

Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	1 / 10
<p>1. Notification Items</p> <p>1.1 Law and the regulation which are applied</p> <ul style="list-style-type: none"> <li>① Ozone depleting substances specified by Montreal Protocol have not been used in the manufacturing process of the material used in this product.</li> <li>② This product complies with RoHS Directive (on the restriction of the use of certain hazardous substances in electrical and electronic equipment) [2011/65/EU as amended by (EU)2015/863].</li> <li>③ The materials used in this product contain only the substances listed in the List of Existing Chemical Substances specified in 'Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc'.</li> <li>④ Permission must be obtained from the Japanese government if the product that is subject to the "Foreign Exchange and Foreign Trade Law" is to be exported or taken out of Japan.</li> </ul> <p>1.2 Application Limits</p> <p>The following shall be described for safety precaution: [Limitation of Application]</p> <ul style="list-style-type: none"> <li>(a) This product has been designed and manufactured for general electronic devices, such as home electronics, office equipment, information devices and communication devices. <ul style="list-style-type: none"> <li>(1) This product is not intended for use in more sophisticated applications which require a higher safety standard and more reliability, including if a failure or malfunction may cause bodily injury or property damage.</li> <li>(2) If the product is intended for more sophisticated applications prior approval must be obtained. Such applications shall include, but are not limited to, the following: aircraft equipment, aerospace equipment, disaster prevention equipment, crime prevention equipment, medical equipment, transportation equipment (such as vehicles, trains, ships, etc.), and information processing equipment that are highly publicized, and other equivalent equipment.</li> </ul> </li> <li>(b) Regardless of its applications, in an event that this product is used for equipment with high safety standards, protective circuits or back up circuits must be used and safety tests must be performed.</li> </ul> <p>1.3 Handling of reference specification.</p> <ul style="list-style-type: none"> <li>• Since the contents of this reference specification are subjected to change without prior notifications, please request us a formal specification again for your investigations before using.</li> </ul> <p>1.4 Manufacturing Sites</p> <p>The country of manufacture : Japan      Input Devices Business Department, Interface Devices Business Unit Electromechanical Control Business Division, Panasonic Corporation</p> <p>2. Summary</p> <p>2.1 This specifications applies to the following types of switch. Push-ON type S.P.S.T</p> <p>2.2 This specifications is a constituent document of contract for business concluded between your company and Panasonic Corporation.</p> <p>2.3 Items not particularly specified in this specifications shall be in conformance with JIS Standards.</p>		

Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	2 / 10

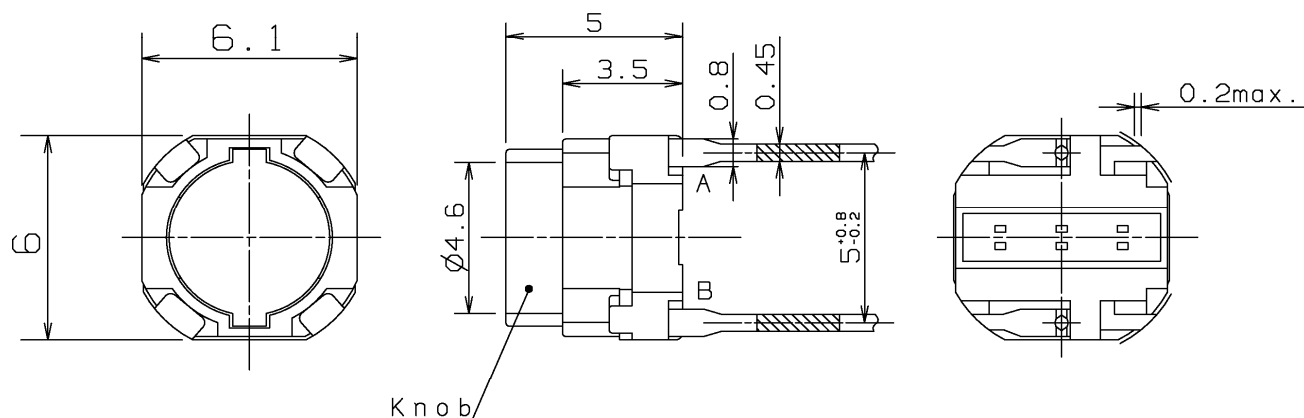
### 3. Dimension・Marking・Circuit diagram

Date code are indicated in the product.

General dimension tolerance :  $\pm 0.2$

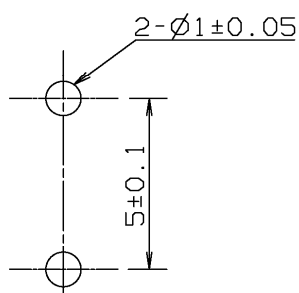
( ) dimensions are reference dimensions.

**REFERENCE ONLY**

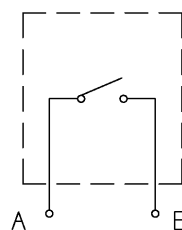


Knob color : BLACK

Piece weight : 0.17g



P.C.B.piercing plan

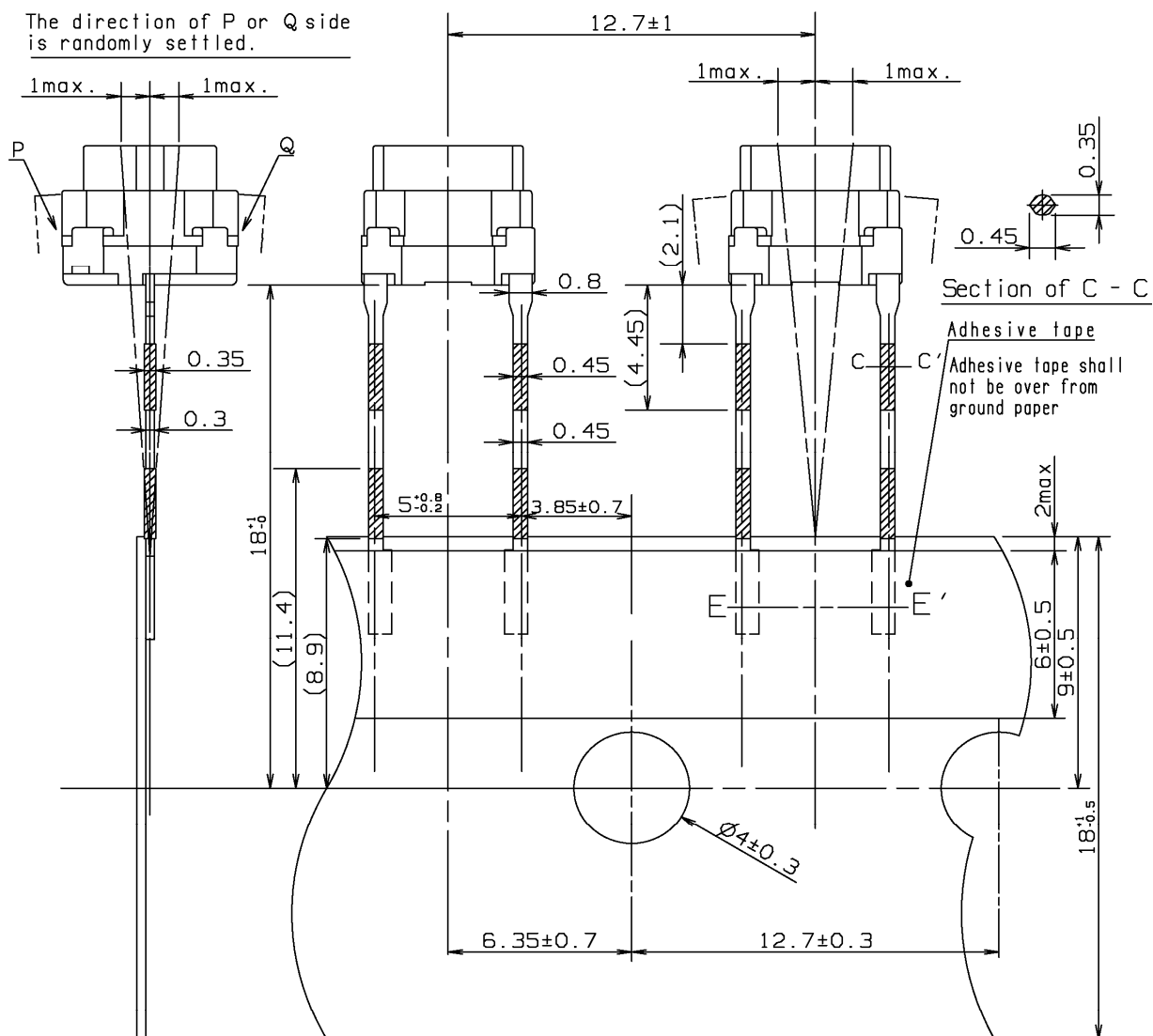


Circuit Diagram

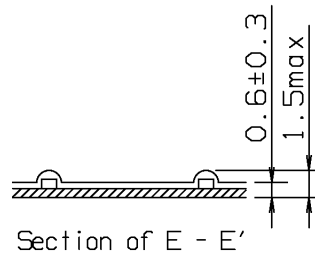
Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	3 / 10

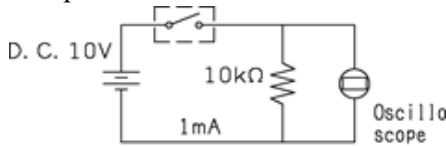
General dimension tolerance :  $\pm 0.2$   
 ( ) dimensions are reference dimensions.

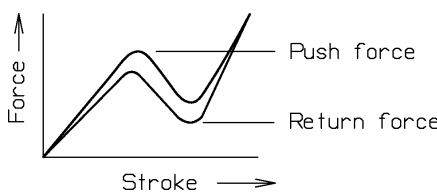
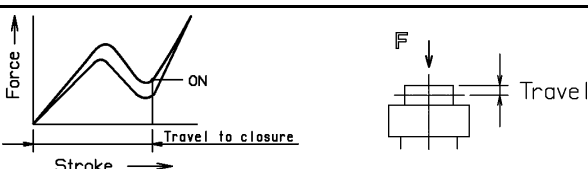
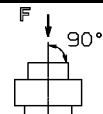
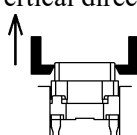
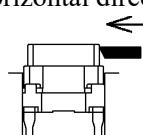
Knob color: BLACK



Correspond to JIS C0806-2 requirements.

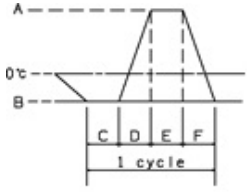


Classification		REFERENCE SPECIFICATION		Issue No. 20210775	
Part Name 6mm Square Long Travel 2R Light Touch Switch		Part No. EVQPVF05K		4 / 10	
4. General specification					
4.1 Switch rating		DC 12 V 50 mA(max.)		DC 2 V 10 μA(min.)	
4.2 Operation temperature range		-30 ~ + 85 °C			
4.3 Preservative temperature range		Single condition : - 40 ~ + 85 °C			
		Taping conditor : - 20 ~ + 40 °C			
4.4 Standard conditions					
Unless otherwise specified, the test and measurements shall be carried out as follows.					
Ambient temperature : 5 ~ 35 °C					
Relative humidity : 45 ~ 85 %					
Atmospheric pressure : 86 ~ 106 kPa					
However, if doubt arises on the decision based on the measured values under the above-mentioned conditions, the following conditions shall be employed.					
Ambient temperature : 20 ± 2 °C					
Relative humidity : 65 ± 5 %					
Atmospheric pressure : 86 ~ 106 kPa					
5. Performance					
5.1 Electrical characteristics					
No.	ITEM	TEST CONDITION		PERFORMANCE	
5.1.1	Contact resistance	Push force : {Operation force} × 2 Measurement tool : Contact resistance meter (Capable of 10 μA ~ 10 mA)		200 mΩ max.	
5.1.2	Insulation resistance	DC 100 V (Between terminals)		100 MΩ min.	
5.1.3	Withstand voltage	AC 250 V for 1 minute. (Between terminals)		No insulation destruction	
5.1.4	Bouncing	Operation speed : 3~4 times/s <div></div> Switch Bouncing Test Circuit		ON 10 ms max. OFF 10 ms max.	

Classification		REFERENCE SPECIFICATION		Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch		Part No. EVQPVF05K		5 / 10
5.2 Mechanical characteristics				
No.	ITEM	TEST CONDITION	PERFORMANCE	
5.2.1	Operation force		Push force 2.5 + 0.6 - 0.6 N  Return force 0.5 N min	
5.2.2	Travel to closure		1.3 + 0.3 - 0.3 mm	
5.2.3	Push strength	50 N for 60 sec. 	No damage (Electrical and mechanical)	
5.2.4	Pull strength	Vertical direction  Horizontal direction 	Vertical direction : 3.0 N min. Horizontal direction : 2.0 N min.	
5.2.5	Robustness of termination	Apply the following force. Tensile force : 5.0 N Bending force : 5.0 N	No.5.1 shall be satisfied. No existence of breakage of termination.	
5.2.6	Vibration test	1) Amplitude : 1.5 mm 2) Sweep rate : 10-55-10Hz for 1 minute 3) Sweep method : Logarithmic frequency sweep rate 4) Vibration direction : X,Y,Z(3 directions) 5) Time : Each direction 2 hours (Total 6 hours)	No.5.1 and 5.2.1 to 5.2.2 shall be satisfied.	
5.2.7	Soldering heat test	Soldering area : 1/2 of P.W.B. thickness Soldering temperature : 260±5°C Soldering time : 5±1 sec.	No damage (Electrical and mechanical)	
5.2.8	Solderbility	After spreading flux, the terminal is immersed in solder with following condition. Solder bar : M705/Sn-3.0Ag-0.5Cu (Senju Metal Industry Co.,Ltd.) Flux : CF-110VH-2A (tamura kaken) Soldering temperture : 260±5°C Soldering time : 2±0.5 sec.	95% or more of surface area(Excluding ruptured surface)where is immersed in solder shall be covered by new solder.	

Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	6 / 10

### 5.3 Climatic characteristics

No.	ITEM	TEST CONDITION	PERFORMANCE
5.3.1	Cold test	1) Temperature : $-40\pm 2^{\circ}\text{C}$ 2) Duration of test : 500h 3) Take off a drop water. 4) Standard conditions after test : 1 h	Contact resistance 200 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.2	Heat test	1) Temperature : $85\pm 2^{\circ}\text{C}$ 2) Duration of test : 500h 3) Standard conditions after test : 1 h	Contact resistance 200 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.3	Heat shock test	1) Test cycles : 20 cycles 2) Standard conditions after test : 1 h  <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> <math>A: +85\pm 2^{\circ}\text{C}</math>  <math>B: -40\pm 2^{\circ}\text{C}</math>            C: 1 hour            D: 5 minutes max.            E: 1 hour            F: 5 minutes max.         </div> </div>	Contact resistance 200 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.4	Humidity test	1) Temperature : $60\pm 2^{\circ}\text{C}$ 2) Relative humidity : 90~95 % 3) Duration of test : 500 h 4) Take off a drop water. 5) Standard conditions after test : 1 h	Contact resistance 200 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.
5.3.5	Endurance (Switching action)	1) DC 12 V 50 mA Resistance load 2) Operation speed : 2~3 times/s 3) Push force : Maximum value of operation force 4) Operation number : 100,000 times	Contact resistance 200m Ω max. Bouncing : 10 ms max. Variation rate of operation force shall be within $\pm 30\%$ to the value before testing No.5.1.2 and 5.2.2 shall be satisfied.
5.3.6	Withstand $\text{H}_2\text{S}$	1) Density : $3\pm 1\text{ppm}$ 2) Temperature : $40\pm 2^{\circ}\text{C}$ 3) Relative humidity : 80~85 % 4) Duration of test : 24 h 5) Standard conditions after test : 1 h	Contact resistance 200 mΩ max. No.5.1.2 to 5.1.4 and No.5.2.1 to 5.2.2 shall be satisfied.

Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	7 / 10

## 6. Prohibitions and precaution for handling

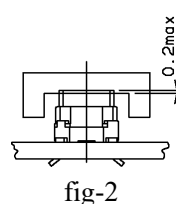
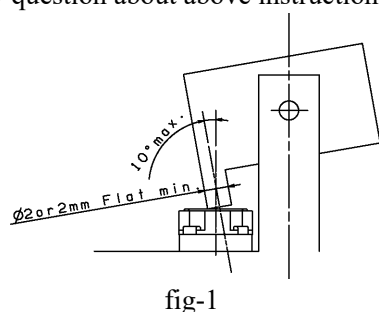
### 6.1 Soldering condition

ITEM	CONDITION
Preheat temperature	110 °C max.(Environmental temperature of soldering surface of P.W.B.)
Preheat time	60 sec. max.
Area of flux	1/2 max. of P.W.B. thickness
Temperature of solder	260±5 °C
Time of immersion	Within 5 sec.
Soldering number	Within 2 times (But should bring down heat of the first soldering.)
Printed wiring board	Single sided copper-clad laminates

- 1) After switches were soldered, please be careful not to clean switches with solvent.
- 2) Please flux don't into over the switch.
- 3) In the case of using soldering iron,soldering conditions shall be 350°C max. 3 sec. max.  
1 time only and the tip of iron must not touch to terminals.  
Soldering iron for re-soldering have to be 60 W max.
- 4) Right after switches were soldered, please be carefull not to load on the knobs of switches.
- 5) The soldering with through hole P.W.B is not available because the switch may hace a damage due to excess heat.

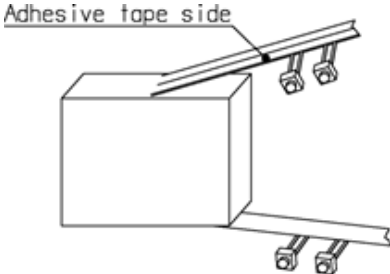
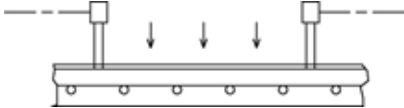
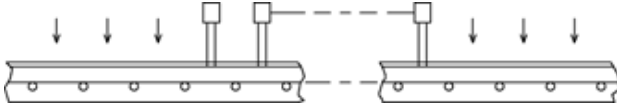
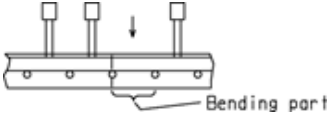

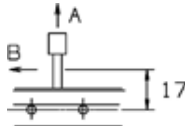
### 6.2 Design instructions

- 1) Please refer to the land pattern plan Panasonic recommends on the 2nd page.
  - 2) The key top shall have flat area on the top as Dia 2mm or greater than it.
  - 3) The deflection of key top when switch is actuated shall be whithin 10° as fig-1.
  - 4) The center of key top for switch operation needs to locate within 1mm max.
  - 5) Pre-load on the switch between key top and switch shall be 0.2mm max. as fig-2.
- If you have any question about above instruction and any deviation per our recommendation,let us know.



### 6.3 Note

- 1) Please be cautions not to give excessive static load or shock to switches.
- 2) Please be careful not to pile up P.W.B. after switches were soldered.
- 3) Preservation under high temperature and high humidity or corrosive gas should be avoided especially. When you need to preserve for a long period, do not open the carton.
- 4) Please do not use this switch for dual side through hole printed wirind board.
- 5) Avoid the use of the switch under pushed ON condition is continued for a long time.

Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	8 / 10
<p>7. Packing and taping Specifications</p> <p>7.1 Packing method</p> <p>Packing method : Taped products should be put into the inner packing case like zigzag.</p> <p>Packing quantity : Inner carton      2,500 pcs. Outer carton      25,000 pcs.</p> <p>7.2 Method of draw out</p> <p>7.3 Taping condition</p> <p>1) Lack of products</p> <p>(1) Middle portion</p> <p>Should not continue 4 pcs.</p> <p>(2) The end of taping</p> <p>Should have more than 5 pitch leader space.</p> <p>(3) Bending part</p> <p>At bending part , one product can be skipped.</p> <p>2) In case of cutting the lead wire off,the length of lead wire protruded from the tape is maximum 2 mm.</p> <p>3) Pull strength</p> <p>Pull strength products should not be separated from the tape at the pull strength of 5N. (Direction A)</p> <p>Pull strength products should not be separated from the tape at the pull strength of 1N. (Direction B ,3 sec)</p>		
     		



Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	9 / 10

#### 4) Connecting portion

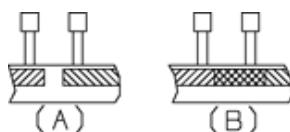
The connecting portion and number is free.

The connection between the mount tape shall be done with adhesive tapes.

Connecting portion should be less than 4 time thick, compared with the other portion.

##### (1) Adhesive tape

The strength of connection should satisfy the specification of 7.3 3) and adhesive tape should not block pilot holes.



##### (2) Ground tape

The connection between the mount tape shall be done with the adhesive tape and the gap between tapes is maximum 0.5 mm.

Adhesive tape should not block pilot holes.



#### 7.4 Bending portion

The tape should be bent every 25 pitch.

The portion of bending is free.

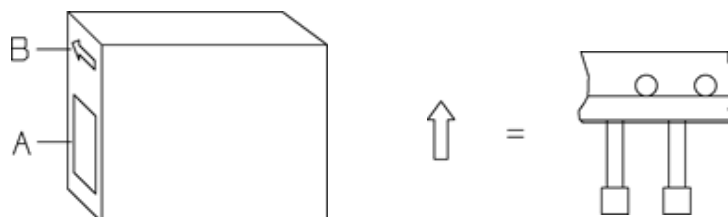
#### 7.5 Marking of packing (Inner carton)

A: Customer part No.

Panasonic part No.

Quantity

B: Direction of products



Classification	REFERENCE SPECIFICATION	Issue No. 20210775
Part Name 6mm Square Long Travel 2R Light Touch Switch	Part No. EVQPVF05K	10 / 10
<p>&lt;Prohibitions and precaution for handling&gt;</p> <p><b>【Prohibited items on fire and smoking】</b></p> <ul style="list-style-type: none"> <li>Absolutely avoid use of a product beyond its rated range because doing so may cause a fire. If misuse or abnormal use may result under conditions in which the product is used out of its rated range, take proper measures such as current interruption using a protective circuit.</li> <li>Please do not use the product in any location or circumstances where spreading fire may occur, or take necessary measures against spreading fire if used in such location or circumstances.</li> </ul> <p><b>【For use in equipment for which safety is requested】</b></p> <ul style="list-style-type: none"> <li>Although care is taken to ensure product quality, inferior characteristics, short circuits, and open circuits are some problems that might be generated. To design an equipment which places maximum emphasis on safety, review the effect of any single fault of a product in advance and perform virtually fail-safe design to ensure maximum safety by: <ul style="list-style-type: none"> <li>Preparing a protective circuit or a protective device to improve system safety, and equipment.</li> <li>Preparing a redundant circuit to improve system safety so that the single fault of a product does not cause a dangerous situation.</li> </ul> </li> </ul> <p><b>【Attentions required for storage condition】</b></p> <ul style="list-style-type: none"> <li>When this product is to be stored in the following circumstances and conditions, it may affect on the performance deteriorations and solderability etc., avoid storing in the following conditions. <ol style="list-style-type: none"> <li>A place where the temperature is -10°C max., +40°C min. and the humidity is 85% min.</li> <li>In the corrosive gas atmosphere.</li> <li>Long-term storage for 6 months min.</li> <li>A place where the product is exposed to direct sunlight.</li> </ol> </li> <li>Store in packed condition so that the load stress is not applied.</li> <li>Please use this product as soon as possible, our recommendation is within 3 months and the limitation is 6 months.</li> <li>If any remainder left after packing is opened, store it with proper moistureproofing and gasproofing, etc.,</li> <li>The switch shall be packed by Nylon sheet in the box like original packaging style when it will be an inventory after using on the assembly machine at your production line.</li> </ul> <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <p>Please refer to "the latest product specifications" when designing your product.</p> <ul style="list-style-type: none"> <li>Requests to customers:</li> </ul> <p><a href="https://www3.panasonic.biz/ac/e/salespolicies/specific_item.jsp">https://www3.panasonic.biz/ac/e/salespolicies/specific_item.jsp</a></p> </div>		