



HIGH ENVIRONMENTAL RESISTANCE

TURQUOISE SWITCHES J TYPE (ABJ)



Dust protected type



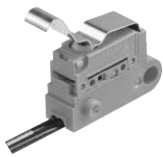
(Mounting hole 2.3mm .091inch type)



Immersion protected type (wire leads bottom type)



(Mounting hole 2.3mm .091inch type)



Immersion protected (wire leads side type)



Long stroke type

FEATURES

- Ultra-miniature size (12.8×6.5×6 mm) (.504×.256×.236 inch)
- Sealed construction for use in adverse environment-Sealed construction by epoxy resin and rubber cap keeps off the cause of miscontact such as dust. Conforming to IP67\* of IEC protective construction classification
- Elastomer double molding technology, an industry first and ultrasonic swaging technology contribute to uniform sealing in high production quantities
- UL/CSA approved
- Long stroke type is available  
Since the repeatability is excellent and the play distance (overtravel) from the operating position is ample, the task of performing the adjustments during installation is an easy one.
- Operating position accuracy ±0.4 mm ±.016 inch
- Overtravel= Min. 2.0 mm .079 inch  
As wide range of high pressure is achieved, a stable reliability is ensured

TYPICAL APPLICATIONS

- Industrial use video jack
  - Automotives (ex. Device for opening and shutting of automobile doors)
- \*Based on the protective construction classification of IEC, items which satisfy the test requirements are denoted with an IP designation.

ORDERING INFORMATION

Ex. A B J 1 4 1 0 4 0

Type of switch	Size of mounting hole	Terminal	Contact arrangement	Actuator	Operating force by pin plunger (max.)	Contact
ABJ: Turquoise switch J type	1: 1.2 mm (.047 inch) 2: 2.3 mm (.091 inch) 3: 3 mm (.118 inch) 4: Fixed pin (right side pin) type 5: Fixed pin (left side pin) type	4: Solder terminal 5: PC board terminal 6: Wire leads (bottom type) 7: Wire leads (right side type) 8: Wire leads (left side type)	1: SPDT 2: SPST-NC 3: SPST-NO	0: Pin plunger 2: Hinge lever 4: Simulated roller lever 6: Roller lever 8: Leaf lever L: Long stroke type	4: 1.23 N {125 gf} 6: 1.96 N {200 gf} 7: 2.45 N {250 gf} (Long stroke type only)	0: Silver-alloy 1: Gold-clad

Remarks: 1. Standard packing: Dust protected type 100 pcs./carton, 2,000 pcs./case; Immersion protected type 50 pcs./case.  
 2. SPST-NC and SPST-NO are only available for wire leads type.  
 3. Leaf lever is only available for wire leads type  
 4. Not every combination is available. Please refer to the following table. "PRODUCT TYPES".

# ABJ1,2,3,4,5

## PRODUCT TYPES

### 1. Dust protected type (Terminal type)

Mounting hole 1.2mm .047inch type / Mounting hole 2.3mm .091inch type

Silver alloy

Actuator	Operating force Max.	Mounting hole 1.2 mm .047 inch type		Mounting hole 2.3 mm .091 inch type
		Solder terminal	PC board terminal	Solder terminal
Pin plunger	1.23 N {125 gf}	ABJ141040	ABJ151040	ABJ241040
	1.96 N {200 gf}	ABJ141060	ABJ151060	ABJ241060
Hinge lever	0.39 N {40 gf}	ABJ141240	ABJ151240	ABJ241240
	0.64 N {65 gf}	ABJ141260	ABJ151260	ABJ241260
Simulated roller lever	0.39 N {40 gf}	ABJ141440	ABJ151440	ABJ241440
	0.64 N {65 gf}	ABJ141460	ABJ151460	ABJ241460
Roller lever	0.39 N {40 gf}	ABJ141640	ABJ151640	ABJ241640
	0.64 N {65 gf}	ABJ141660	ABJ151660	ABJ241660

Gold-clad

Actuator	Operating force Max.	Mounting hole 1.2 mm .047 inch type		Mounting hole 2.3 mm .091 inch type
		Solder terminal	PC board terminal	Solder terminal
Pin plunger	1.23 N {125 gf}	ABJ141041	ABJ151041	ABJ241041
	1.96 N {200 gf}	ABJ141061	ABJ151061	ABJ241061
Hinge lever	0.39 N {40 gf}	ABJ141241	ABJ151241	ABJ241241
	0.64 N {65 gf}	ABJ141261	ABJ151261	ABJ241261
Simulated roller lever	0.39 N {40 gf}	ABJ141441	ABJ151441	ABJ241441
	0.64 N {65 gf}	ABJ141461	ABJ151461	ABJ241461
Roller lever	0.39 N {40 gf}	ABJ141641	ABJ151641	ABJ241641
	0.64 N {65 gf}	ABJ141661	ABJ151661	ABJ241661

### 2-(1). Immersion protected type (Bottom wire leads type)

Mounting hole 1.2mm .047inch type

Silver alloy

Actuator	Operating force Max.	Mounting hole 1.2 mm .047 inch type		
		SPDT	SPST-NC	SPST-NO
Pin plunger	1.23 N {125 gf}	ABJ161040	ABJ162040	ABJ163040
	1.96 N {200 gf}	ABJ161060	ABJ162060	ABJ163060
Hinge lever	0.39 N {40 gf}	ABJ161240	ABJ162240	ABJ163240
	0.64 N {65 gf}	ABJ161260	ABJ162260	ABJ163260
Simulated roller lever	0.39 N {40 gf}	ABJ161440	ABJ162440	ABJ163440
	0.64 N {65 gf}	ABJ161460	ABJ162460	ABJ163460
Roller lever	0.39 N {40 gf}	ABJ161640	ABJ162640	ABJ163640
	0.64 N {65 gf}	ABJ161660	ABJ162660	ABJ163660

Mounting hole 2.3mm .091inch type

Gold-clad

Actuator	Operating force Max.	Mounting hole 1.2 mm .047 inch type		
		SPDT	SPST-NC	SPST-NO
Pin plunger	1.23 N {125 gf}	ABJ161041	ABJ162041	ABJ163041
	1.96 N {200 gf}	ABJ161061	ABJ162061	ABJ163061
Hinge lever	0.39 N {40 gf}	ABJ161241	ABJ162241	ABJ163241
	0.64 N {65 gf}	ABJ161261	ABJ162261	ABJ163261
Simulated roller lever	0.39 N {40 gf}	ABJ161441	ABJ162441	ABJ163441
	0.64 N {65 gf}	ABJ161461	ABJ162461	ABJ163461
Roller lever	0.39 N {40 gf}	ABJ161641	ABJ162641	ABJ163641
	0.64 N {65 gf}	ABJ161661	ABJ162661	ABJ163661

Remarks: When ordering UL/CSA approved types, please attach suffix "9" to the part number.

Mounting hole 2.3mm .091inch type  
Silver alloy

Actuator	Operating force Max.	Mounting hole 2.3 mm .091 inch type		
		SPDT	SPST-NC	SPST-NO
Pin plunger	1.23 N {125 gf}	ABJ261040	ABJ262040	ABJ263040
	1.96 N {200 gf}	ABJ261060	ABJ262060	ABJ263060
Hinge lever	0.39 N {40 gf}	ABJ261240	ABJ262240	ABJ263240
	0.64 N {65 gf}	ABJ261260	ABJ262260	ABJ263260
Simulated roller lever	0.39 N {40 gf}	ABJ261440	ABJ262440	ABJ263440
	0.64 N {65 gf}	ABJ261460	ABJ262460	ABJ263460
Roller lever	0.39 N {40 gf}	ABJ261640	ABJ262640	ABJ263640
	0.64 N {65 gf}	ABJ261660	ABJ262660	ABJ263660

Gold-clad

Actuator	Operating force Max.	Mounting hole 2.3 mm .091 inch type		
		SPDT	SPST-NC	SPST-NO
Pin plunger	1.23 N {125 gf}	ABJ261041	ABJ262041	ABJ263041
	1.96 N {200 gf}	ABJ261061	ABJ262061	ABJ263061
Hinge lever	0.39 N {40 gf}	ABJ261241	ABJ262241	ABJ263241
	0.64 N {65 gf}	ABJ261261	ABJ262261	ABJ263261
Simulated roller lever	0.39 N {40 gf}	ABJ261441	ABJ262241	ABJ263441
	0.64 N {65 gf}	ABJ261461	ABJ262461	ABJ263461
Roller lever	0.39 N {40 gf}	ABJ261641	ABJ262641	ABJ263641
	0.64 N {65 gf}	ABJ261661	ABJ262661	ABJ263661

Mounting hole 3mm .118inch type (Leaf lever type)  
Silver alloy

Actuator	Operating force Max.	Mounting hole 3 mm type		
		SPDT	SPST-NC	SPST-NO
Leaf lever	0.98 N {100 gf}	ABJ361840	ABJ362840	ABJ363840
	1.27 N {130 gf}	ABJ361860	ABJ362860	ABJ363860

Gold-clad

Actuator	Operating force Max.	Mounting hole 3 mm type		
		SPDT	SPST-NC	SPST-NO
Leaf lever	0.98 N {100 gf}	ABJ361841	ABJ362841	ABJ363841
	1.27 N {130 gf}	ABJ361861	ABJ362861	ABJ363861

**2-(2). Immersion protected type (Side wire leads type)**

Fixed pin (right side pin) type  
Silver alloy

Actuator	Operating force Max.	Wire leads direction	Wire leads type	
			SPST-NC	SPST-NO
Leaf lever	1.27 N {130 gf}	Right	ABJ472840	ABJ473840
	1.27 N {130 gf}	Left	ABJ482840	—
	1.76 N {180 gf}	Right	ABJ472860	ABJ473860
	1.76 N {180 gf}	Left	ABJ482860	—

Gold-clad

Actuator	Operating force Max.	Wire leads direction	Wire leads type	
			SPST-NC	SPST-NO
Leaf lever	1.27 N {130 gf}	Right	ABJ472841	ABJ473841
	1.27 N {130 gf}	Left	ABJ482841	—
	1.76 N {180 gf}	Right	ABJ472861	ABJ473861
	1.76 N {180 gf}	Left	ABJ482861	—

Fixed pin (left side pin) type  
Silver alloy

Actuator	Operating force Max.	Wire leads direction	Wire leads type	
			SPST-NC	SPST-NO
Leaf lever	1.27 N {130 gf}	Right	ABJ572840	ABJ573840
	1.27 N {130 gf}	Left	ABJ582840	—
	1.76 N {180 gf}	Right	ABJ572860	ABJ573860
	1.76 N {180 gf}	Left	ABJ582860	—

Remarks: When ordering UL/CSA approved types, please attach suffix "9" to the part number.

# ABJ1,2,3,4,5

Gold-clad

Actuator	Operating force Max.	Wire leads direction	Wire leads type	
			SPST-NC	SPST-NO
Leaf lever	1.27 N {130 gf}	Right	ABJ572841	ABJ573841
	1.27 N {130 gf}	Left	ABJ582841	—
	1.76 N {180 gf}	Right	ABJ572861	ABJ573861
	1.76 N {180 gf}	Left	ABJ582861	—

Mounting hole 3mm .118inch type

Silver alloy

Actuator	Operating force Max.	Wire leads direction	Wire leads type	
			SPST-NC	SPST-NO
Leaf lever	1.27 N {130 gf}	Left	ABJ382840	—
	1.76 N {180 gf}		ABJ382860	—

Gold-clad

Actuator	Operating force Max.	Wire leads direction	Wire leads type	
			SPST-NC	SPST-NO
Leaf lever	1.27 N {130 gf}	Left	ABJ382841	—
	1.76 N {180 gf}		ABJ382861	—

### 3. Immersion protected type (Bottom wire leads type) Long stroke type

Mounting hole 2.3mm .091inch type

Silver alloy

Actuator	Operating force Max.	Mounting hole 2.3 mm type		
		SPDT	SPST-NC	SPST-NO
Pin plunger (Horizontal)	2.45 N {250 gf}	ABJ261L70	ABJ262L70	ABJ263L70

Gold-clad

Actuator	Operating force Max.	Mounting hole 2.3 mm type		
		SPDT	SPST-NC	SPST-NO
Pin plunger (Horizontal)	2.45 N {250 gf}	ABJ261L71	ABJ262L71	ABJ263L71

Remarks: When ordering UL/CSA approved types, please attach suffix "9" to the part number.

## APPLICABLE CURRENT RANGE

Contact	Applicable current range				Max. operating force for operation (at pin plunger)	
	1mA	0.1A	1A	2A	1.23 N {125 gf}	1.96 N {200 gf}
Ag					•	•
					•	•
Au					•	•
					•	•

## SPECIFICATIONS

### 1. Contact rating

Type	Operating force Max.	Standard rating	Low-level circuit rating
Silver alloy contact	1.76 N {180 gf}, 1.96 N {200 gf}	2 A 125 V AC 2 A 30 V DC	—
	1.23 N {125 gf}, 1.27 N {130 gf}	1 A 125 V AC 1 A 30 V DC	—
Long stroke type Silver alloy contact	2.45 N {250 gf}	1 A 125 V AC 1 A 30 V DC	—
Gold-clad contact	1.23 N {125 gf}, 1.27 N {130 gf} 1.76 N {180 gf}, 1.96 N {200 gf}	0.1 A 125 V AC	5 mA 6 V DC 2 mA 12 V DC 1 mA 24 V DC
Long stroke type Gold-clad contact	2.45 N {250 gf}	0.1 A 125 V AC 0.1 A 30 V DC	5 mA 6 V DC 2 mA 12 V DC 1 mA 24 V DC

## 2. Characteristics

Mechanical life (O.T.: Specified value)	Leaf lever, Long stroke type	Min. $5 \times 10^5$ (at 60 cpm)
	Wire leads (right & left side type)	Min. $3 \times 10^5$ (at 60 cpm)
	Other types	Min. $10^6$ (at 60 cpm)
Electrical life at rated load (O.T.: max.)	Silver alloy contact type	Min. $3 \times 10^4$ (at 60 cpm)
	Gold-clad contact type	Min. $10^5$ (at 20 cpm)
Insulation resistance	Min. 100 M $\Omega$ (at 500 V DC insulation resistance meter)	
Dielectric strength	Between non-continuous terminals	600 Vrms
	Between each terminal and other exposed metal parts	1,500 Vrms
	Between each terminal and ground	1,500 Vrms
Vibration resistance (Pin plunger type)	10 to 55 Hz at single amplitude of 0.75 mm (Contact opening max. 1 msec.)	
Shock resistance (Pin plunger type)	Min. 294 m/s <sup>2</sup> {30 G} (Contact opening max. 1 msec.)	
Contact resistance (Initial)	Silver contact type	Dust protected type (IP50): Max. 50 m $\Omega$ Immersion protected type (IP67): Max. 100 m $\Omega$ (By voltage drop 1 A 6 to 8 V DC)
	Gold clad contact type	Dust protected type (IP50): Max. 100 m $\Omega$ Immersion protected type (IP67): Max. 150 m $\Omega$ (By voltage drop 0.1 A 6 to 8 V DC)
Allowable operating speed (at no load)	1 to 500 mm/sec.	
Max. operating cycle rate (at no load)	Other type: 120 cpm Long stroke type: 60 cpm	
Ambient temperature	-40°C to +85°C -40°F to +185°F	
Ambient humidity	Max. 95% R.H.	
Unit weight	Approx. 0.5 g .018 oz (IP50 type)	

## 3. Operating characteristics

### Operating force / Release force / Pretravel

Type of actuator	Operating force, Max.		Release force, Min		Pretravel, Max. mm inch
Pin plunger	1.23N {125gf}	1.96N {200gf}	0.15N {15gf}	0.25N {25gf}	0.6 .024
Hinge lever	0.39N {40gf}	0.64N {65gf}	0.029N {3.0gf}	0.049N {5.0gf}	3.0 .118
Simulated roller lever	0.39N {40gf}	0.64N {65gf}	0.029N {3.0gf}	0.049N {5.0gf}	3.0 .118
Roller lever	0.39N {40gf}	0.64N {65gf}	0.029N {3.0gf}	0.049N {5.0gf}	3.0 .118
Leaf lever	0.98N {100gf}	1.27N {130gf}	0.20N {20gf}	0.29N {30gf}	6.0 .236
Long stroke type	2.45N {250gf}		0.19N {20gf}		—

### Movement differential / Overtravel / Operating position

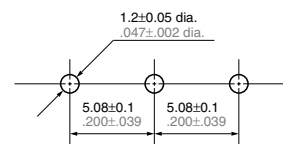
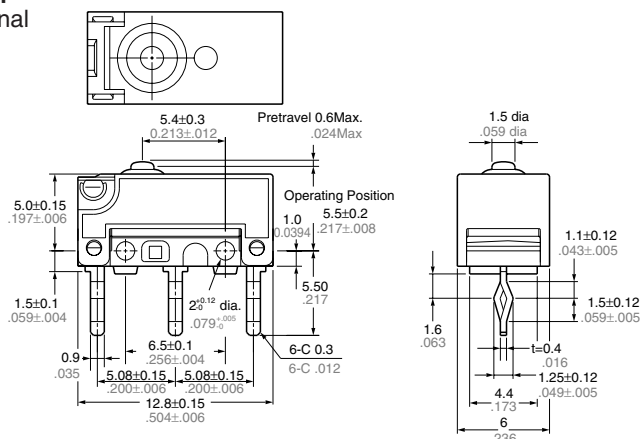
Type of actuator	Movement differential, Max. mm inch	Overtravel, Min. mm inch	Operating position, mm inch		
			Mounting hole: 1.2 .047	Mounting hole: 2.3 .091	Mounting hole: 3.0 .118
Pin plunger	0.12 .005	0.25 .010	5.5±0.2 .217 ± .008	7.0±0.2 .276 ± .008	—
Hinge lever	0.5 .020	0.5 .020	6.8±1.0 .286 ± .039	8.3±1.0 .327 ± .039	—
Simulated roller lever	0.5 .020	0.5 .020	9.8±1.0 .386 ± .039	11.3±1.0 .445 ± .039	—
Roller lever	0.5 .020	0.5 .020	13.1±1.0 .516 ± .039	14.6±1.0 .575 ± .039	—
Leaf lever	1.0 .039	2.5 .098	—	—	16.0±2.0 .630 ± .079
Long stroke type	0.5 .020	2.0 .079	—	2.5±0.4 .098 ± .016	—

( ): Low force type

## DIMENSIONS

mm inch General tolerance:  $\pm 0.25 \pm 0.010$

### 1. Dust protected type 1-(1) PC board terminal Pin plunger

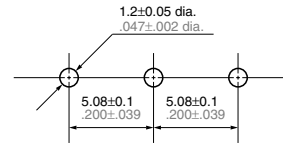
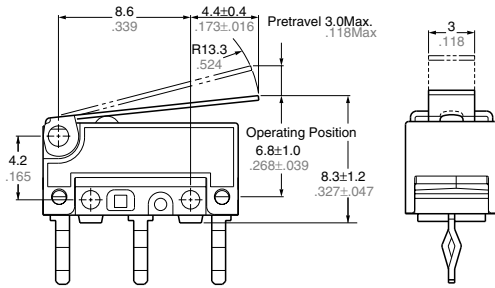


Pretravel, Max. mm inch	0.6 .024	
Movement differential, Max. mm inch	0.12 .005	
Overtravel, Min. mm inch	0.25 .010	
Operating position	Distance from mounting hole, mm inch	5.5±0.2 .217 ± .088
	Distance from stand-off, mm inch	7±0.3 .276 ± .012

# ABJ1,2,3,4,5

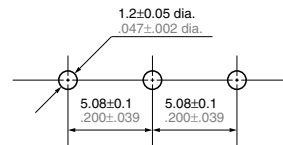
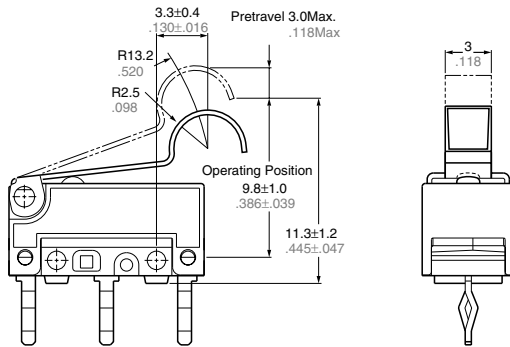
## Hinge lever

mm inch General tolerance:  $\pm 0.25 \pm 0.10$



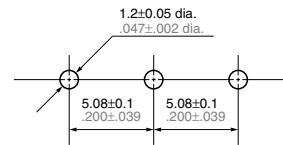
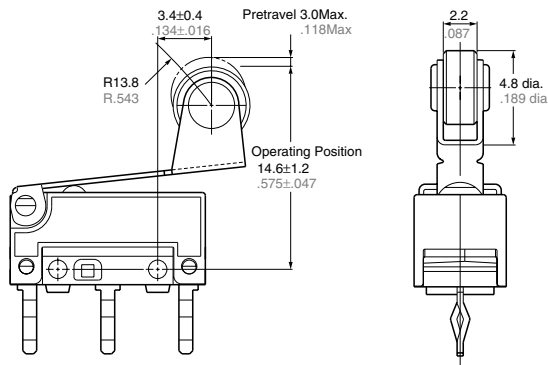
Pretravel, Max. mm inch		3.0 .118
Movement differential, Max. mm inch		0.5 .020
Overtravel, Min. mm inch		0.5 .020
Operating position	Distance from mounting hole, mm inch	6.8±1.0 .267 ± .039
	Distance from stand-off, mm inch	8.3±1.2 .327 ± .047

## Simulated roller lever



Pretravel, Max. mm inch		3.0 .118
Movement differential, Max. mm inch		0.5 .020
Overtravel, Min. mm inch		0.5 .020
Operating position	Distance from mounting hole, mm inch	9.8±1.0 .386 ± .039
	Distance from stand-off, mm inch	11.3±1.2 .445 ± .047

## Roller lever

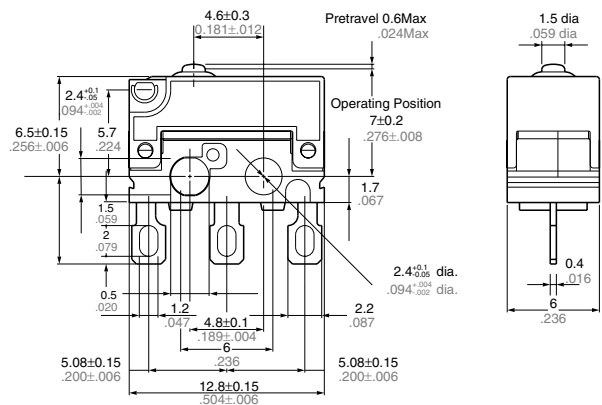
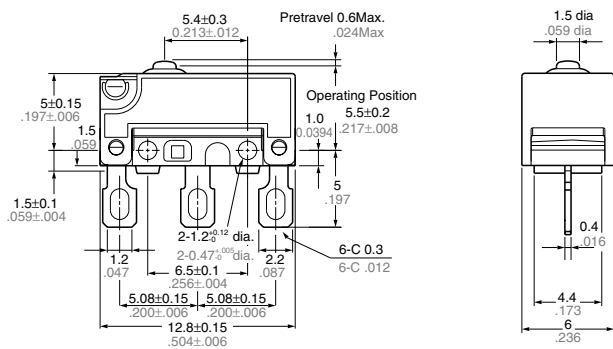


Pretravel, Max. mm inch		3.0 .118
Movement differential, Max. mm inch		0.5 .020
Overtravel, Min. mm inch		0.5 .020
Operating position	Distance from mounting hole, mm inch	13.1±1.0 .516 ± .039
	Distance from stand-off, mm inch	14.6±1.0 .575 ± .039

## 1-(2) Solder terminal Pin plunger

Mounting hole: 1.2 mm .047 inch

Mounting hole: 2.3 mm .091 inch



Remarks: Dimensions of the actuator type are the same as corresponding PC board terminal types.

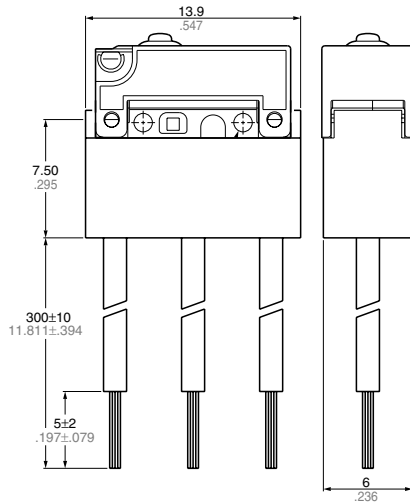
## 2. Immersion protected type

### 2-(1) Bottom wire leads type

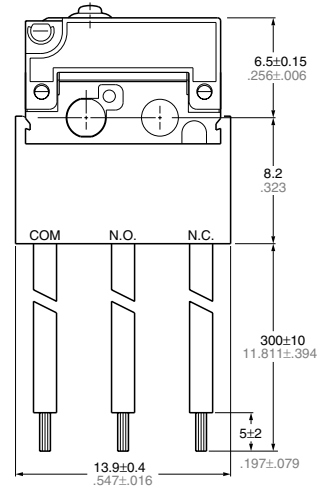
Pin plunger

Mounting hole: 1.2 mm .047 inch

Mounting hole: 2.3 mm .091 inch



Thickness of the lead wire: 0.3 mm<sup>2</sup>  
 UL/CSA approved type: AWG #20  
 Color of the lead wire:  
 COM ...Black  
 N.C. ...Red  
 N.O. ...White

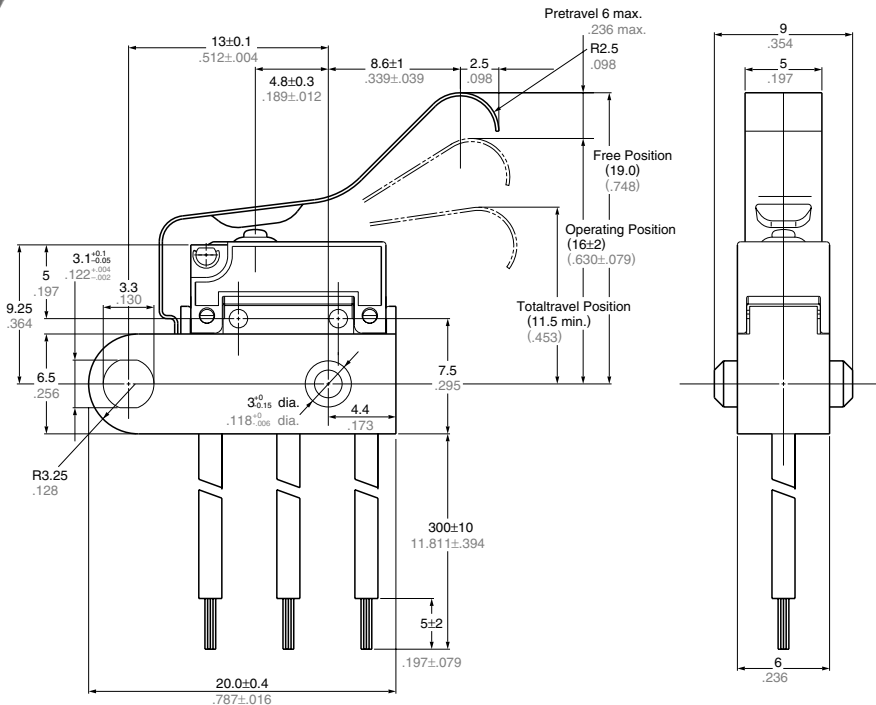
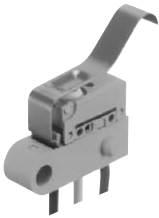


Thickness of the lead wire: 0.3 mm<sup>2</sup>  
 UL/CSA approved type: AWG #20  
 Color of the lead wire:  
 COM ...Black  
 N.C. ....Red  
 N.O. ...White

Remarks: 1. As for M1.2 type, other dimensions are the same as those of corresponding PC board terminal types.  
 As for M2.3 type, other dimensions are the same as those of corresponding solder terminal types.  
 2. Dimensions of the actuator type are the same as corresponding PC board terminal types.

### Leaf lever

Mounting hole: 3 mm .118 inch

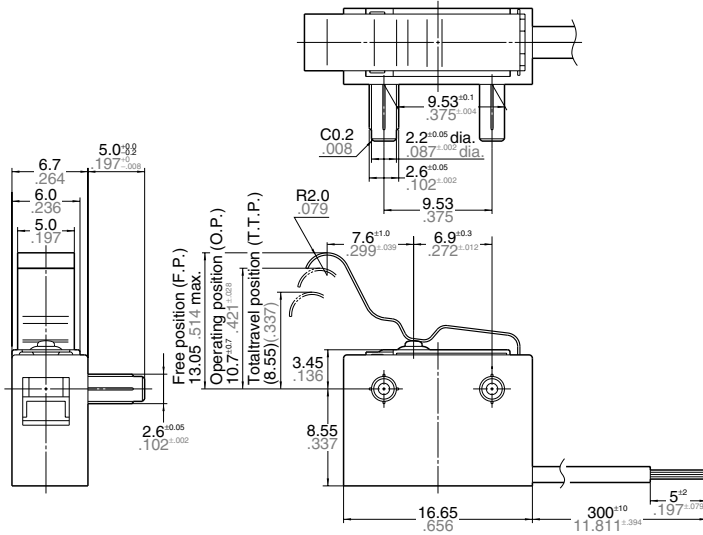
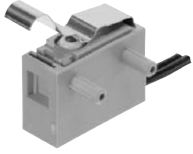


Pretravel, Max. mm inch	6.0 .236
Movement differential, Max. mm inch	1.0 .039
Overtravel, Min mm inch	2.5 .098
Operating position	Distance from mounting hole, mm inch
	16.0±2.0 .630 ± .079

# ABJ1,2,3,4,5

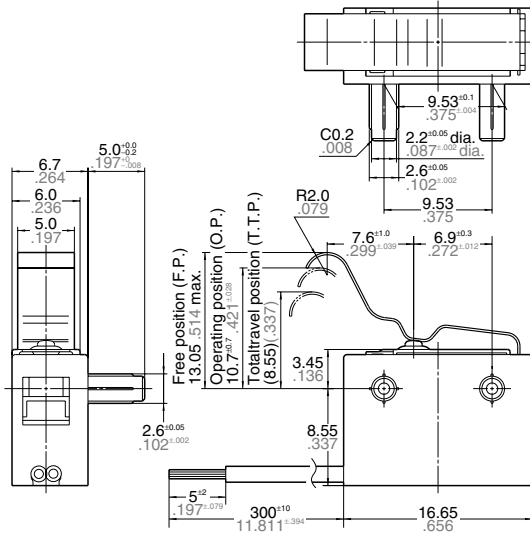
2-(2) Side wire leads type  
 Fixed pin type  
 Right side pin type  
 Right wire leads type

mm inch General tolerance:  $\pm 0.25 \pm 0.10$



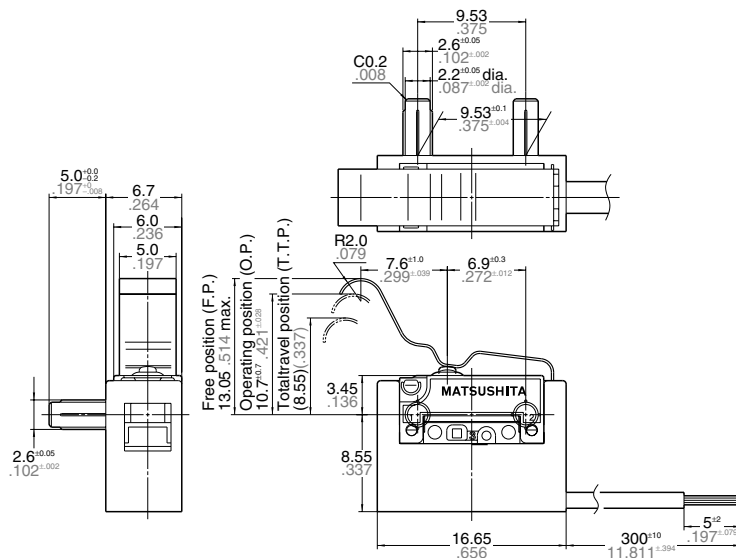
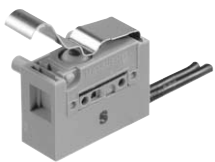
Pretravel, Max. mm inch	2.6 .102
Movement differential, Max. mm inch	0.5 .020
Overtravel, Min mm inch	1.4 .055
Operating position	Distance from mounting hole, mm inch
	10.7±0.7 .421 ± .028

Left wire leads type



Pretravel, Max. mm inch	2.6 .102
Movement differential, Max. mm inch	0.5 .020
Overtravel, Min mm inch	1.4 .055
Operating position	Distance from mounting hole, mm inch
	10.7±0.7 .421 ± .028

Left side pin type  
 Right wire leads type

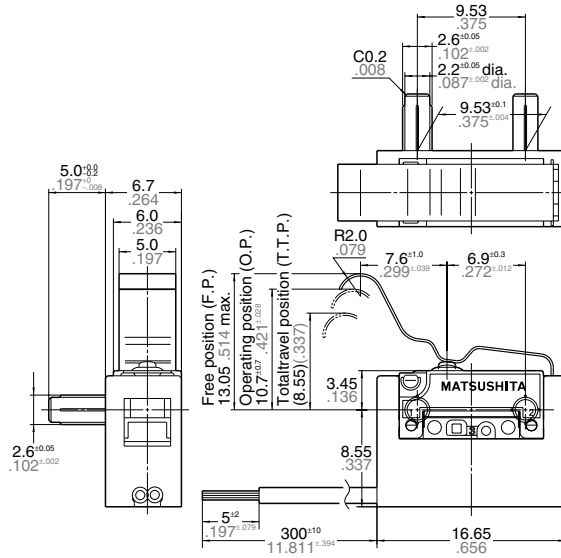


Pretravel, Max. mm inch	2.6 .102
Movement differential, Max. mm inch	0.5 .020
Overtravel, Min mm inch	1.4 .055
Operating position	Distance from mounting hole, mm inch
	10.7±0.7 .421 ± .028



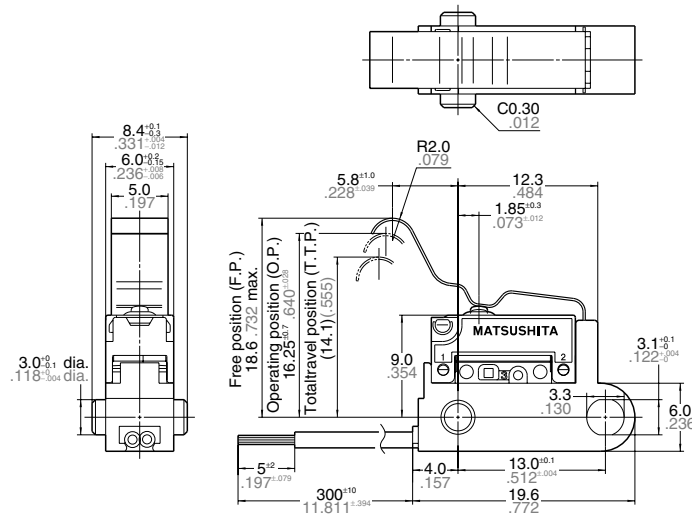
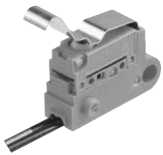
## Left wire leads type

mm inch General tolerance:  $\pm 0.25 \pm .010$



Pretravel, Max. mm inch	2.6 .102
Movement differential, Max. mm inch	0.5 .020
Overtravel, Min mm inch	1.4 .055
Operating position	Distance from mounting hole, mm inch 10.7 $\pm$ 0.7 / .421 $\pm$ .028

## Mounting hole 3mm .118 inch type



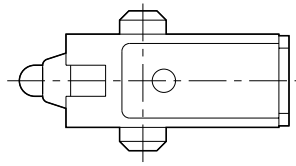
Pretravel, Max. mm inch	2.6 .102
Movement differential, Max. mm inch	0.5 .020
Overtravel, Min mm inch	1.4 .055
Operating position	Distance from mounting hole, mm inch 16.25 $\pm$ 0.7 / .640 $\pm$ .028

# ABJ1,2,3,4,5

## 3. Immersion protected type (Bottom wire leads type) Long stroke type

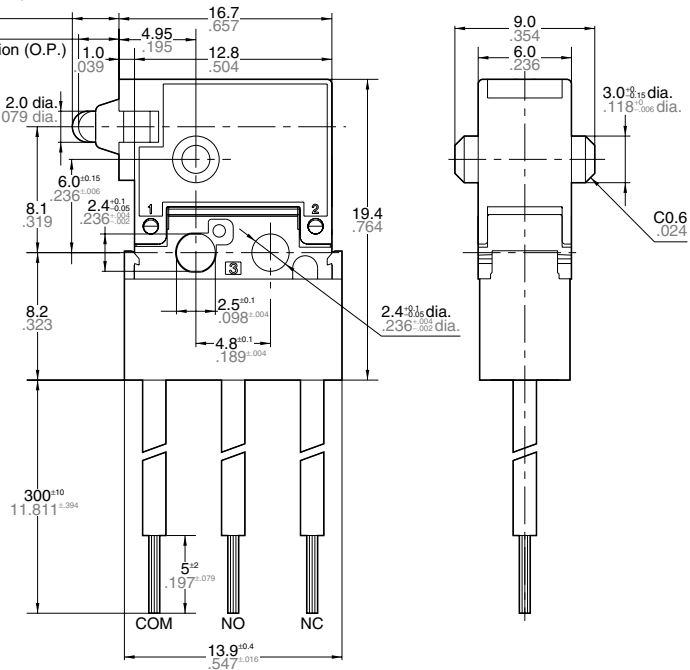
mm inch General tolerance:  $\pm 0.25 \pm 0.10$

Mounting hole: 2.3 mm .091 inch



Free position (F.P.)  
3.2  $\pm 0.126$  max.

Operating position (O.P.)  
2.5  $\pm 0.4 \pm 0.098 \pm 0.16$



Movement differential, Max. mm inch	0.5 .020
Overtravel, Min mm inch	2.0 .079
Operating position	2.5 $\pm 0.4$ .098 $\pm 0.16$