TO: _____

OMRON CORPORATION
OMRON KURAYOSHI Co., Ltd.
1st Product Dept. Product Engineering group

Prepared by	Checked by	Approved by
K.Izawa		Y.Kuramitsu

RoHS Directive Compliant Part

~~☐For Receipt~~ ■For reference

PRODUCT SPECIFICATION

Description : Ultra Sub Miniature Basic Switch

Part Number : D2FC-F-7N (10M)

~~■ Please make a signature, stamp or other equivalent mark indicating your receipt on one copy of this sheet and return it to Omron on or before. If you place an order of a product described in this sheet, you will be deemed to accept this specification.~~

Registration part number for customer
Description : Part number :

Signature, Stamp or Other Equivalent Mark (for receipt confirmation)	Release of Drawings	Sales
	SUBMITTED Nov. 24. 2009 OMRON OMRON Corporation	

Distribution

	Copy
Customer	
Sales ( )	

OMRON

PRODUCT SPECIFICATIONS	Description : Ultra Sub Miniature Basic Switch
	Part number : D2FC-F-7N (10M)

1. Safety Standard

1.1 Approved standard —

1.2 File No. —

2. Structure

2.1 Outline drawing No. 9476104-7

2.2 Mechanism Snap action

2.3 Contact form Single pole single throw (SPST) C-NO

2.4 Protective structure IP40 Conforming to *IEC standard *IEC : International Electrotechnical Commission

2.5 Terminal For PCB board

3. Mechanical Characteristics

3.1 Operating characteristics (Initial value)

	Item	Abbr.	Unit	Specification value
1	Operating force	OF	N	0.44 to 0.74
2	Releasing force	RF	N	Min. 0.24
3	Pretravel	PT	mm	0.3±0.2
4	Overtravel	OT	mm	Min. 0.20
5	Movement differential	MD	mm	Max. 0.12
6	Operating position	OP	mm	6.9±0.2
7	Free Position	FP	mm	$7.35\ ^{0}_{-04}$

3.2 Malfunction vibration

Open contact duration shall be 1msec. max. when the following vibration is applied;

Amplitude : 1.5mm

Frequency : 10 to 55Hz

Cycle : 3 to 5 minutes

Direction : X, Y and Z axis

Time : 10 minute per axis

3.3 Vibration durability

No electrical or mechanical defect after the following vibration is applied;

Amplitude : 1.5mm

Frequency : 10 to 55Hz

Cycle : 3 to 5 minutes

Direction : X, Y and Z axis

Time : 2 hours per axis

3.4 Malfunction shock

Open contact duration shall be 1msec. max. when the following shock is applied;

Shock : Max. 300m/s^2

Direction : X, Y and Z axis

Time : 3 times per axis

3.5 Shock durability

No electrical or mechanical defect after the following shock is applied;

Shock : Max. 1000m/s^2

Direction : X, Y and Z axis

Time : 10 times per axis

Condition common to Section 3.2 and 3.4

Applied voltage : DC5V Applied current : 100mA

Actuator position : Total travel position(detected by oscilloscope)

3.6 Actuator strength

No electrical or mechanical defect when the following force is applied to the actuator;

Direction : Actuator operation direction

Force : 10 times of the specified operating force (OF) 7.4N

Time : 1 minute

3.7 Permissible operating frequency
200 operations/minute max.
3.8 Permissible operating speed
1 to 500mm/second

4. Electrical Characteristics

4.1 Switching capacity ratings
DC6V 1mA Resistive load
4.2 Contact resistance (at total travel position TTP)
Initial value 100mΩ max. at 6VDC 0.1A by voltage drop method
4.3 Insulation resistance, Dielectric strength

Item / Measuring part	Insulation resistance (DC500V megger)	Dielectric strength (50/60Hz for 1 minute)	Remark
Between terminals of the same polarity	100MΩ Min.	600V	
Between each terminal and ground	100MΩ Min.	1500V	Using a separator

4.4 Degree of protection against electric shock
Class I (protecting by ground in addition to basic insulation for shock prevention)
4.5 Proof tracking index (PTI)
175 level (Classification according to UL Yellow Book : PLC level 3 175≦CTI＜250)

5. Environmental Characteristics

5.1 Heat resistance
No electrical or mechanical defect at the standard test condition after leaving at room temperature and humidity for about 1 hour, after soaking under the ambience of 65±2°C for 96 hours.
5.2 Cold resistance
No electrical or mechanical defect at the standard test condition after leaving at room temperature and humidity for about 1 hour, after soaking under the ambience of −25±2°C for 96 hours.
There shall be no icing at a lower temperature range.
5.3 Humidity resistance
No electrical or mechanical defect at the standard test condition after leaving at room temperature and humidity for about 1 hour, after soaking under the ambience of 40±2°C and 90 to 95%RH for 96 hours.
5.4 Temperature cycle resistance
No electrical or mechanical defect at the standard test condition after 1 cycle of −40±2°C and 85±2°C soaking (48 hours at each temperature)

6. Usage Environment

6.1 Ambient temperature range
−25 to +65°C (Humidity : 60%RH Max., No dewing or icing)
6.2 Ambient humidity range
85%RH Max. (at +5 to +35°C, No dewing or icing)

7. Durability

7.1 Electrical durability
No electrical or mechanical defect at the standard test condition when switching the rated load by 10,000,000 operations at the operating frequency of 120 operations/minute at the stroke of the specified OT value.
The contact resistance shall be 100Ω max. and the dielectric strength between terminals of the same polarity shall be excluded.

8. Standard Test Condition and Criteria

8.1 Standard test condition
Temperature : 20±15°C Humidity : 65±20%RH
8.2 Definition of "No electrical or mechanical defect"
Operating characteristics : Not exceeding ±20% of the specification value
Contact resistance : 4 times the initial specification value Max.
Insulation resistance : 10MΩ Min.
Dielectric strength : Meeting the specification value

9. Correct Use

9.1 Stroke setting for switch

- Setting an operating dog in the direction where the actuator moves and detaching the dog from the actuator completely when the switch is at the free position (FP).
- The overtarvel (OT) (0.2mm) is appropriate for the switch stroke setting.
- Avoiding an impact operation as much as possible as it can cause life deterioration.

9.2 Soldering work

- Do the soldering work under the conditions specified below.

	Condition	Standard	Remarks
Manual soldering	350°C 3 seconds Max.	30 to 40W	Do not apply an excessive force to the terminals during the soldering work.
Automated soldering	260°C 5 seconds Max.		The soldering time should be 3 seconds max. when the switch is mounted on a double-sided PCB (through-hole PCB). Control the liquid level of flux and solder not to exceed PCB.

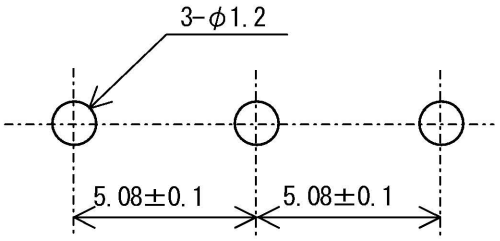
Note : Do not apply an excessive wattage or too long heating, or do not operate the switch for 1 minite after heating. Otherwise, the switch characteristics may be deteriorated Be sure to apply only the minimum required amount of flux. The switch may have a contact failure if flux enters inside the switch.

9.3 Usage/storage environment for switch

- Avoiding the location where a corrosive gas is generated or temperature changes suddenly, the ambience of high temperature or humidity, dusts and others.
- It is recommended that the switch should be inspected before use if it is stored for 3 to 6 months after the production, depending on the location.

9.4 Switch mounting

- Referring to the figure on the right for mounting-hole processing drawing.



10. Precautions

(1) Following terms are defined as below.

1) Conditions; Use conditions, rating, performance, operating environment, handling procedure, precautions and/or prohibited use described in this "product specifications", documentations or manuals
2) User Application; Application of this product by a customer, including but not limited to embedding this product into customer's components, electronic circuit boards, devices, equipments or systems
3) Fitness; (a)Fitness, (b)performance, (c) no infringement of intellectual property of third party, (d) compliance with laws and regulations and (e)conformity to various standards

(2) Note about this specification

1) The product may be discontinued or change its specification without prior notice, unless the specification is not returned or the product is not ordered within one year after issue of this specification. Please confirm current specifications if you return this specification or you place an order of this product one year after issue of this specification.
2) Rating and performance is tested separately. Combined conditions are not warranted.
3) Reference data is intended to be used just for reference. Omron does NOT warrant that the product can work properly in the range of reference data.
4) Examples are intended for reference. Omron does not warrant the Fitness in usage of the examples.
5) Omron may, at its discretion, change factors other than rating, performance, structure, outside dimensions or mounting dimensions.

(3) Note about adoption and use

1) Please use the product in conformance to the Conditions, including rating and performance.
2) Please confirm the Fitness and decide whether or not the product is able to be adopted in User Application.
3) Omron will not warrant any items in (1) 3)(b)～(e) of User Application nor the Fitness.
4) If you use the product in the application below, please ensure followings; (i) allowance in aspect of rating and performance, (ii) safety design which can minimize danger of the User Application when the product does not work properly and (iii) periodical maintenance of the product and the User Application.

(a) Applications requiring safety, including, without limitation, nuclear control facilities, combustion facilities, aerospace and aviation facilities, railroad facilities, elevating facilities, amusement facilities, medical facilities, safety devices or other applications which has possibility to influence lives or bodies

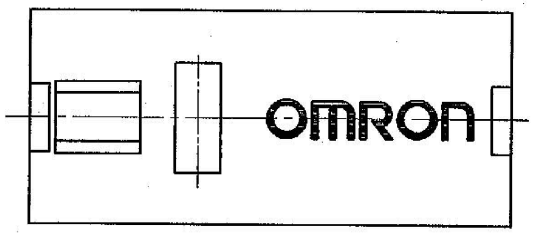
(b) Applications requiring high reliability, including, without limitation, supplying systems of gas, water and electric power and applications handling right, title, ownership or property, such as payment systems

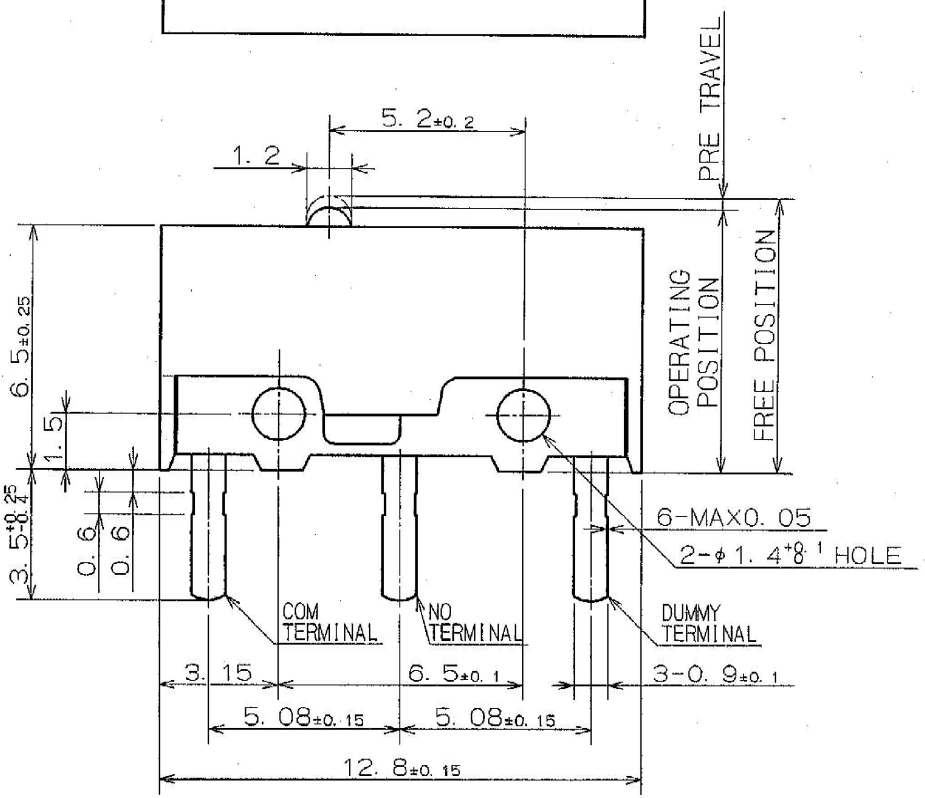
(c) Applications in a harsh condition or environment, including, without limitation, outdoor facilities, facilities with potential of chemical contamination or electromagnetic interference, facilities with vibration or impact and facilities on continual operation for a long period

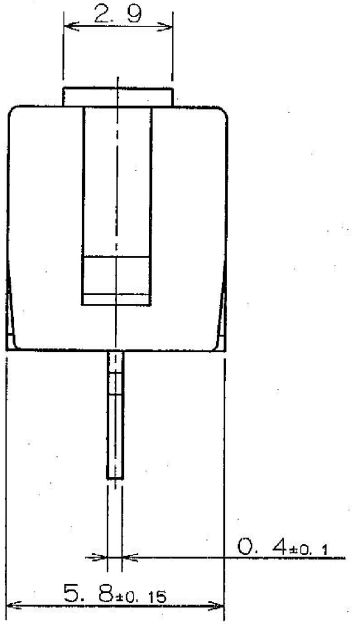
(d) Applications under conditions or environment which are not described in this specification

5) This product is not intended to be used in automotive applications (including two wheel vehicles). Please DO NOT use this product in the automotive application.

A1	09.11.24	Item 10 revised	K.Izawa		Y.Kuramitsu
A	08.08.08	Newly prepared	K.Izawa		H.Yamada
Code	Date	Revision content	Issue	Check	Approval







1. OPERATING CHARACTERISTICS

ITEM	SPEC.
OPERATING FORCE	0. 44~0. 74 N
RELEASE FORCE	0. 24 N MIN
PRE TRAVEL	0. 3±0. 2 mm
OVER TRAVEL	0. 2 mm MIN
MOVEMENT DIFFERENTIAL	0. 12 mm MAX
OPERATING POSITION	6. 9±0. 2 mm
FREE POSITION	7. 35 0 -0. 4 mm

2. ELECTRICAL RATINGS

1mA 6VDC (RESISTIVE LOAD)

3. CONTACT FORM

COM-NO

Note. Dummy terminal should not be connected to any circit.

SYM	DATE	E/C CONTENTS	E/C NO.	SIGN

MATERIAL		SCALE	TYPE D2FC-F-7N(10M)
FINISH		5 : 1	ULTRA SUBMINIATUE BASIC SWITCH
		3RD ANGLE	OUTLINE DRAWING
TOLERANCES UNLESS SPECIFIED ±0. 4	DESIGNED AUG. 08' 08 K. IZAWA	CHECKED	APPROVED Aug. 08 '08 H. Yamada
		SHEET 1/1	DRWG NO. 9476104-7 A
			DESIGNED FOR

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