

# DATA SHEET

SUNGMUN CODE : ESR-16H1  
DESCRIPTION : ROTARY DIP SWITCH

## SUNGMUN ELECTRONICS CO., LTD.

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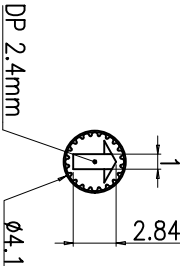
| REV NO. | DATE | REVISION | DR | CH | APP |
|---------|------|----------|----|----|-----|
| △       |      |          |    |    |     |

SPECIFICATION

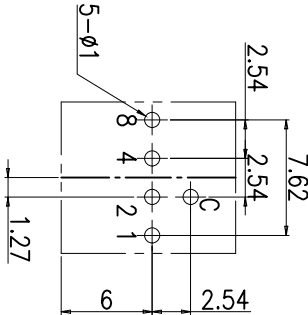
1. Rating : 150mA, DC 42V (Switching)  
200mA, DC 42V (None-Switching)
2. Contact Resistance : 80mΩ Max
3. Insulation Resistance : 100MΩ Min at DC 250V
4. Operating Force : 700gf Max
5. Life cycle : 10,000 steps
6. Sealing : IP67 (Dust & Water proof)
7. Packing : 50pcs Tube

| Real Coded |   |   |   |   |   |   |  |   |
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| 2          | ● |   | ● |   |   |   |  | 2 |
| 3          | ● | ● | ● |   |   |   |  | 3 |
| 4          | ● |   |   | ● |   |   |  | 4 |
| 5          | ● | ● |   | ● |   |   |  | 5 |
| 6          | ● |   | ● | ● |   |   |  | 6 |
| 7          | ● | ● | ● | ● |   |   |  | 7 |
| 8          | ● |   |   |   | ● |   |  | 8 |
| 9          | ● | ● |   |   | ● | ● |  | 9 |
| 10         | ● |   | ● |   | ● |   |  | A |
| 11         | ● | ● | ● |   | ● | ● |  | B |
| 12         |   |   |   | ● | ● | ● |  | C |
| 13         | ● | ● |   | ● | ● | ● |  | D |
| 14         | ● |   | ● | ● | ● | ● |  | E |
| 15         | ● | ● | ● | ● | ● | ● |  | F |

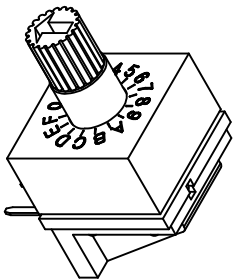
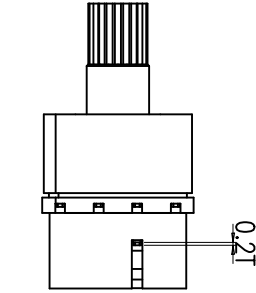
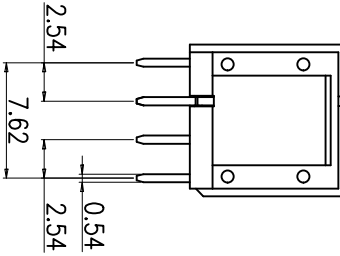
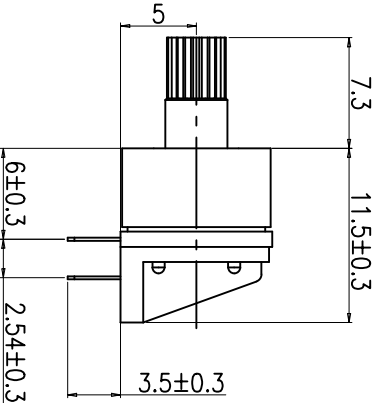
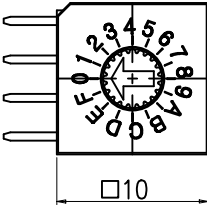
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ACTUATOR



P.C.B DIMENSION (Top View)



| Din ISO-2768-1m |       |      |      |        |         |
|-----------------|-------|------|------|--------|---------|
| Ranges          | 0.5-3 | 3-6  | 6-30 | 30-120 | 120-400 |
| Tolerance       | ±0.1  | ±0.1 | ±0.2 | ±0.3   | ±0.5    |

| DRAW/DESIGNED                | CHECKED    | APPROVED   | G.TOL |          | TITLE       |                   |
|------------------------------|------------|------------|-------|----------|-------------|-------------------|
| H.S LEE                      | K.N KIM    | W.J LEE    | UNIT  | SCALE    | MODEL NO.   | ROTARY DIP SWITCH |
| 2023-10-30                   | 2023-10-30 | 2023-10-30 | mm    | N:S      | ESR-16H1    |                   |
| SUNG MUN ELECTRONICS CO.,LTD |            |            | SIZE  | DRAW NO. | ESR-16H1-01 | REV.              |
|                              |            |            | A4    |          |             | 01                |

## 1. Description:

This specification describes "10X10 slim size of Rotary Dip Switches" which is U&H series.

1-1 Operating / Storage Temperature Range : -40°C ~ +85°C

## 2. Rating:

2-1 None-Switching : 25 mA, DC 24V

2-2 Switching : 25 mA, DC 12V

## 3. Type of Actuation : Rotating

## 4. Electrical Characteristics

| ITEM | DESCRIPTION                     | TEST CONDITIONS                                                                                                                                                  | REQUIREMENTS                                                             |
|------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 4-1  | Visual Examination              | By visual examination check without any out pressure & testing.                                                                                                  | There shall be no defects that affect the serviceability of the product. |
| 4-2  | Contact Resistance              | ① To be measured between the two terminals associated with each switch pole.<br>② Measurements shall be made with a 1kHz shall current contact resistance meter. | 100mΩ max.                                                               |
| 4-3  | Insulation Resistance           | 250V DC, 1minute ±5seconds                                                                                                                                       | 100 MΩ min.                                                              |
| 4-4  | Dielectric withstanding Voltage | 250V AC(50Hz or 60Hz)shall be applied between all the adjacent terminal and between the terminal and the frame for 1 minute.                                     | There shall be no breakdown or flashover.                                |

|                                                                                                                                    |                                                                 |                                    |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------|
| <br><b>SUNG MUN</b><br><small>ELECTRONICS</small> | <b>“U/H” SERIES ROTARY DIP SWITCH<br/>SPECIFICATION (10X10)</b> | <b>Rev. 03</b><br><b>P : 2 / 4</b> |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------|

## 5. Mechanical Characteristics

| ITEM | DESCRIPTION     | TEST CONDITIONS                                                                                                                                                                    | REQUIREMENTS                                                      |
|------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 5-1  | Operation Force | Operating direction shall be clockwise or counter clockwise direction                                                                                                              | 700gf•cm max                                                      |
| 5-2  | Operation Life  | Measurements shall be made following the test set forth below:<br>1)150mA, 24V DC resistive load<br>2)Rate of operation: 15~20 cycles/ minute<br>3)Step of operation: 10,000 steps | 1)As shown in item 4-3, 4-4<br>2)Contact Resistance:<br>200mΩ max |

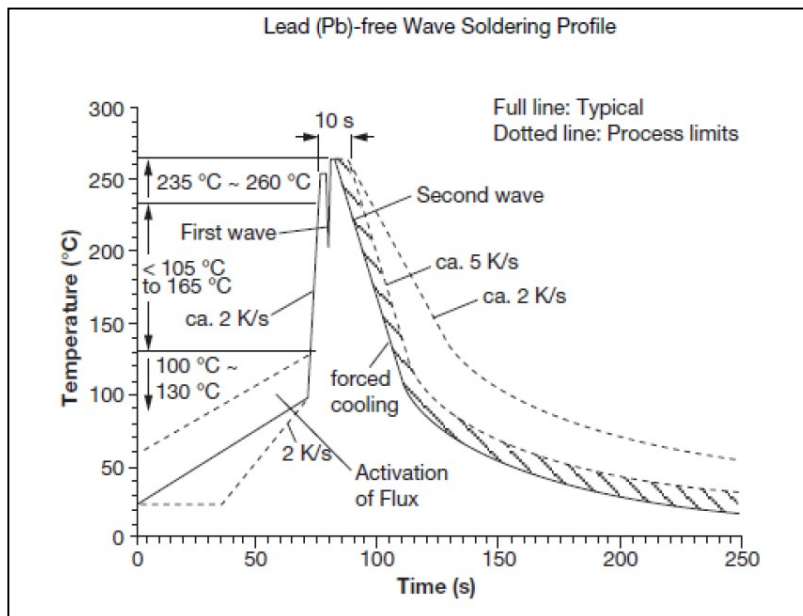
## 6. Environmental Characteristics

| ITEM | DESCRIPTION                 | TEST CONDITIONS                                                                                                                                                                                                                    | REQUIREMENTS                                                                                               |
|------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 6-1  | Resistance Low Temperature  | Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before measurements are made:<br>1)Temperature: -40°C ±3°C<br>2)Time: 96 hours                               | 1)As shown in item 4-3, 4-4, 5-1<br>2)Contact Resistance:<br>200mΩ max                                     |
| 6-2  | Resistance High Temperature | Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before measurements are made:<br>1)Temperature: 85°C ±2°C<br>2)Time: 96 hours                                | 1)As shown in item 4-3, 4-4, 5-1<br>2)Contact Resistance:<br>200mΩ max                                     |
| 6-3  | Resistance Humidity         | Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before measurements are made:<br>1)Temperature: 40°C ±2°C<br>2)Relative humidity: 90~95%<br>3)Time: 96 hours | 1)As shown in item 4-4, 5-1<br>2)Contact Resistance:<br>200mΩ max<br>3)Insulation Resistance:<br>10 MΩ min |

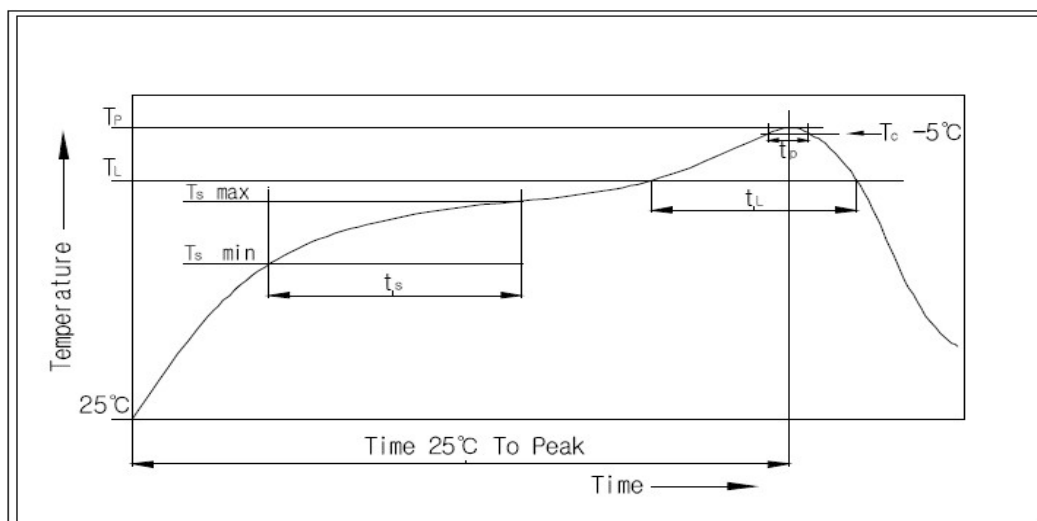
7. This item is "RoHS" Compliant

8. Manual Soldering : Max 350°C, 3 sec.

9. Wave Soldering Conditions:



10. Reflow Soldering Conditions: (SMD type only)



## 10-1 Condition for Soldering

| Profile Feature                                                                                | Pb-Free Assembly                |
|------------------------------------------------------------------------------------------------|---------------------------------|
| Average Ramp-UP Rate(Ts max to TP)                                                             | 3°C/second max                  |
| Preheat<br>- Temperature Min(Ts min)<br>- Temperature Max(Ts max)<br>- Time (ts min to ts max) | 150°C<br>200°C<br>60-180seconds |
| Time maintained above:<br>- Temperature (TL)<br>- Time (tL)                                    | 217°C<br>60-150seconds          |
| Peak/Classification Temperature(TP)                                                            | 260°C +0°C/ -5°C                |
| Time within 5°C of actual Peak Temperature(TP)                                                 | 5~10 seconds                    |
| Ramp-Down Rate                                                                                 | 6°C/sec max                     |
| Time 25°C to Peak Temperature                                                                  | 8 minutes max                   |