chanhvinh.com

8 Series

Toggle Switches

■Introduction

The 8 Series Toggles is Copal Electronics' 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 409.**

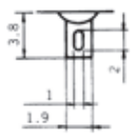
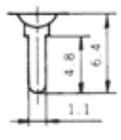
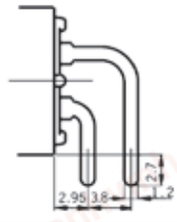
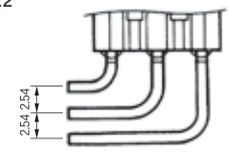
chanhvinh.com

8 Series Toggles Selection Table

Part No.	Name	Actuator shape	Number of poles	Switching function	Terminals	Page
8A	Standard toggle		1•2•3•4	ON – ON ON – OFF – ON (ON) – OFF – (ON) ON – OFF – (ON) ON – (ON) 1/2 Poles ON – ON ON – OFF – ON 3/4 Poles ON – ON – ON 8A Type 4 Poles only	Solder Lug Straight PC	386 ⌇ 388
8B	Mustang Toggle		1•2•3•4		Solder Lug Straight PC	389 ⌇ 390
8C	Flatted Toggle		1•2•3•4		Solder Lug Straight PC	391 ⌇ 392
8D	Long Toggle		1•2•3•4		Solder Lug Straight PC	393 ⌇ 394
8E	Lever Lock Toggle		1•2•3•4		Solder Lug Straight PC	395 ⌇ 396
8F	Splash Proof Toggle		1•2•3•4		Solder Lug Straight PC	397 ⌇ 398
8J	Short Toggle		1•2•3•4		Solder Lug Straight PC	399 ⌇ 400
Washable **8G**	Short Toggle Washable		1•2	ON – ON ON – OFF – ON (ON) – OFF – (ON) ON – (ON)	Straight PC Right Angle Vertical	403 ⌇ 404
Washable **8GA**	Standard Toggle Washable		1•2		Straight PC Right Angle Vertica	405

( ) indicates momentary actuation

■Terminals

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

chanhvinh.com

■Part Numbering

8 A 1 01 1 C – Z

Series code | Actuator shape | Number of poles | Switching function | Terminals | Contact material and plating (※1)

Code	Type
A	Standard Toggle
B	Mustang Toggle
C	Flatted Toggle
D	Long Toggle
E	Lever-lock Toggle
F	Splash Proof Toggle
J	Short Toggle
G	Washable

Fig.	Number of poles
1	1 pole
2	2 poles
3	3 poles
4	4 poles

Code	Switching function
01	ON — ON
02	ON — OFF — ON
04	(ON) — OFF — (ON)
05	ON — OFF — (ON)
06	ON — (ON)
※10	ON — ON — ON

※8A Type only.

Fig.	Terminals
1	Solder Terminal
2	PC Straight
4	Right Angle
6	Vertical Mounting

Code	Contact material	Plating
None	Bs+Ag or Cu+Ag	Ag
C	Bs+Ag or Cu+Ag	Ni+Au

Bs=Brass
Cu=Copper
Ag=Silver
Ni=Nickel
Au=Gold

(※1) : Switches with gold-plated contacts ("C") are made-to order products. MOQ is 25 pcs.

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.	AC125V 6A AC250V 3A DC30V 4A	AC125V 6A AC250V 3A DC20V 25mA
Initial contact resistance		10mΩ Max. (DC2～4V 1A)	20mΩ Max. (AC200μV 1.5mA)
Initial dielectric strength		AC1500V 1 minute	
Initial insulation resistance		1000MΩ Min. (DC500V)	
Electrical life	Alternate type	50,000 cycles	
	Momentary type	25,000 cycles	
Operating temperature range		-30～+85℃	
Storage temperature range		-40～+85℃	

(ON) : Momentary.

chanhvinh.com

8E

Locking Lever Toggle Switch



RoHS Compliant

■Features

The **8E** Locking Lever Toggle Switch features a locking device to prevent accidental switch operation. Caps are available in 3 colors.
Please refer to "Operation Method" on the next page on instructions on how to operate.

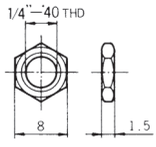
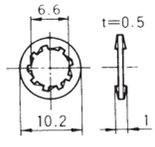
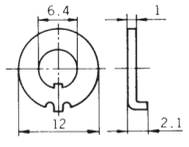
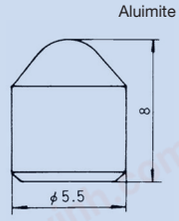
■Table of Part Numbers

Terminal Style	Switching Function \ Number of poles	1 pole	2 poles	3 poles	4 poles
Solder Terminal	ON — ON	**8E1011−Z** ★ **8E1011C−Z**	**8E2011−Z** ☆ **8E2011C−Z**	★ **8E3011−Z** ———	★ **8E4011−Z** ———
	ON — OFF — ON	☆ **8E1021−Z** ★ **8E1021C−Z**	★ **8E2021−Z** ———	——— ———	——— ———
	ON — (ON)	———	★ **8E2061−Z**	———	———
PC Straight	ON — ON	★ **8E1012−Z**	★ **8E2012C−Z**	———	———

■**PC Hole Layouts** ····· Page 411.
■**Panel Cut-Out Dimensions** ····· Page 411.
■**Terminal Style** ····· Page 384.

■ Standard Accessories

《Supplied with switch》

Part Name	**Hex Nut**	**Lockwasher**	**Locking Ring**	**Color Cap**		
Part No.	**140008010241**	**140008030051**	**140008020062**	Dimensions	Color	Part. No.
Dimensions					Silver	**140000470058**
					Black	**140000470059**
Finish	Nickel plated	Zinc plated	Zinc plated		Red	**140000470060**

A Silver cap is attached to the switch. If a different color (Black or Red) is required, please order separately.

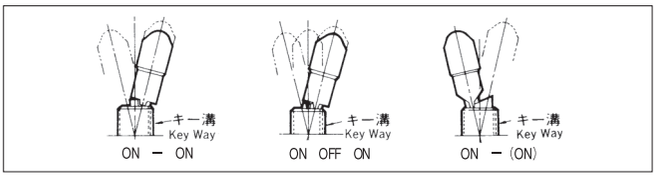
☆ : Semi-standard products.

●For soldering and flux cleaning specifications, please refer to P.410. :Optional Accessories. (ON) : Momentary. ★ : Made to order products.

chanhvinh.com

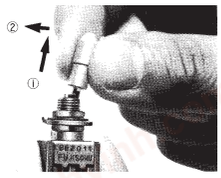
8E

■Lock Types By Function

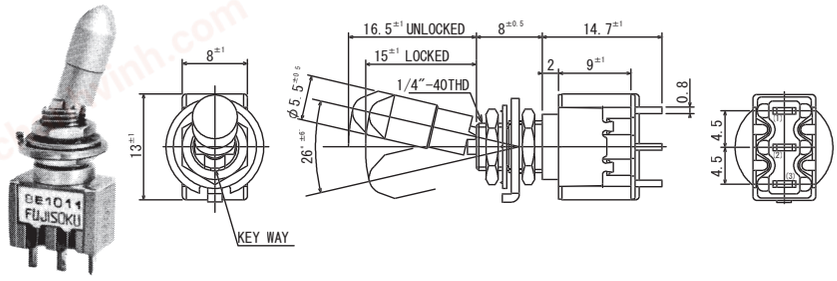


■Operation Method

Pull up the lever to unlock and move the actuator to the desired position.



SPDT

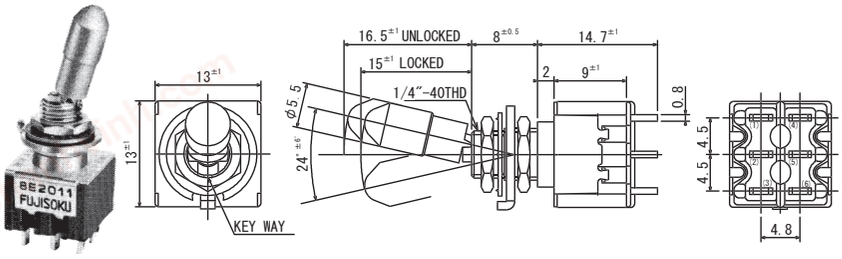


Part No. \ Switching function	Key way	Key way	Key way
8E101■−Z	ON	—	ON
8E102■−Z	ON	OFF	ON
Connecting terminals	2−3	—	2−1

■ : Please refer to "Table of Part Numbers" on P.395 for a list of full part numbers.

Terminal numbers are not shown on the switch.

DPDT

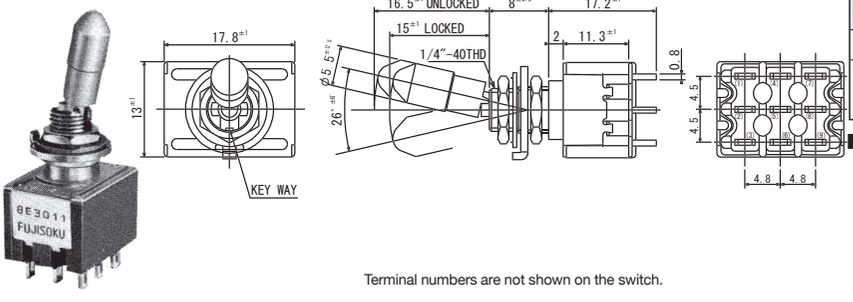


Part No. \ Switching function	Key way	Key way	Key way
8E201■−Z	ON	—	ON
8E202■−Z	ON	OFF	ON
8E206■−Z	ON	—	(ON)
Connecting terminals	2−3 5−6	—	2−1 5−4

■ : Please refer to "Table of Part Numbers" on P.395 for a list of full part numbers.

Terminal numbers are not shown on the switch.

3PDT

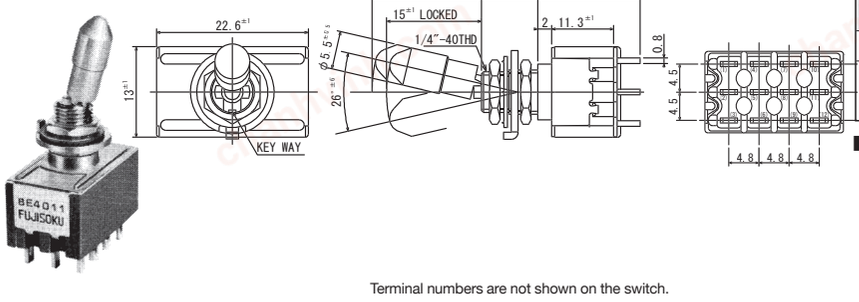


Part No. \ Switching function	Key way	Key way	Key way
8E301■−Z	ON	—	ON
Connecting terminals	2−3 5−6 8−9	—	2−1 5−4 8−7

■ : Please refer to "Table of Part Numbers" on P.395 for a list of full part numbers.

Terminal numbers are not shown on the switch.

4PDT



Part No. \ Switching function	Key way	Key way	Key way
8E401■−Z	ON	—	ON
Connecting terminals	2−3 5−6 8−9 11−12	—	2−1 5−4 8−7 11−10

■ : Please refer to "Table of Part Numbers" on P.395 for a list of full part numbers.

Terminal numbers are not shown on the switch.

(ON) : Momentary.

chanhvinh.com

UL and CSA Listed
(Toggle Switches)

Table of 8 Series Toggles UL and CSA Listed

■8 Series Toggles

Poles	Switching Function		(※1.)							(※2.)						
			8A	8B	8C	8D	8E	8F	8J	8A	8B	8C	8D	8E	8F	8J
1 pole	101□	ON — ON	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	102□	ON — OFF — ON	○		○		○		○	○		○		○		○
	104□	(ON) — OFF — (ON)	○	○	○			○		○	○	○			○	
	105□	ON — OFF — (ON)	○						○	○						○
	106□	ON — (ON)	○					○		○					○	
2 poles	201□	ON — ON	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	202□	ON — OFF — ON	○	○	○		○		○	○	○	○		○		○
	204□	(ON) — OFF — (ON)	○		○			○		○		○			○	
	205□	ON — OFF — (ON)	○							○						
	206□	ON — (ON)	○				○			○				○		
3 poles	301□	ON — ON	○	○	○		○		○	○	○	○		○		○
	302□	ON — OFF — ON	○						○	○						○
4 poles	401□	ON — ON	○	○			○	○	○	○	○			○	○	○
	402□	ON — OFF — ON	○							○						
	410□	ON — ON — ON	○							○						

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

(2) **UL**-recognized switches: Solder terminals and straight terminals available for Single/Double/Three/Four Pole

(3) **CSA**-certified switches: Solder terminals and straight terminals available for Single Pole. Straight terminals available for Double/Three/Four Pole.

(4) UL, CSA marked switches available with additional charge.

(5) (※1.) **UL File No.E43275**
(※2.) **CSA File No.JR38341**

(6) 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.

(ON) : Momentary.

chanhvinh.com

8 series

■8 Series Toggles

Poles	Switching function		(※1.)		(※2.)	
			8G	8GA	8G	8GA
1 pole	**101**□	ON — ON	○	○	○	○
	102□	ON — OFF — ON	○		○	
	104□	(ON) — OFF — (ON)	○		○	
	106□	ON — (ON)	○		○	
2 poles	**201**□	ON — ON	○	○	○	○

UL, CSA marked switches are available upon request.

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

■Precautions (8A・8B・8C・8D・8E・8F・8J・8SS)

1. Soldering Specifications

(1)Manual soldering
Device : Solder iron
①420℃ Max. 3 sec. Max.

(2)Auto soldering
②275℃ 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.

2.Flux Cleaning

(1)Solvent : Fluorine or Alcohol type.

(2)**8A/B/C/D/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.

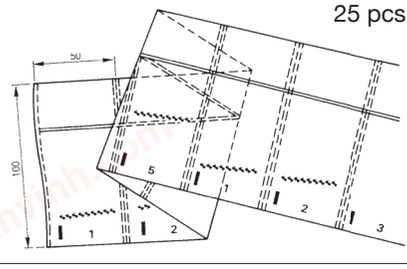
(3)Cleaning after soldering should be done after the terminal temperature falls to 90℃ or below, or after leaving the switch for five minutes or longer at room temperature.

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.

■Packaging Specification

Perforated Plastic Bags 25 pcs./pack

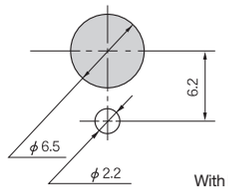
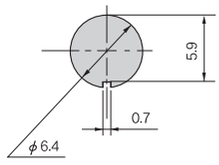
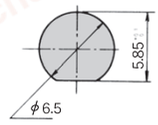


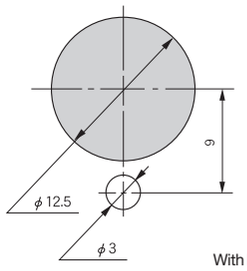
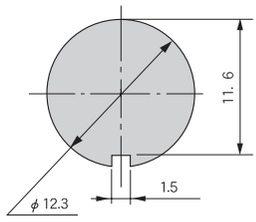
(ON) : Momentary.

chanhvinh.com

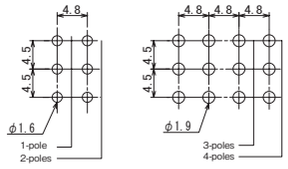
8 Series Toggles

Panel Cut-Out Dimensions

Series	8A·8D·8J	8C	8E	8A·8D·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	 With **Locking Ring**			 Without **Locking Ring**			

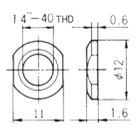
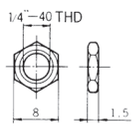
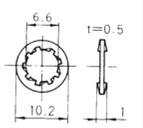
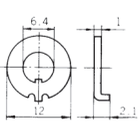
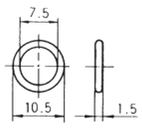
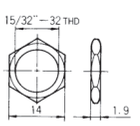
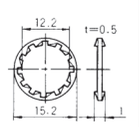
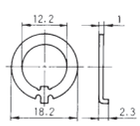
Series	8B	
Panel thickness	5.9 mm Max.	6.9 mm Max.
Dimensions	 With **Locking Ring**	 Without **Locking Ring**

PC Hole Layouts

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

Standard Accessories

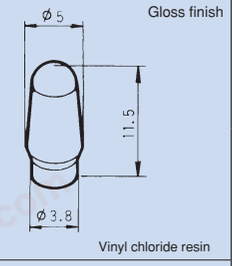
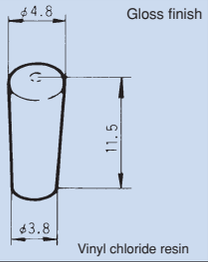
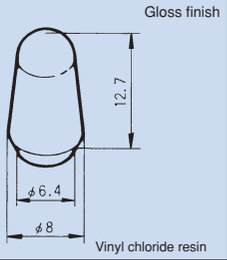
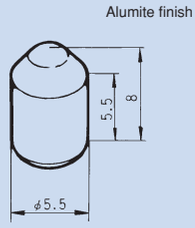
《Q'ty／switch》

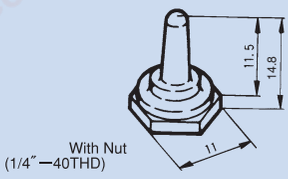
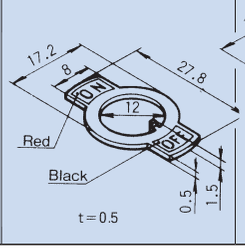
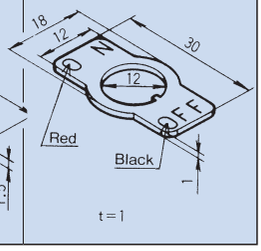
Part Name	Dress Nut	Hex Nut	Lockwasher	Locking Ring	O—Ring	Hex Nut	Lockwasher	Locking Ring
Part No.	140008010253	140008010241	140008030051	140008020062	140000610076	140008010243	140008030055	140008020065
Dimensions								
Finish	Nickel plated		Zinc plated		Nitrile rubber (Black)	Nickel plated	Zinc plated	
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.

chanhvinh.com

■Optional Accessories 《Sold separately》

Type	8A・8F・8GA BT	8A・8F・8GA BT	8B	8E
Part Name	Color Cap			
Dimensions				
Silver	—	—	—	140000470058
White	140000470030	140000470038	140000470063	—
Red	140000470098	140000470100	140000470108	140000470060
Black	140000470031	140000470039	140000470064	140000470059
Gray	140000470037	140000470077	140000470102	—

Type	8A	8B	
Part Name	Boot	Plate	Plate
Part No.	140000470422	140008040021	140008040025
Dimensions			

:Optional Accessories.