Specifications

Model : SD-xxZx

Dwg. : MCG-SD01E, 03E, 05E
Spec. : SD-Z/H17.1

Maruwa Corporation 4145-3, Tana, Sagamihara, Kanagawa, Japan 229-1124

SPECIFICATION OF PRODUCTS SD－Z(Tin plated)

1. Range of specification.

This standard is applied to the DIP switch which can be used for all electric device circuits.

2. Structure. (Size & Material)

	Property	Content
2.1.	Dimension	Attachment outline drawing.
2.2.	Appearance	No remarkable dirt which spoils appearance.
2.3.	Structure	It indicates to the attached drawing.
2.4.	Component	It indicates to the attached drawing.

3. General performance.

3.1. Measurement environment.

The standard test shall be by normal conditions.

(Temperature：5～35℃, Humidity：45～85%, Atmospheric pressure：86～106kPa)

When a doubt is in a judgment, it measures again on the following conditions.

(Temperature：20±2℃, Humidity：60～70%, Atmospheric pressure：same of the above)

3.2. Practical temperature range： －30 ~＋85℃

Temperature range which can be continuously used on rated voltage.

3.3. Guarantee storage temperature range： －40 ~＋85℃

The condition where it does not operate.

4. Electrical performance.

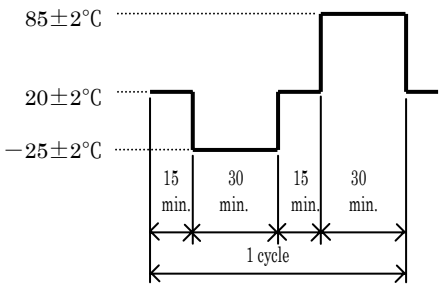
	Property	Test conditions	Performance
4.1	Rated	On load	100mA 50V DC
		On switching	25mA 25V DC
		On switching	100mA 5V DC
4.2	Contact resistance	To be measured with 1K Hz±200Hz (Max.20mV, Max.50mA) or 10mA, 5V.	Max.100mΩ
4.3	Insulation resistance	To be measured with an insulation measuring device of 300V DC between all the terminals and between the terminals and the frame for 1 minute ±5 seconds.	More than 100MΩ
4.4	Voltage proof	300V DC(50~60Hz), being applied between all the adjacent terminals and between the terminal and frame for 1 minute.	No breakdown insulation

5. Mechanical performance.

	Property	Test conditions	Performance
5.1	Operating force		Max. 800g
5.2	Terminal strength	Measurement is made with a static load applied to the foot of the control unit in the operating direction. A static force of 500 gf being applied in one direction on the tip of the terminal for 1 minute. One time per terminal.	No bending or deflection experienced. The terminal may be bent, but shall not break or damage the insulation material.
5.3	Control unit strength	A load of 1 kgf is applied in the operating direction and pulling direction of the control unit for 15 seconds. No operate 3 or more at one time.	Electrical performance of the (4) above shall be assured.

<table>
<tr><td>5.4</td><td>Vivration - proof</td><td>The range of vibration : 10~55 Hz
Total width of vibration : 1.5 mm
The proportion of vibration : 10-55-10(Hz) approx. 1 minute
The variation of the number of vibration : Logarithmic or approximately straight line
The directions : 3 vertical directions including operation direction
Duration : 2 hours each [total 6 hours]</td><td>Contact resistance (4.1): Max. 100mΩ
Insulation resistance (4.2): More than 100MΩ
Withstanding voltage (4.3):
300V DC, 1 minute. No breakdown insulation.
Operating force (5.1): Max. 800g
As per individual specifications.
No apparent effect on physical appearance or mechanical functions.</td></tr>
<tr><td>5.5</td><td>Solderability proof</td><td>Soldering temperature : 235±5℃
Immersing time : max. 5 second</td><td>More than 75% of the part immersed can be covered with solder.</td></tr>
<tr><td>5.6</td><td>Soldering heat</td><td>Test are condition at-off
<table><tr><td></td><td>Temp. (℃)</td><td>Time (sec.)</td></tr><tr><td>P.C.board terminal</td><td>260±5</td><td>Max. 5</td></tr><tr><td>Lead wiring terminal</td><td>270</td><td>Max. 3</td></tr></table></td><td>No defect in appearance shall be observed but the electrical performances (4) shall be maintained.</td></tr>
</table>

6. Weather-proof.

<table>
<tr><th></th><th>Property</th><th>Test conditions</th><th>Performance</th></tr>
<tr><td>6.1</td><td>Cold proof</td><td>Switch for testing being kept in the conditions at −40±2℃ in temperature for 96 hours, and in a normal ambient condition for one hour, then to be measured within one hour.
Drops of water being taken away.</td><td rowspan="3">Contact resistance (4.1): Max. 100mΩ
Insulation resistance (4.2): More than 100MΩ
Withstanding voltage (4.3):
300V DC, 1 minute. No breakdown insulation.
Operating force (5.1): Max. 800g
As per individual specifications.
No apparent effect on physical appearance or mechanical functions.</td></tr>
<tr><td>6.2</td><td>Dry heat proof</td><td>Switch for testing being kept in the conditions at 85±2℃ in temperature for 96 hours, and in a normal ambient condition for one hour, then to be measured within one hour.</td></tr>
<tr><td>6.3</td><td>Resistance to humidity</td><td>Switch for testing being kept in the conditions at 40±2℃ in temperature and 90 ~ 95%RH for 96 hours, and in a normal ambient condition for one hour, then measured within one hour.
Drops of water being taken away.</td></tr>
<tr><td>6.4</td><td>Salt-water spray</td><td>The sample is allowed to stand in the test chamber controlled to 35±2℃ in temperature and 5±1% (weight ratio) in salt-water concentration for 24±1 hours and is subjected to test.
Then, salt deposits attached to the sample are washed away with water.</td><td>Shall be free from functionally harmful rust.</td></tr>
<tr><td>6.5</td><td>Temperature cycle test</td><td>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.
 
</td><td>Contact resistance (4.1): Max. 100mΩ
Insulation resistance (4.2): More than 100MΩ
Withstanding voltage (4.3):
300V DC, 1 minute. No breakdown insulation.
Operating force (5.1): Max. 800g
As per individual specifications.
No apparent effect on physical appearance or mechanical functions.</td></tr>
</table>

7. Electrical performance.

	Property	Test conditions	Performance
7.1	Mechanical operation	100 cycle operations at a rate of 15 ~ 20 cycle/minute with load of following.	Contact resistance (4.1): Max. 1Ω Insulation resistance (4.2): More than 100MΩ Withstanding voltage (4.3): 300V DC, 1 minute. No breakdown insulation. Operating force (5.1): Max. 800g As per individual specifications. No apparent effect on physical appearance or mechanical functions.

8. Cleaning.

Washing is impossible in principle.

When washing, a tape seal type(SD-ZFT) is recommended.

Washing liquid is less than Flux 3%.

9. Packaging.

A plastic tube is standard packing.

10. Voucher.

The voucher which indicated the following contents is attached for every box.

10.1. Type or parts number.

10.2. Product number.

10.3. A manufacturer name, a trademark, or a code number.

10.4. Quantity.

11. Guarantee period.

It is one year from invoice date.

12. The storage conditions.

It is unopened and is the condition of the section 3.

13. Industrial property.

When the dispute of the industrial property is caused among third parties for the product that our company delivered, it solves it in our responsibility.

14. No ozone depleting substances(ODS).

No ozone depleting substances are used in our products and manufacturing process.

Chlorinated fluorocarbons (CFCs), Halon, Carbon tetrachloride,

1.1.1-trichloroethane

Brominated diphenyl ethers (PBDE)

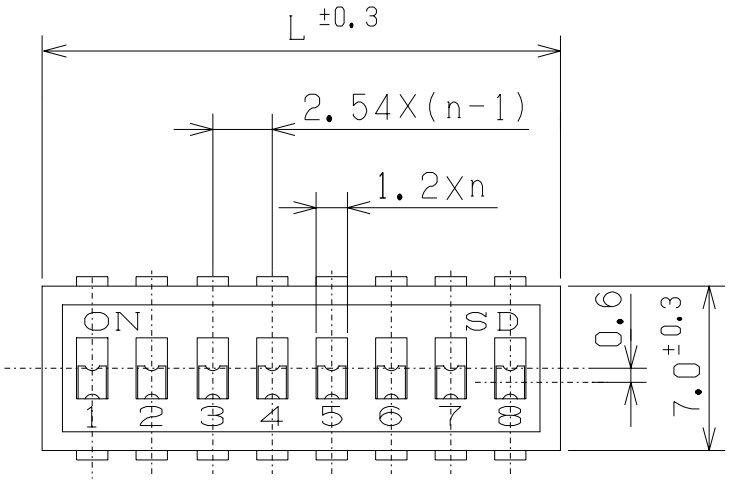
15. Others.

When a doubt occurs on these specifications, it determines after deliberations.

16. RoHS directive.

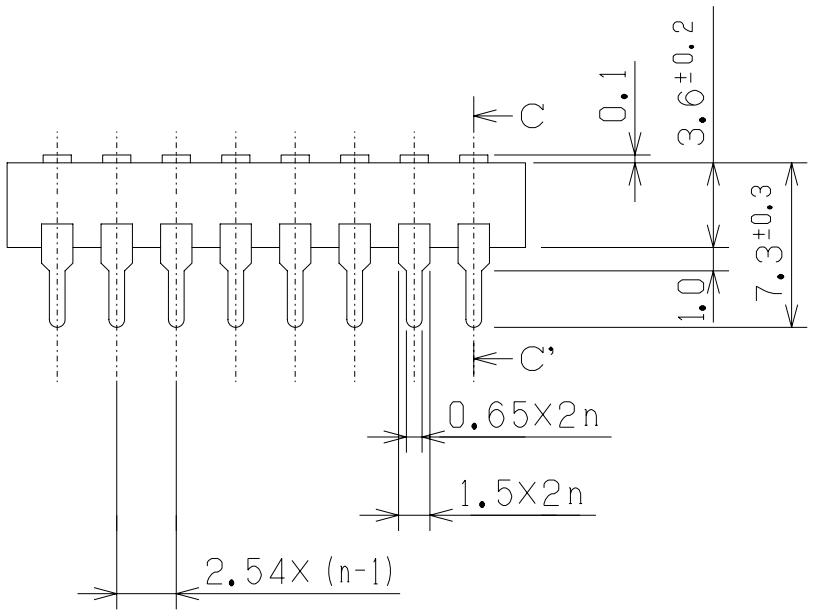
This product contains no lead in its internal connections, component parts, and materials.

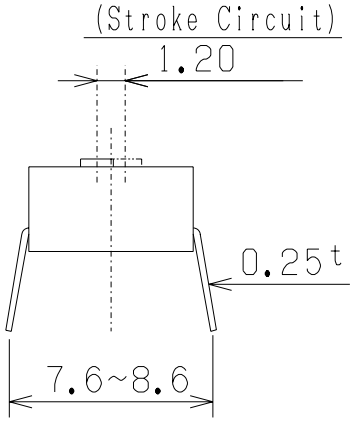
The RoHS compliance means that we judge from EU Directive 2002/95/EC the products do not contain lead, cadmium, mercury, hexavalent chromium, PBB and PBDE, except exemptions stated in EU Directive 2002/95/EC annex and impurities existing in natural world.

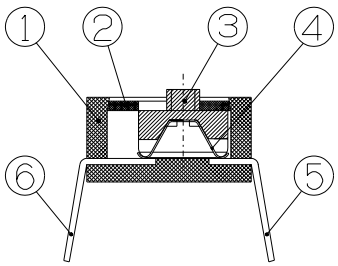


Type	Pole(n)	Dimension of L (mm)
SD-02ZF	2	6.80
SD-03ZF	3	9.40
SD-04ZF	4	12.00
SD-05ZF	5	14.50
SD-06ZF	6	17.00
SD-08ZF	8	22.00
SD-09ZF	9	24.50
SD-10ZF	10	27.00
SD-12ZF	12	32.00

ex. SD-08ZF
of Position "Off"







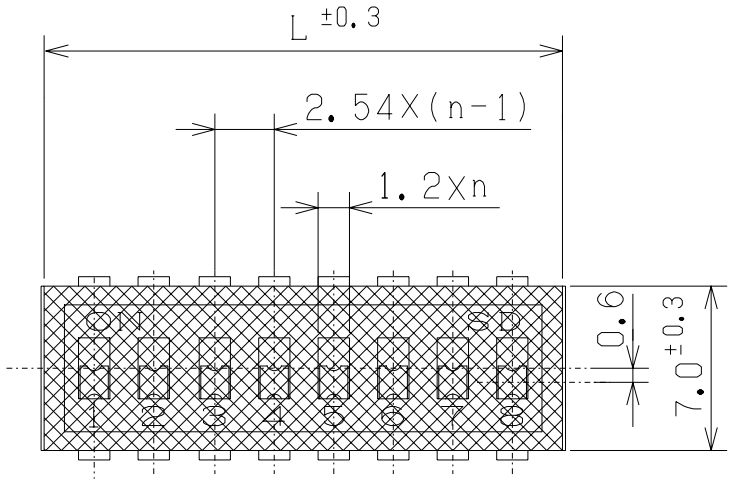
C-C' Position "On"

No	Parts Name	Materials	Remarks
1	Case (Base)	PBT Glass Fiber Resin	Mold Blue UL94V-0 E53829(M)
2	Cover Plate	Aluminium Plate	Anodised
3	Slide Knob	PBT Glass Fiber Resin	Mold Blue UL94V-0 E53829(M)
4	Contact (Spring)	Copper Alloy	t=0.1 0.1μ av. Gold Plating over 1μ av. Nickel Plating
5	Terminal #A	Phosphor Bronze	t=0.25 1~2μ Tin Plating over 0.1μ av. Copper Plating
6	Terminal #B		

2		
1		

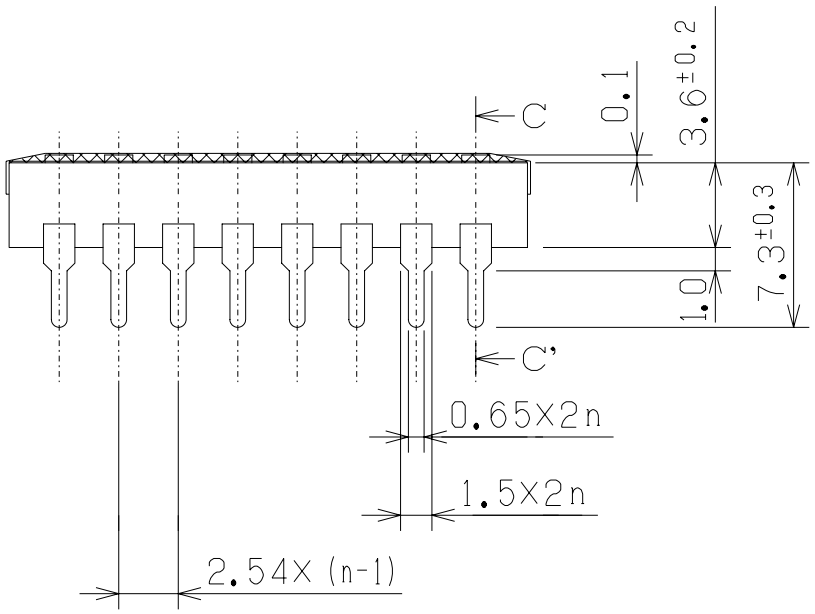
Revisions

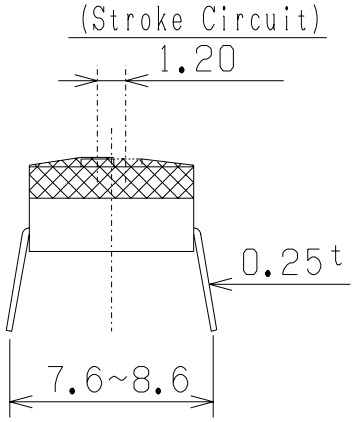
Unit:m/m	Tolerance	Designed	Drawn	Checked	Approved	Title	I. C. DIP
3rd Angle	1> → ±0.1 1≦10≧ → ±0.2 10< → ±0.3	T. Matsudaira	Y. Kamimae	K. Sakurai		Series Name	SD-ZF
		1985.10.16.	2000.10.18.	2001.06.08.			
Scale	Maruwa Corporation					DWG. No.	MCG-SD01E ⓪
A4→3/1							

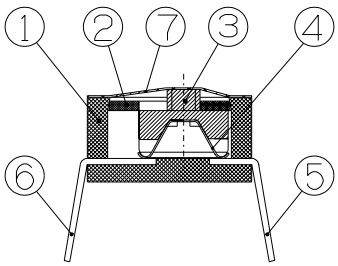


Type	Pole(n)	Dimension of L (mm)
SD-02ZFT	2	6.80
SD-03ZFT	3	9.40
SD-04ZFT	4	12.00
SD-05ZFT	5	14.50
SD-06ZFT	6	17.00
SD-08ZFT	8	22.00
SD-09ZFT	9	24.50
SD-10ZFT	10	27.00
SD-12ZFT	12	32.00

ex. SD-08ZFT
of Position "Off"







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4	Contact (Spring)	Copper Alloy	t=0.1 0.1μ av. Gold Plating over 1μ av. Nickel Plating
5	Terminal #A	Phosphor Bronze	t=0.25 1~2μ Tin Plating over 0.1μ av. Copper Plating
6	Terminal #B		
7	Tape	Polyester	t=0.05 Clear

△2		
△1		

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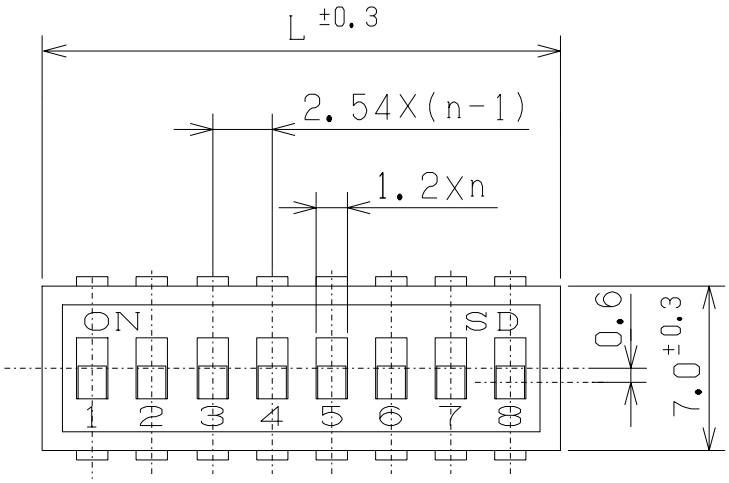
Scale	Maruwa Corporation					DWG. No.	MCG-SD03E △0
A4→3/1							



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ex. SD-08ZL
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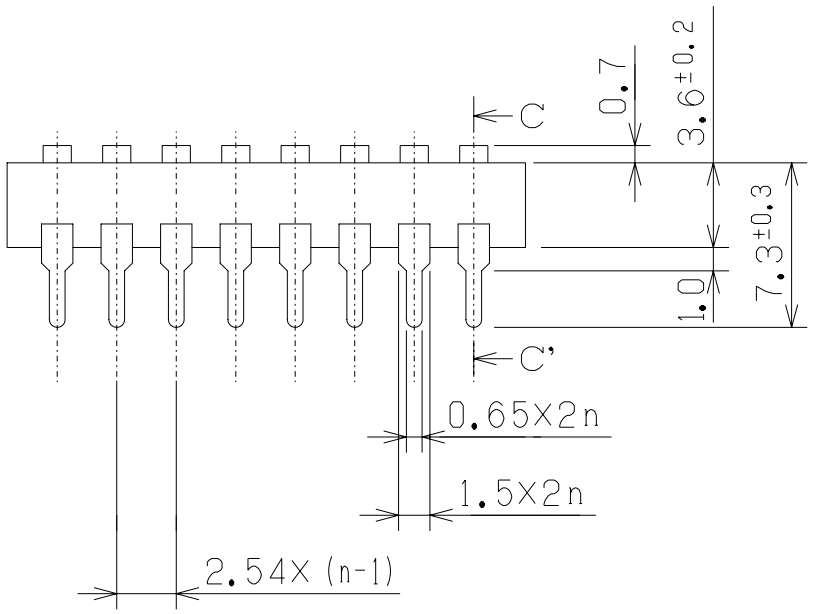

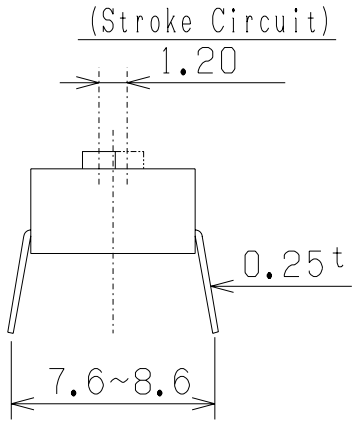

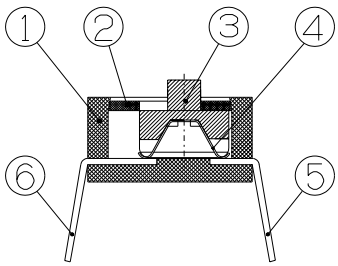

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△2		
△1		

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Scale		1985.10.16.	2000.10.18.	2001.06.08.		DWG. No.	MCG-SD05E △0
A4→3/1	Maruwa Corporation						