

audio

automotive

aerospace

communication devices

consumer appliances

consumer electronics

datacom

data storage

handheld devices

industrial

industrial equipment

instrumentation

medical

military

mobile phones

portable tools

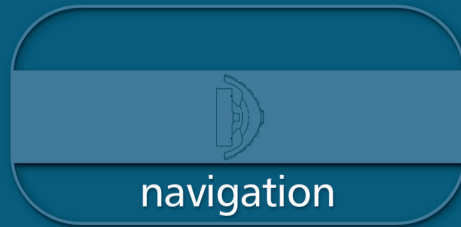
pumps & motors

security alarms

telecom

test equipment

thermostatic controls

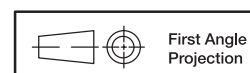


# navigation

# Navigation Switches

## Product Selection Guide

Navigation			
Series	SAM	CS	THB
Number of directions	2 4	4	Dual axis with center select
Size on PCB L x W (mm)	20.7 x 18 or 26.2 x 26.2	40 x 40	21 x 17
Total Height (mm)	27.85 or 31.85 or 27.6	58	19.45
Actuation Force (N)	5.3 or 6	4,9N	714 ± 204 gf
Contact Type	Silver alloy	NA	NA
Max. Voltage (VDC)	14	12	5
Max. Switching Power (A)	15	0.2	NA
Life Cycles/ per way	30,000	10,000	2,000,000
Sealing	Not sealed	Not sealed	Not sealed
Page Number	C-4	C-7	C-8



Dimensions are shown: mm  
Specifications and dimensions subject to change

# SAM Series Multiway Switches

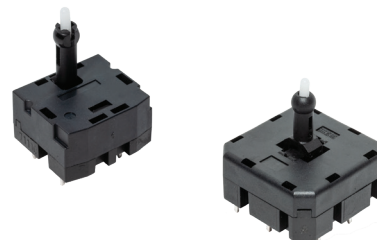
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## Features/Benefits

- Multi-directional switches  
2-way & 4-way
- Actuation force 5.3N or 6N
- Footprint 20.7x18.0 mm (2-way) & 26.2x26.2 mm (4-way)
- Momentary action - SPDT

## Typical Applications

- Automotive
- Industrial
- Avionics
- Joystick switch



## Specifications

FUNCTION: Momentary action.  
CONTACT ARRANGEMENT: SPDT per switching circuit  
SWITCHING MODE: Non-Shorting  
TERMINALS: THT - Through Hole Terminals

## Mechanical

P/N	Force (N)	Operating Life (Cycles*)	Travel (mm)
SAM-H2-LR10SPA	6.0±2.0	30,000	1.00±0.4
SAM-H2-LR14SPA	5.3±2.0	30,000	1.25±0.4
SAM-H2-MR14SPA	5.3±2.0	30,000	1.25±0.4
SAM-H4-MR11SPA	6.0±2.0	30,000	1.00±0.4

Notes: \* per direction

## Electrical

RATING: 15A @ 14V DC  
INITIAL CONTACT RESISTANCE: <20mΩ per switching circuit  
DIELECTRIC WITHSTANDING VOLTAGE: 500VAC  
INSULATION RESISTANCE: >100MΩ  
BOUNCE TIME: <10ms

## Environmental

OPERATING TEMPERATURE: -40°C to +85°C  
STORAGE TEMPERATURE: -40°C to +85°C  
SEALING LEVEL: IP30

## Process

SOLDERING: Wave compatible  
TERMINALS: Silver plated

## Materials

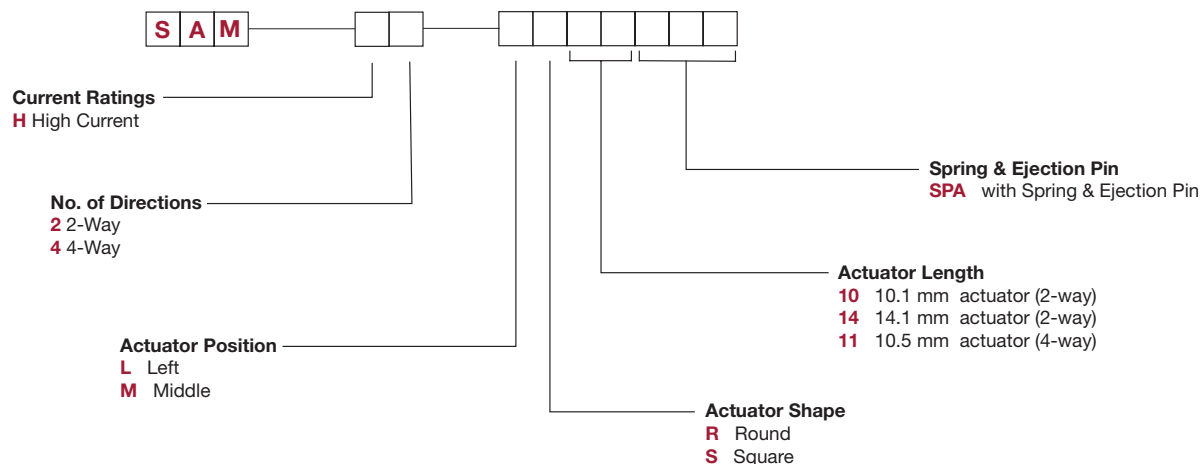
HOUSING: Polyamide UL94 HB  
COVER: PBT+ASA UL94 HB  
ACTUATOR: Polyamide UL94 HB  
TERMINAL: Copper alloy, silver plated  
CONTACT: Silver alloy

## Packaging

720 pieces per box for SAM-H2-LR10SPA & SAM-H2-LR14SPA  
540 pieces per box for SAM-H2-MR14SPA  
264 pieces per box for SAM-H4-MR11SPA

## How To Order

The Build-A Switch concept allows you to mix and match options to create the switch you need. Below is a complete listing of options shown in catalog. To order, simply select desired option from each category and place in the appropriate box.

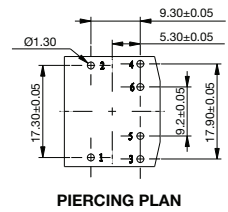
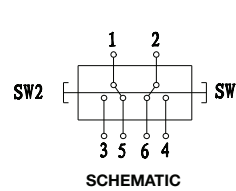
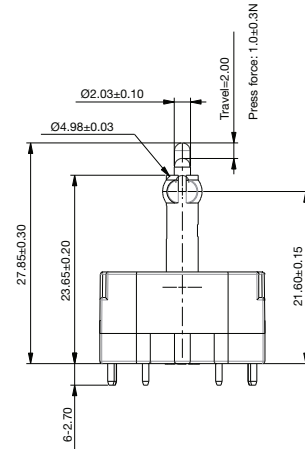
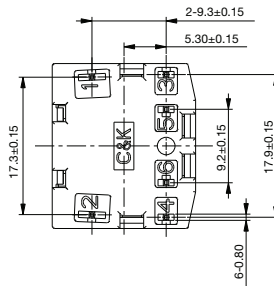
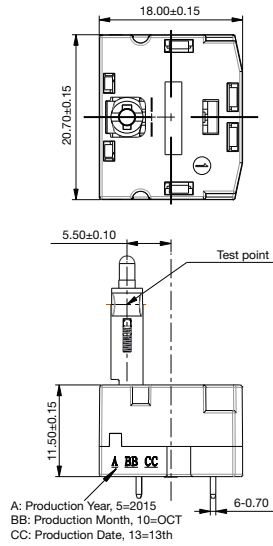


Dimensions are shown: mm  
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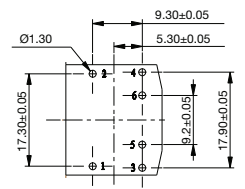
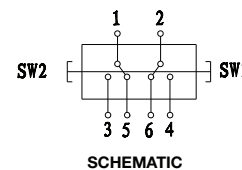
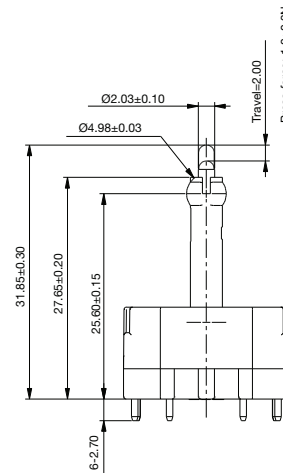
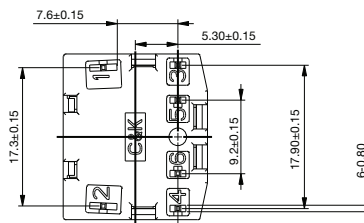
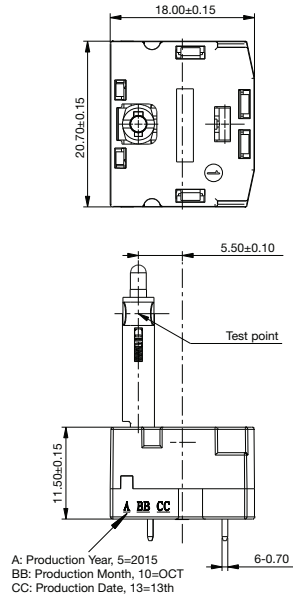
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# SAM Series Multiway Switches

## SAM-H2-LR10SPA



## SAM-H2-LR14SPA

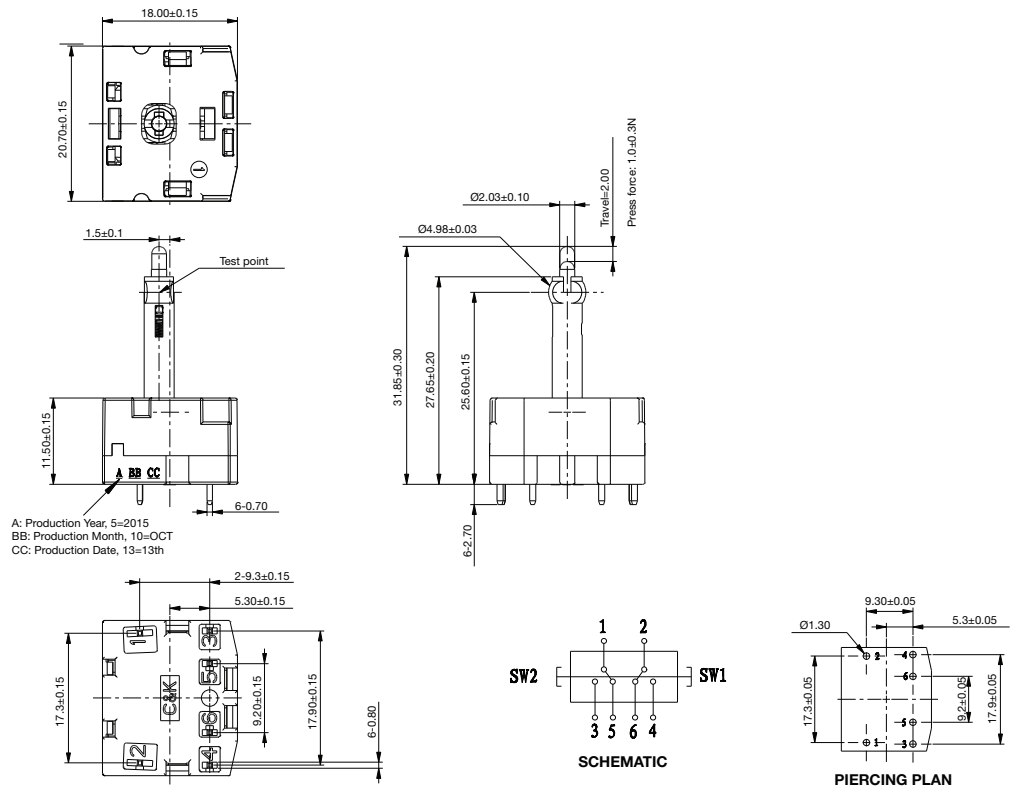


Navigation

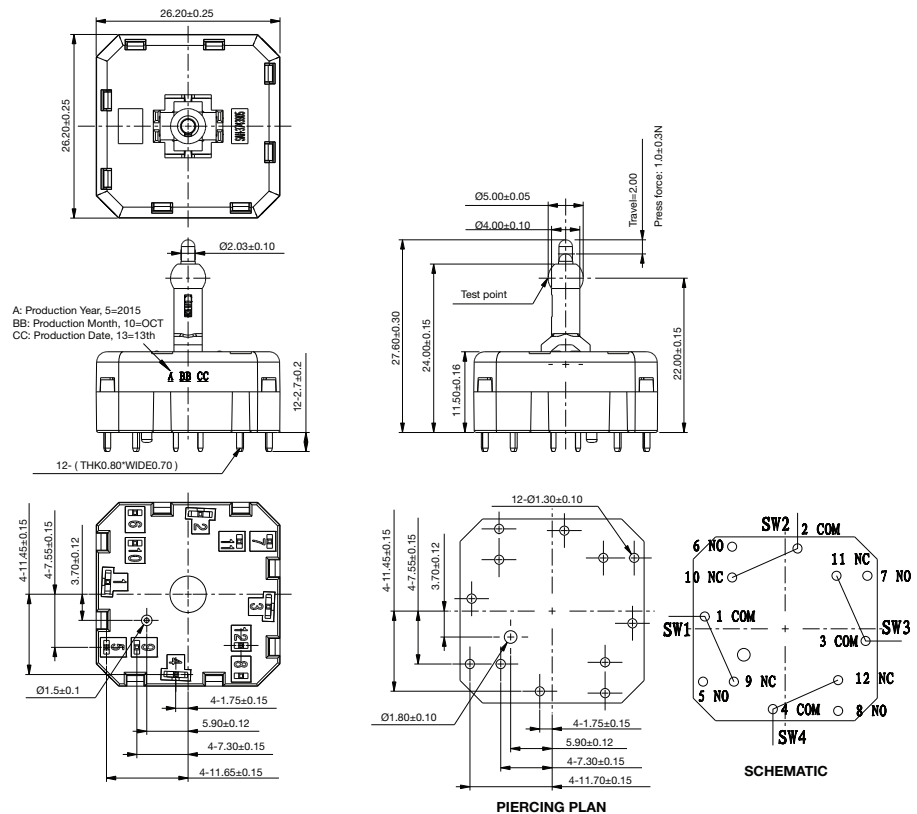
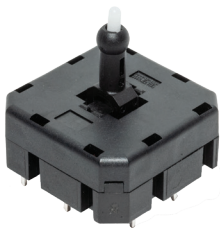
# SAM Series Multiway Switches

**NEW**

## SAM-H2-MR14SPA



## SAM-H4-MR11SPA



Dimensions are shown: mm  
 Specifications and dimensions subject to change

www.ckswitches.com

# CS-41001E Series 4-way Adjustable Direction Switch



## Features/Benefits

- Designed for mirror control
- Wire harness and connector easy to customize
- 4-way adjustable directions

## Typical Applications

- Automotive
- Industrial

## Specifications

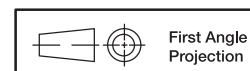
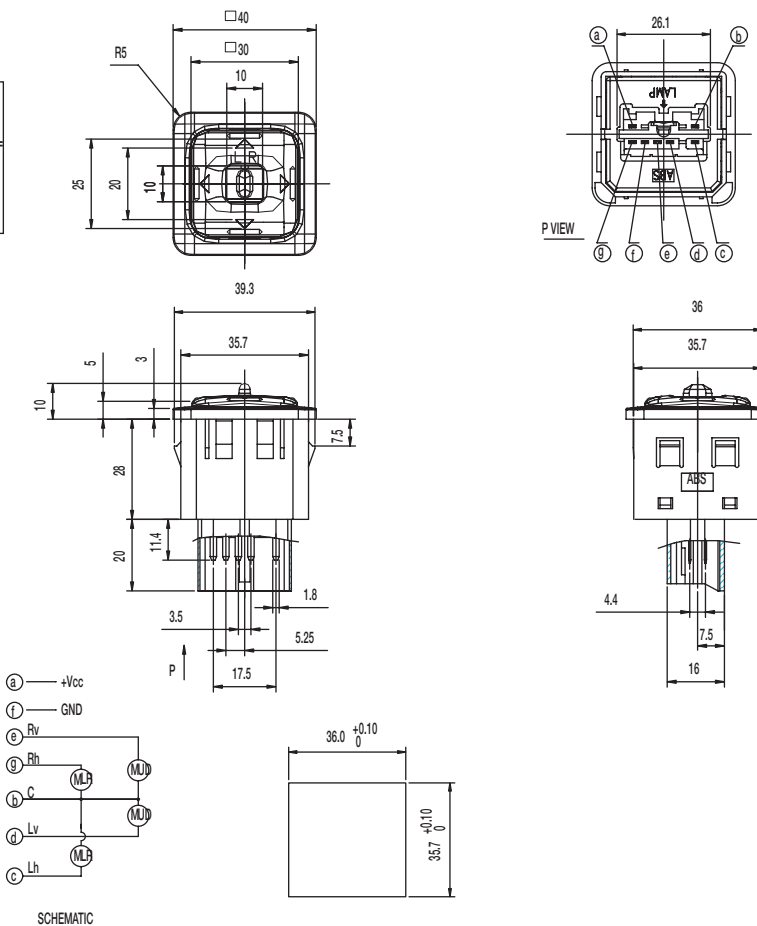
CONTACT RATING: 0.2 A @ 12 VDC  
 OPERATING LIFE: 10,000 cycles  
 INSULATION RESISTANCE: 10 M  $\Omega$  min. @ 500 VDC  
 DIELECTRIC STRENGTH: 500 V AC  
 OPERATING TEMPERATURE: -40°C to +90°C  
 OPERATING FORCE: L- OFF, R-OFF; 200  $\pm$  100 gf  
 OFF-L, OFF-R; 400  $\pm$  200 gf  
 4 Direction; 500  $\pm$  200 gf

## Materials

KNOB: ABS  
 COVER: ABS  
 TERMINAL: Brass, tin plated

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

PART NUMBER	PACKAGING
<b>CS-41001-E</b>	256 pieces



Dimensions are shown: mm  
 Specifications and dimensions subject to change



### Features/Benefits

- 2 axis, multi-direction operation
- 2,000,000 life cycle for toggle
- Center select momentary switch
- Small package size

### Typical Applications

- Gaming peripherals
- Remote Control Vehicles
- Mini-joystick
- Thumb control
- Navigation control
- Industrial control
- Heavy equipment



### Electrical

TOTAL RESISTANCE (POTENTIOMETERS): 10kΩ ± 20% initial  
Within ± 20% of initial values for 10,000 cycles

RESISTANCE POTENTIOMETERS: Percentage of the voltage of terminal 1-2 to the voltage of terminal 1-3

RATED VOLTAGE: 50 VAC or 5 VDC

RATED POWER: 0.05 A @ 12 VDC

CONTACT NOISE: Noise < 10% of operating voltage

VOLTAGE DIVIDER: 39.6 ~ 60.4%

INSULATION RESISTANCE: > 100 MΩ

WITHSTANDING VOLTAGE: No arcing or breakdown

### Environment

OPERATING TEMPERATURE: -10°C to +70°C

STORAGE TEMPERATURE: -30°C to +80°C

### Mechanical

PATTERN OF ACTUATOR MOVEMENT: Toggle cross-wide and in a circle

FULL STROKE ACTUATION STOP STRENGTH: > 3.1 kgf  
(3 seconds minimum)

PULL STRENGTH OF THE ACTUATOR: > 5.0 kgf  
(3 seconds minimum)

ACTUATION FORCE: 160 +/- 40 gf (19 +/- 5mN\*M of Torque)

ACCURACY OF RETURN TO ACTUATOR RELEASE POSITION: ±3°

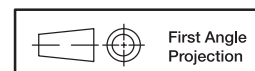
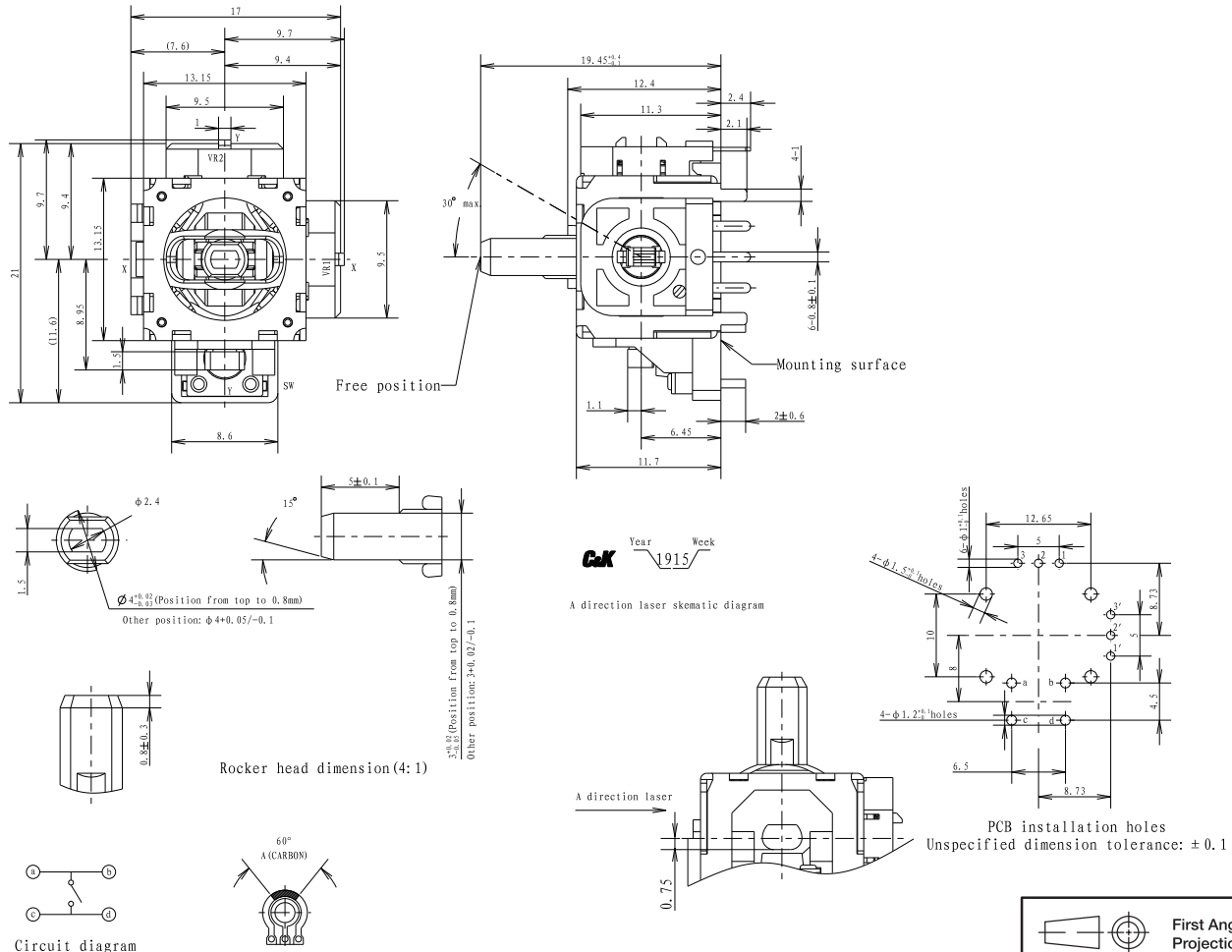
TOGGLE ANGLE OF OPERATION: 30° to 36°C Max angle from vertical through full circular range of rotation

OPERATING LIFE: 1,000,000 cycles minimum (center switch)  
2,000,000 cycles minimum (thumbstick toggle)

### Packaging

Tray (60 units)

### THB001P



Dimensions are shown: mm  
Specifications and dimensions subject to change

