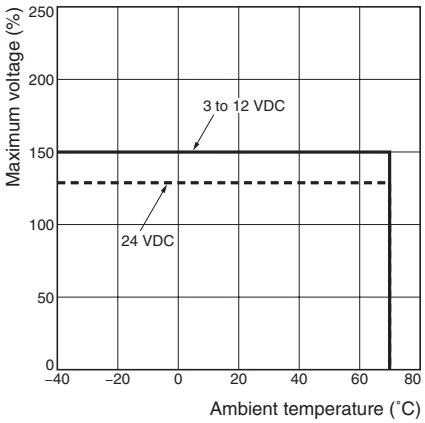
**5.** The above values are initial values.

# Engineering Data

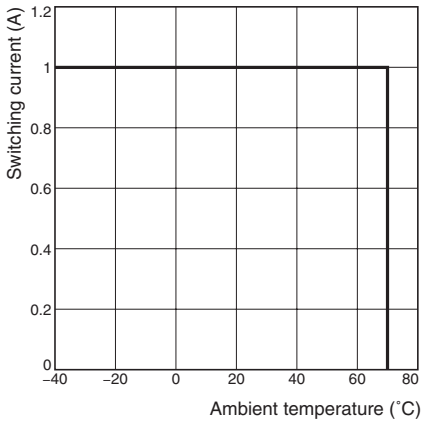
### Maximum Switching Capacity




### Ambient Temperature vs. Maximum Voltage

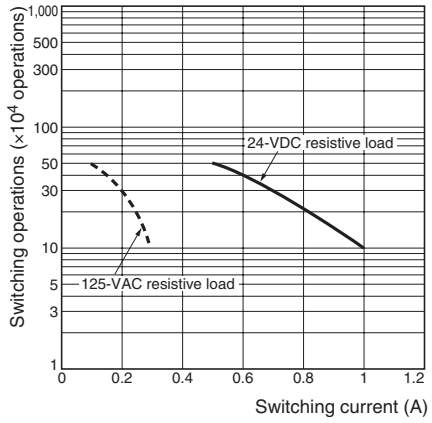



### Ambient Temperature vs. Switching Current

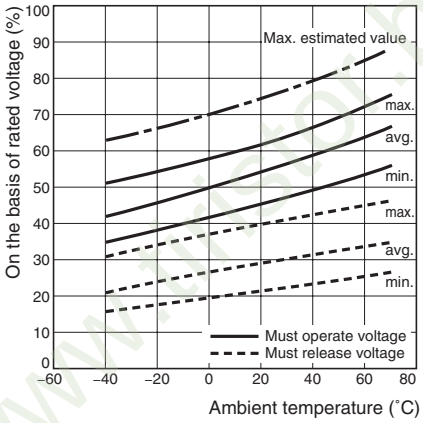



**Note:** "Maximum Voltage" is the maximum voltage that can be applied to the relay coil.

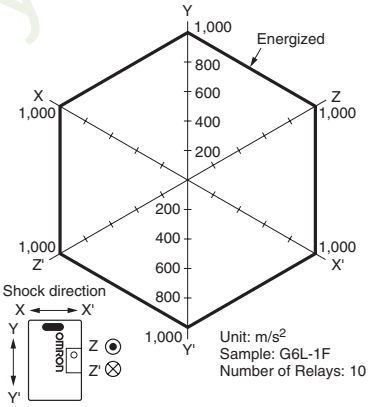
### Endurance




### Ambient Temperature vs. Must Operate or Must Release Voltage

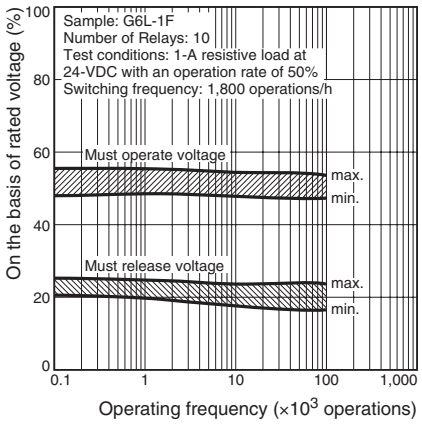



### Shock Malfunction

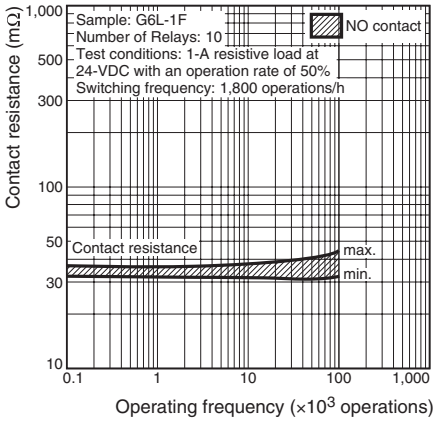



Conditions: Shock is applied in ±X, ±Y, and ±Z directions three times each with and without energizing the Relays to check the number of contact malfunctions.

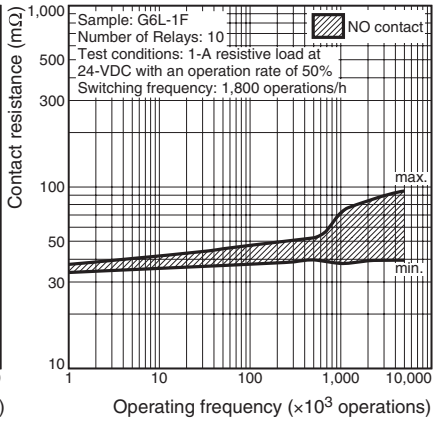
### Electrical Endurance (with Must Operate and Must Release Voltage) (See Note)




### Electrical Endurance (Contact Resistance) (See Note)

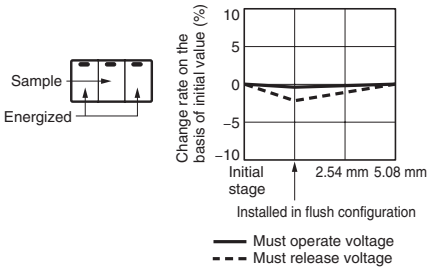



### Contact Reliability Test (Contact Resistance) (See Note)

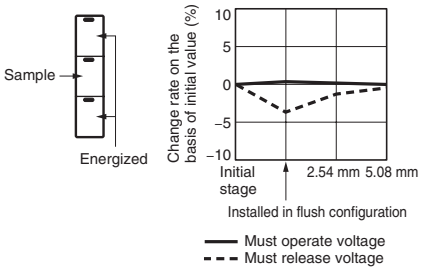



**Note:** The tests were conducted at an ambient temperature of 23°C.

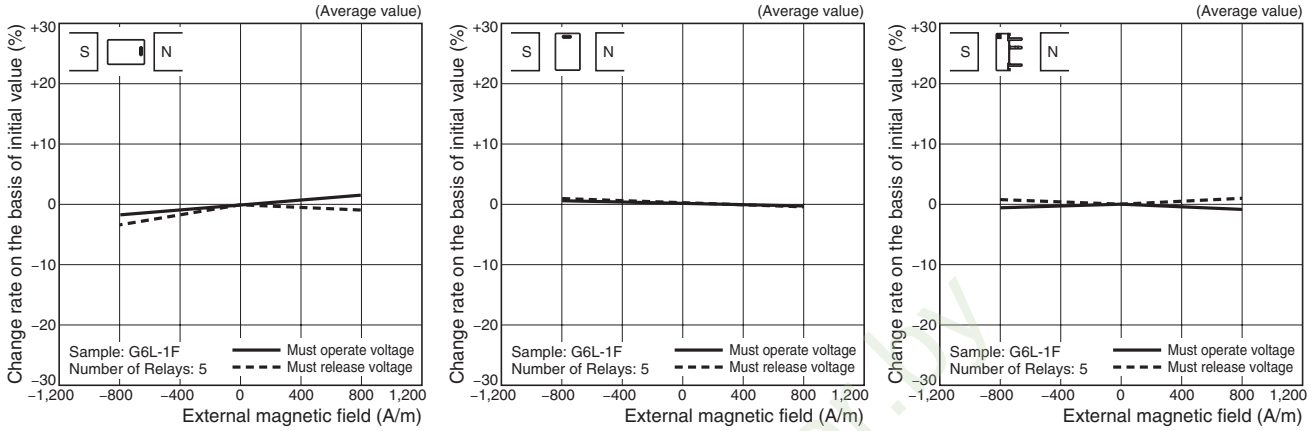
### Mutual Magnetic Interference



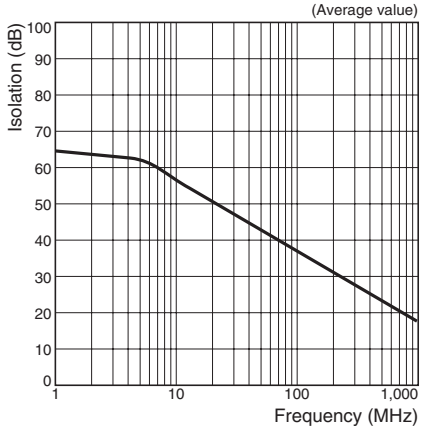

### Mutual Magnetic Interference



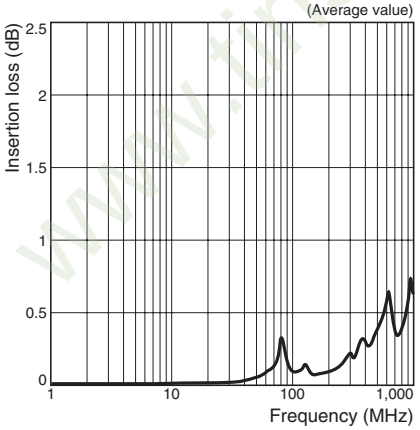

### External Magnetic Interference



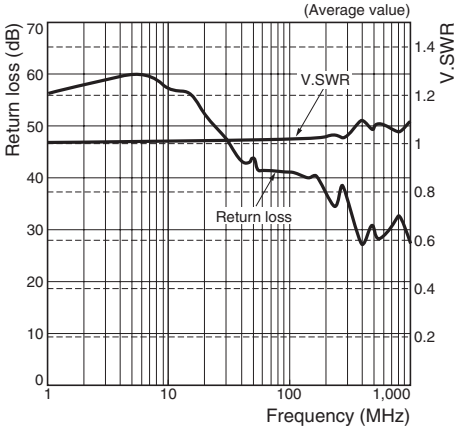

### High-frequency Characteristics (Isolation)



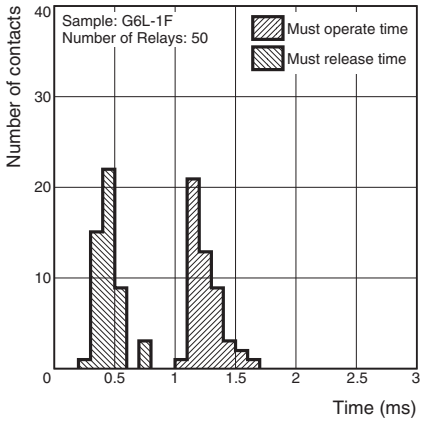

### High-frequency Characteristics (Insertion Loss)



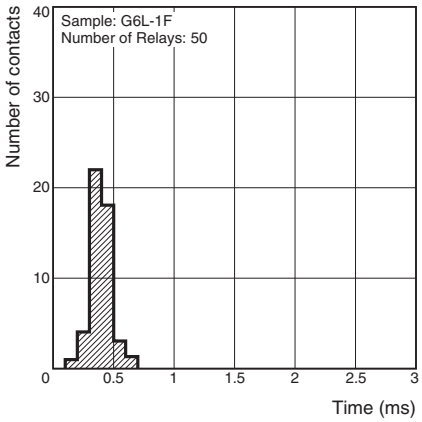

### High-frequency Characteristics (Return Loss, V.SWR)



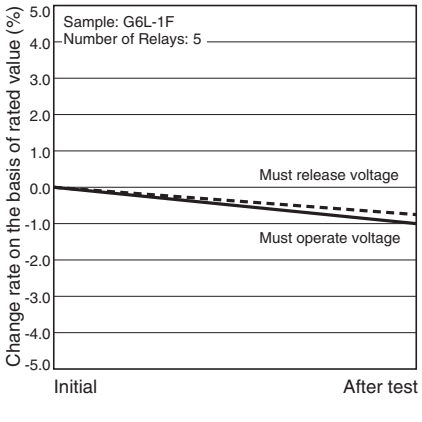
### Must Operate and Must Release Time Distribution (See Note)




### Distribution of Bounce Time (See Note)




### Vibration Resistance

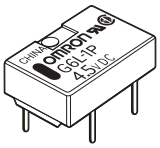


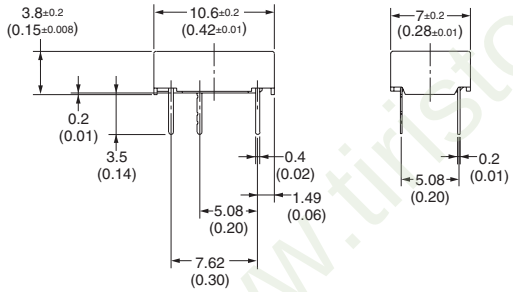

**Note:** The tests were conducted at an ambient temperature of 23ºC.

# Dimensions

Unit: mm (inch)

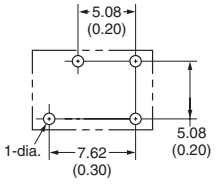
## G6L-1P



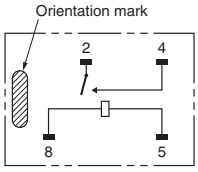




**PCB Mounting Holes (Bottom View)**

Tolerance: ±0.1 mm

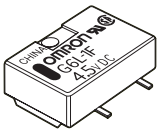


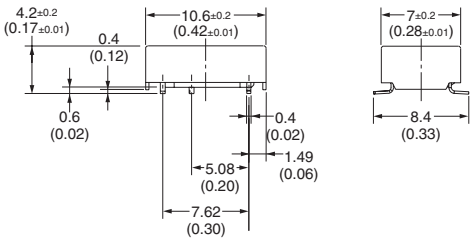

**Terminal Arrangement/ Internal Connections (Bottom View)**




**Note:** Each value has a tolerance of ±0.3 mm.

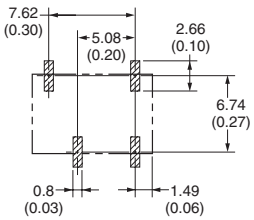
## G6L-1F



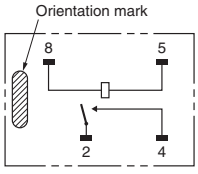




**PCB Mounting Holes (Top View)**

Tolerance: ±0.1 mm




**Terminal Arrangement/ Internal Connections (Top View)**



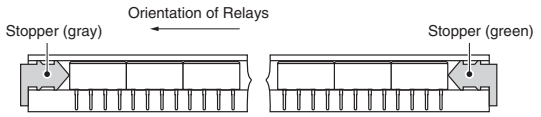

**Note:** Each value has a tolerance of ±0.3 mm.

# Packaging

## ■ Tube Packaging

Relays in tube packaging are arranged so that the orientation mark of each Relay is on the left side.

Always confirm that the Relays are in the correct orientation when mounting the Relays to the PCBs.




Tube length: 552 mm (stopper not included)

No. of Relays per tube: 50

## ■ Tape and Reel Packaging (Surface-mount Terminal Relays)

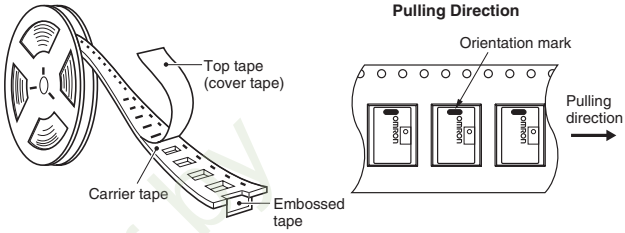
When ordering Relays in tape and reel packaging, add the suffix "-TR" to the model number, otherwise the Relays in tube packing will be provided.

Tape type: TB2412R (Refer to EIAJ (Electronic Industries Association of Japan)

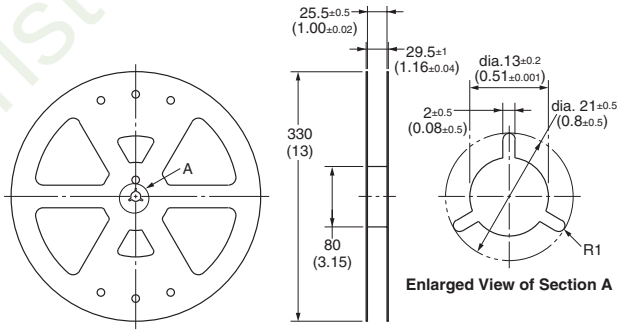
Reel type: R24D (Refer to EIAJ (Electronic Industries Association of Japan)

Relays per reel: 1,000

### Direction of Relay Insertion

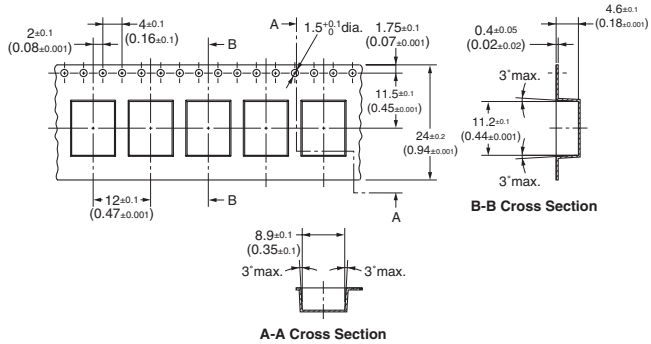



### Reel Dimensions




### Carrier Tape Dimensions

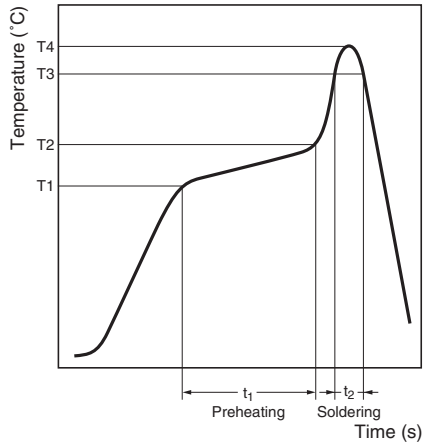
#### G6L-1F



# Recommended Soldering Method

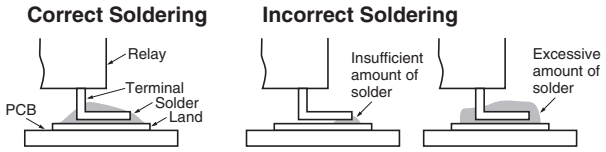
## ■ Temperature Profile According to IRS

When performing reflow-soldering, check the profile on an actual device after setting the temperature condition so that the temperatures at the relay terminals and the upper surface of the case do not exceed the limits specified in the following table.




| Item / Measuring position | Preheating (T1 to T2, $t_1$) | Soldering (T3, $t_2$) | Peak value (T4) |
|---|---|---|---|
| **Terminal** | 150ºC to 180ºC, 120 s max. | 180ºC to 200ºC, 20 to 30 s | 245ºC max. |
| **Upper surface of case** | —— | —— | 250ºC max. |

The thickness of cream solder to be applied should be within a range between 150 and 200 μm on OMRON's recommended PCB pattern.




Visually check that the Relay is properly soldered.

## ■ Approved Standards

UL approval: UL60950 (File No. E41515)

CSA approval: C22.2 No.60950 (File No. LR31928)

| Contact form | Coil rating | Contact rating | Number of test operations |
|---|---|---|---|
| SPST-NO | G6L-1P and G6L-1F: 3 to 24 VDC | 1A at 30 VDC<br>0.5A at 60 VDC<br>0.3A at 125 VAC | 6,000 |

# Precautions

## ■ Correct Use

### Handling

Leave the Relays packed until just prior to mounting them.

### Soldering

Solder: JIS Z3282, H63A

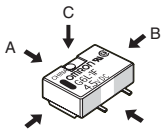
Soldering temperature: Approx. 250ºC (At 260ºC if the DWS method is used.)

Soldering time: Approx. 5 s max. (approx. 2 s for the first time and approx. 3 s for the second time if the DWS method is used.)

Be sure to adjust the level of the molten solder so that the solder will not overflow onto the PCB.

### Claw Securing Force During Automatic Insertion

During automatic insertion of Relays, make sure to set the securing force of the claws to the following values so that the Relay characteristics will be maintained.




Direction A: 5.0 N max.
Direction B: 5.0 N max.
Direction C: 5.0 N max.

Secure the claws to the area indicated by shading.
Do not attach them to the center area or to only part of the Relay.

### Environmental Conditions During Operation, Storage, and Transportation

Protect the Relays from direct sunlight and keep the Relays under normal temperature, humidity, and pressure.

### Maximum Voltage

The maximum voltage of the coil can be obtained from the coil temperature increase and the heat-resisting temperature of coil insulating sheath material. (Exceeding the heat-resisting temperature may result in burning or short-circuiting). The maximum voltage also involves important restrictions which include the following:

- Must not cause thermal changes in or deterioration of the insulating material.
- Must not cause damage to other control devices.
- Must not cause any harmful effect on people.
- Must not cause fire.

Therefore, be sure not to exceed the maximum voltage specified in the catalog.

As a rule, the rated voltage must be applied to the coil. A voltage exceeding the rated value, however, can be applied to the coil provided that the voltage is less than the maximum voltage. It must be noted that continuous voltage application to the coil will cause a coil temperature increase thus affecting characteristics such as electrical life and resulting in the deterioration of coil insulation.

### Coating

Relays mounted on PCBs may be coated or washed. Do not apply silicone coating or detergent containing silicone, otherwise the silicone coating or detergent may remain on the surface of the Relays.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, divide by 25.4

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# КАК КУПИТЬ

1. Сделать заявку или запрос можно по телефону,факсу или по электронной почте (отвечаем в течении получаса) или отправить запрос on-line
   Просим Вас указывать в заявке:
   — название предприятия или ФИО ИП,
   — факс, контактный телефон, контактное лицо;
   — полное наименование и количество товара;
   — возможность замены или аналоги;