

# General Specifications

## CWSA

### Electrical Capacity

**Power Level:** For Resistive Load 6A @ 250V AC

### Other Ratings

**Contact Resistance:** 20 milliohms maximum

**Insulation Resistance:** 500 megohms minimum @ 500V DC

**Dielectric Strength:** 1,500V AC minimum between contacts for 1 minute minimum

3,000V AC minimum between contacts & case for 1 minute minimum

**Mechanical Life:** 30,000 operations minimum

**Electrical Life:** 10,000 operations minimum with Resistive Load & 6,000 operations with Inductive Load

**Nominal Operating Force:** 2.50N

**Angle of Throw:** 30°

**Operating Temperature Range:** -10°C ~ +70°C (+14°F ~ +158°F)

### Materials & Finishes

**Rocker:** Polycarbonate

**Housing:** Polyamide

**Movable Contactor:** Brass with silver alloy plating

**Movable Contacts:** Silver alloy

**Stationary Contacts:** Silver alloy

**Base:** Laminated thermosetting sheets

**Contact Terminals:** Copper with silver plating

**Common Terminals:** Brass with silver plating

## CWSB

### Electrical Capacity

**Power Level:** For Resistive Load 6A @ 250V AC

### Other Ratings

**Contact Resistance:** 20 milliohms maximum

**Insulation Resistance:** 500 megohms minimum @ 500V DC

**Dielectric Strength:** 1,500V AC minimum between contacts for 1 minute minimum

3,000V AC minimum between contacts & case for 1 minute minimum

**Mechanical Life:** 30,000 operations minimum

**Electrical Life:** 10,000 operations minimum with Resistive Load & 6,000 operations with Inductive Load

**Nominal Operating Force:** 6.50N for single pole models; 10.0N for double pole models

**Angle of Throw:** 30°

**Operating Temperature Range:** -10°C ~ +70°C (+14°F ~ +158°F)

### Materials & Finishes

**Rocker:** Polycarbonate

**Housing:** Polyamide

**Movable Contactor:** Beryllium copper w/silver alloy plating

**Movable Contacts:** Silver

**Stationary Contacts:** Silver alloy

**Base:** Laminated thermosetting sheets

**Terminals:** Brass with silver plating

## CWT

### Electrical Capacity

**Power Level:** For Resistive Load 6A @ 125V AC; 3A @ 250V AC; 4A @ 30V DC

### Other Ratings

**Contact Resistance:** 20 milliohms maximum

**Insulation Resistance:** 1,000 megohms minimum @ 500V DC

**Dielectric Strength:** 1,000V AC minimum between contacts for 1 minute minimum

1,500V AC minimum between contacts & case for 1 minute minimum

**Mechanical Life:** 50,000 operations minimum

**Electrical Life:** 25,000 operations minimum

**Nominal Operating Force:** 2.0N

**Angle of Throw:** 30°

**Operating Temperature Range:** -25°C ~ +70°C (-13°F ~ +158°F)

### Materials & Finishes

**Rocker:** Glass fiber reinforced polyamide

**Housing:** Polyamide

**Movable Contactor:** Phosphor bronze w/silver plating

**Movable Contacts:** Silver alloy

**Base:** LCP (Liquid Crystal Polymer)

**Contact Terminals:** Brass + silver with silver plating

**Common Terminals:** Brass with silver plating

# Distinctive Characteristics

## CWSA

Low cost molded rocker.

See-saw contact mechanism

Stable stationary contact construction for high reliability.

Easily installed with snap-in mounting.

Large terminal hole dimensioned .067" x .098"  
(1.7mm x 2.5mm) simplifies wiring and soldering.

Wave Soldering (PC version): See Profile A in Supplement section.  
Manual Soldering: See Profile A in Supplement section.



## CWSB

Low cost molded rocker.

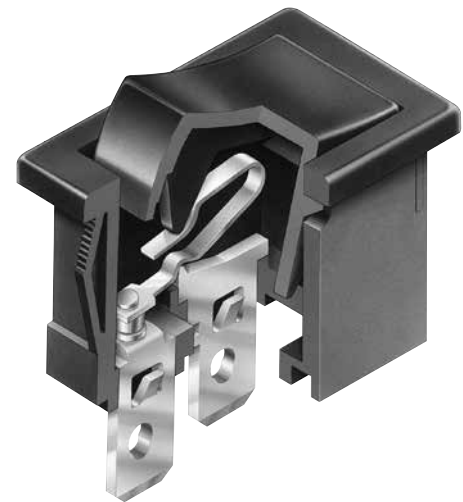
Snap-acting contact mechanism gives smooth actuation and audible feedback.

Stable stationary contact construction for high reliability.

Front panel, snap-in mounting for labor-saving installation.

Solder lug/quick connect terminals can be used with connectors.

Manual Soldering: See Profile B in Supplement section.



## CWT

Low cost molded rocker in compact, slim design.

See-saw contact mechanism

Outstanding insulation resistance and dielectric strength.

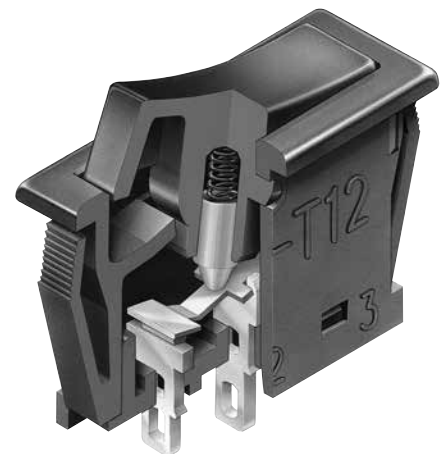
Dust proof construction protects contact area.

Stable stationary contact construction for high reliability.

Front panel, snap-in mounting for labor-saving installation.

Terminals are molded in and epoxy sealed to lock out flux, dust, and other contaminants.

Manual Soldering: See Profile A in Supplement section.



- Toggle
- B** Rockers
- Pushbuttons
- Illuminated PB
- Programmable
- Keylocks
- Rotaries
- Slides
- Tactiles
- Tilt
- Touch
- Indicators
- Accessories
- Supplement

### STANDARDS & CERTIFICATIONS

#### CWSA



Specific CWSA models listed below are qualified for Underwriters Laboratories Inc. recognition and Canadian Standards Association certification. cULus marking on case is standard as noted in following table.

<u>Model</u>	<u>Ratings @ AC</u>	<u>cULus File No.</u>	<u>Marking on Case</u>
CWSA11	6A @ 250V	E44145	Standard
CWSA12	6A @ 250V	E44145	Standard

#### CWSB



Specific CWSB models listed below are qualified for Underwriters Laboratories Inc. recognition and Canadian Standards Association certification. cULus marking on case is standard as noted in following table.

<u>Model</u>	<u>Ratings @ AC</u>	<u>cULus File No.</u>	<u>Marking on Case</u>
CWSB11	6A @ 250V	E44145	Standard
CWSB21	6A @ 250V	E44145	Standard

#### CWT



Specific CWT model listed below is qualified for Underwriters Laboratories Inc. recognition and Canadian Standards Association certification. cULus marking on case is standard as noted in following table.

<u>Model</u>	<u>Ratings @ AC</u>	<u>cULus File No.</u>	<u>Marking on Case</u>
CWT12	6A @ 125V 3A @ 250V	E44145	Standard

TYPICAL SWITCH ORDERING EXAMPLES

**CWSA** **1** **1** **A** **A** **N** **S**

Pole	
1	SPST & SPDT

Circuits			
1	ON	NONE	OFF
2	ON	NONE	ON


Cap Color	
A	Black

Housing	
A	Black

Inscription	
For SPST & SPDT	
No Code	None
For SPST	
1	Horizontal
2	Vertical
3	Dot Marking

Terminals	
S	Solder Lug
H	Right Angle PC

**TYPICAL ORDERING EXAMPLE**  
**CWSA11AANS**



**CWSB** **2** **1** **A** **A** **2** **F**

Poles	
1	SPST
2	DPST

Circuit			
1	ON	NONE	OFF


Cap Color	
A	Black

Housing	
A	Black

Inscription	
No Code	None (SPST only)
1	Horizontal
2	Vertical
3	Dot Marking (SPST only)

Terminals	
F	Quick Connect
H	Right Angle PC

**TYPICAL ORDERING EXAMPLE**  
**CWSB21AA2F**



**CWT** **1** **2** **A** **A** **S1**

Pole	
1	SPDT


Circuit			
2	ON	NONE	ON

Cap Color	
A	Black

Housing	
A	Black

Terminals	
S1	Solder Lug

**TYPICAL ORDERING EXAMPLE**  
**CWT12AAS1**



Toggles  
 Rockers **B**  
 Pushbuttons  
 Illuminated PB  
 Programmable  
 Keylocks  
 Rotaries  
 Slides  
 Tactiles  
 Tilt  
 Touch  
 Indicators  
 Accessories  
 Supplement

## INSCRIPTIONS

**No Code**

**None**

Not available in double pole.



**1**

**Horizontal Orientation**

Only On-None-Off models are available with the horizontal inscription.



**2**

**Vertical Orientation**

Only On-None-Off models are available with the vertical inscription.



**3**

**Dot Marking**

Only Single Pole On-None-Off models are available with the dot inscription.

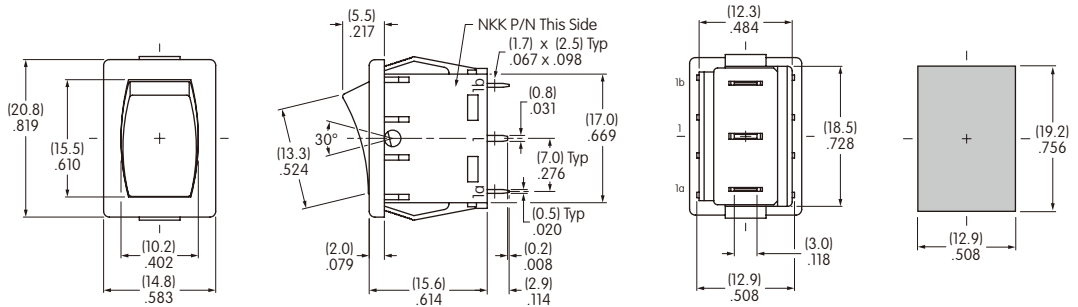


The IEC symbols for On-Off are supplied with Single Throw models only. Orientation of inscription must be selected. Inscription color is white ink on black.

## TYPICAL SWITCH DIMENSIONS FOR CWSA

**Solder Lug**

**Single Pole • No Inscription**



**CWSA12AANS**

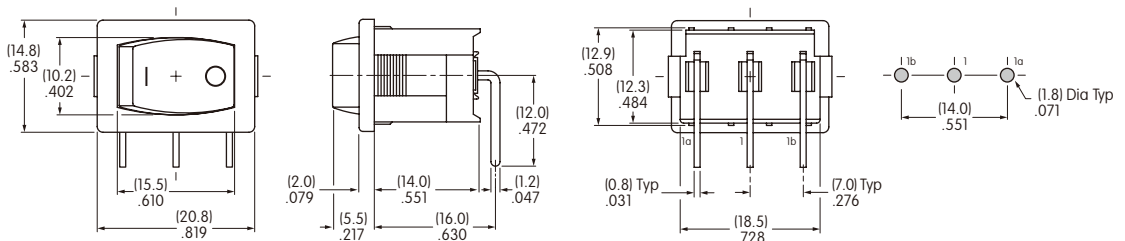
Single throw model does not have terminal 1b

Terminal numbers are on side of switch body

Panel Thickness .030" ~ .079" (0.75mm ~ 2.0mm)

**Right Angle**

**Single Pole • Horizontal On-Off Inscription**



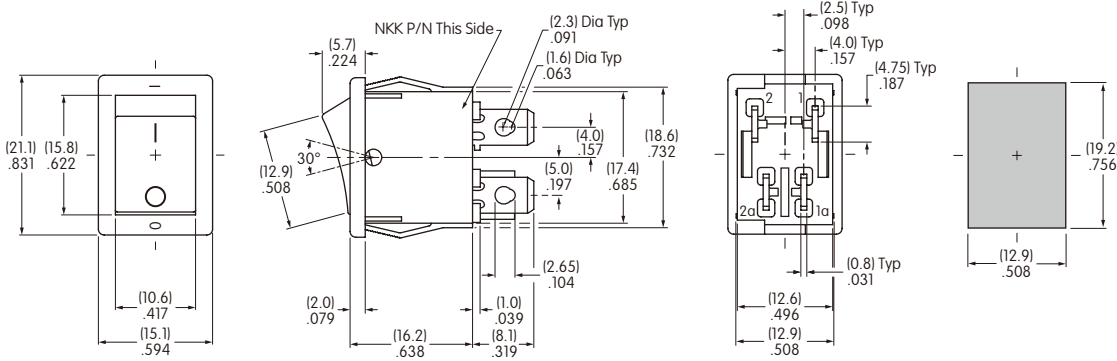
**CWSA11AAN1H**

Single throw model does not have terminal 1b

Terminal numbers are on side of switch body

TYPICAL SWITCH DIMENSIONS FOR CWSB

Double Pole • Vertical On-Off Inscription



Terminal numbers are on bottom of switch

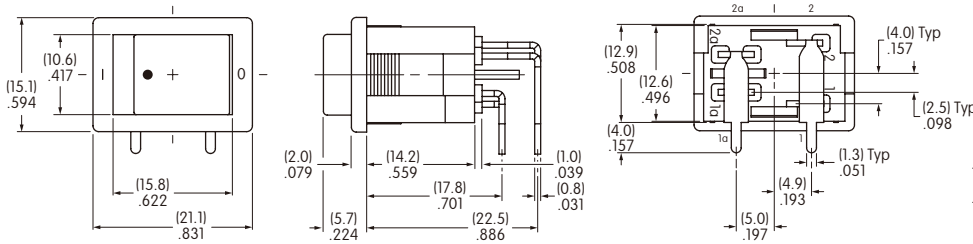
Panel Thickness  
.030" ~ .079"  
(0.75mm ~ 2.0mm)

Quick Connect



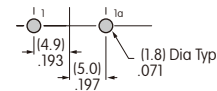
CWSB21AA2F

Single Pole • Dot Inscription

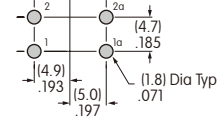


Terminal numbers are on bottom of switch

Footprint SPST



Footprint DPST



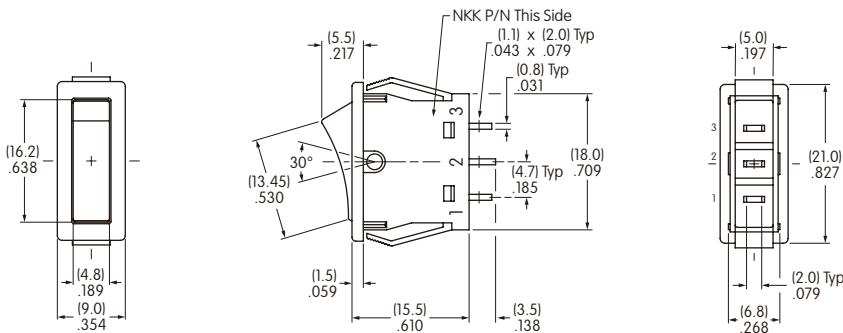
Right Angle



CWSB11AA3H

TYPICAL SWITCH DIMENSIONS FOR CWT

Single Pole • No Inscription



Terminal numbers are on side of switch body

Panel Thickness  
.030" ~ .079"  
(0.75mm ~ 2.0mm)

Solder Lug



CWT12AAS1

# General Specifications

Toggles

Rockers  
B

Pushbuttons

Illuminated PB

Programmable

Keylocks

Rotaries

Slides

Tactiles

Tilt

Touch

Indicators

Accessories

Supplement

## Electrical Capacity (Resistive Load)

Power Level: 9A @ 125V AC

## Other Ratings

**Contact Resistance:** 20 milliohms maximum

**Insulation Resistance:** 500 megohms minimum @ 500V DC

**Dielectric Strength:** 1,500V AC minimum between contacts for 1 minute minimum;  
3,000V AC minimum between contacts & case for 1 minute minimum

**Mechanical Life:** 30,000 operations minimum

**Electrical Life:** 10,000 operations minimum

**Nominal Operating Force:** 10.0N

**Angle of Throw:** 30°

## Materials & Finishes

**Rocker:** Polycarbonate

**Housing:** Polyamide

**Movable Contactor:** Beryllium copper with silver plating

**Movable Contacts:** Silver alloy

**Stationary Contacts:** Silver alloy

**Switch Terminals:** Brass with silver plating

**Lamp Terminals:** Brass with silver plating

## Environmental Data

**Operating Temp Range:** -20°C through +85°C (-4°F through +185°F)

**Humidity:** 90 ~ 95% humidity for 96 hours @ 40°C (104°F)

**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 0.75mm traversing the frequency range  
& returning in 1 minute; 3 right angled directions for 2 hours

**Shock:** 50G (490m/s<sup>2</sup>) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

## Installation

**Soldering Time & Temp:** Manual Soldering: See Profile B in Supplement section.

## Standards & Certifications

**UL:** File No. E44145  
9A @ 125V AC  
Markings on case are standard.

**CSA:** File No. 0701166\_0\_000  
9A @ 125V AC  
Markings on case are standard.

# Distinctive Characteristics

Full face, Neon illumination in choice of red, amber, or green.

Neon lamp suited to 125V AC applications.

9-amp electrical capacity in compact body.

Built-in resistor for direct connection to 125V AC power source.

Low cost molded rocker.

Front panel, snap-in mounting assures labor-saving installation.

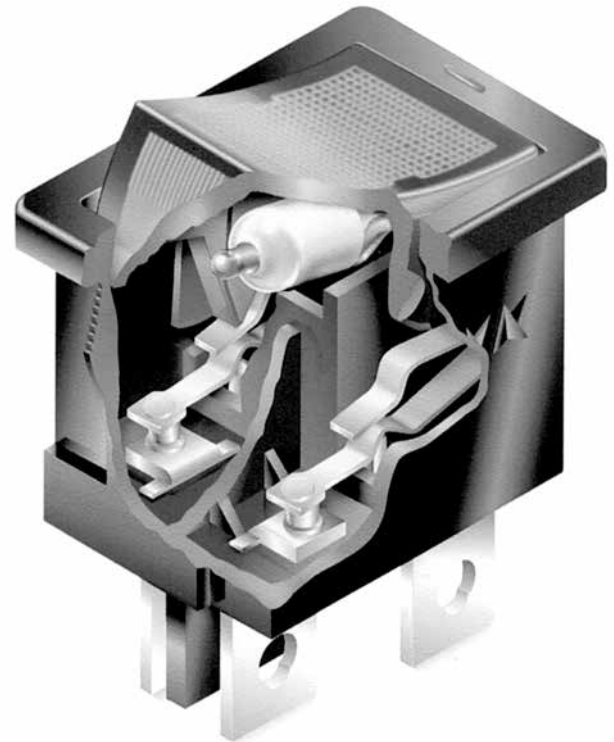
Single-break, snap-acting contact mechanism gives smooth actuation and audible feedback.

Quick-make, quick-break characteristic limits arcing and prolongs electrical life.

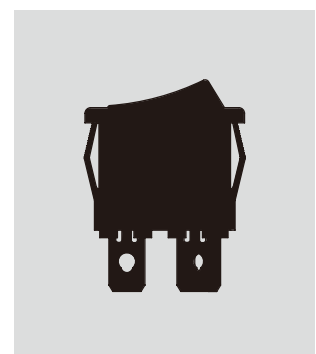
Stable stationary contact construction for high reliability.

Offset terminal alignment gives outstanding insulation resistance and dielectric strength.

Solder lug/.187" quick connect terminals can be used with connectors.



Actual Size

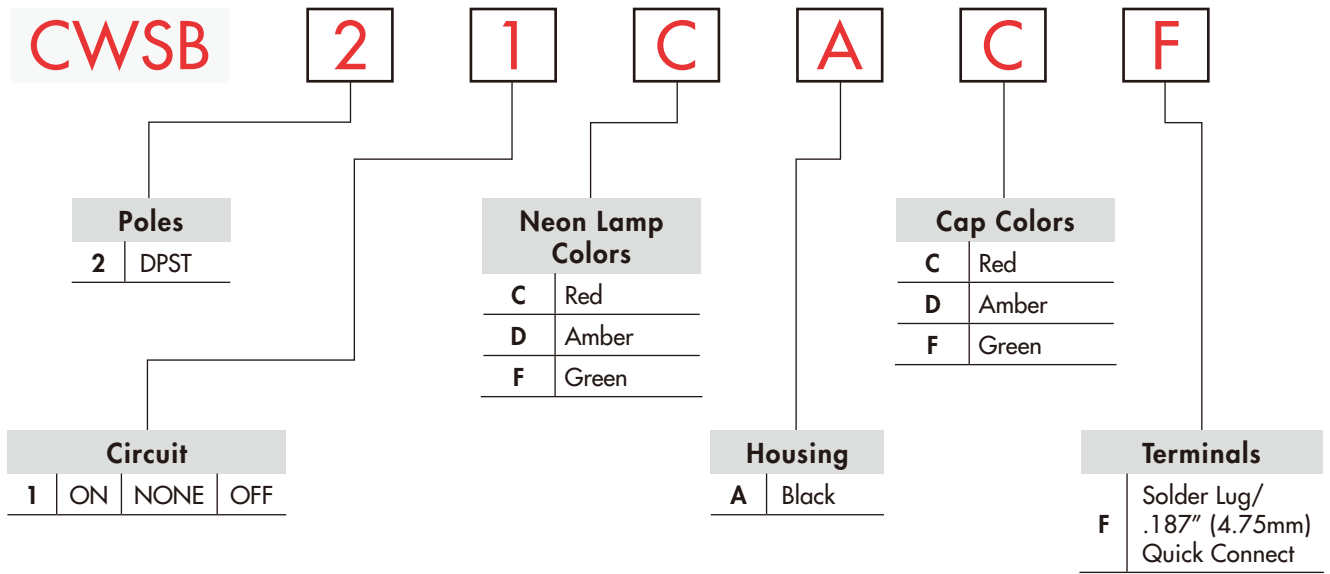


- Toggle
- B** Rockers
- Pushbuttons
- Illuminated PB
- Programmable
- Keylocks
- Rotaries
- Slides
- Tactiles
- Tilt
- Touch
- Indicators
- Accessories
- Supplement



Toggles  
 Rockers **B**  
 Pushbuttons  
 Illuminated PB  
 Programmable  
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 Supplement

### TYPICAL SWITCH ORDERING EXAMPLE



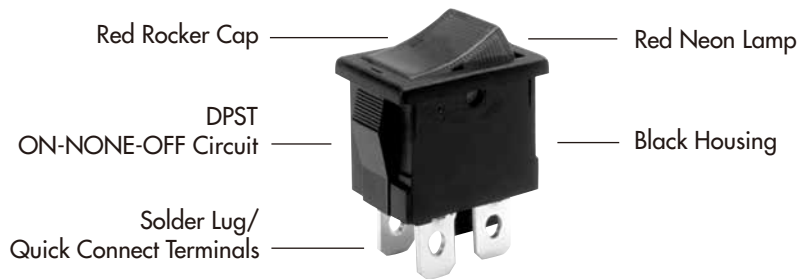
### IMPORTANT:



Switches are supplied with UL & CSA markings on the case. Specific models & ratings noted on the General Specifications page.

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

#### CWSB21CAF



### POLE & CIRCUIT

		Rocker Position			Connected Terminals			Throw & Switch/Lamp Schematic
Pole	Model	Down	Center	Up	Down	Center	Up	
DP	CWSB21	ON	NONE	OFF	1-1a 2-2a	OPEN	OPEN	DPST

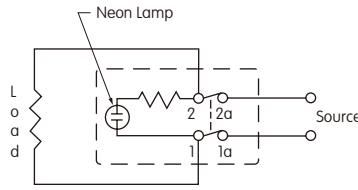
Note: Terminal numbers "1a" & "2a" are actually on the switch.

NEON LAMP COLORS & SPECIFICATIONS

The Neon lamp is factory assembled and not available separately. The lamp circuit is synchronous to switching circuit.

The electrical specifications shown are determined at a basic temperature of 25°C.

Values for the built-in resistors are given in the accompanying table.



		Colors		
		<b>C</b>	<b>D</b>	<b>F</b>
		Red	Amber	Green
Voltage	V	125V AC	125V AC	125V AC
Internal Series Resistance		33K ohms	33K ohms	68K ohms
Current	I	1.4mA	1.4mA	0.6mA
Endurance	Hours	15,000	15,000	8,000

HOUSING

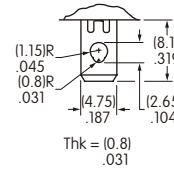
**A** Black Housing with Snap-in Mounting

On Off (I O) symbols are molded on the bezel.



TERMINALS

**F** Solder Lug/.187" (4.75mm) Quick Connect



CAP COLOR CODES

Cap Colors Available

**C** Red    **D** Amber    **F** Green

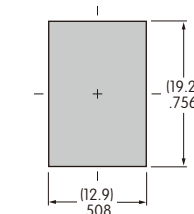
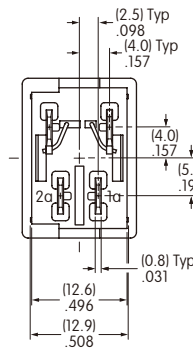
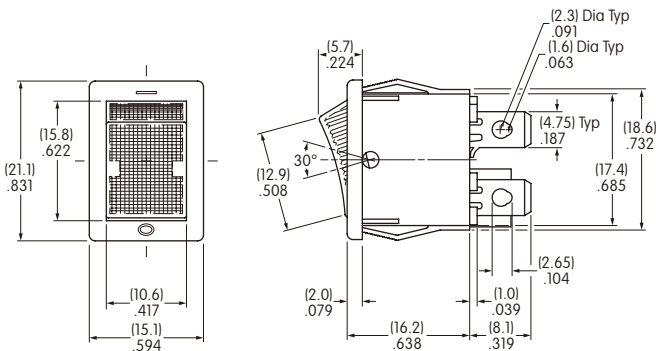


Caps are factory assembled and are not available separately.

TYPICAL SWITCH DIMENSIONS

Double Pole

Neon Illuminated



Panel Thickness  
.030" ~ .079"  
(0.75mm ~ 2.0mm)



CWSB21CACF

# General Specifications

## Electrical Capacity (Resistive Load)

**Power Level:** 9A @ 125V AC or 6A @ 250V AC

## Other Ratings

**Contact Resistance:** 20 milliohms maximum

**Insulation Resistance:** 500 megohms minimum @ 500V DC

**Dielectric Strength:** 1,500V AC minimum between contacts for 1 minute minimum;  
3,000V AC minimum between contacts & case for 1 minute minimum

**Mechanical Life:** 30,000 operations minimum

**Electrical Life:** 10,000 operations minimum

**Nominal Operating Force:** Single Pole 4.50N; Double Pole 10.0N

**Angle of Throw:** 33°

## Materials & Finishes

**Rocker:** Polycarbonate

**Housing:** Polyamide

**Movable Contactor:** Beryllium copper with silver plating

**Movable Contacts:** Silver alloy

**Stationary Contacts:** Silver alloy

**Switch Terminals:** Brass with silver plating

**Lamp Terminals:** Brass with silver plating

## Environmental Data

**Operating Temp Range:** -10°C through +50°C (+14°F through +122°F)

**Humidity:** 90 ~ 95% humidity for 96 hours @ 40°C (104°F)

**Vibration:** 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours

**Shock:** 50G (490m/s<sup>2</sup>) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

## Installation

**Soldering Time & Temp:** Manual Soldering: See Profile A in Supplement section.

## Standards & Certifications

**UL:** File No. E44145

All models recognized at 9A @ 125V AC & 6A @ 250V AC.

cULus marking on case is standard.

# Distinctive Characteristics

Full face, bright LED illumination in choice of red, amber, or green for visible status indication.

9-amp or 6-amp electrical capacity in compact body.

Interior shield prevents contamination of the rocker by carbon from arcing.

Front panel, snap-in mounting assures labor-saving installation.

Single-break, snap-acting contact mechanism gives smooth actuation and audible feedback.

Quick-make, quick-break characteristic limits arcing and prolongs electrical life.

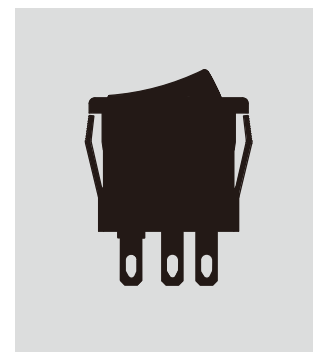
Stable stationary contact construction for high reliability.

Offset terminal alignment gives outstanding insulation resistance and dielectric strength.

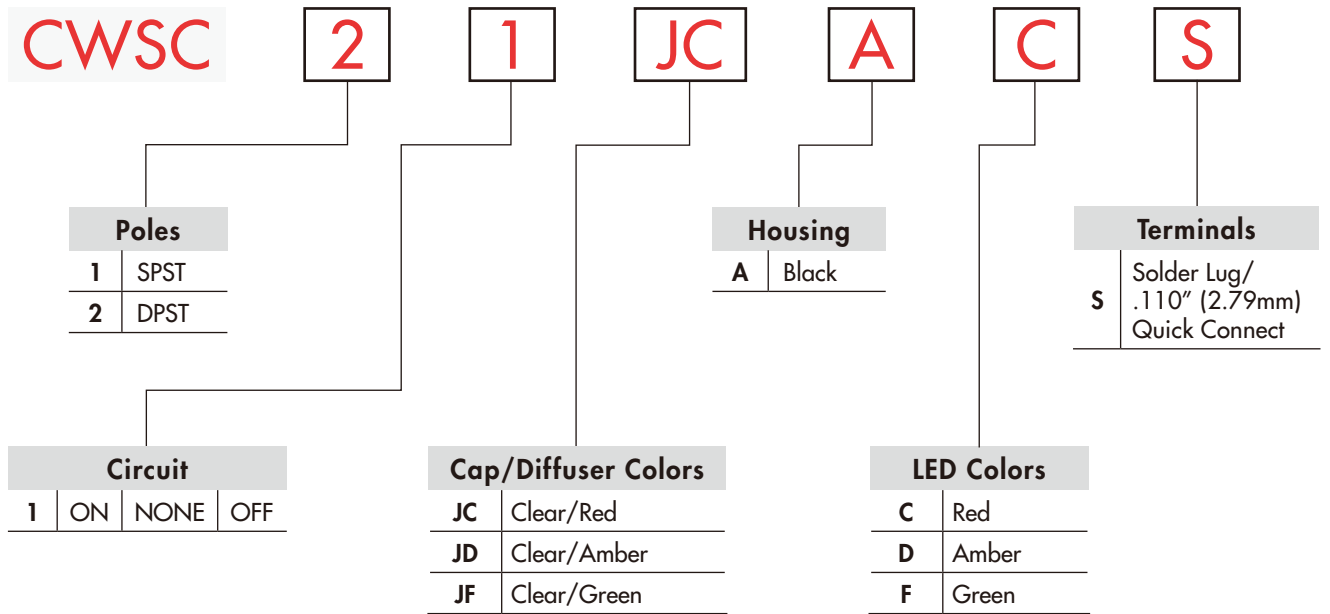
Solder lug/.110" quick connect terminals can be used with connectors.



Actual Size



### TYPICAL SWITCH ORDERING EXAMPLE



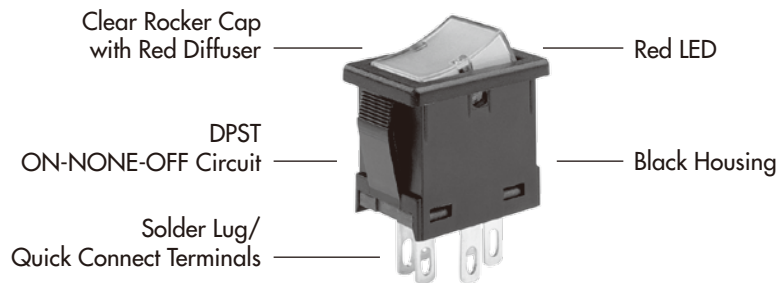
### IMPORTANT:










Switches are supplied with cULus marking on the case. Specific models & ratings noted on the General Specifications page.

### TYPICAL ORDERING EXAMPLE

#### CWSC21JCACS



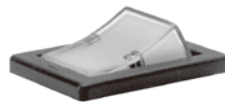
POLE & CIRCUITS

		Rocker Position			Connected Terminals			Throw & Switch/Lamp Schematics
Pole	Model	Down	Center	Up	Down	Center	Up	Notes: Terminal numbers and polarity are actually on the switch.
SP	CWSC11	ON 	NONE	OFF 	1-1a 	OPEN	OPEN 	
DP	CWSC21	ON	NONE	OFF	1-1a 2-2a 	OPEN	OPEN 	DPST 

CAP TYPES & COLORS

Rocker Cap/Diffuser

Caps are factory assembled and are not available separately.



Cap/Diffuser Colors Available

- JC** Clear/Red
- JD** Clear/Amber
- JF** Clear/Green

HOUSING

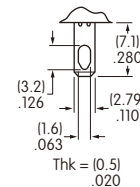
- A** Black Housing with Snap-in Mounting

On Off (I O) symbols are molded on the bezel.



TERMINALS

- S** Solder Lug/ .110" (2.79mm) Quick Connect




LED SPECIFICATIONS & COLORS

The LED is factory assembled and not available separately. LED circuit is isolated and requires an external power source. Polarity marks are on the bottom of the switch.

The electrical specifications shown are determined at a basic temperature of 25°C.

If the source voltage exceeds the rated voltage, a ballast resistor is required. The resistor value can be calculated by using the formula in the Supplement.

		<b>C</b>	<b>D</b>	<b>F</b>
 Colors:		Red	Amber	Green
Maximum Forward Current	$I_{FM}$	30mA	30mA	30mA
Typical Forward Current	$I_F$	20mA	20mA	20mA
Forward Voltage	$V_F$	1.95V	2.0V	2.1V
Maximum Reverse Voltage	$V_{RM}$	5V	5V	5V
Current Reduction Rate above 25°C	$\Delta I_F$	0.41mA/°C	0.29mA/°C	0.39mA/°C
Ambient Temperature Range		-10°C ~ +50°C		

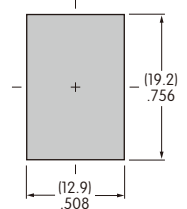
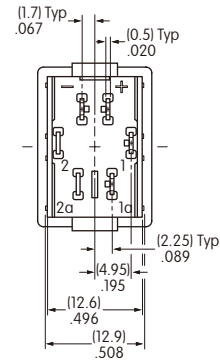
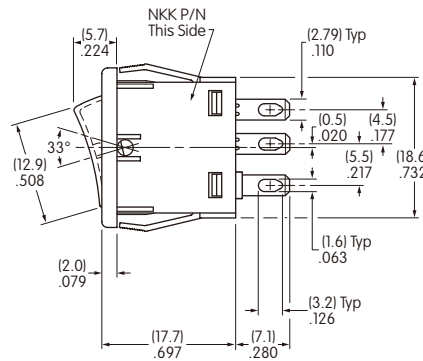
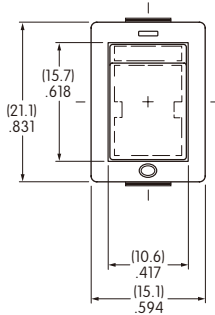
Toggle  
 Rockers  
 Pushbuttons  
 Illuminated PB  
 Programmable  
 Keylocks  
 Rotaries  
 Slides  
 Tactiles  
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 Touch  
 Indicators  
 Accessories  
 Supplement

Toggles  
 Rockers **B**  
 Pushbuttons  
 Illuminated PB  
 Programmable  
 Keylocks  
 Rotaries  
 Slides  
 Tactiles  
 Tilt  
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 Supplement

## TYPICAL SWITCH DIMENSIONS

### LED Illuminated

### Single Pole

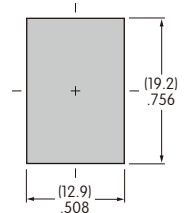
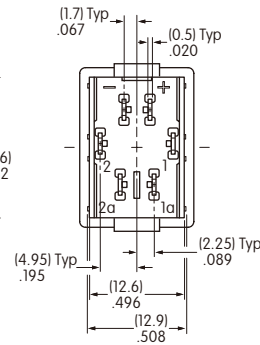
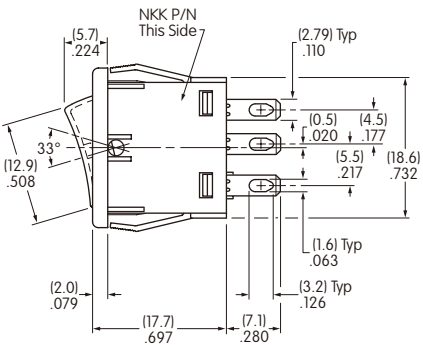
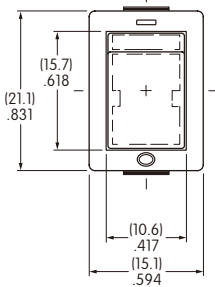


**CWSC11JCACS**

Panel Thickness  
 .030" ~ .079"  
 (0.75mm ~ 2.0mm)

### LED Illuminated

### Double Pole



**CWSC21JCACS**

Panel Thickness  
 .030" ~ .079"  
 (0.75mm ~ 2.0mm)

