

# SPVQ6 Water-proof Type

Compact type with body size of 13.3×5.3×7mm



Detector

Slide

Push

Rotary

Power

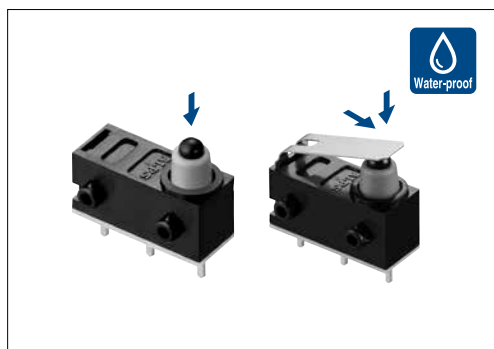
Dual-in-line  
Package Type

General-  
purpose Type

Water-proof  
Type

Fast Switching  
Type

## Typical Specifications



| Items                                                  |              | Specifications                 |                             |
|--------------------------------------------------------|--------------|--------------------------------|-----------------------------|
|                                                        |              | Standard type                  | With internal resistor type |
| Rating (max.)/(min.) (Resistive load)                  |              | 0.1A 12V DC/<br>50μA 5V DC     | —                           |
| Contact resistance<br>(Initial / After operating life) |              | 500mΩ max./1Ω max.             | —                           |
| 電気の出力                                                  |              | —                              | Respond individually        |
| Operating force                                        |              | Push type                      | Actuator type               |
|                                                        |              | 1±0.5N                         | 3N max.                     |
| Operating life                                         | Without load | 300,000cycles                  |                             |
|                                                        | With load    | 300,000cycles<br>(0.1A 12V DC) | —                           |

## Product Line

| Poles | Positions | Change over timing | Operating part shape | Terminal type               | Main body form    | Minimum order Unit (pcs.) |        | Product No. | Drawing No. |
|-------|-----------|--------------------|----------------------|-----------------------------|-------------------|---------------------------|--------|-------------|-------------|
|       |           |                    |                      |                             |                   | Japan                     | Export |             |             |
| 1     | 2         | Non shorting       | Push                 | For PC board                | Boss - right side | 1,500                     | 6,000  | SPVQ640102  | 1           |
|       |           |                    |                      |                             | Boss - left side  |                           |        | SPVQ640202  | 2           |
|       |           |                    | Actuator             |                             | Boss - right side |                           |        | SPVQ630104  | 3           |
|       |           |                    |                      |                             | Boss - left side  |                           |        | SPVQ630203  | 4           |
|       | 1         |                    | Press fit            | Without boss / Left bending | SPVQ6R※           |                           |        | 5           |             |

## Note

This unit cannot be used in water (IP67 rating, except for terminal).

## Packing Specifications

Tray

| Number of packages (pcs.) |                        | Export package measurements<br>(mm) |
|---------------------------|------------------------|-------------------------------------|
| 1 case /Japan             | 1 case /export packing |                                     |
| 1,500                     | 6,000                  | 540×360×270                         |

## Dimensions

Unit:mm

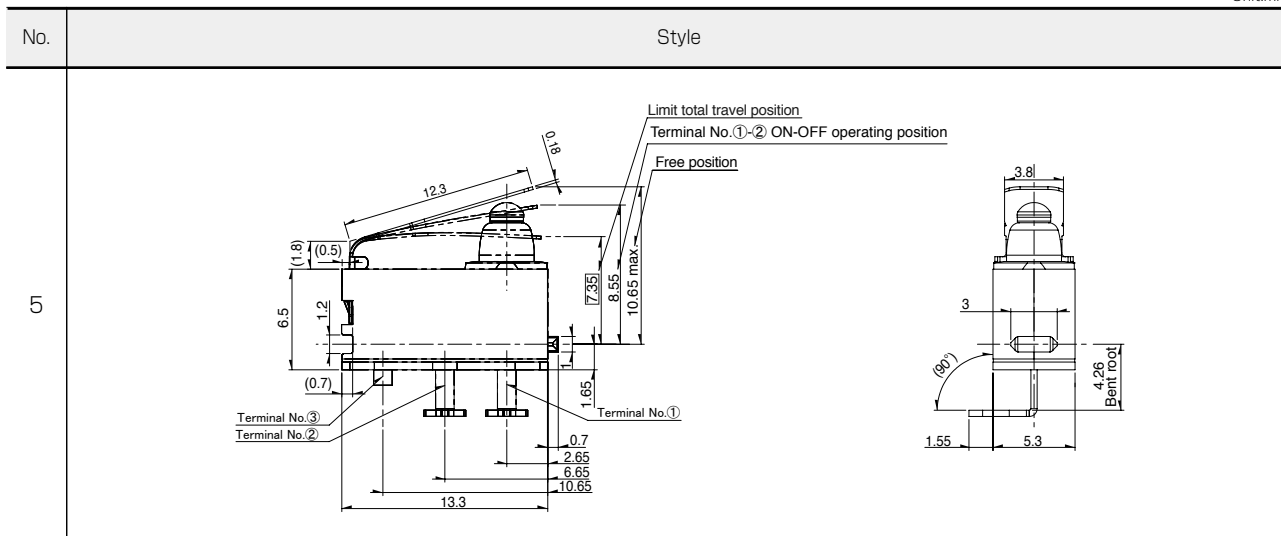
| No. | Style |
|-----|-------|
| 1   |       |

| Dimensions |       | Unit:mm |
|------------|-------|---------|
| No.        | Style |         |
| 2          |       |         |
| 3          |       |         |
| 4          |       |         |

|                           |
|---------------------------|
| Detector                  |
| Slide                     |
| Push                      |
| Rotary                    |
| Power                     |
| Dual-in-line Package Type |
| General-purpose Type      |
| Water-proof Type          |
| Fast Switching Type       |

## ■ Dimensions

Unit:mm

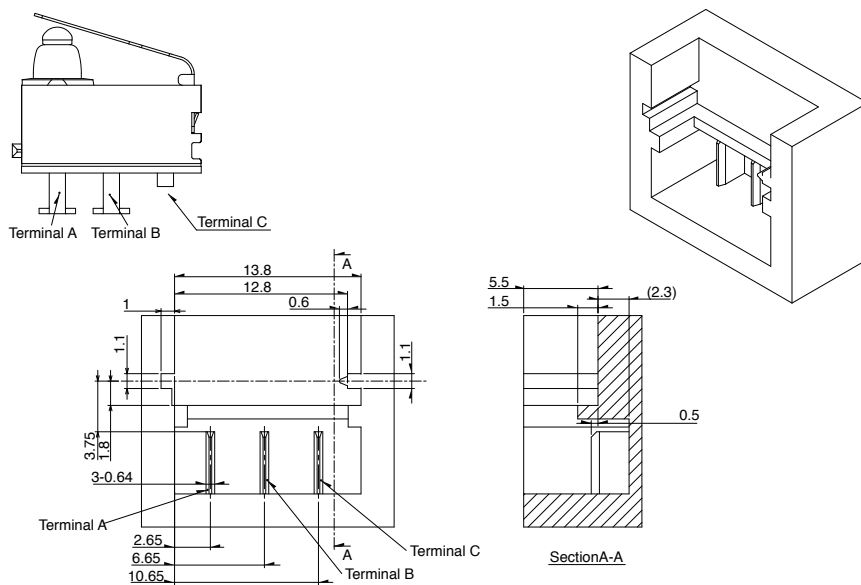


## ■ Recommended Unit Terminal Shape for Press-Fit Terminals (Normally Open)

Unit:mm

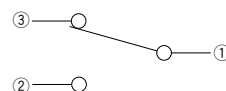
| Style |
|-------|
|-------|

SPVQ6R\*

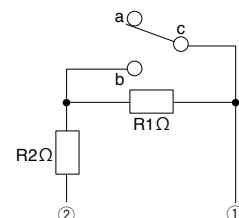


## ■ Circuit Diagram

Drawing No. : 1, 2, 3, 4



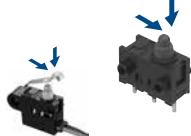
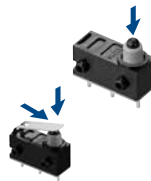
Drawing No. : 5



| Electrical output<br>Terminal No. | Initial  |         |
|-----------------------------------|----------|---------|
|                                   | Free     | Depress |
| ①-②                               | (R1+R2)Ω | R2Ω     |

# Detector Switches

## List of Varieties

| Series                            |                                                               | Water-proof Type                                                                  |                                                                                   |                                                                                     |                                                                                     |
|-----------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                   |                                                               | SPVQ1                                                                             | SPVQ3                                                                             | SPVQ6                                                                               | SPVQ7                                                                               |
| Photo                             |                                                               |  |  |   |  |
| Operation type                    |                                                               | One-way<br>Two-way                                                                | Two-way                                                                           | One-way<br>Two-way                                                                  | Two-way                                                                             |
| Dimensions<br>(mm)                | W                                                             | 13.3                                                                              | 13                                                                                | 13.3                                                                                | 14.7                                                                                |
|                                   | D                                                             | 5.8                                                                               |                                                                                   | 5.3                                                                                 | 5.4                                                                                 |
|                                   | H                                                             | 8                                                                                 | 8.35                                                                              | 7                                                                                   | 6.7                                                                                 |
| Operating temperature range       |                                                               | -40℃ to +85℃                                                                      |                                                                                   |                                                                                     |                                                                                     |
| Automotive use                    |                                                               |  |  |  |  |
| Life cycle (availability)         |                                                               |  |  |  |  |
| Poles / Positions                 |                                                               | 1/2                                                                               | 1/1<br>1/2                                                                        | 1/2                                                                                 | 1/1<br>1/2                                                                          |
| Rating (max.)<br>(Resistive load) |                                                               | 0.1A 12V DC                                                                       |                                                                                   |                                                                                     |                                                                                     |
| Rating (min.)<br>(Resistive load) |                                                               | 50μA 3V DC                                                                        |                                                                                   | 50μA 5V DC                                                                          |                                                                                     |
| Durability                        | Operating life without load                                   | 300,000cycles 1Ω max.                                                             |                                                                                   |                                                                                     |                                                                                     |
|                                   | Operating life with load<br>Rating (max.)<br>(Resistive load) | 300,000cycles 1Ω max.                                                             |                                                                                   |                                                                                     |                                                                                     |
| Electrical performance            | Initial contact resistance                                    | 500mΩ max.                                                                        |                                                                                   |                                                                                     |                                                                                     |
|                                   | Insulation resistance                                         | 100MΩ min. 500V DC                                                                |                                                                                   |                                                                                     |                                                                                     |
|                                   | Voltage proof                                                 | 500V AC for 1minute                                                               |                                                                                   |                                                                                     |                                                                                     |
| Mechanical performance            | Terminal strength                                             | 3N for 1minute                                                                    | 3N for 1minute (with terminal)<br>Wire strength 30N for 1minute (with wire)       | 3N for 1minute                                                                      |                                                                                     |
|                                   | Actuator strength                                             | 20N                                                                               |                                                                                   |                                                                                     |                                                                                     |
| Environmental performance         | Cold                                                          | -40℃ 500h                                                                         |                                                                                   |                                                                                     |                                                                                     |
|                                   | Dry heat                                                      | 85℃ 500h                                                                          |                                                                                   |                                                                                     |                                                                                     |
|                                   | Damp heat                                                     | 60℃, 90 to 95% RH 500h                                                            |                                                                                   |                                                                                     |                                                                                     |
| Operation force                   |                                                               | 2N max. 5.9N max.                                                                 | 1±0.5N 3N max.                                                                    |                                                                                     | 1±0.5N                                                                              |
| Page                              |                                                               | 43                                                                                | 45                                                                                | 50                                                                                  | 53                                                                                  |

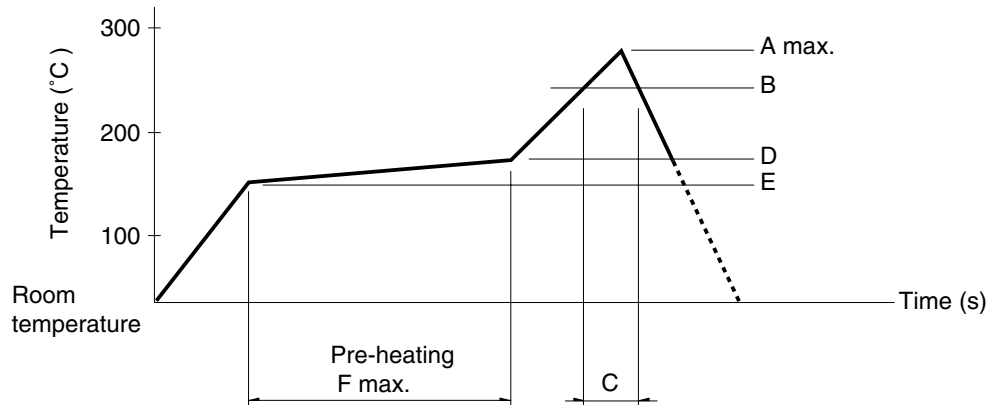
|                                        |    |
|----------------------------------------|----|
| Detector Switches Soldering Conditions | 66 |
| Detector Switches Cautions             | 67 |

### Note

● Indicates applicability to all products in the series.

## Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple  $\phi 0.1$  to  $0.2$  CA (K) or CC (T) at soldering portion (copper foil surface).  
A heat resisting tape should be used for fixed measurement.
3. Temperature profile



| Series (Reflow type) | A (°C) 3s max. | B (°C) | C (s) | D (°C) | E (°C) | F (s) |
|----------------------|----------------|--------|-------|--------|--------|-------|
| SPPB                 | 250            | 230    | 40    | 180    | 150    | 120   |
| SPVE                 | 260            |        | 40    |        |        |       |
| SPVL                 |                |        |       |        |        |       |
| SPVM                 |                |        |       |        |        |       |
| SPVN                 |                |        |       |        |        |       |
| SPVR                 |                |        |       |        |        |       |
| SPVS                 |                |        |       |        |        |       |
| SPVT                 |                |        |       |        |        |       |
| SSCM                 |                |        |       |        |        |       |
| SSCQ                 |                |        |       |        |        |       |
| SPVQC                | 250            |        |       |        |        |       |

### Notes

1. The condition mentioned above is the temperature on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, surface depending on the PC board's material, size, thickness, etc.  
The above-stated conditions shall also apply to switch surface temperatures.
2. Soldering conditions differ depending on reflow soldering machines.  
Prior verification of soldering condition is highly recommended.

## Reference for Hand Soldering

| Series                                                                   | Soldering temperature | Soldering time |
|--------------------------------------------------------------------------|-----------------------|----------------|
| <b>SPVS, SPVN, SPVT, SPVM, SPVR, SPVE, SSCQ, SSCM, SPVL, SSCT, SPVQC</b> | 350±5°C               | 3s max.        |
| <b>SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SSCN, SPVQA</b>             | 300±10°C              | 3 + 1 / 0s     |
| <b>SPPB (Reflow)</b>                                                     | 300±5°C               | 5s max.        |
| <b>SSCF, SPPB (For Lead, Dip)</b>                                        | 350±10°C              | 3 + 1 / 0s     |

## Reference for Dip Soldering

(For PC board terminal types)

| Series                                                       | Items                  |                 | Dip soldering         |                       |
|--------------------------------------------------------------|------------------------|-----------------|-----------------------|-----------------------|
|                                                              | Preheating temperature | Preheating time | Soldering temperature | Duration of immersion |
| <b>SSCT, SPVQ1, SPVQ3, SPVQ6, SPVQ7, SPVQ8, SPVQ9, SPVQA</b> | 100±10°C               | 60s max.        | 260±5°C               | 5±1s                  |
| <b>SPPW8, SPPB</b>                                           | 100 °C max.            | 60s max.        | 255±5°C               | 5±1s                  |
| <b>SSCF</b>                                                  | —                      | —               | 260±5°C               | 5±1s                  |

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9