



**THE DATASHEET OF  
8A2011-Z**



# 8 Series

## Toggle Switches

### ■ Introduction

The 8 Series Toggles is our high-reliability miniature switch product offering. This product line meets and exceeds all basic international switch standards.

With 8 toggle options, PC and solder lug terminals, power and logic level current ratings, 1-4 pole and many circuit offerings these switches can be used in many industries and various applications within these industries.

Four of the 8 Series lines are washable. Specifically designed for PC applications with automated solder and cleaning methods.

The 8 Series is available with UL Recognition and CSA Certification upon request from the customer.

### ■ Applications


























- Communication equipment
- Computer peripheral equipment
- Measuring instruments
- Medical equipment
- Automotive diagnosis

The switches can be used in a wide range of fields from industrial to consumer equipment.

### ■ Features of 8 Series Toggles

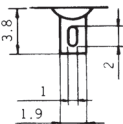
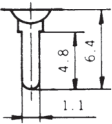
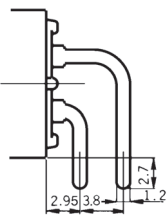
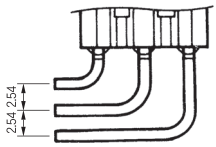
- 1. Terminal style :**  
Solder, Straight, Right angle and vertical mount PC terminals.
- 2. Contacts :**  
Silver or gold.
- 3. Epoxy resin case :**  
UL94V-0 self-extinguishing epoxy.
- 4. Actuator styles :**  
Over 30 actuator variations.
- 5. Insulation between terminal and ground :**  
4 mm minimum.
- 6. Prevention of flux entry**  
The epoxy resin seal on bottom of the switch helps prevent the entry of solder and flux.
- 7. Insulation barrier :**  
Insulation barrier design between poles helps prevent short-circuiting between poles ensuring high reliability.
- 8. UL Recognized product      File No.E43275**
- 9. CSA Certified product      File No.LR38341**
- 10. For the UL Recognized and CSA Certified products please see page 358.**

## 8 Series Toggles Selection Table

Part No.	Name	Actuator shape	Number of poles	Switching function	Terminals	Page	
<b>8A</b>	Standard toggle		1•2•3•4		 	341 } 343	
<b>8B</b>	Mustang Toggle		1•2•3•4		ON - ON ON - OFF - ON	 	344 } 345
<b>8C</b>	Flatted Toggle		1•2•3		※1/2 Poles ON - ON ON - OFF - ON	 	346 } 347
<b>8E</b>	Lever Lock Toggle		1•2•3•4		※3/4 Poles	 	348 } 349
<b>8F</b>	Splash Proof Toggle		1•2•4		ON - ON - ON ※8A Type 4 Poles only	 	350 } 351
<b>8J</b>	Short Toggle		1•2•3•4			 	352 } 353
<b>Washable</b>	<b>8G</b>	Short Toggle Washable	1•2	ON - ON ON - OFF - ON (ON) - OFF - (ON) ON - (ON)	  	354 } 355	
	<b>8GA</b>	Standard Toggle Washable		1•2		  	356

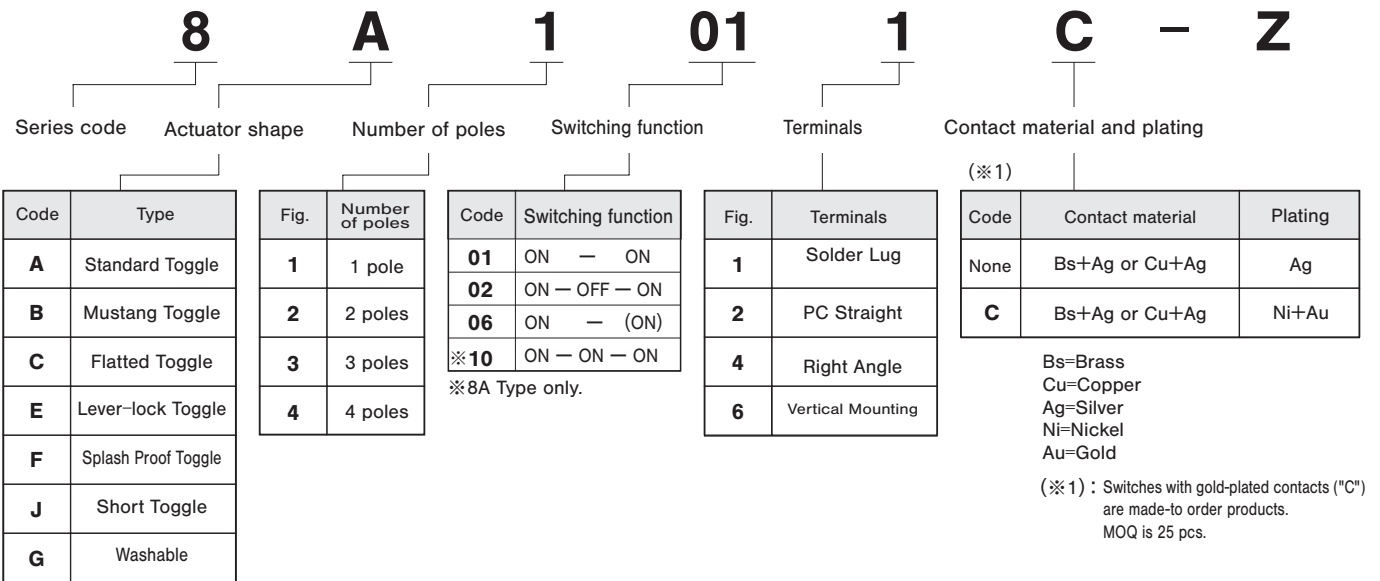
( ) indicates momentary actuation

### ■ Terminals

Solder Lug (Style:1)	PC Straight (Style:2)	Right Angle (Style:4)	Vertical Mounting (Style:6)
t=0.8 	t=0.8 PC 	t=0.8 R/A 	t=0.8 w=1.2 V/M 

## 8 Series Toggles

### Part Numbering



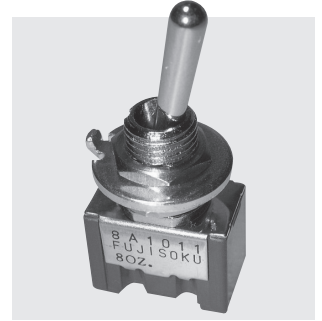
Note : Some combinations may not be available. Please check the "Table of Part Numbers" for each series.

### 8 Series Toggles Common Specifications

Contact specs.		Silver	Gold
Rating	Max.	AC125 V 6 A AC250 V 3 A DC30 V 4 A	AC125 V 6 A AC250 V 3 A DC30 V 4 A DC20V 25mA
Initial contact resistance		10 mΩ Max. (DC2~4 V 1 A)	20 mΩ Max. (AC200 μV 1.5 mA)
Initial dielectric strength		AC1500 V / 1 minute	
Initial insulation resistance		1000 MΩ Min. (DC500 V)	
Electrical life	Alternate type	50,000/cycles	
	Momentary type	25,000/cycles	
Operating temperature range		-30~+85°C	
Storage temperature range		-40~+85°C	

# 8A

## Standard Bat Toggle Switches



RoHS Compliant

### ■ Features

The 8A series has a 10.5mm bat toggle.

### ■ Table of Part Numbers

Terminal Style	Number of poles		1 pole	2 poles	3 poles	4 poles
	Switching Function					
Solder Lug	ON	– ON	☆ 8A1011-Z ☆ 8A1011C-Z	☆ 8A2011-Z ☆ 8A2011C-Z	☆ 8A3011-Z	☆ 8A4011-Z
	ON	– OFF – ON	8A1021-Z	☆ 8A2021-Z	—	—
	ON	– ON – ON	—	—	—	★ 8A4101-Z
PC Straight	ON	– ON	☆ 8A1012-Z ☆ 8A1012C-Z	8A2012-Z	8A3012-Z	—
	ON	– OFF – ON	☆ 8A1022-Z ☆ 8A1022C-Z	☆ 8A2022-Z	—	—

### ■ Optional Accessories Page 361.

Color Cap					
Dimensions	Color	Part. No.	Dimensions	Color	Part. No.
	White	140000470030		White	140000470038
	Red	140000470098		Red	140000470100
	Black	140000470031		Gray	140000470077
	Gray	140000470037			

### ■ PC Hole Layouts Page 360.

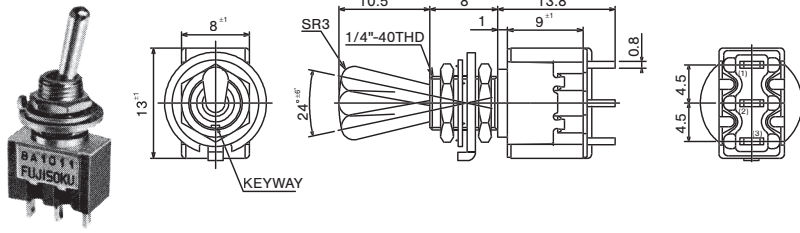
### ■ Panel Cut-Out Dimensions Page 360.

### ■ Terminal Styles Page 339.

### ■ Standard accessories Page 360.

### ■ Soldering, Flux Cleaning and Packing Spec. Page 359.

**SPDT**



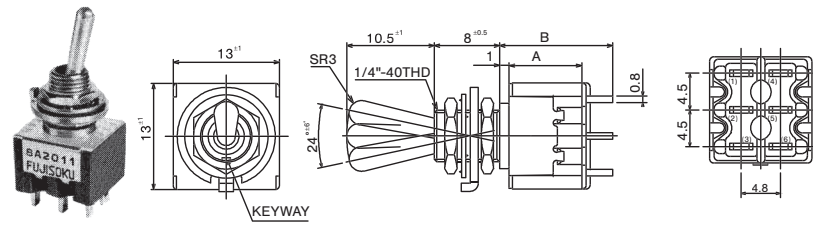
Terminal numbers are not shown on the switch.

Switching function	Key way	Key way	Key way
Part No.			
<b>8A101■-Z</b>	ON	-	ON
<b>8A102■-Z</b>	ON	OFF	ON
Connecting terminals	2-3	-	2-1

■ : Please refer to "Table of Part Numbers" for a list of full part numbers.

**DPDT**

Dimensions	A	B
Part No.		
<b>8A2011~2022</b>	9±1	13.8±1

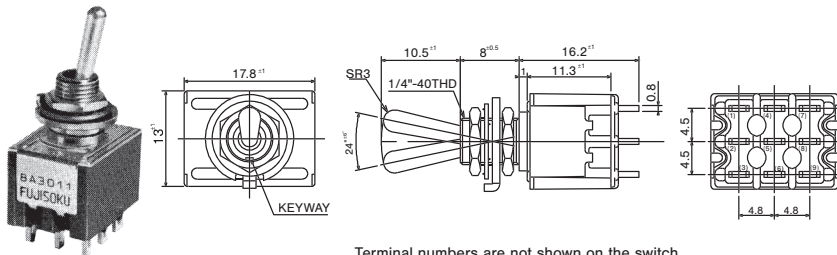


Terminal numbers are not shown on the switch.

Switching function	Key way	Key way	Key way
Part No.			
<b>8A201■-Z</b>	ON	-	ON
<b>8A202■-Z</b>	ON	OFF	ON
Connecting terminals	2-3 5-6	-	2-1 5-4

■ : Please refer to "Table of Part Numbers" for a list of full part numbers.

**3PDT**

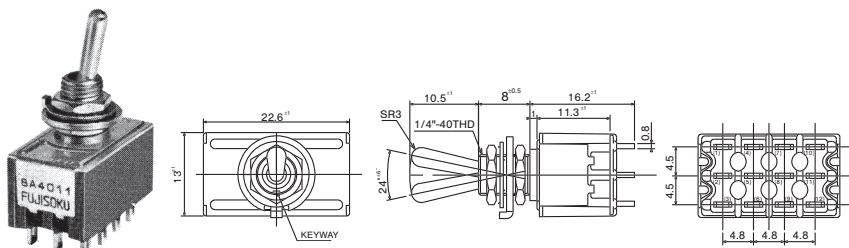


Terminal numbers are not shown on the switch.

Switching function	Key way	Key way	Key way
Part No.			
<b>8A301■-Z</b>	ON	-	ON
Connecting terminals	2-3 5-6 8-9	-	2-1 5-4 8-7

■ : Please refer to "Table of Part Numbers" for a list of full part numbers.

**4PDT**



Terminal numbers are not shown on the switch.

Switching function	Key way	Key way	Key way
Part No.			
<b>8A401■-Z</b>	ON	-	ON
Connecting terminals	2-3 5-6 8-9 11-12	-	2-1 5-4 8-7 11-10
<b>8A410■-Z</b>	ON	ON	ON
Connecting terminals	2-3 5-6 8-9 11-12	2-3 5-4 8-9 11-10	2-1 5-4 8-7 11-10

■ : Please refer to "Table of Part Numbers" for a list of full part numbers.




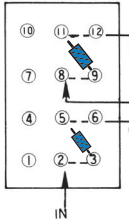
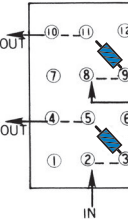
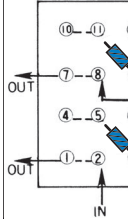
# Three ON Switches


These switches are designed so that the Switching Function will be ON in all three positions. Extra wiring is required by the customer to get the three ON options. Please see below.

## 8A4101-Z

### 2 Circuit 3 Contacts

#### Function

Actuator position	 Key way	 Key way	 Key way
Circuit diagram			
Switching function	ON	ON	ON
Connecting terms.	2-6 8-12	2-4 8-10	2-1 8-7

 External wiring (to be wired by the customer)

# UL、CSA (Toggle Switches)

## Table of 8 Series Toggles UL and CSA Listed

### ■ 8 Series Toggles

Poles	Switching Function			UL (※1.)						CSA (※2.)					
				8A	8B	8C	8E	8F	8J	8A	8B	8C	8E	8F	8J
1 pole	101□	ON	-	ON	○	○	○	○	○	○	○	○	○	○	○
	102□	ON	-	OFF	-	ON	○	○	○	○	○	○	○	○	○
2 poles	201□	ON	-	ON	○	○	○	○	○	○	○	○	○	○	○
	202□	ON	-	OFF	-	ON	○	○	○	○	○	○	○	○	○
3 poles	301□	ON	-	ON	○	○	○	○	○	○	○	○	○	○	○
4 poles	401□	ON	-	ON	○	○	○	○	○	○	○	○	○	○	○
	410□	ON	-	ON	-	ON	○	○	○	○	○	○	○	○	○

(1) Terminal types: 1 Solder terminal; 2 Straight terminal

(2) Even if the products are of UL-or CSA-approved ones. The products in stock do not carry the UL mark of the CSA mark. When placing an order, be sure to specify "With UL/CSA Mark." For the products with the UL mark or the CSA mark, extra costs will be added.

(3) (※1.) UL File No.E43275  
(※2.) CSA File No.LR38341

(4) As shown in the above chart, not all products are UL-recognized or CSA-certified. Please check with your local sales representative if you have any questions.

**■ Precautions (8A•8B•8C•8E•8F•8J)****1. Soldering Specifications**

## (1) Manual soldering

Device : Solder iron

① 420°C Max. 3 sec. Max.

## (2) Auto soldering

② 275°C Max. 6 sec. Max.

The above-stated soldering conditions shall apply only to switches with straight terminals. Auto soldering is not possible with right-angle terminals. Switches with right-angle terminals should be soldered manually according to the conditions specified in (1) above.

## (3) When soldering two or more terminals to the common land, use the solder resist to isolate the terminals.

**3. Mounting**

● Do not bend the terminals before mounting the switch on the PC board.

● After mounting the switch, do not place the device in such a way that the device weight will be applied on to the actuator of the switch.

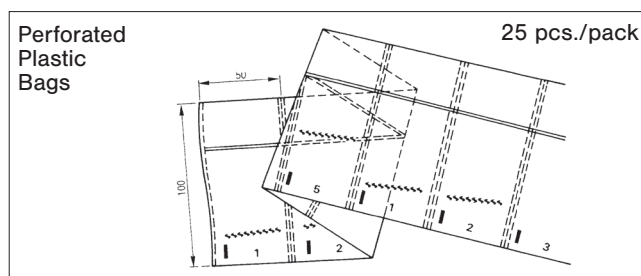
● For switches with straight terminals, solder the switch on the PC board after fixing the switch on the panel with a nut.

**2. Flux Cleaning**

(1) Solvent : Fluorine or Alcohol type.

(2) 8A/B/C/E/F/J series are not washable. To wash the PC board, clean the soldering surface of the PC board with a brush so that the switch is not exposed to the cleaning solution.

(3) Cleaning after soldering should be done after the terminal temperature falls to 90°C or below, or after leaving the switch for five minutes or longer at room temperature.

**■ Packaging Specification**

## ◆ 8 Series Toggles ◆

### ■ Panel Cut-Out Dimensions

Series	8A-8J	8C	8E	8A-8J	8C	8E	8F
Panel thickness	2.5 mm Max.	2.4 mm Max.	1.5 mm Max.	3.5 mm Max.	3.4 mm Max.	2.5 mm Max.	5 mm Max.
Dimensions	<p style="text-align: center;">With Locking Ring</p>			<p style="text-align: center;">Without Locking Ring</p>			
Series	<b>8B</b>						
Panel thickness	5.9 mm Max.			6.9 mm Max.			
Dimensions	<p style="text-align: center;">With Locking Ring</p>			<p style="text-align: center;">Without Locking Ring</p>			

### ■ PC Hole Layouts

Series	8A · 8B · 8C · 8E · 8F · 8J
Dimensions	

### ■ Standard Accessories

《Q'ty / switch》

Part Name	Dress Nut	Hex Nut	Lockwasher	Locking Ring	O-Ring	Hex Nut	Lockwasher	Locking Ring
Part No.	140008010253	140008010241	140008030051	140008020062	14000610076	140008010243	140008030055	140008020065
Dimensions								
Finish	Nickel plated		Zinc plated		Nitrile rubber (Black)	Nickel plated	Zinc plated	
8A		2	1	1				
8B						2	1	1
8C	1	1	1	1				
8D		2	1	1				
8E		2	1	1				
8F		1	1		1			
8J		2	1	1				

● Numbers in the above chart show the quantities of each accessories enclosed with the switch.

**Optional Accessories**



《Sold separately》

Type	8A · 8F · 8GA	8A · 8F · 8GA	8B	8E
Part Name	<b>Color Cap</b>			
Dimensions	<p style="text-align: center;">Vinyl chloride resin</p>	<p style="text-align: center;">Vinyl chloride resin</p>	<p style="text-align: center;">Vinyl chloride resin</p>	<p style="text-align: center;">Aluminum alloy</p>
Silver	-	-	-	<b>140000470058</b>
White	<b>140000470030</b>	<b>140000470038</b>	<b>140000470063</b>	-
Red	<b>140000470098</b>	<b>140000470100</b>	<b>140000470108</b>	<b>140000470060</b>
Black	<b>140000470031</b>	-	<b>140000470064</b>	<b>140000470059</b>
Gray	<b>140000470037</b>	<b>140000470077</b>	-	-

/Type	8A	8B	
Part Name	<b>Boot</b>	<b>Plate</b>	<b>Plate</b>
Part No.	<b>140000470422</b>	<b>140008040021</b>	<b>140008040025</b>
Dimensions	<p style="text-align: center;">With Nut (1/4" - 40THD)</p>	<p style="text-align: center;">Red Black t = 0.5</p>	<p style="text-align: center;">Red Black t = 1</p>

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