

# 东莞市康深电子科技有限公司

## *DSIC series DIP Switch*

### STANDARD SPECIFICATION

#### 1. Ratings:

- 1.1 **Mechanical Life** : 3000 cycles minimum
- 1.2 **Contact Rating**: 100mA at 50 Vdc non-switching; 25 mA at 24 Vdc, 10 mA at 50 Vdc Switching.
- 1.3 **Contact Resistance**:
  - 50 milliOhms maximum (initial)
  - 100 milliOhms maximum (after test)
- 1.4 **Insulation Resistance**: 1,000MOhm Minimum at 500 Vdc between adjacent closed contacts and Also across open switch contacts.
- 1.5 **Dielectric Strength**: 500 Vac, RMS, minimum voltage measured between adjacent closed contacts and also across open switch contacts.
- 1.6 **Switch Capacitance**: 5pF at 1 MHz
- 1.7 **Operating Temperature**: -30deg C to +85deg C.
- 1.8 **Storage Temperature**: -40deg C to +85deg C.
- 1.9 **Test condition** : The standard test shall be 5 ~ 35deg C temperature and 45 ~ 85% relative humidity 860 ~ 1060 Hpa atmospheric pressure unless otherwise specified. In case of any question happen, retest condition shall specify by temperature 20 +/- 2deg C, 65 +/-5%RH and 860 ~ 1060 Hpa.

#### 2. Materials and Finishes:

- 2.1 Finished code :
  - G**: Full Gold Plated (Contact area & Terminal with gold-plated )
  - S**: Contact – Gold plated with Terminal Tin-plated
- 2.2 Plated code :
  - E**: 3 u" Gold -Plated
  - F**: 10u" Gold -Plated
  - A**: 12u" Gold -Plated
  - B**: 20u" Gold -Plated
  - G**: 30u" Gold -Plated
- 2.3 **Base** : UL 94 V0 grade PPS Thermoplastic / Black color
- 2.4 **Cover** : UL 94 V0 grade PPS Thermoplastic / Black color
- 2.5 **Actuator** : UL 94 V0 grade NYLON Thermoplastic / Whit color

#### 3. Processing:

- 3.1 **Switch Operation and Taping**
  - 3.1.1 Use tweezers or ball point pen for operation.
  - 3.1.2 Flux cleaning should be done without removing the tape
  - 3.1.3 If the tape is removed, it adhered less than before when it is placed back on, possibly causing flux inflow.
  - 3.1.4 Sealed switches withstand aqueous, detergent and isopropyl alcohol washing.

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#### 4. ELECTRICAL CHARACTERISTIC :

| ITEM | TEST DESCRIPTION                        | TEST CONDITIONS   | SPECIFICATION              |
|------|---|---|----------------------------|
| 4.1  | <b>Contact Resistance</b>               | To be measure with AC<br>1 KHz +/-200Hz<br>(Max 20mV, Max 50mA) or<br>10mA, 5V DC.  | Max 50 mOhm                |
| 4.2  | <b>Insulation Resistance</b>            | To be measured with an<br>insulation measuring device of<br>500V DC between all the<br>terminals and between the<br>terminals and the frame for 1<br>minute +/-5 seconds. | Min 1,000MOhm              |
| 4.3  | <b>Dielectric Breakdown<br/>Voltage</b> | AC 500V (50-60Hz, 2mA<br>current) being applied between<br>all the adjacent terminals and<br>between the terminal and<br>frame for 1 minute.                              | No breakdown<br>insulation |
| 4.4  | <b>Switch Capacitance</b>               | To be measured with frequency<br>1MHz +/-10KHz<br>Applied between adjacent<br>terminal and circuit.   | Max 5PF                    |

#### 5. MECHANICAL CHARACTERISTIC :

| ITEM | TEST DESCRIPTION  | TEST CONDITIONS  | SPECIFICATION  |
|------|---|--|--|
| 5.1  | <b>Operation Force</b>  | Applied in the direction of<br>operation.  | 1,000gf Max  |
| 5.2  | <b>Terminal Strength</b><br><br><b>MIL-STD-202F</b><br><b>Method : 211A</b><br><b>Condition : C</b> | Measurement in made with a<br>static load applied to the foot of<br>the control unit in the operating<br>direction. A static force of<br>500gf being applied in one<br>direction on the tip of the<br>terminal for 5~10seconds.<br>One time each terminal. | No bending or<br>deflection<br>experienced.<br>The terminal may be<br>bent, but shall not<br>break or damage the<br>insulation material. |
| 5.3  | <b>Operation Strength</b>   | A load of 1Kgf is applied in the<br>operating direction and pulling<br>direction of the control unit for<br>15 seconds.  | Electrical<br>characteristic of the<br>above shall be<br>assured.  |

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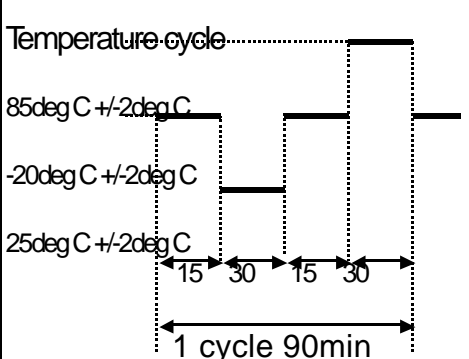
#### 6. RELIABILITY

|     |  |   |   |
|-----|--|---|---|
| 6.1 | <b>Cold Resistance</b><br><br>JIS-C5021  | Switch for testing being kept in the conditions at -40 +/-2deg C in temperature for 96 hours, and in a normal ambient condition for one hour, then to be measured within one hour.<br>(Drops of water being taken away)   | Contact resistance<br>Max 100mOhm<br>Insulation resistance<br>Min 1,000 MOhm<br>Dielectric breakdown voltage: AC 500V<br>1 minute no<br>breakdown insulation                              |
| 6.2 | <b>Dry Heat Resistance</b><br><br>JIS-C5022                                      | Switch for testing being kept in the conditions at 55+/-2deg C in temperature for 96 hours, and in a normal ambient condition for one hour, then to be measured within one hour.  | Operating force<br>1,000gf Max.<br>There shall be no<br>defects in appearance<br>or in the mechanical<br>functions.   |
| 6.3 | <b>Humidity Resistance</b><br><br>MIL-STD-202F<br>Method : 103B<br>Condition : C | Switch for testing being kept in the conditions at 40+/-2deg C in temperature and 90~95% RH for 96 hours, and in a normal ambient condition for one hour, then measured within one hour.  | Contact resistance<br>Max 100mOhm<br>Insulation resistance<br>Min 10MOhm<br>Dielectric breakdown voltage: AC 500V<br>1 minute no<br>breakdown insulation<br>Operating force 800gf<br>Max. |
| 6.4 | <b>Vibration Test</b><br><br>MIL-STD-202F<br>Method : 201A<br>Condition : A      | The range of vibration:<br>10 ~ 55Hz<br>Total width of vibration:<br>1.5mm<br>The proportion of vibration:<br>10~55~10(Hz)<br>approx. 1 minute<br>The variation of the number of vibration:<br>Logarithmic or approx.<br>straight line<br>The directions: 3 vertical<br>directions including operation<br>direction<br>Amplitude : 0.03inch~0.06inch<br>Duration: 2 hours each<br>(Total 6 hours) | There should be no<br>defects in appearance<br>or in the mechanical<br>functions.   |

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| <p><b>6.5</b></p> | <p><b>Shock Test</b></p> <p><b>MIL-STD-202F</b><br/> <b>Method : 213B</b><br/> <b>Condition : A</b></p> |  | <p>Contact resistance<br/> Max 100mOhm<br/> Insulation resistance<br/> Min 1,000 MOhm<br/> Dielectric breakdown<br/> voltage: AC 500V<br/> 1 minute no<br/> breakdown insulation<br/> Operating force<br/> 1,000gf Max.<br/> There shall be no<br/> defects in appearance<br/> or in the mechanical<br/> functions.</p> |
| <p><b>6.6</b></p> | <p><b>Thermal Shock</b></p>   | <p>After 5 cycle testing under the following conditions, the sample is allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement is made within 1 hour after that. Water drops should be eliminated.</p> <p>Temperature cycle</p>  <p>85deg C +/-2deg C<br/> -20deg C +/-2deg C<br/> 25deg C +/-2deg C</p> <p>15 30 15 30</p> <p>1 cycle 90min</p> | <p>Contact resistance<br/> Max 100 mOhm<br/> Insulation resistance<br/> Min 1,000 MOhm<br/> Dielectric breakdown<br/> voltage: AC 500 V<br/> 1 minute no breakdown<br/> insulation<br/> Operating force 1,000gf<br/> Max.</p> <p>There shall be no defects<br/> in appearance or in the<br/> mechanical functions</p>   |

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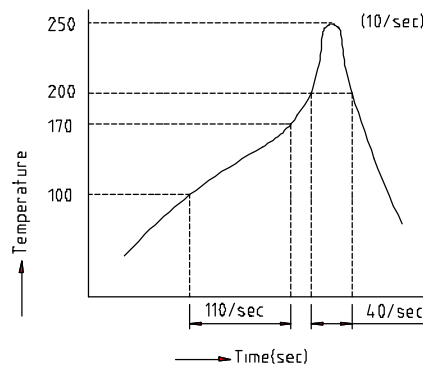
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| ITEM | TEST DESCRIPTION  | TEST CONDITIONS  | SPECIFICATION   |
|------|---|--|---|
| 6.7  | <b>Resistance to Soldering Heat</b><br><br><b>JIS-C5034</b> | <b>Reflow Soldering</b><br>P.C. board terminal at 250 +/-10deg C, 10 +/-1 second<br>Should be operated in OFF positions when soldering<br><b>Wave Soldering :</b><br>Soldering temperature: 230 +/-5deg C<br>Immersing time: 3+/-0.5 second<br><b>Iron Tip :</b><br>30W Iron / ceramic Tip<br>Temp. : 320+/-5deg C / 3 sec per pin | Contact resistance<br>Max 50mOhm<br>Insulation resistance<br>Min 1,000MOhm<br>Dielectric breakdown voltage AC500V<br>1 minute no breakdown insulation<br>Operating force<br>1,000gf Max |

(1) **Reflow soldering:**

Device :In-line or Batch system  
 Apply reflow soldering only once



(2) When soldering two or more terminals to the common land, use solder resist to solder them independently.

|     |   |   |  |
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| 6.8 | <b>Salt-Spray Test</b><br><br><b>MIL-STD-202F</b><br><b>Method : 101D</b><br><b>Condition : B</b> | The sample is allowed to stand in the test chamber controlled to 35+/-2deg C in temperature and 5+/-1% (weight ratio) salt-water concentration for 48+/-1 hour and is subjected to test. Then, salt deposits attached to the sample are washed away with water. | Shall be free from functionally harmful rust.<br>There shall be no defects in appearance or in the mechanical functions. |
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### **STANDARD SPECIFICATION**

#### **7. DURABILITY**

| ITEM | TEST DESCRIPTION                       | TEST CONDITIONS   | SPECIFICATION   |
|------|--|---|---|
| 7.1  | <b>Operation Life<br/>With No Load</b> | 3,000 cycle operation at a rate of 15 ~20 cycle / minute                    | Contact resistance<br>Max 100 mOhm<br>Insulation resistance<br>Min 1,000 MOhm with<br>DC 250V<br>Dielectric breakdown<br>voltage: AC 250 V<br>1 minute no breakdown<br>insulation |
| 7.2  | <b>Operation Life<br/>With Load</b>    | DC 2AV 25mA 2,000 cycle<br>operation at a rate of 15 ~ 20<br>cycle / minute | Operating force : 1,000gf<br>Max.<br><br>There shall be no defects in<br>appearance or in the<br>mechanical functions.  |