E-SWITCH®

SELECTION. SERVICE. SPEED.

PRODUCT MATRIX

About E-Switch

Headquartered in Minneapolis, Minnesota with offices in Singapore and Hong Kong, E-Switch's global reach extends to Asia, Europe and Latin America. Products include Rocker, Toggle, Slide, Tact, Pushbutton, DIP, Rotary, Keylock, Snap Action, Power, Illuminated Switches and more. E-Switch has local reps, distributors, engineers and account managers on hand to provide specifying assistance and quick response to 3D drawing requests and other inquiries, along with a top notch sample program that allows engineers to examine and qualify our switches for their end product applications. E-Switch's online catalog includes complete specifications, drawings and schematics. Also offered are product modifications and customization expertise for many of our switches.

MISSION STATEMENT

To supply a broad line of quality electromechanical switches, priced competitively, with a service network that is flexible, responsive and timely.

QUALITY POLICY

At E-Switch we are committed to providing electromechanical switches to the worldwide marketplace.

All employees are responsible to continuously improve the business system in order to provide an innovative working environment that is responsive to our customers' needs and meets their requirements. This enables E-Switch to provide our customers with superior service and exceptional products at a competitive price.

E-Switch is completely committed to quality throughout our entire manufacturing, sales and distribution network. We retain only professional independent sales representatives who are highly trained in our lines. Our global stocking distributors provide off-the-shelf product to ensure rapid delivery and easy accessibility to sample and product information.

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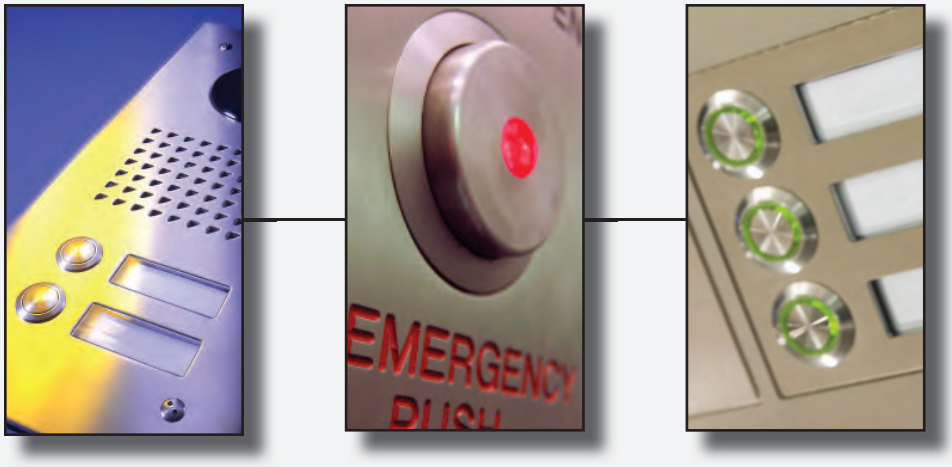
Anti-vandal Switches

Anti-vandal switches feature a metal body and actuator with a water resistant body design. A wide variety of options, including bi-color illumination, different actuator styles and the capacity for a long life expectancy give this switch a unique ability to be used in many public related applications such as elevators, kiosks and parking ticket dispensers.



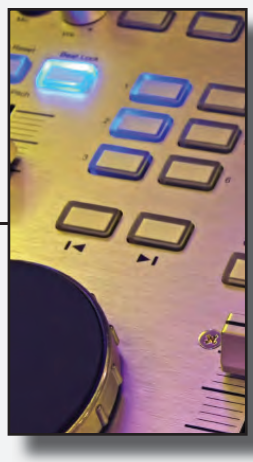
Anti-vandal Switch Series Comparison

	Electrical Ratings	Cutout Diameter / Panel Depth	Functions Available	Terminal Options	Actuator Options	Material Options	Illumination Options	Water Resistance Ratings	
 **PV1**	2A, 48VDC	**Diameter:** 19mm **Max. Depth:** 10mm	**1 Pole:** Off-(On)	Screw Solder	Domed Flat High	Anodized Aluminum Gold Plated Brass Nickel Plated Brass Stainless Steel	N/A	IP65	
 **PV2**	2A, 48VDC	**Diameter:** 16mm **Max. Depth:** 6mm	**1 Pole:** Off-(On)	Screw Solder	Domed Flat High	Anodized Aluminum Gold Plated Brass Nickel Plated Brass Stainless Steel	N/A	IP65	
 **PV3**	2A, 48VDC	**Diameter:** 16mm **Max. Depth:** 10mm or 14mm	**1 Pole:** On-(On) **2 Pole:** On-(On)	Solder	Concave Flat Guarded High	Anodized Aluminum Gold Plated Brass Nickel Plated Brass Stainless Steel	Bi-Color Dot Ring	IP65 Optional	
 **PV4**	2A, 24VDC	**Diameter:** 19mm **Max. Depth:** 10mm	**1 Pole:** On-On On-(On) **2 Pole:** On-On On-(On) 1P Off-(On) + 1P On-(Off)	Screw Solder	Flat High Rotary	Anodized Aluminum Nickel Plated Brass Stainless Steel	Bi-Color Dot Ring Arrow	IP65	
 **PV5**	2A, 48VDC	**Diameter:** 12mm **Max. Depth:** 6mm	**1 Pole:** Off-(On)	Screw Solder	Domed	Anodized Aluminum Nickel Plated Brass Stainless Steel	N/A	IP65	
 **PV6**	2A, 48VDC	**Diameter:** 16mm **Max. Depth:** 9mm	**1 Pole:** Off-(On)	Solder	Flat High	Anodized Aluminum Nickel Plated Brass Stainless Steel	Bi-Color Dot Ring	IP65	
 **PV7**	2A, 48VDC	**Diameter:** 22mm **Max. Depth:** 8mm (Momentary), 13mm (Maintained)	**2 Pole:** 1P Off-On + 1P On-Off 1P Off-(On) + 1P On-(Off)	Solder	Flat	Anodized Aluminum Nickel Plated Brass Stainless Steel	Bi-Color Dot Ring	IP65	
 **PV8**	2A, 48VDC	**Diameter:** 25mm **Max. Depth:** 10mm (Momentary), 14mm (Maintained)	**2 Pole:** 1P Off-On + 1P On-Off 1P Off-(On) + 1P On-(Off) **4 Pole:** 2P Off-On + 2P On-Off 2P Off-(On) + 2P On-(Off)	Solder	Flat	Anodized Aluminum Nickel Plated Brass Stainless Steel	Bi-Color Dot Ring	IP65	

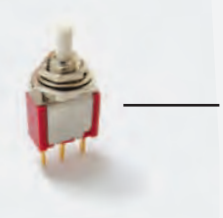
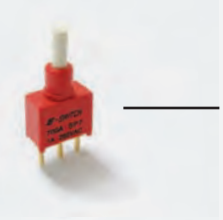
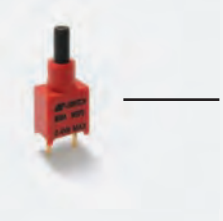
Specifications subject to change without notice

Pushbutton Switches

Pushbutton switches open or close an electrical circuit by the user pressing down on the actuator or in some cases, pulling on the actuator. Our pushbutton switches come in many different shapes and sizes, ranging from low milliamp ratings to high power ratings with horse power. We also offer some that are sealed up to IP67 standards, and many different styles of actuation with illumination are available.

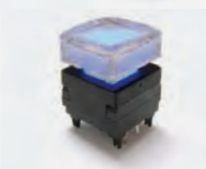


Pushbutton Switch Series Comparison (Subminiature)

	General Ratings	Electrical Ratings	Travel	Poles / Throws / Functions	Bushing Options	Terminal Options	Water Resistance Ratings
 **700** **Panel Mount Version*	**Life Cycles:** 50,000 **Operating Force:** 200gf **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 10mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, Max. 20V (AC or DC)	1.0mm	**SPDT:** On-(On) **DPDT:** On-(On)	Panel Cutout 12.7mm x 15.7mm	Quick Connect Solder	N/A
 **700**	**Life Cycles:** 50,000 **Operating Force:** 200gf **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 10mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, Max. 20V (AC or DC)	1.0mm	**SPDT:** On-(On) **DPDT:** On-(On)	Flat Non-Threaded Flat Threaded Keyway Non-Threaded Keyway Threaded	Right Angle PCB Pin Solder Vertical PCB Pin Vertical PCB Pin with Bracket Wire Wrap	N/A
 **700A**	**Life Cycles:** 50,000 **Operating Force:** 300gf **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 20mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, Max. 20V (AC or DC)	1.0mm	**SPDT:** On-(On) **DPDT:** On-(On)	Non-Threaded Threaded	Right Angle PCB Pin Solder Vertical PCB Pin Vertical PCB Pin with Bracket	IP67
 **700C**	**Life Cycles:** 50,000 **Operating Force:** 400gf SP7 600gf DP7 **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 10mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, Max. 20V (AC or DC)	3.0mm	**SPDT:** On-(On)	Flat Non-Threaded Flat Threaded Keyway Non-Threaded Keyway Threaded	Right Angle PCB Pin Solder Vertical PCB Pin Vertical PCB Pin with Bracket	N/A
 **800**	**Life Cycles:** 50,000 **Operating Force:** 200gf **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 10mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, Max. 20V (AC or DC)	0.9mm	**SPST** Off-(On) **SPDT** On-(On)	Flat Non-Threaded Flat Threaded Non-Threaded	Right Angle PCB Pin Solder Right Angle PCB Pin with Bracket Vertical PCB Pin Vertical PCB Pin with Bracket	N/A
 **800A**	**Life Cycles:** 50,000 **Operating Force:** 200gf **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 10mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 1A, 120VAC [cURus]; 1A, 28VDC **Gold:** 0.4VA, Max. 20V (AC or DC)	0.9mm	**SPST** Off-(On) **SPDT** On-(On)	Non-Threaded	Right Angle PCB Pin Vertical PCB Pin	IP67
 **800B**	**Life Cycles:** 50,000 **Operating Force:** 200gf **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 20mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, Max. 20V (AC or DC)	0.9mm	**SPST** Off-(On) **SPDT** On-(On)	Non-Threaded	Surface Mount	IP67

Specifications subject to change without notice

Pushbutton Switch Series Comparison (PCB Mount)

	General Ratings	Electrical Ratings	Operating Force Options	Travel	Poles / Throws	Mounting Options	Terminal Options	Illumination Options	Water Resistance Ratings
 **5500**	**Life Cycles:** 500,000 **Operating Temperature:** -25°C to 65°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 50MΩ Min.	300mA, 12VDC	255gf Max.	2.5mm	SPDT	PCB	PCB Pin	1 or 2 Dot	N/A
 **LC**	**Life Cycles:** 10,000 **Operating Temperature:** -20°C to 85°C **Contact Resistance:** 20mΩ Max. **Insulation Resistance:** 100MΩ Min.	300mA, 30VDC	200gf to 330gf	3.5mm	SPDT DPDT	PCB	Right Angle PCB Pin	N/A	N/A
 **LP11**	**Life Cycles:** 200,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 200mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 12VDC	250gf	4.5mm	SPST	PCB	PCB Pin	Full	N/A
 **LP15**	**Life Cycles:** 300,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 200mΩ Max. **Insulation Resistance:** 100MΩ Min.	1mA, 20VDC	125gf	1.3mm	SPST	PCB	PCB Pin	Full	N/A
 **LP16**	**Life Cycles:** 50,000,000 **Operating Temperature:** -5°C to 60°C **Contact Resistance:** 150mΩ Max. **Insulation Resistance:** 10MΩ Min.	100mA, 200VDC	250gf	3.3mm	SPST	PCB	PCB Pin	Full	N/A
 **LP2**	**Life Cycles:** 300,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 200mΩ Max. **Insulation Resistance:** 100MΩ Min.	1mA, 20VDC 5mA, 5VDC	125gf	1.3mm	SPST	PCB	PCB Pin	Full	N/A
 **LP37**	**Life Cycles:** 30,000 **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	10mA to 250mA 20mVDC to 50VDC	250gf	**Full:** 5.1mm **Switching:** 2.95mm **Latching:** 3.3mm	SPDT	PCB	Right Angle PCB Pin	Dot	N/A
 **LP4**	**Life Cycles:** 50,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	250gf	**Full:** 1.5mm **Latching:** 1.0mm	DPDT	PCB	PCB Pin	Full	N/A
 **LP6**	**Life Cycles:** 200,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	12mA, 12VDC	150gf SPST 200gf DPST	2.2mm	SPST DPST	PCB	PCB Pin	Full	N/A

Specifications subject to change without notice

Pushbutton Switch Series Comparison (PCB Mount)

	General Ratings	Electrical Ratings	Operating Force Options	Travel	Poles / Throws	Mounting Options	Terminal Options	Illumination Options	Water Resistance Ratings
	**P197** **Electrical Life:** 10,000 Cycles **Temperature:** -20°C to 85°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	10A, 125VAC [cURus] 5A, 250VAC [cURus, VDE] TV-5 125VAC [cURus]	300gf	3.5mm	SPST	PCB Panel Mount	Right Angle PCB Pin Solder	N/A	N/A
	**PBH** **Life Cycles:** 6,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	230gf DPDT 280gf 4PDT 380gf 6PDT	5.5mm	DPST DPDT	PCB	Right Angle PCB Pin	N/A	N/A
 *TL2201 Pictured	**TL2201** **TL4201** **Life Cycles:** 10,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	220gf DPDT 300gf 4PDT	2.5mm	DPDT 4PDT	PCB	PCB Pin	N/A	N/A
	**TL2203** **Life Cycles:** 10,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	180gf	1.9mm	DPDT	PCB	PCB Pin	N/A	N/A
	**TL2205** **Life Cycles:** 10,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	250gf	**Full:** 2.5mm **Lock:** 1.5mm	DPDT	PCB	PCB Pin	Dot	N/A
	**TL2230** **Life Cycles:** 10,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	140gf 230gf	1.8mm	DPDT	PCB	PCB Pin	N/A	N/A
	**TL2285** **Life Cycles:** 10,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	180gf	2.5mm	DPDT	PCB	PCB Pin	N/A	N/A
	**WBL** **Life Cycles:** 10,000 **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	300mA, 30VDC	200gf	**Full:** 3.3mm **Lock:** 2.5mm	DPDT 4PDT	PCB	Right Angle PCB Pin	Full	N/A

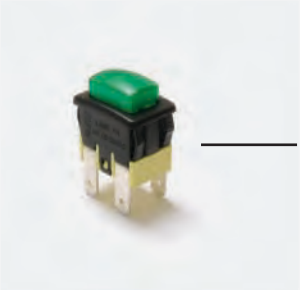
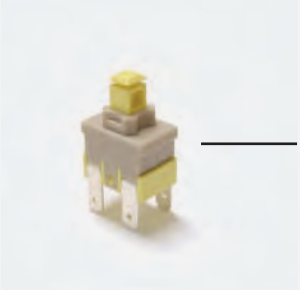
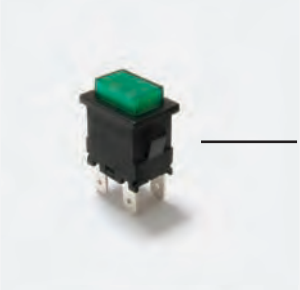
Specifications subject to change without notice

Pushbutton Switch Series Comparison (Panel Mount)

		General Ratings	Electrical Ratings	Operating Force Options	Travel	Poles / Throws / Functions	Panel Cutout Dimensions	Terminal Options	Illumination Options	Water Resistance Ratings
	**D16**	**Electrical / Mechanical Life:** 50,000 / 100,000 Cycles **Operating Temperature:** -20°C to 55°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	8A, 125VAC [cURus, CSA] 5A, 250VAC [cURus, VDE] 6A, 24VDC [cURus, CSA]	300gf	3.0mm	**SPDT, DPDT, 3PDT, 4PDT** On-On On-(On)	16mm Diameter	Solder	Full	N/A
	**L16**	**Operating Temperature:** -20°C to 55°C **Insulation Resistance:** 1,000MΩ Min.	N/A	N/A	N/A	Signal Light	16mm Diameter	Solder	Full Signal Light	N/A
	**LA**	**Electrical / Mechanical Life:** 50,000 / 100,000 Cycles **Operating Temperature:** -20°C to 55°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	8A, 125VAC [cURus] 5A, 250VAC [cURus] 2A, 250VDC [cURus] 6A, 24VDC [cURus]	300gf	3.0mm	**SPDT, DPDT, 3PDT, 4PDT** On-On On-(On)	22mm Diameter 25.5mm Diameter 30.5mm Diameter	Socket Solder Tab	Full Signal Light	IP65
	**LP1**	**Electrical / Mechanical Life:** 50,000 / 50,000 Cycles **Operating Temperature:** -20°C to 55°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 30VDC	250gf	1.8mm	**SPST** Off-(On)	8.2mm Diameter	Solder	Full	N/A
	**MDP-16**	**Electrical / Mechanical Life:** 6,000 / 50,000 Cycles **Operating Temperature:** -25°C to 55°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 50MΩ Min.	8A, 125VAC [cURus, VDE] 5A, 250VAC [cURus, VDE]	**SPDT** 500gf **DPDT** 800gf	3.0mm	**SPDT** On-On On-(On) **DPDT** On-On On-(On)	16mm Diameter	Tab	Full	N/A

Specifications subject to change without notice

Pushbutton Switch Series Comparison (Panel Mount)

	General Ratings	Electrical Ratings	Operating Force Options	Travel	Poles / Throws / Functions	Panel Cutout Dimensions	Terminal Options	Illumination Options	Water Resistance Ratings
 **P16**	**Electrical / Mechanical Life:** 50,000 / 100,000 Cycles **Operating Temperature:** -20°C to 55°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	8A, 125VAC cURus 5A, 250VAC [VDE] 6A, 24VDC	300gf	3.0mm	**SPDT, DPDT, 3PDT, 4PDT** On-On On-(On)	16mm Diameter	Socket	Full	N/A
 **PA4**	**Electrical / Mechanical Life:** 10,000 / 50,000 Cycles **Operating Temperature:** -20°C to 65°C -20°C to 125°C **Contact Resistance:** 20mΩ Max. **Insulation Resistance:** 100MΩ Min.	16A, 125VAC [cURus] 16A, 250VAC [cURus] 16(4)A, 250VAC [ENEC] 16(8)A, 250VAC [ENEC]	500gf	4.5mm	**SPST** Off-On Off-(On)	13mm x 19mm PCB	PCB Pin Solder Tab	Full	IP54
 **PA5**	**Electrical / Mechanical Life:** 10,000 / 50,000 Cycles **Operating Temperature:** -20°C to 125°C **Contact Resistance:** 20mΩ Max. **Insulation Resistance:** 100MΩ Min.	16A, 125VAC [cURus] 16A, 250VAC [cURus] 16(4)A, 250VAC [ENEC] 16(8)A, 250VAC [ENEC]	500gf	5.5mm	**SPST** Off-On Off-(On) **DPST** Off-On Off-(On)	Capture Mount PCB	PCB Pin Solder Tab	N/A	N/A
 **PB1973**	**Electrical / Mechanical Life:** 10,000 / 30,000 Cycles **Operating Temperature:** -10°C to 55°C **Contact Resistance:** 20mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	15A, 125VAC [cURus] 15A, 250VAC [cURus] 10(4)A, 250VAC [VDE]	300gf to 800gf	2.8mm	**SPST** Off-On Off-(On) **DPST** Off-On Off-(On)	13mm x 19.2mm	Tab	Full	N/A
 **PB2**	**Electrical / Mechanical Life:** 6,000 / 50,000 Cycles **Operating Temperature:** 0°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 5MΩ Min.	20A, 125VAC [UR] 12A, 250VAC [UR]	600gf	3.1mm	**SPST** Off-On On-On **DPST** Off-On On-On	22mm x 30mm	Tab	Dot	IP54

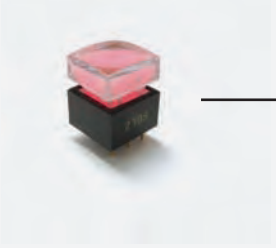
Specifications subject to change without notice

Pushbutton Switch Series Comparison (Panel Mount)

	General Ratings	Electrical Ratings	Operating Force Options	Travel	Poles / Throws / Functions	Panel Cutout Dimensions	Terminal Options	Illumination Options	Water Resistance Ratings
	**PP1**	**Electrical / Mechanical Life:** 6,000 / 50,000 Cycles **Operating Temperature:** 0°C to 85°C **Contact Resistance:** 10mΩ Max. **Insulation Resistance:** 2MΩ Min.	16A, 125VAC [cURus] 12A, 250VAC [cURus] 1HP, 125/250VAC [cURus]	300gf to 500gf	**Push Only** Push: 9.4mm **Push-Pull** Push: 5.0mm Pull: 5.7mm	**SPDT** On$_2$-On$_1$-(On$_2$) Push-Pull On-(On)	13.3mm x 28.2mm	Tab	N/A	N/A	
	**PP2**	**Electrical / Mechanical Life:** 6,000 / 50,000 Cycles **Operating Temperature:** 0°C to 85°C **Contact Resistance:** 10mΩ Max. **Insulation Resistance:** 10MΩ Min.	*Rating Option 1:* 10R(4)A 277VAC 5E4 [UL] *Rating Option 2:* 16A, 125VAC [cURus] 12A, 250VAC [cURus] 1HP, 125/250VAC [cURus]	300gf to 500gf	**Push Only** Push: 9.4mm **Push-Pull** Push: 5.0mm Pull: 5.7mm	**DPDT** On$_2$-On$_1$-(On$_2$) Push-Pull On-(On)	13.5mm x 36mm	Tab	N/A	N/A	
	**PR1**	**Electrical / Mechanical Life:** 50,000 / 100,000 Cycles **Operating Temperature:** -20°C to 105°C [cURus] -20°C to 125°C [ENEC] **Contact Resistance:** 35mΩ Max. **Insulation Resistance:** 100MΩ Min.	16A, 125VAC [cURus] 3/4HP, 250VAC [cURus] 16(6)A, 250VAC [ENEC] 10(4)A, 250VAC [ENEC]	1,800gf	6.2mm	**SPST** Off-On Off-(On) **DPST** Off-On Off-(On)	25mm Diameter	Tab	Full	IP54 Optional	
	**RP3508**	**Electrical / Mechanical Life:** 6,000 / 20,000 Cycles **Operating Temperature:** 0°C to 65°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	3A, 125VAC [cURus] 1.5A, 250VAC [cURus]	500gf	3.5mm	**SPST** Off-On Off-(On)	15mm x 16mm (Rounded Edge)	Solder	Full	N/A	
	**RP8100**	**Electrical / Mechanical Life:** 500,000 Cycles **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	125mA, 125VAC 100mA, 50VDC	300gf	1.5mm	**SPST** Off-(On)	13.6mm Diameter	Solder	Dot	IP65	

Specifications subject to change without notice

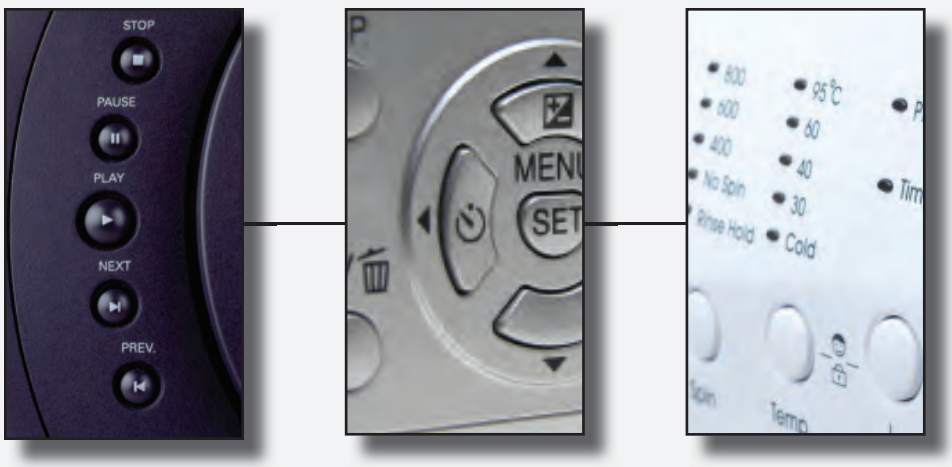
Pushbutton Switch Series Comparison (Panel Mount)

		General Ratings	Electrical Ratings	Operating Force Options	Travel	Poles / Throws / Functions	Panel Cutout Dimensions	Terminal Options	Illumination Options	Water Resistance Ratings
	**RP8200**	**Electrical / Mechanical Life:** 200,000 Cycles **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	100mA, 24VDC	560gf	2.5mm	**SPST** Off-On	13.6mm Diameter	Solder	Dot	IP65
	**RP8300**	**Electrical / Mechanical Life:** 500,000 Cycles **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	125mA, 125VAC 100mA, 50VDC	350gf	1.5mm	**SPST** Off-(On)	13.6mm Diameter	Solder	Dot	IP65
	**RP8400**	**Electrical / Mechanical Life:** 500,000 Cycles **Operating Temperature:** -30°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	125mA, 125VAC 100mA, 50VDC	350gf	**1.5mm**	**SPST** Off-(On)	13.6mm Diameter	Solder	Dot	IP65
	**ULP**	**Electrical / Mechanical Life:** 200,000 / 1,000,000 Cycles **Operating Temperature:** -20°C to 70°C **Contact Resistance:** 50mΩ Max. (Silver) 100mΩ Max. (Gold) **Insulation Resistance:** 1,000MΩ Min.	**Silver:** 500mA, 25VDC 200mA, 250VAC **Gold:** 0.4VA, Max. at 28V (AC or DC)	**SPDT** 200gf **DPDT** 300gf	2.2mm	**SPST** On-On On-(On) **DPST** On-On On-(On)	15.8mm x 16mm PCB 15.8mm x 18mm Panel Mount Cut-out size	PCB Pin Solder	Full	N/A

Specifications subject to change without notice

Tactile Switches

Tactile switches are very reliable and economical due to their unique features. Being extremely low profile and having a long operating life, tactile switches are used in common markets like telecommunication, medical, audio, and computer. With an array of options, such as multiple actuation forces and actuator lengths, consumers can benefit from a soft to strong touch of a button.



Tactile Switch Series Comparison (Part 1)

	General Ratings	Electrical Ratings	Travel	Body Dimensions	Operating Force Options (gf)	Mounting Options	Washable
 **320**	Multiple Actuator Styles **Life Cycles:** 1,000,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 1,000MΩ Min.	25mA, 50VDC	0.5mm	12.4mm x 12.4mm 12.4mm x 22.0mm	135	PCB Pin	N/A
 **LL1105**	Multiple Actuator Styles **Life Cycles:** 5,000,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.0mm x 6.0mm	65	PCB Pin	N/A
 **TL1014**	**Life Cycles:** 200,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	4.7mm x 3.5mm	160, 220	SMT (Gull Wing)	N/A
 **TL1015**	**Life Cycles:** 200,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.2mm	2.9mm x 3.9mm	160	SMT (Gull Wing)	N/A
 **TL1100**	Multiple Actuator Styles **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.3mm	12.0mm x 12.0mm	160, 260	PCB Pin	N/A
 **TL1105**	Caps Available **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.0mm x 6.0mm	100, 160, 250	PCB Pin	N/A
 **TL1107**	Multiple Actuator Styles **Life Cycles:** 30,000 (260gf), 50,000 (130gf & 180gf) **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	3.5mm x 6.0mm	130, 180, 260	PCB Pin	N/A

Specifications subject to change without notice

Tactile Switch Series Comparison (Part 2)

	General Ratings	Electrical Ratings	Travel	Body Dimensions	Operating Force Options (gf)	Mounting Options	Washable
 **TL1220**	Caps Available **Life Cycles:** 500,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.2mm	7.5mm x 7.5mm 10.0mm x 14.0mm 10.0mm x 19.0mm 7, 8, 10mm Dia	180	PCB Pin	N/A
 **TL1240**	Caps Available / LED Illuminated **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.0mm x 6.0mm.	160	PCB Pin	N/A
 **TL1250**	**Life Cycles:** 50,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	7.0mm x 8.3mm	120, 180, 280	PCB Pin	N/A
 **TL1260**	Caps Available / LED Illuminated **Life Cycles:** 50,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.2mm	6.8mm x 7.0mm	160	PCB Pin	N/A
 **TL1265**	Caps Available / LED Illuminated **Life Cycles:** 500,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.2mm	6.8mm x 7.0mm	160	PCB Pin	N/A
 **TL1290**	LED Illuminated **Life Cycles:** 25,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 250mΩ Max. **Insulation Resistance:** 100MΩ Min.	100mA, 32VDC	2.0mm	9.45mm x 8.0mm	500	PCB Pin	N/A
 **TL2243**	Double Stacked Low Profile **Life Cycles:** 30,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	40mA, 12VDC	0.25mm	7.3mm x 9.1mm	180	PCB Pin	N/A
 **TL3200**	Single or Dual LED Illumination **Life Cycles:** 30,000 **Operating Temp:** -25°C to 85°C **Contact Resistance:** 500mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.8mm x 4.5mm	160	SMT (Gull Wing)	N/A
 **TL3210**	LED Illuminated **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 500mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.2mm	5.6mm x 3.4mm	160	SMT (Gull Wing)	N/A

Tactile Switch Series Comparison (Part 3)

	General Ratings	Electrical Ratings	Travel	Body Dimensions	Operating Force Options (gf)	Mounting Options	Washable
 **TL3240**	LED Illuminated Life Cycles: up to 200,000 Operating Temp: -25°C to 70°C Contact Resistance: 100mΩ Max. Insulation Resistance: 100MΩ Min.	50mA, 12VDC	0.2mm	6.1mm x 6.1mm	100, 160, 260	SMT (Gull Wing)	N/A
 **TL3253**	LED Illuminated Life Cycles: up to 500,000 Operating Temp: -20°C to 70°C Contact Resistance: 100mΩ Max. Insulation Resistance: 100MΩ Min.	50mA, 12VDC	0.25mm	12mm x 12mm	160	Right Angle PCB Pin	N/A
 **TL3300**	Multiple Actuator Styles Life Cycles: up to 200,000 Operating Temp: -25°C to 70°C Contact Resistance: 100mΩ Max. Insulation Resistance: 100MΩ Min.	50mA, 12VDC	0.35mm	12mm x 12mm	160, 260, 320, 520	SMT (Gull Wing)	N/A
 **TL3301**	Caps Available / Multiple Actuator Styles **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.0mm x 6.0mm	100, 160, 260	SMT (Gull Wing)	N/A
 **TL3302**	Multiple Actuator Styles **Life Cycles:** 20,000 - 50,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	3.5mm x 6.0mm	130, 180, 260	SMT (Gull Wing)	N/A
 **TL3303**	Multiple Actuator Styles **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.0mm x 6.0mm	100, 160, 260	SMT (Gull Wing)	N/A
 **TL3313**	**Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	4.8mm x 4.8mm	100, 160, 250	SMT (Gull Wing)	N/A
 **TL3315**	**Life Cycles:** 100,000 (100gf), 500,000 (160gf), 200,000 (250gf) **Operating Temp:** -20°C to 70°C **Contact Resistance:** 200mΩ Max. **Insulation Resistance:** 50MΩ Min.	50mA, 15VDC		4.5mm x 4.5mm	100, 160, 250	SMT (Gull Wing)	N/A
 **TL3330**	**Life Cycles:** 50,000 (130gf), 30,000 (260gf) **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.9mm x 3.3mm	100, 200	Right Angle SMT (Gull Wing)	N/A

Tactile Switch Series Comparison (Part 4)

		General Ratings	Electrical Ratings	Travel	Body Dimensions	Operating Force Options (gf)	Mounting Options	Washable
	**TL3340**	**Life Cycles:** 100,000 **Operating Temp:** -35°C to 85°C **Contact Resistance:** 500mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.2mm	4.25mm x 3.3mm	160	SMT (Gull Wing)	N/A
	**TL3342**	**Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 20mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	5.2mm x 5.2mm	160, 250	SMT (Gull Wing)	N/A
	**TL3700**	**Life Cycles:** 100,000 **Operating Temp:** -40°C to 85°C **Contact Resistance:** 500mΩ Max. **Insulation Resistance:** 100MΩ Min.	20mA, 15VDC	0.15mm	3.0mm x 2.6mm	100, 160	SMT (Gull Wing)	N/A
NEW 	**TL3901**	**Life Cycles:** 50,000 **Operating Temp:** -40°C to 85°C **Contact Resistance:** 500mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.3mm	5.4mm x 5.0mm	180	Right Angle Edge (Gull Wing)	N/A
	**TL4100**	**Life Cycles:** 1,000,000 **Operating Temp:** -40°C to 85°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.15mm	3.5mm x 6.2mm	120, 240	Right Angle Edge (Gullwing)	N/A
	**TL4105**	**Life Cycles:** 200,000 **Operating Temp:** -40°C to 85°C **Contact Resistance:** 1Ω Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.15mm	2.9mm x 4.8mm	160	Right Angle Edge (Gullwing)	N/A
	**TL52**	IP67 Rated **Life Cycles:** 100,000 **Operating Temp:** -25°C to 85°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.3mm	8.0mm x 8.0mm	160, 260	PCB Pin	●
	**TL58**	Multiple Actuator Styles **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.2mm x 6.2mm	100, 160, 260	Right Angle PCB Pin	N/A

Specifications subject to change without notice

Tactile Switch Series Comparison (Part 5)

		General Ratings	Electrical Ratings	Travel	Body Dimensions	Operating Force Options (gf)	Mounting Options	Washable
	**TL59**	Multiple Actuator Styles **Life Cycles:** 100,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.25mm	6.2mm x 6.2mm	100, 160, 260	PCB Pin	N/A
	**TL6100**	Caps Available / Multiple Actuator Styles **Life Cycles:** 80,000 **Operating Temp:** -40°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 50VDC	0.5mm	7.2mm x 7.2mm 8.0mm x 8.0mm	130, 160, 300, 500	PCB Pin	●
	**TL6110**	Caps Available / Multiple Actuator Styles **Life Cycles:** 80,000 **Operating Temp:** -40°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.5mm	6.0mm x 8.0mm	130, 160, 300, 500	Right Angle PCB Pin	●
	**TL6120**	Caps Available / Multiple Actuator Styles **Life Cycles:** 80,000 **Operating Temp:** -40°C to 85°C **Contact Resistance:** 50mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.5mm	7.2mm x 7.2mm	130, 160, 300, 500	SMT (Gull Wing)	●
	**TL6190**	Caps Available **Life Cycles:** 100,000 **Operating Temp (Switch):** -40°C to 105°C **Operating Temp (Cap):** -40°C to 85°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.5mm	12.0mm x 11.5mm	160, 220, 320	Right Angle PCB Pin	●
NEW 	**TL6200**	**Life Cycles:** 10,000,000 **Operating Temp:** -20°C to 70°C **Contact Resistance:** 30mΩ Max. **Insulation Resistance:** 10MΩ Min.	50mA, 24VDC	1.0mm	6.9mm x 6.2mm	300	SMT (Gull Wing) PCB Pin	●
	**TL6700**	**Life Cycles:** 500,000 (160gf), 100,000 (260gf) **Operating Temp:** -20°C to 70°C **Contact Resistance:** 100mΩ Max. **Insulation Resistance:** 100MΩ Min.	50mA, 12VDC	0.35mm	6.9mm x 6.2mm	160, 260	SMT (Gull Wing J-Bend)	●

Specifications subject to change without notice

Snap Action Switches

Snap Action switches are uniquely designed to deliver a very precise “Turn-ON” function as well as featuring a very rapid actuation. Most actuator styles are easily customized. The actuation force and lever length also can be customizable at a low cost to fit many requirements. They are commonly used in vending machines, timing controls, power tools and the gaming industry.

Snap Action Switch Series Comparison

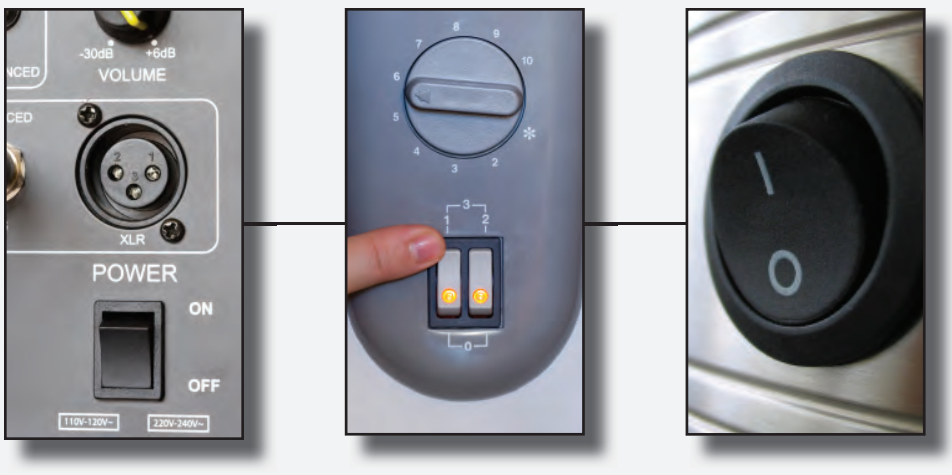
	General Ratings	Electrical Ratings	Functions	Operating Force Options*	Actuator Options	Terminal Options	Body Options
 **LS**	**Electrical Life:** 50,000 Cycles **Mechanical Life:** 1,000,000 Cycles **Operating Temp:** -25°C to 85°C **Contact Resistance:** 100mΩ Max.	**cURus, VDE:** 15A, 125/250VAC **Gold:** 0.4VA, 20V (AC or DC)	SPST N.O. SPST N.C. SPDT	25, 40, 45, 50, 60, 75, 85, 100, 120, 140, 160, 250	Pin Plunger Lever Roller Simulated Roller	Quick Connect Right Angle PCB Pin Left Angle PCB Pin Solder	**Width:** 27.9mm **Height:** 15.9mm **Depth:** 10.3mm
 **MS**	**Electrical Life:** 50,000 Cycles **Mechanical Life:** 1,000,000 Cycles **Operating Temp:** -25°C to 85°C **Contact Resistance:** 100mΩ Max.	**cURus:** 5A, 125/250VAC **Gold:** 0.4VA, 20V (AC or DC)	SPST N.O. SPDT	10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 95, 115, 130, 150, 175, 190, 250, 295	Pin Plunger Lever Roller Simulated Roller Custom	Quick Connect PCB Pin Right Angle PCB Pin Left Angle PCB Pin Solder	**Width:** 19.8mm **Height:** 10.6mm **Depth:** 6.4mm
 **SS**	**Electrical Life:** 100,000 Cycles **Mechanical Life:** 1,000,000 Cycles **Operating Temp:** -25°C to 75°C **Contact Resistance:** 100mΩ Max.	**cURus:** 3A, 125VAC 1.5A, 250VAC 0.1A, 5VDC **Gold:** 0.4VA, 20V (AC or DC)	SPDT	15, 20, 25, 30, 35, 40, 50, 70, 90, 110, 130	Pin Plunger Lever Simulated Roller	PCB Pin PCB Retention Right Angle PCB Pin Left Angle PCB Pin Solder	**Width:** 12.7mm **Height:** 6.5mm **Depth:** 5.75mm
 **TS**	**Electrical Life:** 50,000 Cycles **Mechanical Life:** 100,000 Cycles **Operating Temp:** -25°C to 85°C **Contact Resistance:** 300mΩ Max.	300mA, 6VDC	SPDT	20	Lever	Vertical PCB Pin Right Angle PCB Pin Short Left Angle PCB Pin Short Right Angle PCB Pin Long Left Angle PCB Pin Long	**Width:** 8.2mm **Height:** 6.6mm **Depth:** 2.7mm
 **TS2**	**Electrical Life:** 3,000,000 Cycles **Mechanical Life:** 3,000,000 Cycles **Operating Temp:** -25°C to 85°C **Contact Resistance:** 300mΩ Max.	100mA, 125VAC 100mA, 48VDC	SPST	70	Pin Plunger	SMT Terminals	**Width:** 8.6mm **Height:** 3.0mm **Depth:** 4.8mm

Specifications subject to change without notice

*Not all force options work with all actuator options.

Rocker Switches

Rocker switches open or close an electrical circuit by pivoting between the terminal contacts as the user rocks the actuator back and forth. Our rocker switches come in many different shapes and sizes, ranging from low milliamp ratings to high power ratings with horse power. We also offer some that are sealed up to IP67 standards and many different styles of actuation with illumination are available.



Rocker Switch Series Comparison (Subminiature)

	Electrical Ratings	Poles / Functions	Actuator Options	Mounting Options	Terminal Options	Water Resistance Ratings
 **300**	**Silver:** 5A, 120VAC [cURus] 5A, 28VDC 2A, 250VAC [cURus] **Gold:** 0.4VA, 20V (AC or DC)	**1, 2, 3, or 4 Pole:** On-On On-Off-On On-Off-(On) (On) On-(On) (On)-Off-(On) **2 Pole:** On-On-On On-On-(On) (On)-On-(On) **4 Pole:** On-On-On	Paddle Rocker	**Panel Mount:** Quick Connect Vertical Solder **PC Mount:** Horizontal Right Angle Horizontal Right Angle with Bracket Vertical Vertical Right Angle Vertical with Bracket	PCB Pin Quick Connect Solder	N/A
 **300A**	**Silver:** 5A, 120VAC [cURus] 5A, 28VDC 2A, 250VAC [cURus] **Gold:** 0.4VA, 20V (AC or DC)	**1 or 2 Pole:** On-On On-Off-On On-Off-(On) On-(On) (On)-Off-(On)	Paddle Rocker	**Panel Mount:** Quick Connect Vertical Solder **PC Mount:** Horizontal Right Angle Horizontal Right Angle with Bracket Vertical Vertical Right Angle Vertical with Bracket	PCB Pin Quick Connect Solder	IP67
 **400**	**Silver:** 3A, 120VAC [cURus] 3A, 28VDC 1A, 250VAC [cURus] **Gold:** 0.4VA, 20V (AC or DC)	**1 Pole:** On-On On-Off-On On-Off-(On) On-(On) (On)-Off-(On) Off-On **2 Pole:** On-On On-Off-On On-(On)	Rocker	**Panel Mount:** Vertical Solder **PC Mount:** Horizontal Right Angle Horizontal Right Angle with Bracket Vertical Vertical Right Angle Vertical Right Angle with Bracket Vertical with Bracket	PCB Pin Solder	N/A
 **400A**	**Silver:** 3A, 120VAC [cURus] 3A, 28VDC 1A, 250VAC [cURus] **Gold:** 0.4VA, 20V (AC or DC)	**1 Pole:** On-On On-Off-On On-Off-(On) On-(On) (On)-Off-(On) Off-On **2 Pole:** On-On On-Off-On On-(On)	Rocker	**Panel Mount:** Vertical Solder **PC Mount:** Horizontal Right Angle Horizontal Right Angle with Bracket Vertical Right Angle Vertical Right Angle with Bracket Vertical with Bracket	PCB Pin Solder	IP67
 **400B**	**Silver:** 3A, 120VAC [cURus] 1A, 250VAC [cURus]	**1 Pole:** On-On On-Off-On On-Off-(On) On-(On) (On)-Off-(On)	Rocker	**PC Mount:** Surface Mount	PCB Pin	IP67

Specifications subject to change without notice

Rocker Switch Series Comparison (Rectangular Panel Mount)

	Electrical Ratings	Poles / Functions	Panel Cutout Dimensions	Actuator Options	Illumination Options	Water Resistance Ratings
 **R1966**	15A, 125VAC T65 [cURus] 8A, 250VAC T65 [cURus] 6A, 250VAC T85 [VDE]	**1 Pole:** On-Off On-Off-On Off-(On) On-Off-(On) On-On On-(Off) On-(On) (On)-Off-(On)	13mm x 19.2mm	Curved	Full	N/A
 **R1973**	9A, 125VAC T65 [cURus] 6A, 250VAC T65 [cURus] 4(1)A, 250VAC T85 [VDE]	**1 Pole:** On-Off **2 Pole:** On-Off	13mm x 19.2mm	Curved	Full	N/A
 **R4**	20A, 125VAC T65 [cURus] 15A, 125VAC T65 [cURus] 3/4HP, 125VAC [cURus] 1HP, 250VAC [cURus] 15A, 250VAC T85 [VDE] 10A, 250VAC T85 [VDE]	**1 Pole:** On-Off On-Off-On Off-(On) On-(Off) On-On On-(On) (On)-Off-(On) On-Off-(On)	11mm x 30mm	Curved	Full Dott	N/A
 **R5**	20A, 125VAC T65 [cURus] 15A, 125VAC T65 [cURus] 3/4HP, 125VAC [cURus] 1HP, 250VAC [cURus] 16A, 250VAC T85 [VDE] 10A, 250VAC T85 [VDE]	**2 Pole:** On-Off On-Off-On Off-(On) On-(Off) On-On On-(On) (On)-Off-(On) On-Off-(On)	22mm x 30mm	Curved	Full	N/A
 **R6**	10A, 125VAC T65 [cURus] 6A, 250VAC T65 [cURus]	**1 Pole:** On-Off (On)-Off	6.65mm x 19.2mm	Curved	N/A	N/A
 **RA1**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125/55 [ENEC] 10(2)A, 250VAC 5E4 T85/55 [ENEC]	**1 Pole:** Off-On On-(On) Off-(On) On-Off-On On-(Off) On-Off-(On) On-On (On)-Off-(On)	13mm x 19mm	Bi-Color Curved Custom	Full Signal Light	IP54 with cap
 **RA2**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125 [ENEC] 10(2)A, 250VAC 5E4 T85 [ENEC]	**1 Pole (Each Actuator):** Off-On Off-(On) On-(Off) On-On On-Off-On	22mm x 19mm	Curved	Signal Light	IP54 with cap
 **RA4**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC T125 1E4 [ENEC] 10(2)A, 250VAC T85 5E4 [ENEC]	**1 or 2 Pole:** Off-On Off-(On) On-(Off) On-On On-Off-On On-(On)	22mm x 19.2mm	Curved Paddle	Full	IP54 with cap
 **RA8**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125/55 [ENEC] 10(2)A, 250VAC 5E4 T85/55 [ENEC]	**1 Pole:** Off-On **2 Pole:** Off-On	13mm x 19mm	Bi-Color Curved	Full Signal Light	IP54 with cap

Specifications subject to change without notice

Rocker Switch Series Comparison (Rectangular Panel Mount)

	Electrical Ratings	Poles / Functions	Panel Cutout Dimensions	Actuator Options	Illumination Options	Water Resistance Ratings
 **RB1**	20A, 125VAC 1/4HP T65 [cURus] 20A, 250VAC 3/4HP T65 [cURus] 20(8)A, 250VAC 1E4 T125 [ENEC] 16(4)A, 250VAC 1E4 T85/55 [ENEC] 10(2)A, 250VAC 5E4 T85/55 [ENEC]	**1 Pole:** Off-On On-(On) Off-(On) On-Off-On On-(Off) On-Off-(On) On-On (On)-Off-(On)	11mm x 30mm	Curved Flat	Dot Full Signal Light	IP54 with cap
 **RB2**	20A, 125VAC 1/4HP T65 [cURus] 20A, 250VAC 3/4HP T65 [cURus] 16(8)A, 250VAC 1E4 T125 [ENEC] 10(2)A, 250VAC 5E4 [ENEC] 16(4)A, 250VAC 1E4 T85/55 [ENEC]	**1 or 2 Pole:** Off-On On-Off-On (On)-Off-(On) On-On On-Off-(On) **2 Pole Only:** Off-(On) On-(On)	22mm x 30mm	Curved Flat	Dot Full Signal Light	IP54 with cap
 **RB4**	16A, 125VAC T85 [cURus] 8A, 250VAC T85 [cURus] 16(4)A, 250VAC 1E4 T125 [ENEC]	**1 Pole (Each Actuator):** Off-On On-(On) Off-(On) On-Off-On On-(Off) On-Off-(On) On-On (On)-Off-(On)	22mm x 30mm	Curved Flat	Dot Full Signal Light	IP54 with cap
 **RBW2**	16(16)A, 125VAC 5E4 T85 [cURus] 1/3HP, 125VAC IP66 [cURus] 10(10)A, 250VAC 5E4 T85 [VDE]	**2 Pole:** Off-On *On-On	22mm x 30mm	Curved	Full	IP66
 **RD1**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125 [ENEC] 10(2)A, 250VAC 5E4 T85 [ENEC]	**1 Pole:** Off-On	6.8mm x 19.2mm	Curved	N/A	N/A
 **RSC**	20A, 125VAC 1/4HP T105 [cURus] 16A, 250VAC 3/4HP T105 [cURus] 20(8)A, 250VAC 1E4 T125 [ENEC] 16(4)A, 250VAC 1E4 T125 [ENEC] 10(2)A, 250VAC 5E4 T125 [ENEC]	**1 Pole:** Off-On Off-(On) On-(Off) On-Off-(On) On-On On-Off-On On-(On)	28.6mm x 13.9mm 27.2mm x 12.1mm 27.2mm x 13.9mm 28.6mm x 12.1mm	Bi-Color Curved Flat	Full Signal Light	N/A
 **RVW**	20A, 125VAC [cURus UL508] 15A, 277VAC [cURus UL508] 2HP, 220-240VAC [cURus UL508] **Momentary Switches:** 1.5HP, 220-240VAC [cURus UL508]	**1 or 2 Pole:** Off-On Off-(On) On-(Off) On-Off-(On) On-On On-Off-On On-(On) (On)-Off-(On)	21mm x 36.8mm	Curved	N/A	IP54
 **WB2**	**Maintained Switches:** 20A, 125/250VAC T65/T85 [cURus] 2.0HP, 125/250VAC [cURus] 18(12)A, 250VAC 5E4 T85 [TÜV] **Momentary Switches:** 20A, 125/250VAC T65/T85 [cURus] 1.5HP, 125/250VAC [cURus] 18(10)A, 250VAC 5E4 T85 [TÜV]	**2 Pole:** Off-On Off-(On) (On)-Off-(On) On-On On-Off-On On-(On)	22mm x 30mm	Curved	N/A	IP55

Specifications subject to change without notice

*Option only available with non-illuminated version.

Rocker Switch Series Comparison (Oval / Round Panel Mount)

	Electrical Ratings	Poles / Functions	Panel Cutout Dimensions	Actuator Options	Illumination Options	Water Resistance Ratings
 **RE1**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125 [ENEC] 10(2)A, 250VAC 5E4 T85 [ENEC]	**1 Pole:** Off-On On-On	On-Off-On	13.5mm x 23.3mm (Oval)	Curved	Full	N/A
 **RR1**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125/55 [ENEC] 10(2)A, 250VAC 5E4 T85/55 [ENEC]	**1 Pole:** Off-On Off-(On) On-(Off) On-Off-(On)	On-On On-Off-On On-(On)	20mm Diameter	Curved	Dot Full Signal Light	IP54 with cap
 **RR3112**	16A, 125VAC T65 [cURus] 10A, 250VAC T65 [cURus]	**1 Pole:** On-Off On-Off-On	On-On Off-(On)	20.2mm Diameter	Curved	Full	N/A
 **RR3130**	10A, 125VAC T65 [cURus] 6A, 250VAC T65 [cURus]	**1 Pole:** On-Off **2 Pole:** On-On	On-On	18.2mm Diameter	Curved	N/A	N/A
 **RR3402**	6A, 125VAC [cURus] 3A, 250VAC [cURus]	**1 Pole:** On-Off On-Off-On	On-On	15mm Diameter	Paddle	N/A	N/A

Specifications subject to change without notice

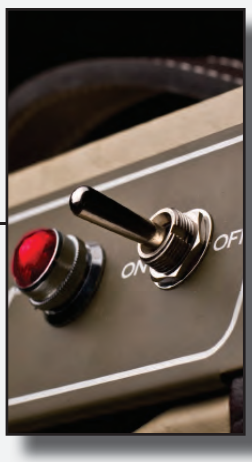
Rocker Switch Series Comparison (Oval / Round Panel Mount)

	Electrical Ratings	Poles / Functions	Panel Cutout Dimensions	Actuator Options	Illumination Options	Water Resistance Ratings
 **RR5**	20A, 125VAC T65 [cURus] 12A, 250VAC T65 [cURus] 10(4)A, 250VAC 5E4 T125 [ENEC]	**1 Pole:** Off-On Off-(On)	20mm Diameter	Curved	N/A	N/A
 **RR8**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125/55 [ENEC] 10(2)A, 250VAC 5E4 T85/55 [ENEC]	**1 Pole:** Off-On **2 Pole:** Off-On	20mm Diameter	Curved	Full	N/A
 **RRA**	15A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus]	**1 Pole:** Off-On On-On On-Off-On **2 Pole:** Off-On On-On On-Off-On	22mm Diameter	Curved	Full	IP54 with cap
 **RRG3**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125/55 [ENEC]	**1 Pole:** Off-On On-On Off-(On) On-Off-On On-(Off) On-(On) On-Off-(On)	20mm Diameter	Curved	N/A	N/A
 **RRGA**	16A, 125VAC 1/3HP T105 [cURus] 10A, 250VAC 1/3HP T105 [cURus] 10(4)A, 250VAC 1E4 T125/55 [ENEC]	**1 Pole:** Off-On On-On Off-(On) On-Off-On On-(Off) On-(On) On-Off-(On)	22mm Diameter	Curved	N/A	N/A

Specifications subject to change without notice

Toggle Switches

Toggle switches are actuated by a mechanical lever and are used in both big industrial applications and smaller board level applications. Our toggle switches include a wide variety of actuator, bushing, and terminal options as well as low and high amperage ratings. There are even a few with horse power ratings for some of the more industrial strength applications.



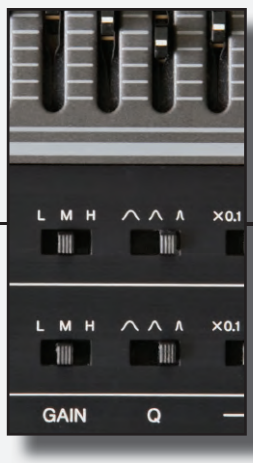
Toggle Switch Series Comparison

	General Ratings	Electrical Ratings	Poles / Functions	Actuator Options	Bushing Options	Terminal Options	Water Resistance Ratings
 **100**	**Electrical Life:** 6,000 Cycles **Mechanical Life:** 30,000 Cycles **Operating Temp:** -30°C to 85°C **Contact Resistance:** 10mΩ Max.	**Silver:** 5A, 120VAC [cURus]; 5A, 28VDC; 2A, 250VAC [cURus] **Gold:** 0.4VA, 20V Max. (AC or DC)	**1 or 3 Pole:** On-On; On-Off-On; On-Off-(On); On-(On); (On)-Off-(On) **2 or 4 Pole:** On-On; On-Off-On; On-Off-(On); On-On-(On); On-(On); (On)-Off-(On); On-On-On; (On)-On-(On)	Flat Locking Metal Plastic	High Torque Non-Threaded Threaded Splash Proof	Quick Connect Right Angle PCB Pin Solder Vertical PCB Pin Wire Wrap	N/A
 **100A**	**Electrical Life:** 6,000 Cycles **Mechanical Life:** 30,000 Cycles **Operating Temp:** -30°C to 85°C **Contact Resistance:** 10mΩ Max.	**Silver:** 5A, 120VAC [cURus]; 5A, 28VDC; 2A, 250VAC [cURus] **Gold:** 0.4VA, 20V Max. (AC or DC)	**1 Pole:** On-On; On-Off-On; On-Off-(On); On-(On); (On)-Off-(On) **2 Pole:** On-On; On-Off-On; On-Off-(On); On-(On); (On)-Off-(On)	Metal Plastic	Non-Threaded Threaded	Right Angle PCB Pin Solder Vertical PCB Pin Wire Wrap	IP67
 **200**	**Electrical Life:** 6,000 Cycles **Mechanical Life:** 30,000 Cycles **Operating Temp:** -30°C to 85°C **Contact Resistance:** 10mΩ Max.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, 20V Max. (AC or DC)	**1 Pole:** On-On; On-Off-On; On-Off-(On); On-(On); (On)-Off-(On); Off-On **2 Pole:** On-On; On-Off-On; On-(On)	Metal	Non-Threaded Threaded	Right Angle PCB Pin Solder Vertical PCB Pin	N/A
 **200A**	**Electrical Life:** 6,000 Cycles **Mechanical Life:** 30,000 Cycles **Operating Temp:** -30°C to 85°C **Contact Resistance:** 10mΩ Max.	**Silver:** 3A, 120VAC [cURus]; 3A, 28VDC; 1A, 250VAC [cURus] **Gold:** 0.4VA, 20V Max. (AC or DC)	**1 Pole:** On-On; On-Off-On; On-Off-(On); On-(On); (On)-Off-(On); Off-On **2 Pole:** On-On; On-Off-(On); On-(On)	Metal Plastic	Non-Threaded	Right Angle PCB Pin Vertical PCB Pin	IP67
 **200B**	**Electrical Life:** 6,000 Cycles **Mechanical Life:** 30,000 Cycles **Operating Temp:** -30°C to 85°C **Contact Resistance:** 20mΩ Max.	**Gold:** 0.4VA, 20V Max. (AC or DC)	**1 Pole:** On-(On); (On)-Off-(On); On-Off-On; On-Off-(On)	Metal Plastic	Non-Threaded	Surface Mount	IP67
 **200U**	**Electrical Life:** 40,000 Cycles **Mechanical Life:** 40,000 Cycles **Operating Temp:** -30°C to 85°C **Contact Resistance:** 100mΩ Max.	**Gold:** 0.4VA, 20V Max. (AC or DC)	**1 or 2 Pole:** Off-On; On-On; On-Off-On	Plastic	Non-Threaded	PCB Pin Right Angle PCB Pin Vertical Right Angle-PCB Pin	IP67
 **ST1** **ST2** **ST2 Pictured*	**Electrical Life:** 6,000 Cycles **Mechanical Life:** 100,000 Cycles **Operating Temp:** -20°C to 85°C **Contact Resistance:** 50mΩ Max.	**Maintained Switches:** 20A, 125VAC [cURus]; 15A, 277VAC [cURus]; 2HP, 125-277VAC [cURus] **Momentary Switches:** 20A, 125VAC [cURus]; 15A, 277VAC [cURus]; 1.5HP, 125-277VAC [cURus]	**2 Pole:** Off-On; Off-(On); On-Off-(On); On-On; On-Off-On; (On)-Off-(On)	Metal	Threaded	Quick Connect Screw Solder Wire Leads	N/A
 **ST3**	**Electrical Life:** 6,000 Cycles **Mechanical Life:** 100,000 Cycles **Operating Temp:** -30°C to 85°C **Contact Resistance:** 50mΩ Max.	**Maintained Switches:** 24A, 125VAC [cURus]; 15A, 277VAC [cURus]; 2HP, 125-277VAC [cURus]	**3 Pole:** Off-On; On-Off-On; On-On	Metal	Threaded	Quick Connect Screw Solder Wire Leads	N/A

Specifications subject to change without notice

Slide Switches

Slide switches function in a sliding movement from the current position to the next. The method of activation is designed to move toward a switching condition with an option of flush or raised actuators. Our diverse selection of termination types allow the switch to be mounted in a variety of ways. They are frequently used in computer servers, consumer electronics, and testing equipment.



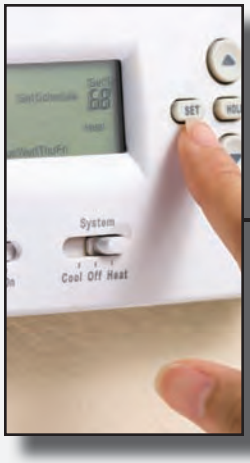
Slide Switch Series Comparison

	Electrical Ratings	Number of Poles	Number of Positions	Terminal Options	Panel Mount Capable	Water Resistance Ratings
 **500**	**Silver:** 5A, 120VAC [cURus] 2A, 250VAC [cURus] **Gold:** 0.4VA, 20V (AC or DC)	Up to 2 Poles	Up to 3 Positions	PCB Pin Solder Quick Connect Wire Wrap	●	N/A
 **500A**	**Silver:** 3A, 120VAC [cURus] 1A, 250VAC [cURus] **Gold:** 0.4VA, 20V (AC or DC)	Up to 2 Poles	Up to 3 Positions	PCB Pin	N/A	N/A
 **500R**	**Gold:** 0.4VA, 20V (AC or DC)	Up to 2 Poles	Up to 3 Positions	Right Angle PCB Pin Vertical PCB Pin	N/A	IP67
 **600**	**Silver:** 1A, 30VDC **Gold:** 0.4VA, 20V (AC or DC)	1 Pole	Up to 3 Positions	Right Angle PCB Pin Vertical PCB Pin Surface Mount	●	N/A
 **EG**	300mA, 4VDC 300mA, 6VDC	Up to 6 Poles	Up to 6 Positions	PCB Pin Surface Mount	●	N/A
 **LSK**	500mA, 50VDC	Up to 4 Poles	Up to 3 Positions	Right Angle PCB Pin	N/A	N/A
 **LSS**	500mA, 50VDC	Up to 4 Poles	Up to 3 Positions	PCB Pin	N/A	N/A
 **LSU**	11A, 125VAC [cURus] 5.5A, 250VAC [cURus]	Up to 2 Poles	2 Positions	PCB Pin Solder	●	N/A

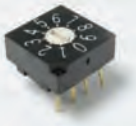
Specifications subject to change without notice

DIP Switches

DIP switches are designed to be used on a PC board and are commonly used to customize the behavior of an electronic device for specific situations. DIP switches are also an alternative to jumper blocks, as one of their main advantages lies in the ability to quickly change positions. Also, there are no parts to lose. Some examples of applications include radio receivers such as the ones found in a garage door opener and a ceiling fan.



DIP Switch Series Comparison

	General Ratings	Electrical Ratings	Body Dimensions (mm)	Number of Positions	Actuator Options	Mounting Options	Packaging Options	Tape Seal / Washable
 **KAE**	**Life Cycles:** 2,000 **Operating Force:** 1,000gf Max. **Operating Temp:** -20°C to 85°C	**Switch:** 25mA, 24VDC **Carry:** 100mA, 50VDC	**Height:** 3.05 **Width:** 6.3 **Length:** Varies per # of positions	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12	Extended Recessed	SMT (Gull Wing) PCB Pin (Splayed or straight)	Tape and Reel Tube	●
 **KAN**	**Life Cycles:** 2,000 **Operating Force:** 500gf Max. **Operating Temp:** -40°C to 85°C	**Switch:** 25mA, 24VDC **Carry:** 100mA, 50VDC	**Height:** 1.5 **Width:** 4.5 **Length:** Varies per # of positions	2, 4, 6, 8, 10	Recessed	SMT (Gull Wing)	Tape and Reel Tube	●
 **KAP**	**Life Cycles:** 2,000 **Operating Force:** 400gf Max. **Operating Temp:** -40°C to 85°C	**Switch:** 25mA, 24VDC **Carry:** 100mA, 50VDC	**Height:** 10.8 **Width:** 10.2 **Length:** Varies per # of positions	2, 3, 4, 5, 6, 7, 8, 9, 10, 12	Extended Recessed	PCB Pin	Tube	●
 **KAC**	**Life Cycles:** 2,000 **Operating Force:** 800gf Max. **Operating Temp:** -20°C to 85°C	**Switch:** 25mA, 24VDC **Carry:** 100mA, 50VDC	**Height:** 5.0 **Width:** 6.0 **Length:** Varies per # of positions	2, 4, 6, 8, 10	Extended	SMT (Gull Wing) PCB Pin (Splayed)	Tape and Reel Tube	N/A
 **KAS**	**Life Cycles:** 2,000 **Operating Force:** 1,000gf Max. **Operating Temp:** -40°C to 85°C	**Switch:** 25mA, 24VDC **Carry:** 100mA, 50VDC	**Height:** 6.0 **Width:** 9.9 **Length:** Varies per # of positions	2, 3, 4, 5, 6, 7, 8, 9, 10, 12	Extended Recessed	PCB Pin (Vertical & Right Angle)	Tube	●
 **DR**	2x3, 3x3, 4x1 Layout **Life Cycles:** 15,000 Steps **Operating Force:** 500gf-cm Max. **Operating Temp:** -40°C to 85°C	**Switch:** 25mA, 24VDC **Carry:** 100mA, 50VDC	**Height:** 4.5 **Width:** 9.8 **Length:** 9.9	10, 16	Extended Flush	PCB Pin	Tape and Reel Tube	N/A
 **RDM**	3x3 Layout **Life Cycles:** 25,000 Steps **Operating Force:** 120gf-cm Max. **Operating Temp:** -60°C to 125°C	**Switch:** 100mA, 42VDC **Carry:** 400mA, 42VDC	**Height:** 3.65 *(Vert)* **Height:** 5.80 *(RA)* **Width:** 7.4 **Length:** 7.4	10, 16	Extended Flush	PCB Pin (Vertical & Right Angle) SMT	Tape and Reel Tube	IP67
 **RDT**	2x3, 3x3 Layout **Life Cycles:** 10,000 Steps **Operating Force:** 700gf-cm Max. **Operating Temp:** -40°C to 85°C *(Through Hole)*, -60°C to 125°C *(SMT)*	**Switch:** 150mA, 42VDC **Carry:** 200mA, 42VDC	**Height:** 6.50 *(Vert)* **Height:** 12.05 *(RA)* **Width:** 10.0 **Length:** 10.0	04, 06, 08, 10, 16	Extended Flush	PCB Pin (Vertical & Right Angle) SMT	Tape and Reel Tube	IP67
 **SRJ**	2x3 Layout **Life Cycles:** 15,000 Steps **Operating Force:** 400gf-cm Max. **Operating Temp:** -10°C to 60°C	**Switch:** 100mA, 5VDC **Carry:** 100mA, 50VDC	**Height:** 6.5 **Width:** 10.0 **Length:** 10.0	8, 10, 16	Extended Flush	PCB Pin	Tube	●
 **SRK**	3x3 Layout **Life Cycles:** 15,000 Steps **Operating Force:** 400gf-cm Max. **Operating Temp:** -10°C to 60°C	**Switch:** 100mA, 5VDC **Carry:** 100mA, 50VDC	**Height:** 6.5 **Width:** 10.0 **Length:** 10.0	10	Extended Flush	PCB Pin	Tube	●
 **SRM**	2x3 Layout **Life Cycles:** 15,000 Steps **Operating Force:** 400gf-cm Max. **Operating Temp:** -10°C to 60°C	**Switch:** 100mA, 5VDC **Carry:** 100mA, 50VDC	**Height:** 5.1 **Width:** 10.0 **Length:** 10.0	10, 16	Flush	SMT (Gull Wing)	Tape and Reel Tube	●
 **SRT**	4x1 Layout **Life Cycles:** 15,000 Steps **Operating Force:** 400gf-cm Max. **Operating Temp:** -10°C to 60°C	**Switch:** 100mA, 5VDC **Carry:** 100mA, 50VDC	**Height:** 4.7 **Width:** 10.0 **Length:** 10.0	10, 16	Flush	PCB Pin (Vertical & Right Angle)	Tube	●

Specifications subject to change without notice

Glossary / IP Rating Chart

Actuator: The mechanical interface between the basic switch contacts and the means of operation, such as the operator's finger.

Actuation Force: The required force to change a circuit's electrical state.

Alternate Action Switch: A Pushbutton style switch where the change of the electrical state is maintained between actuations.

Ampere: A unit of electrical current flow.

Base (Housing): A base of a switch is the main member to which the conducting parts or insulator unit are attached. It may also have parts of the operating or control mechanism attached.

Bounce: Rebounding of moving contact against fixed contact during transfer.

Break: Interruption of a circuit. Double-break occurs when a single mechanism interrupts two contacts simultaneously.

Break Before Make: The term given to a double throw switch where the first circuit is opened before the second circuit is closed.

Capacity: Usually refers to the current handling capability of a switch.

Chatter: Rapid opening and closing of contacts, usually exhibited during extreme vibration and/or shock.

Clearance (Spacing): Distance through air between electrically live parts of opposite polarity or to ground.

Contact: The contact is a conducting part designed to be united by pressure to another conducting part for the purpose of carrying current.

Contact Bounce: Oscillation of the movable contact upon closure of the circuit.

Contact Gap: The minimum distance between the fixed and moveable contacts.

Contact Resistance: The resistance of current flow across closed contacts.

Dead-Break: Open circuit condition, usually caused when slowly actuating snap-action switches. Results from low contact pressure or contact lift-off.

Detent: Feature that indicates actuation point has been reached. Can also be referred to as tactile feel.

Dielectric Strength: The ability of an insulating material to resist voltage from arcing across its surface.

Differential: Distance between trip point (or force) and reset point (or force).

Double-Break: A mechanism that breaks the circuit at two points simultaneously by means of a "shorting bar" like device.

Double-Throw: Contact arrangement that alternately transfers normally open and normally closed circuits.

Dust-Tight: Sealed switch will withstand sand and dust contamination.

Electrical Life: Expected cycle life when switch is operated at full rated load.

Free Position: Point at which plunger exists in the un-operated condition.

Insulation Resistance: The resistance to current flow of the insulating materials between contacts.

Lever Actuator: A device, hinged or spring type, applied to a basic switch to facilitate its application.

Make Before Break: The term given to a double throw switch when the second circuit is closed before the first circuit is opened.

Momentary Action Switch: The term given to a switch where a circuit is continuously closed or opened only when force is applied. The electrical state returns to its normal position when the force is removed.

Normally Closed: The term given to a switch where a circuit is closed in the normal switch position.

Normally Open: The term given to a switch where a circuit is open in the normal switch position.

Operating Point: Point at which contacts transfer. Usually measured from the switch mounting holes.

Over Travel: The distance an actuator travels after the circuit is closed.

Pole: The term to denote a completely separate circuit, which passes through a switch at one time.

Pre Travel: The movement of the actuator prior to closing the circuit. Sometimes identical to "Travel to Make".

Reset Point: Point at which contact resumes normal position. Single-Break: Mechanism that transfers one contact.

Single Throw Switch: A single throw switch is a switch by means of which the circuit can be opened or closed by moving the switch blade into or out of one set of contacts only.

Snap Action: The abrupt transfer of contacts from one position to another. This action is relatively independent of the speed of actuator travel.

Splash Proof: Sealed switch will withstand heavy rain or stream of water.

Switch: A switch is a device for making, breaking, or changing the connections in an electric circuit.

Switch Abbreviations:

N.C.: Normally Closed circuit

N.O.: Normally Open circuit

SPST: Single Pole Single Throw

SPDT: Single Pole Double Throw

DPST: Double Pole Single Throw

DPDT: Double Pole Double Throw

MBB: Make Before Break

BBM: Break Before Make

Throw: The term denotes the number of positions in which a given pole is closed.

Travel to Make: The distance parallel to the designated direction of the actuator movement at which point a circuit is closed.

Watertight: Sealed switch will withstand submersion to various depths depending on specification level.

Wiping Action: Lateral travel of movable contact over fixed contact while pressure between the two contacts exists. Occurs during plunger travel. This action helps clean the contacts of contamination.

IP Rating Chart

First Number	Definition	Second Number	Definition
Protection against solid objects		*Protection against liquids*	
0	No protection	0	No protection
1	Protected against solid objects over 50mm (e.g. accidental touch by hands)	1	Protected against vertically falling drops of water
2	Protected against solid objects over 12mm (e.g. fingers)	2	Protected against direct sprays up to 15° from the vertical
3	Protected against solid objects over 2.5mm (e.g. tools and wires)	3	Protected against direct sprays up to 60° from vertical
4	Protected against solid objects over 1mm (e.g. tools, wires and small wires)	4	Protected against sprays from all directions - limited ingress permitted
5	Protected against dust - limited ingress (no harmful deposit)	5	Protected against low pressure jets if water from all directions - limited ingress permitted
6	Totally protected against dust	6	Protected against strong jets of water (e.g. for use on shipdecks - limited ingress permitted)
		7	Protected against the effects of temporary immersion between 15cm and 1m. Duration of test 30 min.
		8	Protected against long periods of immersion under pressure

Recommended Soldering Guidelines

Most contamination problems can be prevented by exercising care during the cleaning and soldering process. Care should be taken not to immerse or spray unsealed switches during flux removal. Contact E-Switch for specific soldering recommendations and specifications not found in this catalog. Generalized soldering procedures are outlined below.

HAND SOLDERING AND TEMPERATURES

Recommend soldering irons of 30 watt maximum with a tip temperature of 345°C (650°F) for 2-3 seconds and solder of 0.030 - 0.040 diameter.

WAVE SOLDER TIME AND TEMPERATURES

When wave soldering, we recommend using a no-clean flux soldering process, rather than a process that requires washing. The fluxing process must be controlled so as not to have flux migrate inside the switch.

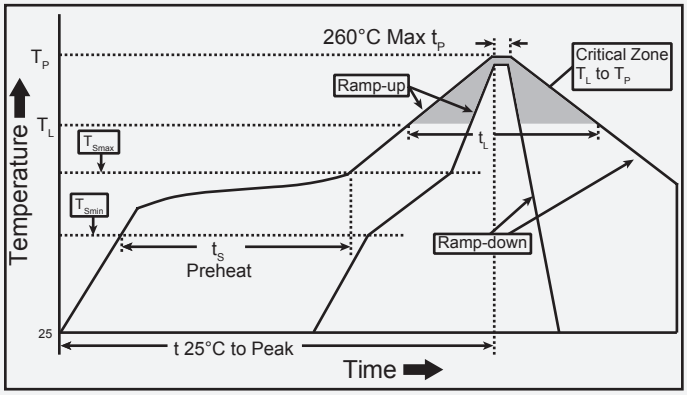
SMT REFLOW (LEAD AND LEAD-FREE)

"TYPICAL" SMT REFLOW (Pb and Pb-Free)

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (T_{Smax} to T_P)	3°C/second max.	3°C/second max.
Preheat -Temperature Min. (T_{Smin}) -Temperature Max. (T_{Smax}) -Time (t_{Smin} to t_{Smax})	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: -Temperature (T_L) -Time (t_L)	 183°C 60-150 seconds	 217°C 60-150 seconds
Time within 5°C of actual Peak Temperature (t_P)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6°C/second max.	6°C/second max.
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

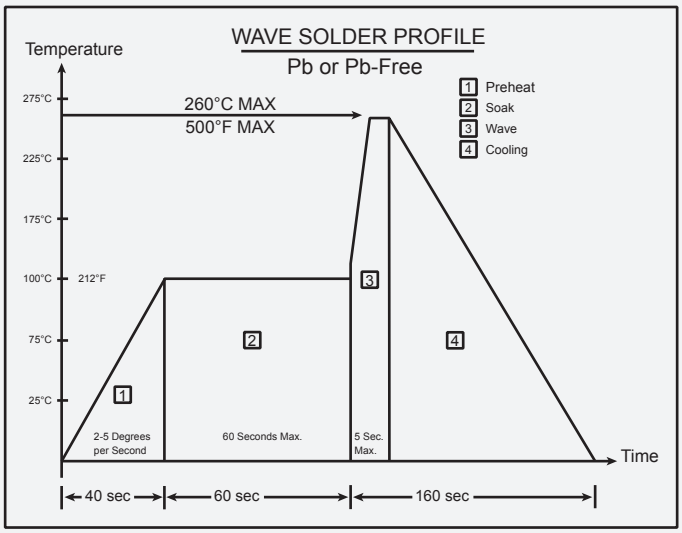
Note 1: *All temperatures refer to topside of the package, measured on the package body surface.*

Classification Reflow Profile



WAVE SOLDER

(Includes Pb-Free, max. component side preheat temp-130°C)



Good venting is required. No-clean flux vapors can enter the switch if adequate venting is not available. The vapors will condense on the internal contacts and become an insulator when they solidify.

- Preheat temperature/time: Circumferential temperature of the P.C. Board not to exceed 100°C (212°F) for 60 seconds.
- Soldering temperature/time: not to exceed 260°C (500°F) for 5 seconds.

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