

# General Specifications

## Electrical Capacity (Resistive Load)

**Power Level:** 10A @ 125V AC or 6A @ 250V AC or 10A @ 30V DC

## Other Ratings

**Contact Resistance:** 10 milliohms maximum for solder lug & screw terminal models;  
30 milliohms maximum for wire lead terminal models

**Insulation Resistance:** 200 megohms minimum @ 500V DC

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

**Mechanical Life:** 50,000 operations minimum for On-None-Off, On-None-On, & On-Off-On models  
30,000 operations minimum for all other models

**Electrical Life:** 15,000 operations minimum

**Angle of Throw:** 24°

## Materials & Finishes

**Toggle:** Brass with chrome plating

**Bushing & Outer Case:** Fiberglass reinforced polyamide (UL94V-0)

**Inner Case:** Melamine

**Inner Sealing Ring:** Nitrile butadiene rubber for On-None-Off, On-None-On, & On-Off-On models;  
silicone rubber for all other models

**Outer Sealing Ring:** Natural rubber

**Movable Contactor:** Copper with silver plating

**Movable Contacts:** Silver alloy plus copper with silver plating

**Stationary Contacts:** Silver alloy plus copper with silver plating

**Terminals:** Copper with tin plating for solder lug & wire lead; brass with silver plating for screw lug

**Wire Lead Covers:** Heat resistant polyvinyl chloride (Leads are AWG 16)

## Environmental Data

**Operating Temp Range:** -30°C through +70°C (-22°F through +158°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)

**Front Panel Seal:** IP67 of IEC60529, dust tight & water protected during temporary immersion for all models;  
optional toggle boot AT401 for additional protection (details at end of WT section)

**Behind Panel Seal:** IP60 of IEC60529, dust tight but not water protected  
for solder lug & screw terminal models  
IP67 of IEC60529, dust tight & water protected during temporary immersion  
for wire lead models

## Installation

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

**Mounting Torque:** 1.47Nm (13 lb•in)

## Standards & Certifications

**Flammability Standards:** UL94V-0 outer case

**Wiring Material Standards:** UL AWM 1015 Recognized at Flammability VW-1;  
Temperature Range -20°C ~ +105°C; Maximum Load 600V; AWG 16.  
CSA TEW 105 Certified at Temperature Range -20°C ~ +105°C;  
Maximum Load 600V

# Distinctive Characteristics

Sealing for wire lead models meets IP67 of IEC60529 Standards at front and back panel.

Sealing for solder lug or screw lug models meets IP67 at front panel and IP60 at back panel.

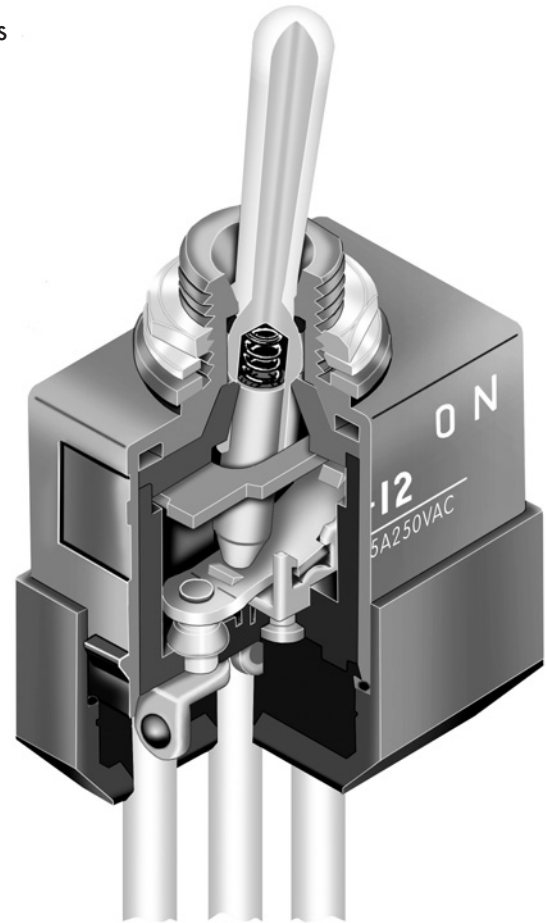
Single unit construction of bushing and case gives added protection from environmental elements.

Epoxy sealed base covered by outer case doubles protection from dust and water (not operable under water or oil).

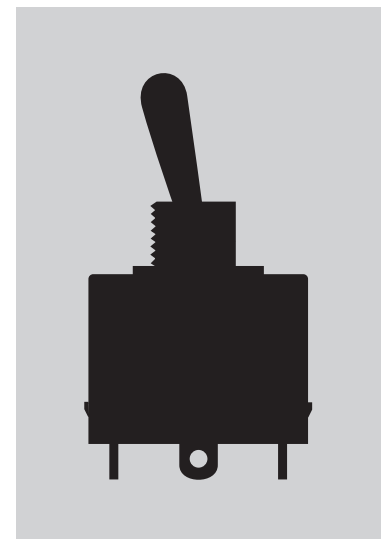
Specially designed contact mechanism that breaks light contact welds for circuits 11, 12, 21 and 22.

Interlocked movable contact mechanism provides highly reliable switching by minimizing contact bounce over center contact.

Heat resistant resin used for outer housing meets UL94V-0 flammability standard and provides high arc and tracking resistance.

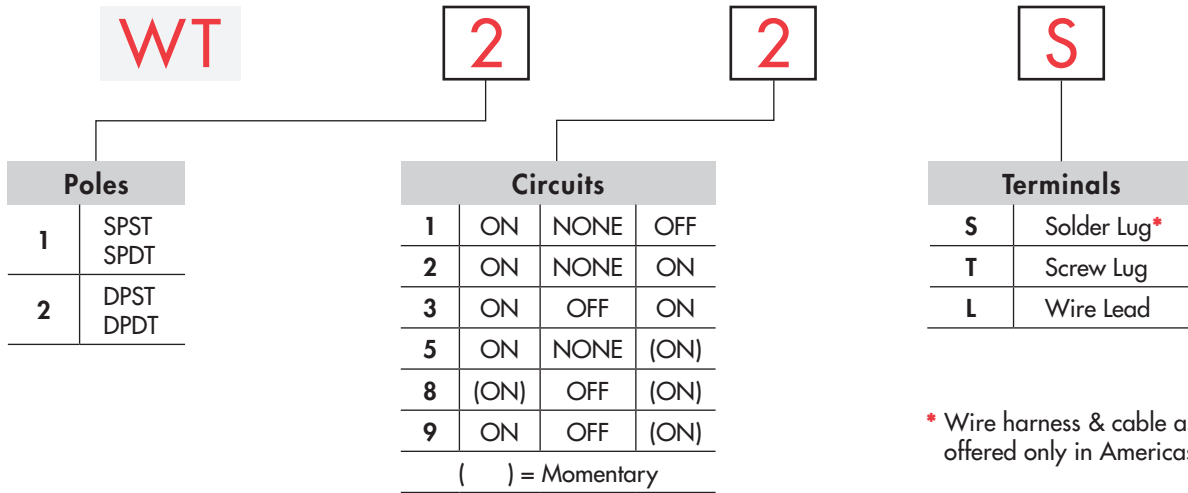


Actual Size



- A Toggles
- Rockers
- Pushbuttons
- Illuminated PB
- Programmable
- Keylocks
- Rotaries
- Slides
- Tactiles
- Tilt
- Touch
- Indicators
- Accessories
- Supplement

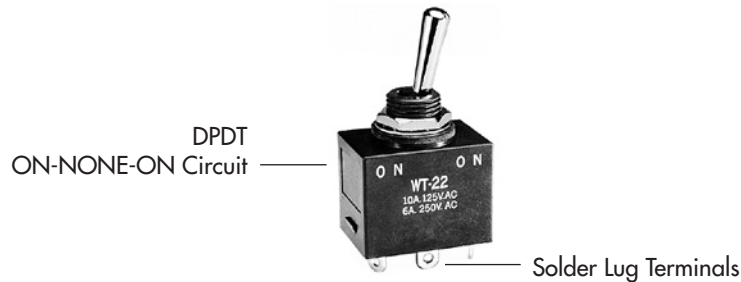
### TYPICAL SWITCH ORDERING EXAMPLE



\* Wire harness & cable assemblies offered only in Americas

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**WT22S**

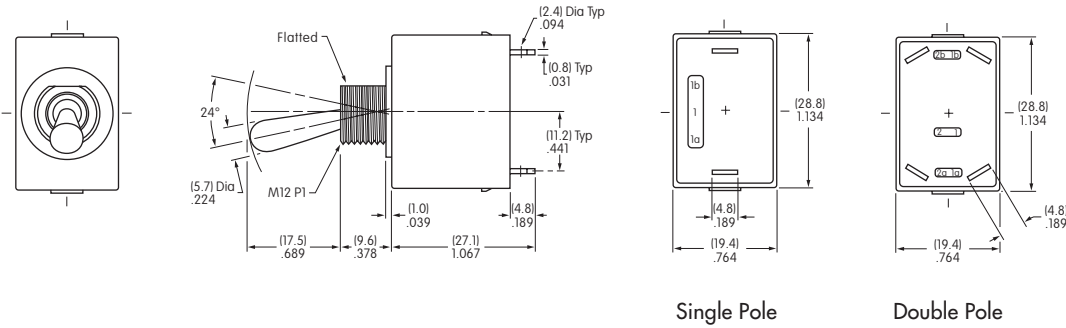


### POLES & CIRCUITS

Pole	Model	Toggle Position ( ) = Momentary			Connected Terminals			Throw & Schematics
		Down <small>Flat</small>	Center	Up	Down <small>Flat</small>	Center	Up	
SP	WT11	ON	NONE	OFF	1a-1b	OPEN	OPEN	SPST 
SP	WT12 WT13 WT15 WT18 WT19	ON ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	1-1b	OPEN	1-1a	SPDT 
DP	WT21	ON	NONE	OFF	1a-1b 2a-2b	OPEN	OPEN	DPST 
DP	WT22 WT23 WT25 WT28 WT29	ON ON ON (ON) ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	1-1b 2-2b	OPEN	1-1a 2-2a	DPDT 

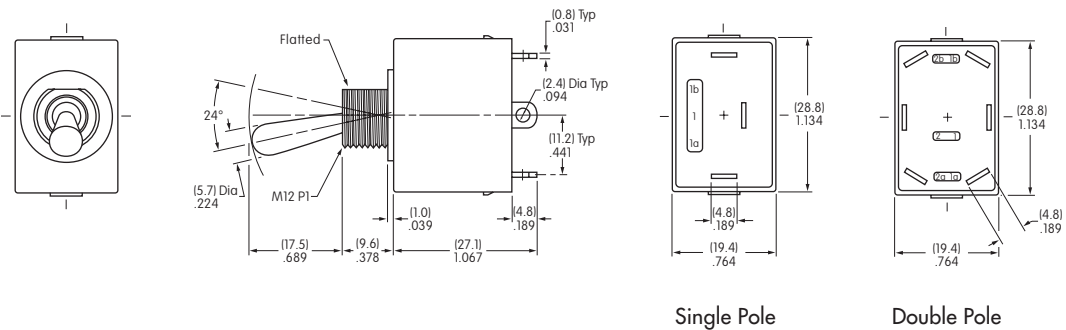
## TYPICAL SWITCH DIMENSIONS

### Single Throw • Solder Lug



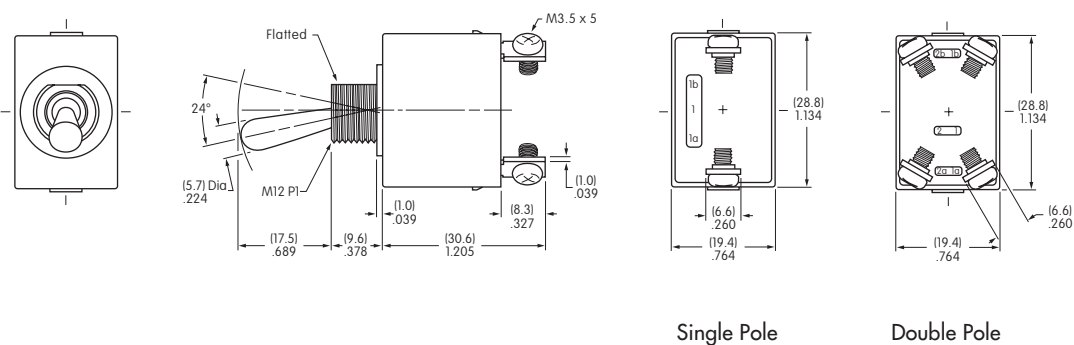
**WT11S**

### Double Throw • Solder Lug



**WT22S**

### Single Throw • Screw Lug



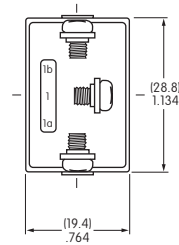
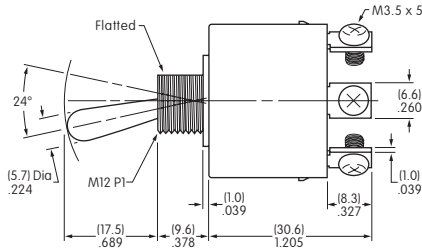
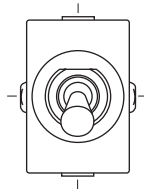
**WT21T**

### TYPICAL SWITCH DIMENSIONS

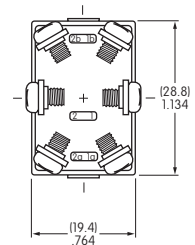
#### Double Throw • Screw Lug



**WT22T**



Single Pole

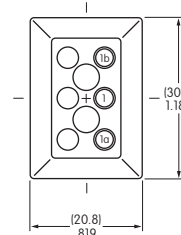
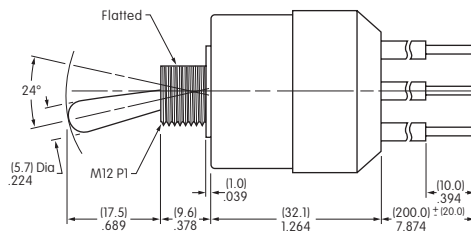
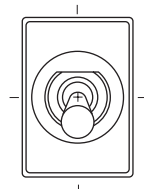


Double Pole

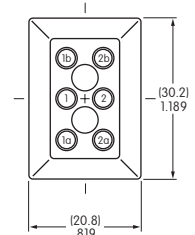
#### Single & Double Pole • Wire Lead



**WT22L**



Single Pole



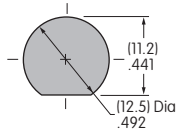
Double Pole

### STANDARD WIRE COLOR SCHEME

Wire leads are covered with heat resistant vinyl in accordance to UL 1015 and CSA TEW 105 Standards for Appliance Wiring Material (AWM).

	Terminal Numbers & Wire Colors					
	1a	1	1b	2a	2	2b
<b>WT11</b>	Black		White			
<b>WT12-19</b>	White	Black	Red			
<b>WT21</b>	Black		White	Blue		Yellow
<b>WT22-29</b>	White	Black	Red	Yellow	Blue	Green

## PANEL CUTOUT & THICKNESS



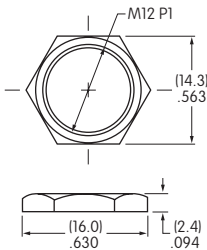
### Maximum Effective Panel Thickness

With Standard Hardware: .157" (4.0mm)  
 With optional Boot Assembly AT401A/H/S: .063" (1.6mm)  
 With optional Boot Assembly AT4181: .083" (2.1mm)

## STANDARD HARDWARE

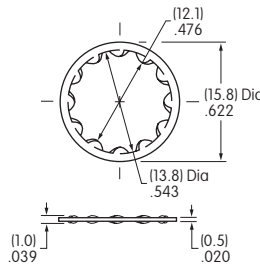
### AT503M Hex Face Nut

Material: Brass with Chrome Plating  
 1 supplied with each switch



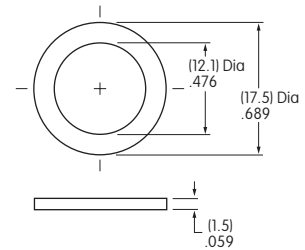
### AT508 Internal Tooth Lockwasher

Material: Steel with Zinc/Chromate  
 1 supplied with each switch



### AT401P O-ring

Material: Nitrile butadiene rubber  
 1 supplied with each switch



## OPTIONAL ACCESSORIES

### Boot Assemblies for High Particulate Contamination Applications

#### AT401A for Oil Resistance

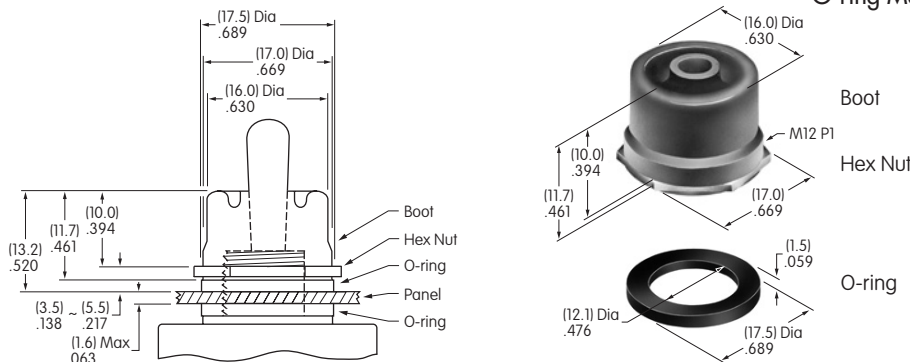
Boot Material: Black nitrile butadiene rubber  
 Hex Nut Material & Finish: Nickel plated brass  
 O-ring Material: Nitrile butadiene rubber

#### AT401H for Dust & Ozone Resistance

Boot Material: Gray ethylene propylene rubber  
 Hex Nut Material & Finish: Nickel plated brass  
 O-ring Material: Nitrile butadiene rubber

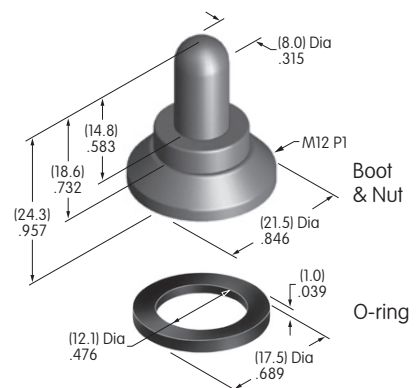
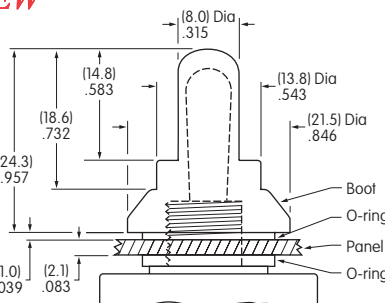
#### AT401S for Retention of Flexibility, Resilience & Tensile Strength Over Wide Temperature Range

Boot Material: Black silicone rubber  
 Hex Nut Material & Finish: Nickel plated brass  
 O-ring Material: Nitrile butadiene rubber



### AT4181 Splashproof Boot Assembly **← NEW**

Boot Material: Black Silicon rubber  
 Nut Material & Finish: Nickel plated brass  
 O-ring Material: Nitrile butadiene rubber



Note: When using boot assemblies AT401A/H/S or AT4181, also use o-ring AT401P from the standard hardware supplied. Hex face nut AT503M and lockwasher AT508 are not used with these boot assemblies.

# Notes

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# Mouser Electronics

Authorized Distributor

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## NKK Switches:

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[WT15T-RO](#) [WT25L-RO](#) [WT29T-RO](#) [WT22S-RO](#) [WT23T-RO](#) [WT11L-RO](#) [WT13T-RO](#) [WT21S-RO](#) [WT22T-RO](#)  
[WT18L-RO](#) [WT18T-RO](#) [WT15S-RO](#) [WT18S-RO](#) [WT28T-RO](#) [WT28L-RO](#) [WT28S-RO](#) [WT19L](#) [WT29S-RO](#) [WT29T](#)  
[WT28L](#) [WT12L](#) [WT23L](#) [WT22S](#) [WT12S](#) [WT15S](#) [WT21S](#) [WT21L](#) [WT23S](#) [WT18T](#) [WT23T](#) [WT29S](#) [WT13T](#)  
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[WT18L](#)