

|                                          |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
|------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|--------------------------------------|-------|-------|
| TITLE                                    |                       | PRODUCT SPECIFICATIONS                                                                                                                                                                                                               |                                                                                                                                             |      |      |      |                                      |       |       |
| MODEL No.                                |                       | DETECTOR SWITCH(MD 1120S TYPE)                                                                                                                                                                                                       |                                                                                                                                             |      |      |      | PAGE                                 |       |       |
|                                          |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      | 1/4                                  |       |       |
| 1. GENERAL                               |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
| 1.1 Application                          |                       | : This specification is applied to low current circuit (Secondary circuit) push switch used for electronic equipment.                                                                                                                |                                                                                                                                             |      |      |      |                                      |       |       |
| 1.2 Operating temperature range          |                       | : -10~60                                                                                                                                                                                                                             |                                                                                                                                             |      |      |      |                                      |       |       |
| 1.3 Test conditions                      |                       | : The standard test conditions shall be 5~45 in temperature, 45~85% RH and 86~106kpa (860~1060 mbar) in atmospheric pressure.<br>Should any doubt arise in judgement, tests shall be conducted at 20±2 , 65±5% RH and 860~1060 mbar. |                                                                                                                                             |      |      |      |                                      |       |       |
| 2. APPEARANCE CONSTRUCTION AND DIMENSION |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
| 2.1 Appearance                           |                       | : Switch shall have good finishing and shall have no rust, crack of plating failures.                                                                                                                                                |                                                                                                                                             |      |      |      |                                      |       |       |
| 2.2 Construction and dimension           |                       | : Per individual product drawing.                                                                                                                                                                                                    |                                                                                                                                             |      |      |      |                                      |       |       |
| 2.3 Markings                             |                       | : Per individual product drawing.                                                                                                                                                                                                    |                                                                                                                                             |      |      |      |                                      |       |       |
| 3. RATED VOLTAGE AND CURRENT             |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
| 30V DC 100mA (Resistive load)            |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
| 4. ELECTRICAL PERFORMANCE                |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
|                                          | PROPERTY              |                                                                                                                                                                                                                                      | TEST CONDITION                                                                                                                              |      |      |      | PERFORMANCE                          |       |       |
| 4.1                                      | Contact resistance    |                                                                                                                                                                                                                                      | Shall be measured at 1KHz ±200Hz(20mV MAX,50mA MAX) or 1A 5V DC by voltage drop method.                                                     |      |      |      | 100mΩ max                            |       |       |
| 4.2                                      | Insulation resistance |                                                                                                                                                                                                                                      | Test voltage : 100V DC, measured after 1 minute ±5seconds.<br>Applied position : Between all terminals Between terminals and ground (frame) |      |      |      | 100 MΩ min                           |       |       |
| 4.3                                      | Voltage proof         |                                                                                                                                                                                                                                      | Test voltage : 100V AC (50-60Hz, cut-off current 2 mA)<br>Applied position : Between all terminals, between terminals and grounds(frame)    |      |      |      | No dielectric breakdown shall occur. |       |       |
| 4.4                                      | Changeover timing     |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      | As per individual product drawing.   |       |       |
| 5. MECHANICAL PERFORMANCE                |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
|                                          | PROPERTY              |                                                                                                                                                                                                                                      | TEST CONDITION                                                                                                                              |      |      |      | PERFORMANCE                          |       |       |
| 5.1                                      | Operating force       |                                                                                                                                                                                                                                      | A static load shall be applied to the tip of actuator in operating direction.                                                               |      |      |      | As per individual product drawing.   |       |       |
|                                          |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      | APPD.                                | CHKD. | DSGE. |
|                                          |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
|                                          |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
|                                          |                       |                                                                                                                                                                                                                                      |                                                                                                                                             |      |      |      |                                      |       |       |
| PAGE                                     | MARK                  | REVISION                                                                                                                                                                                                                             | DATE                                                                                                                                        | APPD | CHKD | DSGE |                                      |       |       |

PQS-1001-10(REV.0)

MYUNG DO SYSTEM

(210×297)

| TITLE                     |                                | PRODUCT SPECIFICATIONS                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MODEL No.                 | DETECTOR SWITCH(MD 1120S TYPE) |                                                                                                                                                                                                                                                                                                                                                                                                                              | PAGE<br>2/4                                                                                                                                                                                                                                                                                                                                            |
| 5. MECHANICAL PERFORMANCE |                                |                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                        |
|                           | PROPERTY                       | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                               | PERFORMANCE                                                                                                                                                                                                                                                                                                                                            |
| 5.2                       | Terminal strength              | A static load of 300gf shall be applied to the tip of terminal in a desired direction for 1 minute.<br>The number of test shall be once per terminal.                                                                                                                                                                                                                                                                        | Shall be free from terminal looseness and damage and breakage of terminal holding portion.<br>Terminals may be bent after test, electrical performance requirement specified in item 4 shall be satisfied.                                                                                                                                             |
| 5.3                       | Control strength               | 1) A static load of 100gf shall be applied in the operating direction of actuator for 15 seconds.<br>2) A static load of 300gf shall be applied to the pull direction of actuator for 15 seconds.<br>(For construction with lock, the test shall be conducted at the condition of lock released)<br>3) A static load of 200gf shall be applied to the vertical direction of operation at the tip of actuator for 15 seconds. | Shall be free from pronounced wobble, bending and mechanical abnormalities.                                                                                                                                                                                                                                                                            |
| 5.5                       | Vibration                      | Switch shall be secured to a testing machine by a regular mounting device and method.<br>1)Vibration frequency range : 10~55Hz<br>2)Total amplitude : 1.5mm<br>3)Sweep ratio : 10-55-10(Hz) Approx, 1minute.<br>4)Method of changing the sweep vibration frequency : Logarithmic or linear.<br>5)Direction of vibration : Three vertical directions including actuator.<br>6)Time : 1hours each (3 hour in total)            | * Contact resistance (Item4.1)<br>: 150mΩ max<br>* Insulation resistance (Item 4.2)<br>: 100MΩ min<br>* Voltage proof(Item 4.3)<br>: apply 100V AC for 1minute.<br>* No dielectric breakdown shall occur.<br>* Operating force (Item5.1)<br>: within +30% of specified value.<br>* No abnormalities shall be recognized in appearance and construction |
| 5.6                       | Soldering heat test            | Soldering area : t/2 of P.C.B thickness (P.C.B : t = 1.6)<br>Soldering temperature : 260 ± 5<br>Soldering time : 5 ± 1sec                                                                                                                                                                                                                                                                                                    | * No damage<br>(Electrical and mechanical)                                                                                                                                                                                                                                                                                                             |

|                  |                                |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                           |
|------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TITLE            | PRODUCT SPECIFICATIONS         |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                           |
| MODEL No.        | DETECTOR SWITCH(MD 1120S TYPE) | PAGE                                                                                                                                                                                                                                         | 3/4                                                                                                                                                                                                                                                                                                                                                       |
| 6.DURABILITY     |                                |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                           |
|                  | PROPERTY                       | TEST CONDITION                                                                                                                                                                                                                               | PERFORMANCE                                                                                                                                                                                                                                                                                                                                               |
| 6.1              | Operating life with load       | Switch shall be operated 50,000 cycles at 15~20 cycles/minute with 30V DC 100mA. (Resistive load)<br>Push force : Maximum value of operation force                                                                                           | * Contact resistance (Item 4.1)<br>: 2Ω max<br>* Insulation resistance (Item 4.2)<br>: 10MΩ min<br>* Voltage proof (Item 4.3)<br>: apply 100 V AC for 1minute.<br>* No dielectric breakdown shall occur.<br>* Operating force (Item5.1)<br>: Within +30% of specified value.<br>* No abnormalities shall be recognized in appearance and construction.    |
| 7. WEATHER PROOF |                                |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                           |
|                  | PROPERTY                       | TEST CONDITION                                                                                                                                                                                                                               | PERFORMANCE                                                                                                                                                                                                                                                                                                                                               |
| 7.1              | Cold proof                     | After testing at -20±2 for 96 hours, the switch shall be allowed to stand under normal temperature and humidity condition for 1 hour and then measurement shall be made within 1 hour.<br>Water drops shall be removed.                      | * Contact resistance (Item 4.1)<br>: 150mΩ max<br>* Insulation resistance (Item 4.2)<br>: 10MΩ min<br>* Voltage proof (Item 4.3)<br>: apply 100 V AC for 1minute.<br>* No dielectric breakdown shall occur.<br>* Operating force (Item5.1)<br>: Within +30% of specified value.<br>* No abnormalities shall be recognized in appearance and construction. |
| 7.2              | Dry heat                       | After testing at 85±2 for 96hours the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour and then measurement shall be made within 1hour                                                           | * Contact resistance (Item 4.1)<br>: 150mΩ max<br>* Insulation resistance (Item 4.2)<br>: 10MΩ min                                                                                                                                                                                                                                                        |
| 7.3              | Damp heat                      | After testing at 40±2 and 90 ~ 95% RH for 96 hours, the switch shall be allowed to stand under normal temperature and humidity condition for 1 hour, and measurement shall be made within 1hour after that.<br>Water drops shall be removed. | * Voltage proof (Item 4.3 )<br>: apply 100V AC for 1minute<br>* No dielectric breakdown shall occur.<br>* Operating force (Item 5.1)<br>: within +30% specified value<br>* No abnormalities shall be recognized in appearance and construction.                                                                                                           |
| 7.4              | Salt mist                      | Switch shall be checked after following test.<br>(1) Temperature : 35±2<br>(2) Salt solution : 5±1% (solids by weight)<br>(3) Duration : 24±1 hour After the test, salt deposit shall be removed in running water.                           | * No remarkable corrosion shall be recognized in metal part.                                                                                                                                                                                                                                                                                              |

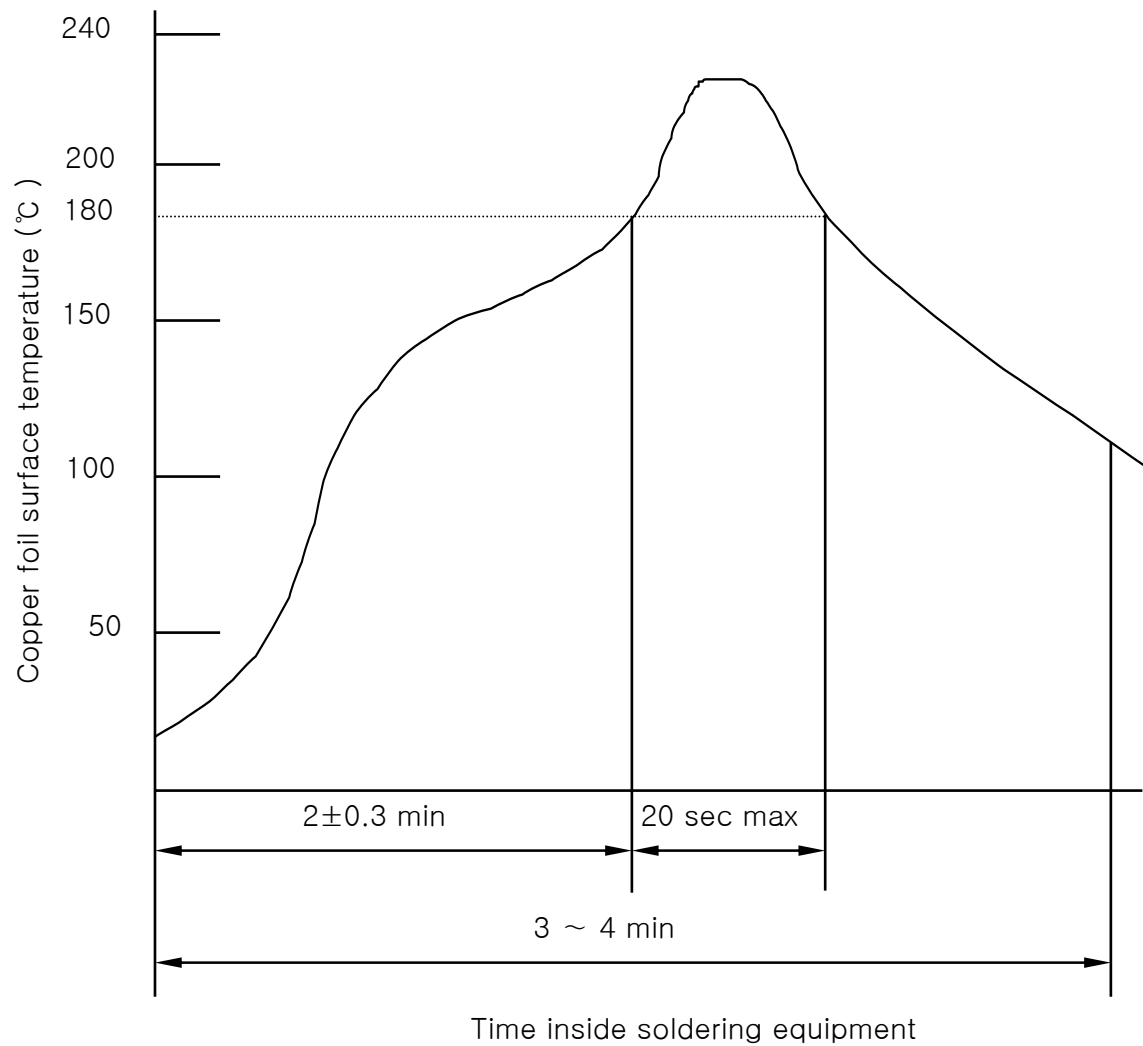
|           |                                |             |
|-----------|--------------------------------|-------------|
| TITLE     | PRODUCT SPECIFICATIONS         |             |
| MODEL No. | DETECTOR SWITCH(MD 1120S TYPE) | PAGE<br>4/4 |

8. Soldering

Reflow soldering conditions

Preheat : temperature on the copper foil surface should reach 180 , 2±0.3 minutes after the P.W.P entered into the soldering equipment.

Soldering heat : Temperature on ther copper foil surface should reach the peak temperature of 240 within 20 seconds after the P.W.B entered into soldering heat zone.



Temperature Profile