

# DATA SHEET

**SUNGMUN CODE :** QDR-16 (LG)

**DESCRIPTION :** ROTARY DIP SWITCH

## **SUNGMUN ELECTRONICS CO., LTD.**

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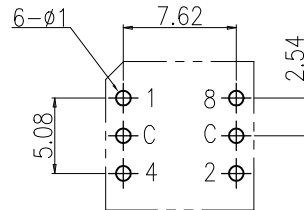


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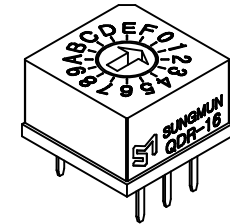
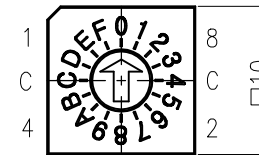
| REV NO. | DATE | REVISION | DR | CH | APP |
|---------|------|----------|----|----|-----|
| △       |      |          |    |    |     |

## SPECIFICATION

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

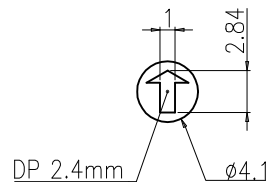


P.C.B DIMENSION (Top View)

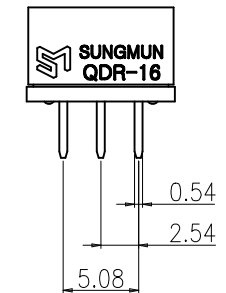
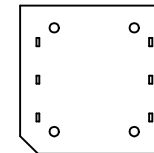
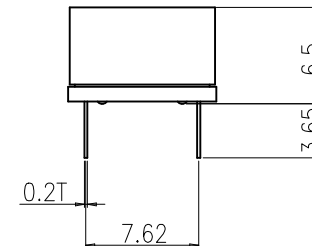


| Real Coded |   |   |   |   |   |   |
|------------|---|---|---|---|---|---|
|            | C | 1 | 2 | 4 | 8 |   |
| 0          | ● |   |   |   |   | 0 |
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| 2          | ● |   | ● |   |   | 2 |
| 3          | ● | ● | ● |   |   | 3 |
| 4          | ● |   |   | ● |   | 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



| DRAW/DESIGNED | CHECKED    | APPROVED   | UNIT | G.TOL | SCALE   | TITLE             | MODEL NO.     | REV. |
|---------------|------------|------------|------|-------|---------|-------------------|---------------|------|
| H.S LEE       | K.N KIM    | W.J LEE    | mm   | --    | N:S     | ROTARY DIP SWITCH | QDR-16 (LG)   |      |
| 2023-09-05    | 2023-09-05 | 2023-09-05 |      |       | SIZE A4 |                   | QDR-16(LG)-01 | 01   |

| 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    |

**SUNGMUN ELECTRONICS CO.,LTD**

## 1. Description:

This specification describes "10X10 size of Rotary Dip Switches" which are S, T, F and Q,E series.

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

## 2. Rating:

2-1 None-Switching : 200 mA, DC 42V

2-2 Switching : 150 mA, DC 42V

## 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. | 80mΩ 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.                                |

### 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, 42V 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 |

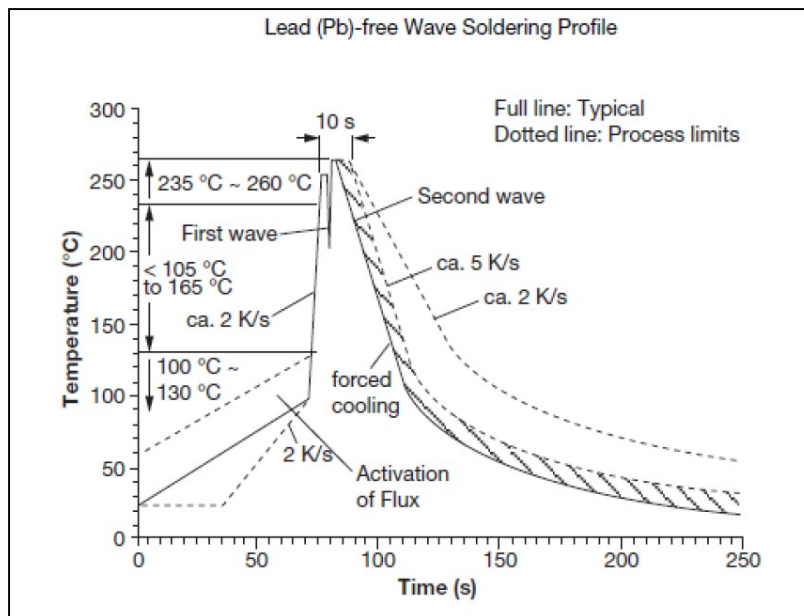
### 6. Environmental Characteristics

| 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 |

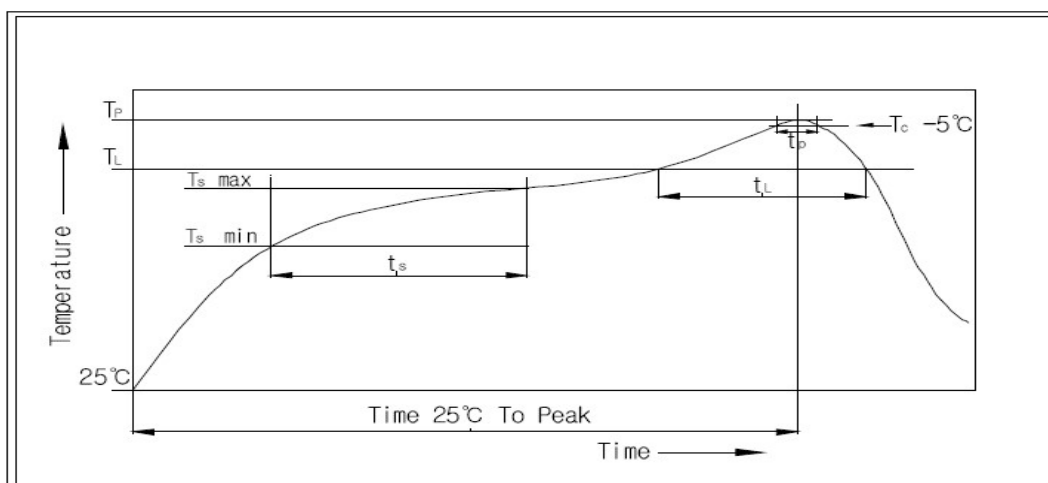
7. This item is "RoHS" Compliant

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                                        |                  |
| - Temperature Min(Ts min)                      | 150°C            |
| - Temperature Max(Ts max)                      | 200°C            |
| - Time (ts min to ts max)                      | 60-180seconds    |
| Time maintained above:                         |                  |
| - Temperature (TL)                             | 217°C            |
| - Time (tL)                                    | 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    |