

# General Specifications

CWSA Electrical Capacity	
Power Level:	For Resistive Load 6A @ 250V AC
<b>Other Ratings</b>	
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°
<b>Materials &amp; Finishes</b>	
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
<b>CWSB Electrical Capacity</b>	
Power Level:	For Resistive Load 6A @ 250V AC
<b>Other Ratings</b>	
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°
<b>Materials &amp; Finishes</b>	
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
<b>CWT Electrical Capacity</b>	
Power Level:	For Resistive Load 6A @ 125V AC; 3A @ 250V AC; 4A @ 30V DC
<b>Other Ratings</b>	
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°
<b>Materials &amp; Finishes</b>	
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.

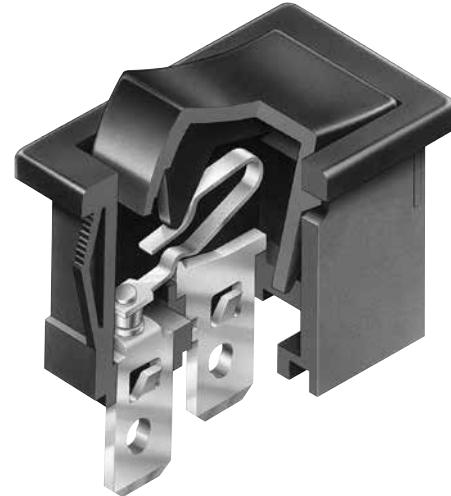
Snap-acting contact mechanism gives smooth actuation and audible feedback.

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.

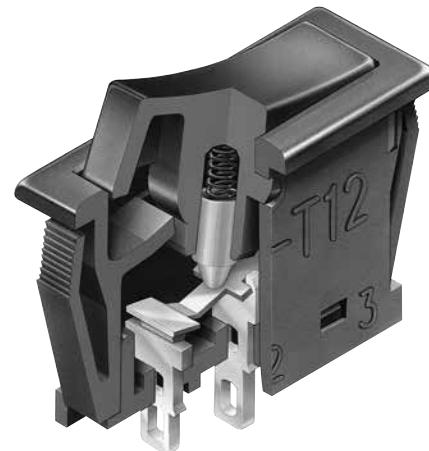
Dust proof construction protects contact area.

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.





### 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			
2	ON	NONE	OFF	

Circuits	1	ON	NONE	OFF
	1	ON	NONE	ON
	2	ON	NONE	ON

Cap Color	A	Black
	A	Black

Housing  
A | Black

Inscription		
For SPST & SPDT		
No Code	None	

Inscription		
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
	1	ON	NONE	OFF

Cap Color	A	Black
	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
	2	ON	NONE	ON

Housing	A	Black
	A	Black

TYPICAL ORDERING EXAMPLE  
CWT12AAS1

Cap Color	A	Black
	A	Black

Terminals	S1	Solder Lug
	S1	Solder Lug



### 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**

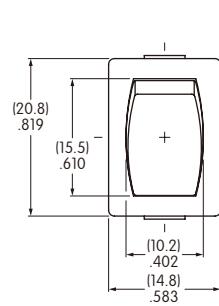
Only Single Pole On-None-Off models are available with the dot inscription.



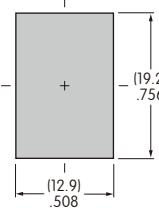
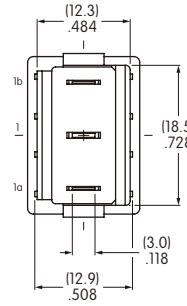
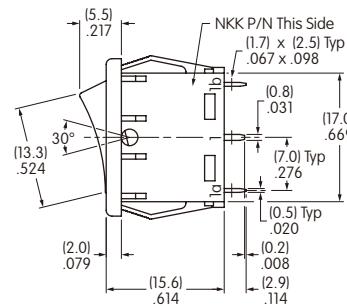
The IEC symbols for On-Off are supplied with Single Throw models only. Orientation of inscription must be selected.  
Inscription color is white ink on black.

### TYPICAL SWITCH DIMENSIONS FOR CWSA

#### Solder Lug



#### Single Pole • No Inscription



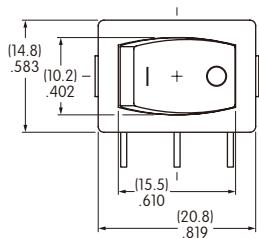
**CWSA12AANS**

Single throw model does not have terminal 1b

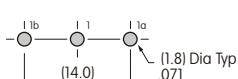
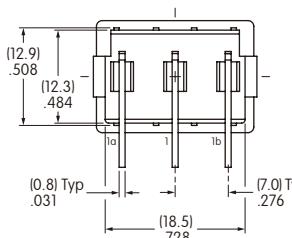
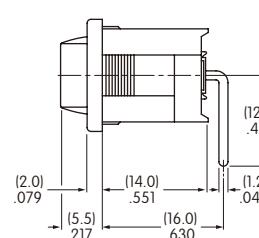
Terminal numbers are on side of switch body

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

#### Right Angle



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



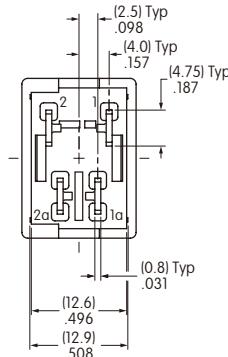
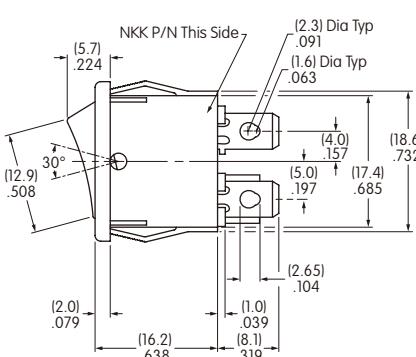
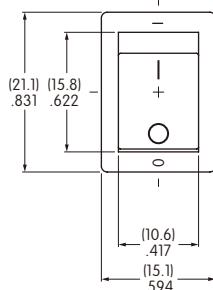
**CWSA11AAN1H**

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



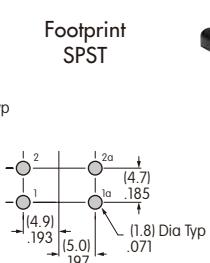
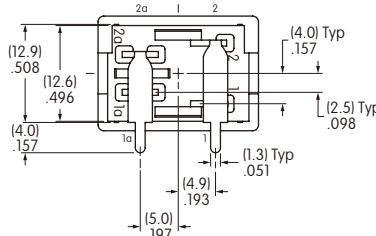
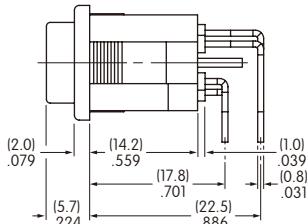
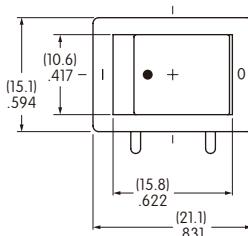
## Quick Connect



Terminal numbers are  
on bottom of switch

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

**CWSB21AA2F**



Terminal numbers are  
on bottom of switch

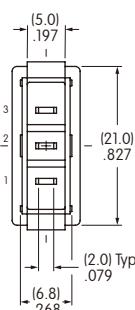
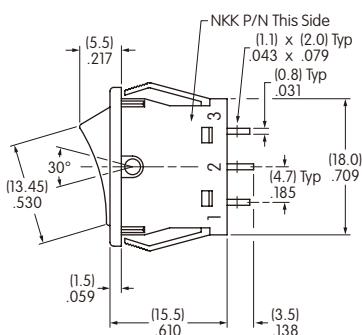
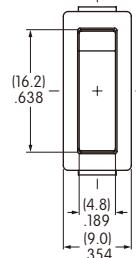
Footprint  
DPST



**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)

**CWT12AA1**



# General Specifications

## 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.

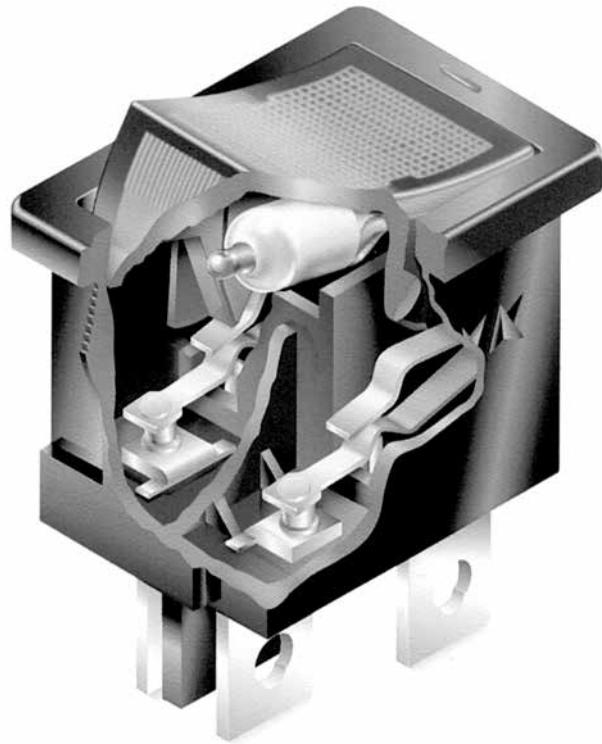
Single-break, snap-acting contact mechanism gives smooth actuation and audible feedback.

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

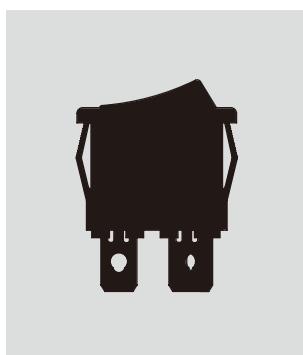
Stable stationary contact construction for high reliability.

Offset terminal alignment gives outstanding insulation resistance and dielectric strength.

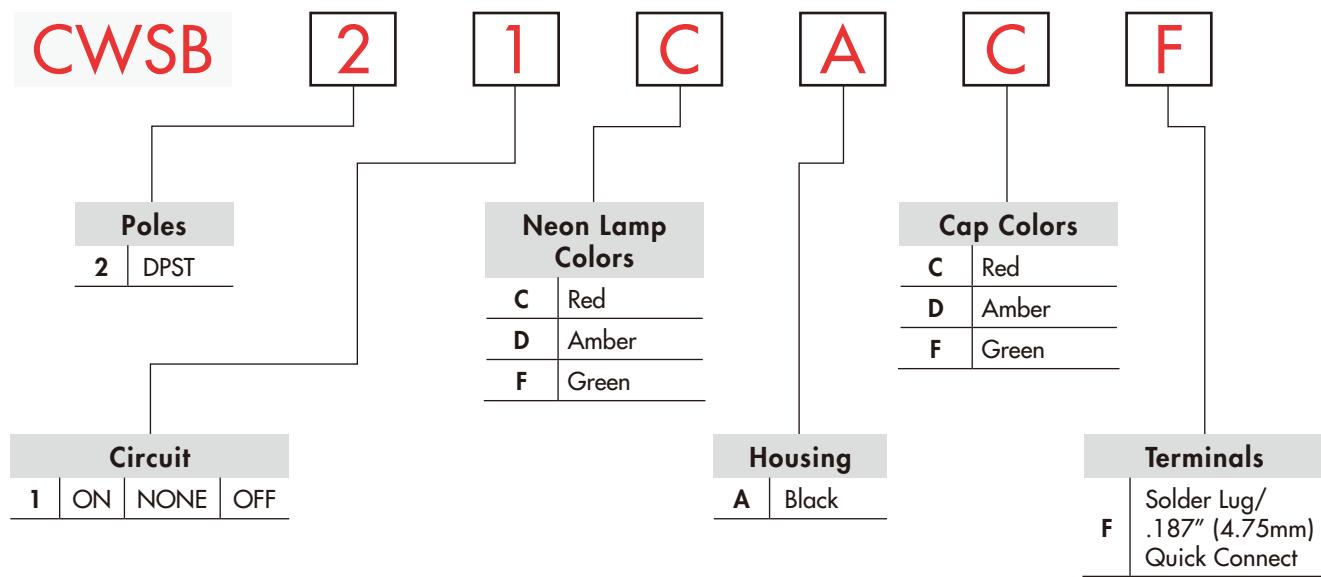
Solder lug/.187" quick connect terminals can be used with connectors.



Actual Size



### TYPICAL SWITCH ORDERING EXAMPLE



### IMPORTANT:



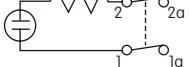
Switches are supplied with UL & CSA markings on the case. Specific models & ratings noted on the General Specifications page.

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**CWSB21CACF**



### POLE & CIRCUIT

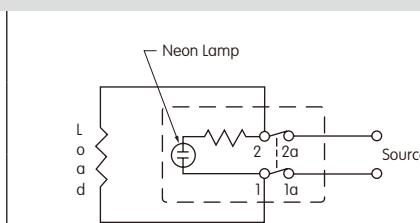
		Rocker Position			Connected Terminals			Throw & Switch/Lamp Schematic	
Pole	Model	Down	Center	Up	Down	Center	Up	Note: Terminal numbers "1a" & "2a" are actually on the switch.	
DP	<b>CWSB21</b>	ON	NONE	OFF	1-1a	2-2a	OPEN	OPEN	DPST
									

## NEON LAMP COLORS &amp; 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
125V AC	125V AC	125V AC
33K ohms	33K ohms	68K ohms
1.4mA	1.4mA	0.6mA
15,000 Hours	15,000	8,000

## HOUSING

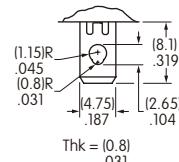
**A** Black Housing with Snap-in Mounting

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

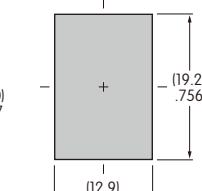
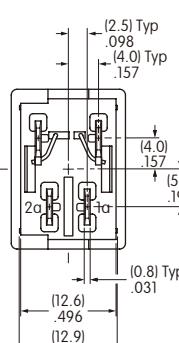
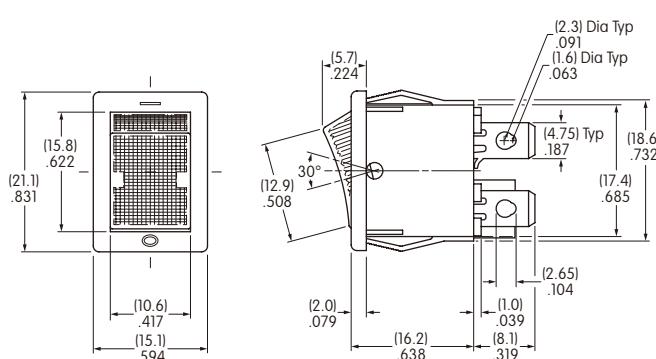
**F** Green



Caps are factory assembled and are not available separately.

## TYPICAL SWITCH DIMENSIONS

## Double Pole



## Neon Illuminated



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.
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# 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.

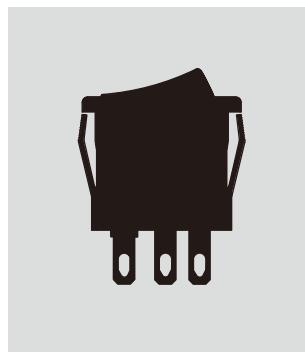
Stable stationary contact construction for high reliability.

Offset terminal alignment gives outstanding insulation resistance and dielectric strength.

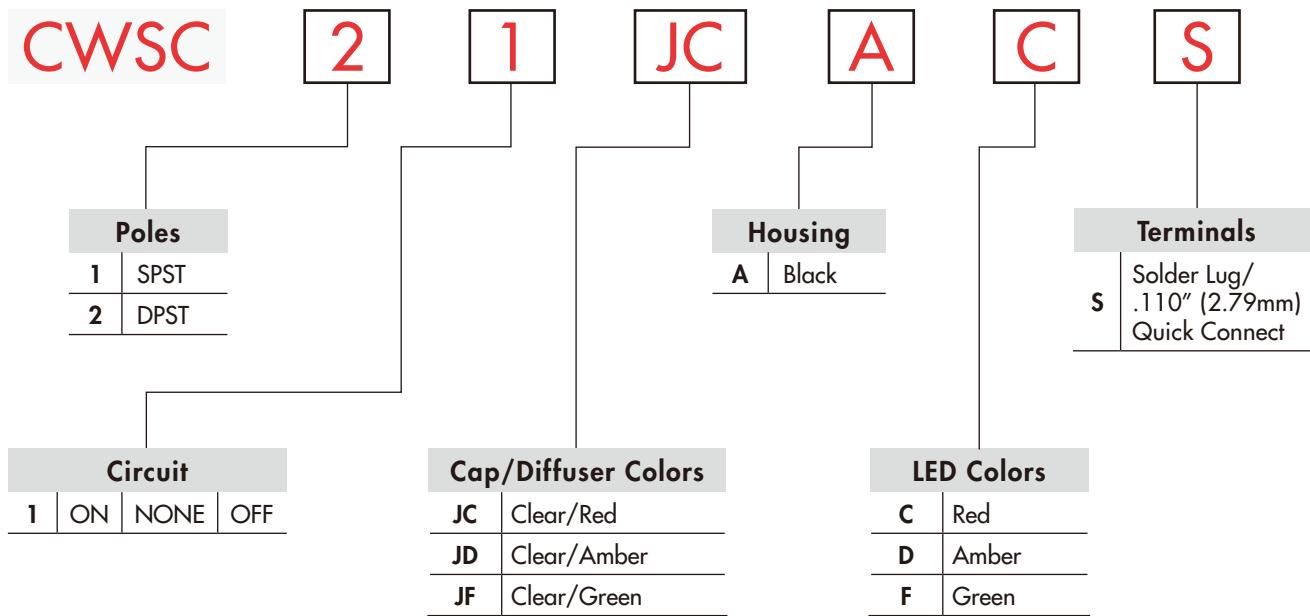
Solder lug/.110" quick connect terminals can be used with connectors.



Actual Size



### TYPICAL SWITCH ORDERING EXAMPLE



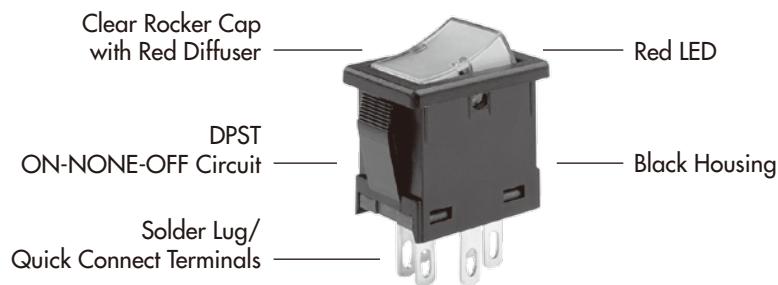
### IMPORTANT:



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	<b>CWSC11</b>	ON	NONE	OFF	1-1a	OPEN	OPEN	SPST
DP	<b>CWSC21</b>	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

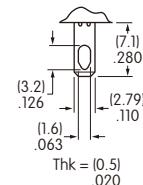
#### A Black Housing with Snap-in Mounting



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.

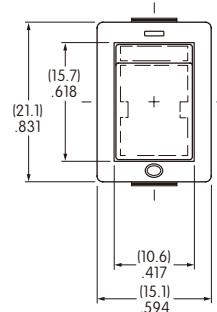
Colors:	<b>C</b> Red	<b>D</b> Amber	<b>F</b> Green
Maximum Forward Current $I_{FM}$	30mA	30mA	30mA
Typical Forward Current $I_F$	20mA	20mA	20mA
Forward Voltage $V_F$	1.95V	2.0V	2.1V
Maximum Reverse Voltage $V_{RM}$	5V	5V	5V
Current Reduction Rate above 25°C $\Delta I_F$	0.41mA/°C	0.29mA/°C	0.39mA/°C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

### TYPICAL SWITCH DIMENSIONS

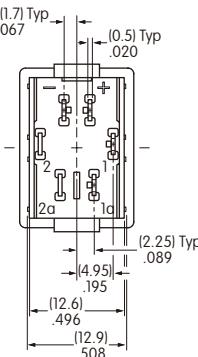
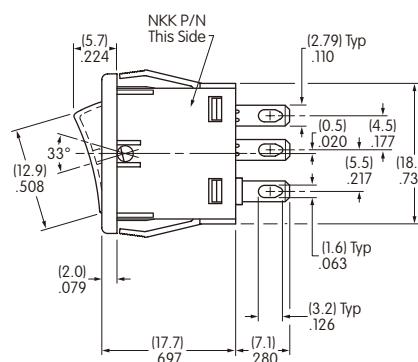
#### LED Illuminated



**CWSC11JCACS**



#### Single Pole

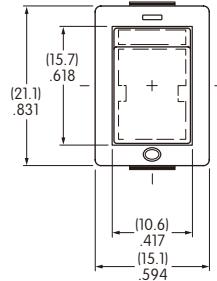


Panel Thickness  
.030" ~ .079"  
(0.75mm ~ 2.0mm)

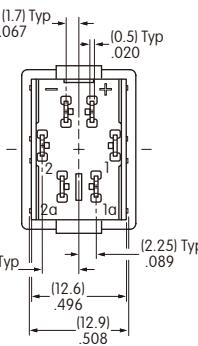
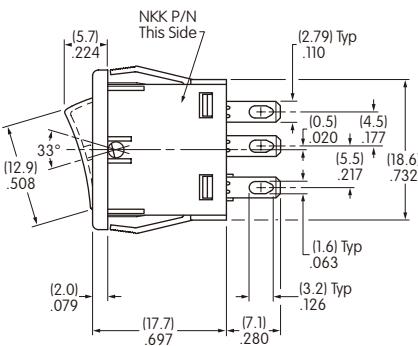
#### LED Illuminated



**CWSC21JCACS**



#### Double Pole



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

