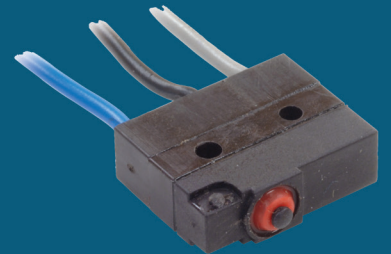
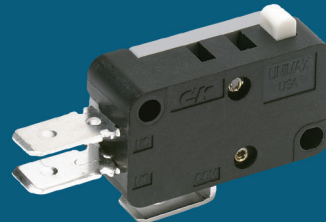
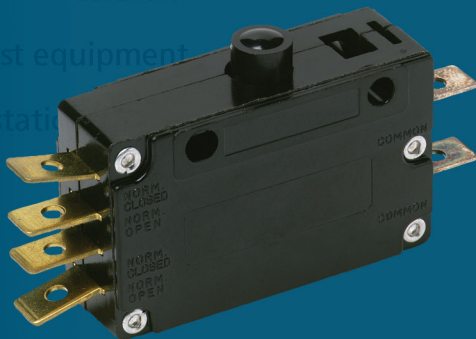
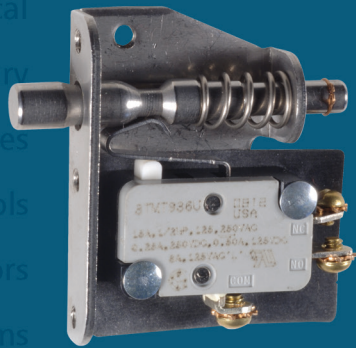
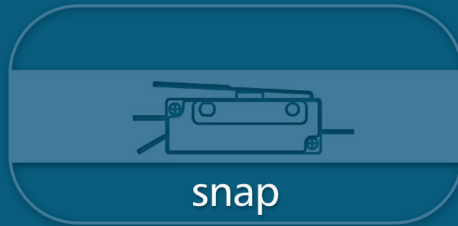


audio
automotive
aerospace
communication devices
consumer appliances
consumer electronics
datacom
data storage
handheld devices
industrial
industrial equipment
instrumentation
medical
military
mobile phones
portable tools
pumps & motors
security alarms
telecom
test equipment
thermostats



snap

Snap-acting Product Selection Guide

Snap-acting								
Series	MM	MS	ZM	ZMA	ZMS	ZMSM	ZMW	ZPA
Switch Profile	Mini Size	Mini Size	Mini Size	Mini Size	Mini Size	Mini Size	Mini Size	Mini Size
Poles/Throws	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPST, SPDT	SPDT
Maximum Current	7 Amps	3 Amps	3 Amps	3 Amps	3 Amps	3 Amps	0.1 Amps	0.1 Amps
Terminations								
Solder				•	•	•	•	•
Quick Connect							•	
Wire Leads					•	•	•	
Screw								
PCB Thru-hole	•	•	•	•	•	•	•	
Flat & Step Base								
Bushing								
Sealed					•	•	•	
Page No.	J-6	J-10	J-15	J-18	J-22	J-26	J-30	J-34

Snap-acting								
Series	MDS	SSW	LC	LCA	LCS	TF	TFS	TF2
Switch Profile	Mini Size	Mini Size	Small Size	Small Size	Small Size	Mid Size	Mid Size	Mid Size
Poles/Throws	SPDT	DPDT	SPST, SPDT	SPDT	SPST	SPST, SPDT	SPDT	SPDT
Maximum Current	300 m Amps	20 mA	10.1 Amps	10 Amps	6 Amps	21 Amps	10 Amps	10 Amps
Terminations								
Solder	•		•	•	•	•		•
Quick Connect			•	•	•	•	•	•
Wire Leads			•		•		•	
Screw								•
PCB Thru-hole	•							
Flat & Step Base								
Surface Mount		•						
PC			•	•	•			
Formed PC			•	•				
Extended Operations			•	•		•	•	
Sealed					•		•	
Page No.	J-38	J-46	J-50	J-54	J-58	J-62	J-68/72	J-76

Snap-acting Product Selection Guide

Snap-acting						
Series	TF3	TM	HB	A	TL	DS
Switch Profile	Mid Size	Mid Size	Large Heavy Duty	Large Heavy Duty	Large Heavy Duty	Large Heavy Duty
Poles/Throws	SPST	SPST, SPDT	SPST, SPDT	SPST, SPDT, DP	SPDT	SPDT, DPDT
Maximum Current	25 Amps	15 Amps	20 Amps	30.1 Amps	15 Amps	0.1, 10, 16A
Terminations						
Solder		•	•			
Quick Connect	•	•	•	•	•	•
Wire Leads						
Screw		•	•		•	
PCB Thru-hole						
Flat & Step Base			•			
Surface Mount						
PC						
Formed PC						
Bushing			15/32-32	3/8-23		
Page No.	J-82	J-86	J-93	J-99	J104	J-107

Snap-acting Technical Data

HOW TO CHOOSE PRECISION SNAP-ACTING SWITCHES AND ACTUATORS

This catalog describes electric switches that satisfy the following definition: "A precision snap-acting switch is a mechanically operated electric switch having predetermined and accurately controlled characteristics and having contacts other than blade-and-jaw, or mercury-type, where the maximum separation between any butting contacts is 1/8 inch."

In choosing a switch, the first thing to consider is its electrical rating. As a basic part of an electric control system, the switch must be able to carry the full load current in the system, to interrupt this current, and to handle any surge of current that may occur when the switch contacts close or any transients that occur when contacts open.

The method of applying mechanical force to operate the switch influences the choice of actuator. Basic switches are provided with leaf spring, levers, or other linkages between the switch plunger and the actuating device, which are typically used to provide additional overtravel and reduce the operating force. The differential travel measured at the free end of the leaf or lever is considerably greater than that measured at the switch plunger and max. operating force is adequately smaller. Table 1 relates types of actuators to means of applying operating force.

MOTION OF APPLIED OPERATING FORCES	ACTUATOR								
	Pin	Overtravel Plunger	Roller Plunger	Leaf	Roller Leaf	Hinged Lever	Hinged Roller Lever	Reverse-Acting Hinged Lever	Reverse-Acting Hinged Roller Lever
	Basic	D, Q, J	R	L	W	T	A	Y	F
 CAM Rotary			✓	✓	✓	✓	✓	✓ ¹	✓ ¹
 LEVER Angular	✓	✓ ²	✓ ²	✓	✓	✓	✓	✓	✓
 SLIDE Wedge			✓		✓		✓		✓
 PLUNGER In-Line	✓ ³	✓		✓		✓		✓	
 BI-METAL or BELLOWS Slow In-Line	✓	✓							

✓ Suitable for this actuating method.

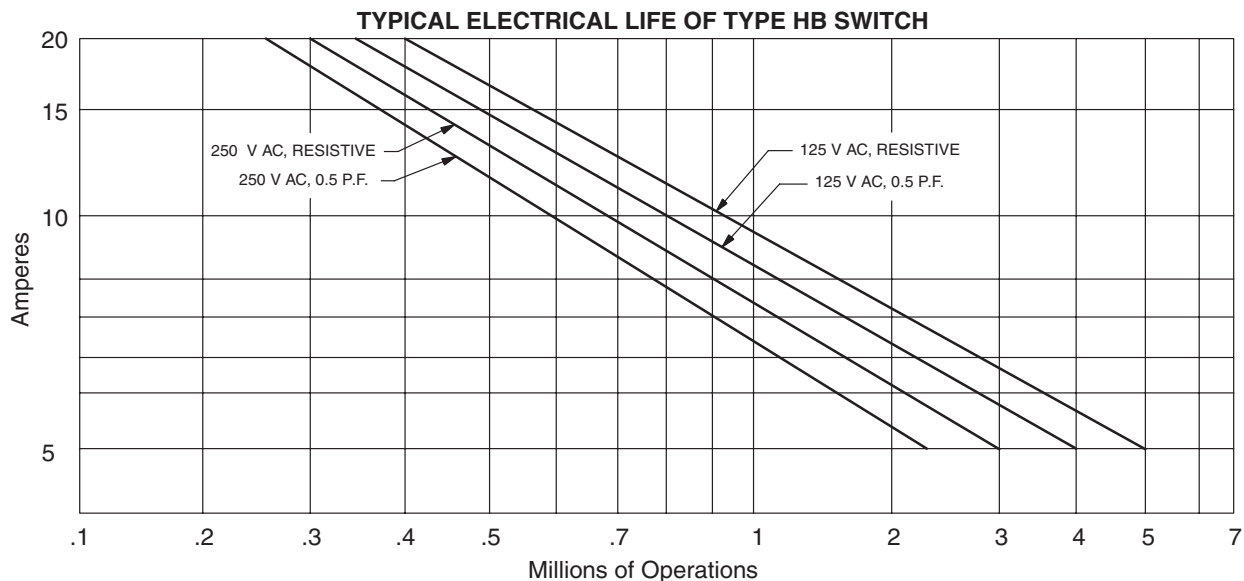
¹ Where large overtravel is required.

² Do not use when there is side thrust.

³ Use only where the actuating device contains provisions for absorbing excess over travel.

ELECTRICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

The primary limitation to electrical life of a switch is wear of the contacts. In general, contacts wear out more quickly as current or voltage is increased and as power-factor is decreased. This is indicated by the graph below, which shows electrical life of switches tested under ordinary atmospheric conditions, operated 60 times a minute, with AC power handled on both the normally open and the normally closed contacts. The high inrush current encountered in lamp loads and in motor or other inductive loads is responsible for decreased contact life under such loading.



MECHANICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

Fatigue of the internal spring blade is the limiting factor in the mechanical life of a switch. This fatigue can often be reduced and the life thereby extended, by reducing overtravel. One method is to use a leaf or lever actuator or a plunger containing an overtravel-absorbing spring. Tests on switches of the types covered in this catalog indicate that the mechanical life of a lever actuated switch is more than double that of a switch having the operating force applied directly on the pin.

Mechanical life is also affected by the combination of total travel and operating force. Thus a high-sensitivity switch which has small travel and light force, has about twice the life expectancy of a high current type switch, in which the travel/ force combination is relatively high. Experience indicates that million of operations is a reasonable mechanical life expectancy for a basic snap switch.

For the best mechanical life, the applied overtravel force should not exceed three times the operating force.

AC RATINGS FOR SNAP-ACTING SWITCHES

Switches used to control alternating current loads, up to the ratings shown in this catalog, will maintain repeatability of characteristics and provide long electrical life (refer to graph on page K-3). In special circumstances, higher currents or voltages may be controlled, but changes in performance must be anticipated.

Switches used to control "dry circuits" can be furnished, but factory recommendations should be secured.

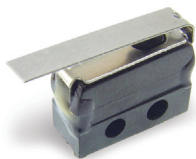
DC RATINGS FOR SNAP-ACTING SWITCHES

To use the table below, determine the contact separation of the switch and select the ratings from the appropriate line. The maximum current rating must be limited to the current value listed for that switch type in the body of the catalog.

CONTACT SEPARATION	DIRECT CURRENT VOLTAGE	ACTUATOR				INDUCTIVE			
		Heater Load		Lamp Load (tungsten)		Motor, Relay, or Solenoid Load			
		Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact	Sea Level		50,000 Feet	
						Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact
Inches	Volts	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes
.010	6-8	15.0	20.0	1.5	3.0	8.0	8.0	7.0	7.0
	12-14	15.0	20.0	1.5	3.0	5.0	5.0	5.0	5.0
	24-30	2.0	2.0	1.5	2.0	1.0	1.0	1.0	1.0
	110-115	0.4	0.4	0.4	0.4	0.03	0.03	0.02	0.02
	220-230	0.2	0.2	0.2	0.2	0.02	0.02	0.01	0.01
.020	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	10.0	10.0	8.0	8.0
	24-30	6.0	6.0	1.5	2.0	5.0	5.0	2.0	2.0
	110-115	0.4	0.4	0.4	0.4	0.05	0.05	0.03	0.03
	220-230	0.2	0.2	0.2	0.2	0.03	0.03	0.02	0.02
.040	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	10.0	10.0	1.5	2.0	10.0	10.0	5.0	5.0
	110-115	0.6	0.6	0.6	0.6	0.1	0.1	0.05	0.05
	220-230	0.3	0.3	0.3	0.3	0.05	0.05	0.03	0.03
.070	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	15.0	20.0	1.5	2.0	10.0	10.0	7.5	7.5
	110-115	0.75	0.75	0.75	0.75	0.4	0.4	0.2	0.2
	220-230	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1

MM Series

Mini Size Precision Snap-acting Switches



Features/Benefits

- Low level and power switching
- Long electrical and mechanical life
- Increased overtravel
- Reliable snap-acting mechanism

Typical Applications

- Limited space constraints
- Communication devices

Specifications

CONTACT RATING: From low level* to 7 AMPS @ 250 V AC.
ELECTRICAL LIFE: 100,000 cycles at full rated load.
INSULATION RESISTANCE: 1,000 ohm min.
DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
OPERATING TEMPERATURE: -67 F to 275 F (-55 C to 135 C).
OPERATING FORCE: 5 oz. (142 grams) max. at actuator button.
MOUNTING: 2-56 screws, torque 2 in/lbs max.

*Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

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

Materials

SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).
ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).
SPRING: Beryllium copper CDA alloy C17200.
PIVOT: Brass CDA alloy 260.
MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. 24K gold for 1 AMP @ 125 V AC or less.
STATIONARY CONTACTS: Fine silver inlay on copper CDA alloy C10200 for ratings greater than 1 AMP @ 125 V AC. 24K gold on copper CDA alloy C10200 for 1 AMP @ 125 V AC or less.
TERMINALS: Copper CDA alloy C18700.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

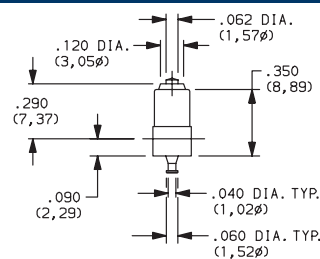
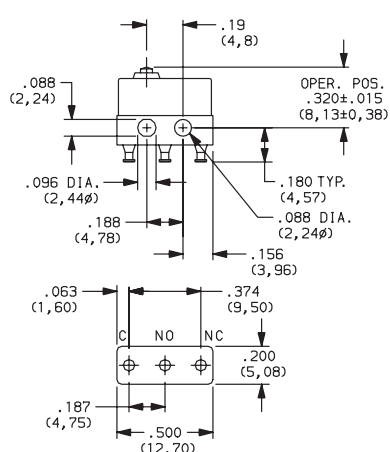
	M	M		G	G			
Series								
MM SP, Mom.								
Operating Force								
GG 5 oz./142 grams								
Electrical Rating								
D1 7A 125, 250 VAC								
7A 28 VDC resistance								
4A 28 VDC inductive								
2.5A 28 VDC (lamp)								
F5 1 A, 125 V AC, 30 V DC								
Actuator								
P0 Pin plunger								
D0 Plunger, high overtravel								
C0 Leaf								
L2 Leaf, high force, low motion								
W0 Leaf roller								
W2 Leaf roller, high force, low motion								
Terminations								
C Single turret solder								
L Left formed PC thru-hole								
R Right formed PC thru-hole								
T PC thru-hole, .035"								



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

MM Series Mini Size Precision Snap-acting Switches

SWITCH WITH STANDARD OPTIONS



PART NUMBER	BASIC OPERATING FORCE (OZ./GRAMS)	ELECTRICAL RATING
MMGGD1P0C	5 142	7 AMPS @ 250 V AC.

SERIES

MM SPDT MOMENTARY

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
GG	5 oz. (142 grams) maximum for basic switch with pin plunger actuator (*P0* actuator option).

NOTE : Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
D1	Yes	Yes	Fine silver.	Fine silver inlay on copper alloy.	7A 125, 250 VAC; 7A 28 VDC resistance 4A 28 VDC inductive; 2.5A 28 VDC (lamp)
F5	Yes	Yes	24K Gold.	24K Gold on copper alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

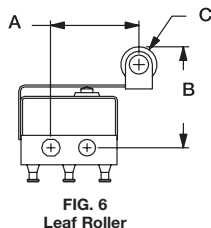
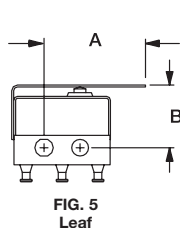
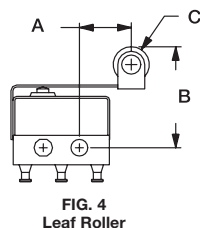
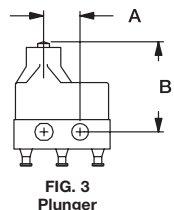
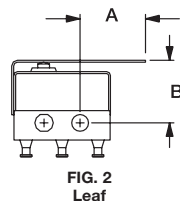
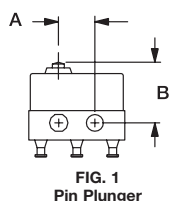
Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models **C&K** US with all options.

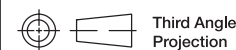
Consult Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

ACTUATOR



OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C
P0	1	.19 (4, 8)	.320 ± .015 (8, 13 ± 0, 38)	—
D0	3	.19 (4, 8)	.475 ± .031 (12, 07 ± 0, 79)	—
L0	2	.34 (8, 6)	.330 ± .015 (8, 38 ± 0, 38)	—
L2	5	.53 (13, 5)	.330 ± .015 (8, 38 ± 0, 38)	—
W0	4	.27 (6, 9)	.532 ± .025 (13, 51 ± 0, 64)	.188 dia. (4, 78)
W2	6	.46 (11, 7)	.532 ± .025 (13, 51 ± 0, 64)	.188 dia. (4, 78)



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



MM Series Mini Size Precision Snap-acting Switches

ACTUATOR

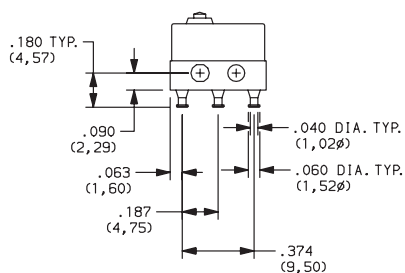
SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	MINIMUM RELEASE FORCE (OZ./GRAMS)	MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
D0	5 142	.7 20	.004 (0,10)	.030 (0,76)	.040 (1,02)
L0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
L2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)
P0	5 142	1 28	.002 (0,05)	.020 (0,51)	.004 (0,10)
W0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
W2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)

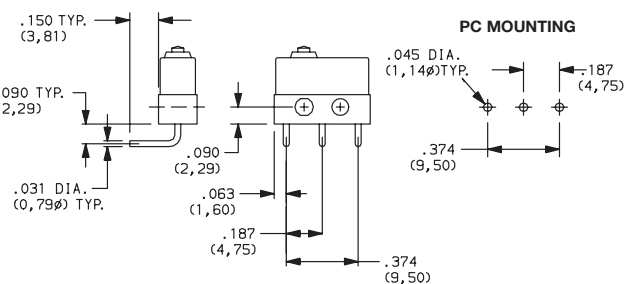
NOTE : For basic switch operating forces, see page J-44

TERMINATIONS

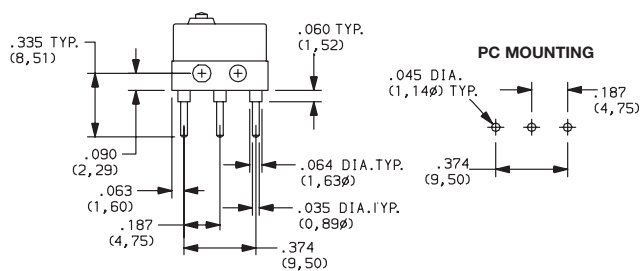
C SINGLE TURRET SOLDER



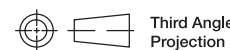
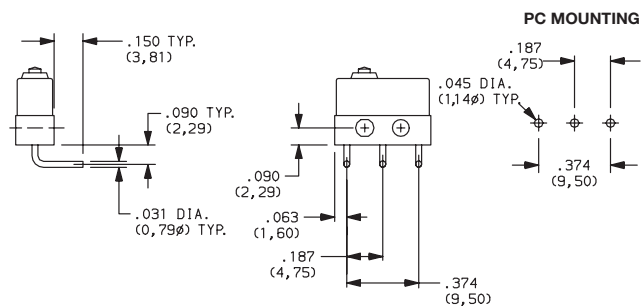
L LEFT FORMED PC THRU-HOLE



T PC THRU-HOLE, .035"



R RIGHT FORMED PC THRU-HOLE



Third Angle
Projection

Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

MS Series

Small Size Snap-acting Switches

Features/Benefits

- Detect interlock and movement
- Different lever options
- Various operating forces
- Extended mechanical life
- UL approval on some designs
- Customization available
- RoHS compatible and compliant

Typical Applications

- Office equipment
- Consumer electronics
- Appliances
- Audio & visual equipment
- Medical
- Industrial meters



Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 5 A @ 125 VAC / 3 A @ 250 VAC
 OPERATING LIFE: 1,000,000 cycles without load
 6,000 cycles with load UL
 INITIAL CONTACT RESISTANCE: 100 mΩ max.
 INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -40°C to + 85°C
 OPERATING FORCE: 130 ± 30 gf
 PRE-TRAVEL (PT): 0.6 mm max.
 OVERTRAVEL: 0.5 mm max.
 OPERATING POSITION (OP): 8.40 ± 0.40 mm

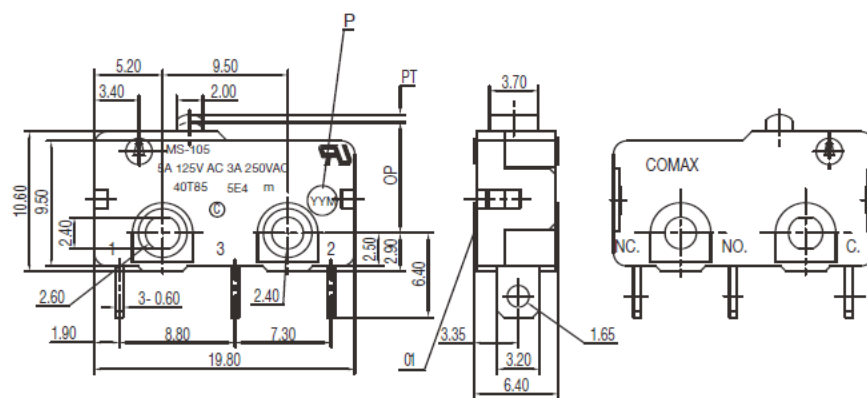
Materials

COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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

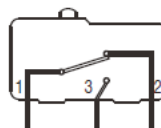
PART NUMBER

MS-105A01



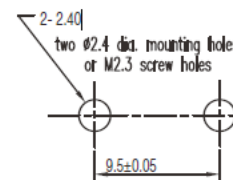
Standard Size

Circuit Diagram



SCHEMATIC

Mounting Holes



PIERCING PLAN

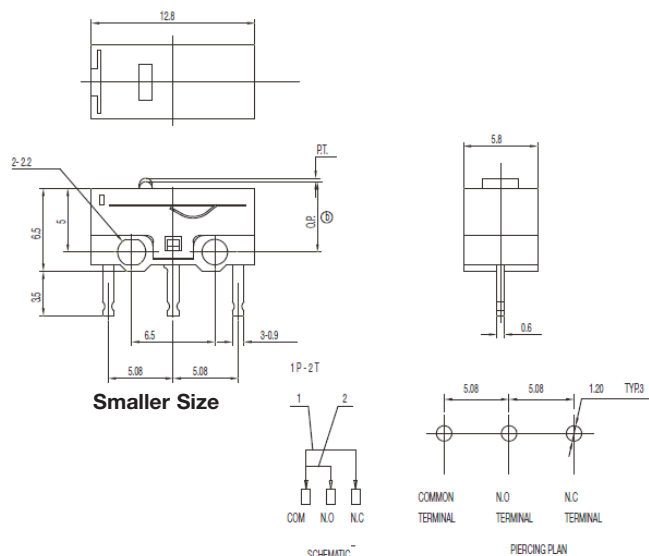
Snap-acting



MS Series

Small Size Snap-acting Switches

PART NUMBER
MS-118305



Specifications

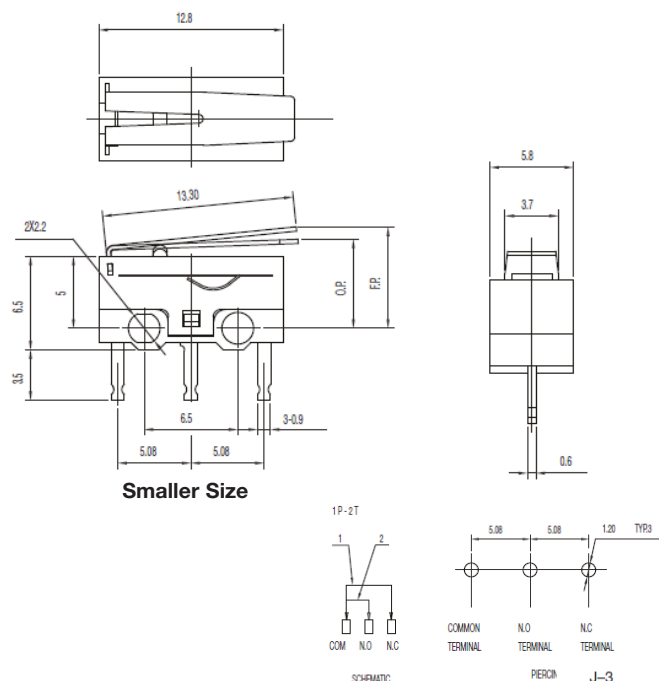
CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 VDC
 OPERATING LIFE: 500,000 cycles without load
 50,000 cycles with load
 INITIAL CONTACT RESISTANCE: 50 mΩ max.
 INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to + 70°C
 OPERATING FORCE: 70 ± 40 gf
 PRE-TRAVEL (PT): 0.50 mm max.
 OVERTRAVEL: 0.5 mm min.
 OPERATING POSITION (OP): 5.50 ± 0.30 mm

Materials

COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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

PART NUMBER
MS-118305-A



Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 VDC
 OPERATING LIFE: 500,000 cycles without load
 50,000 cycles with load
 INITIAL CONTACT RESISTANCE: 50 mΩ max.
 INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to + 70°C
 OPERATING FORCE: 25 ± 15 gf
 OVERTRAVEL: 0.5 mm min.
 OPERATING POSITION (OP): 6.0 ± 0.80 mm
 FREE POSITION (FP): 8.5mm max.

Materials

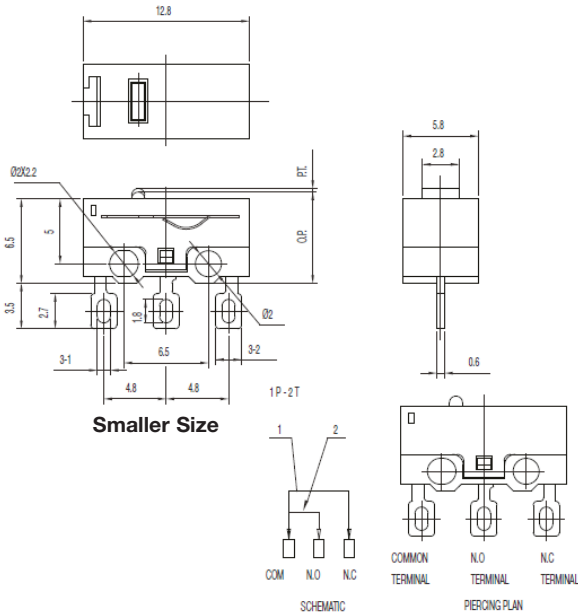
COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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

MS Series Small Size Snap-acting Switches

PART NUMBER

MS-118405



Specifications

CONTACT ARRANGEMENT: SPDT
CONTACT RATING: 0.1 A @ 30 VDC
OPERATING LIFE: 500,000 cycles without load
50,000 cycles with load
INITIAL CONTACT RESISTANCE: 50 mΩ max.
INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
OPERATING TEMPERATURE: -20°C to + 70°C
OPERATING FORCE: 70 ± 40 gf
PRE-TRAVEL (PT): 0.50 mm max.
OVERTRAVEL: 0.5 mm min.
OPERATING POSITION (OP): 7.0 ± 0.30 mm

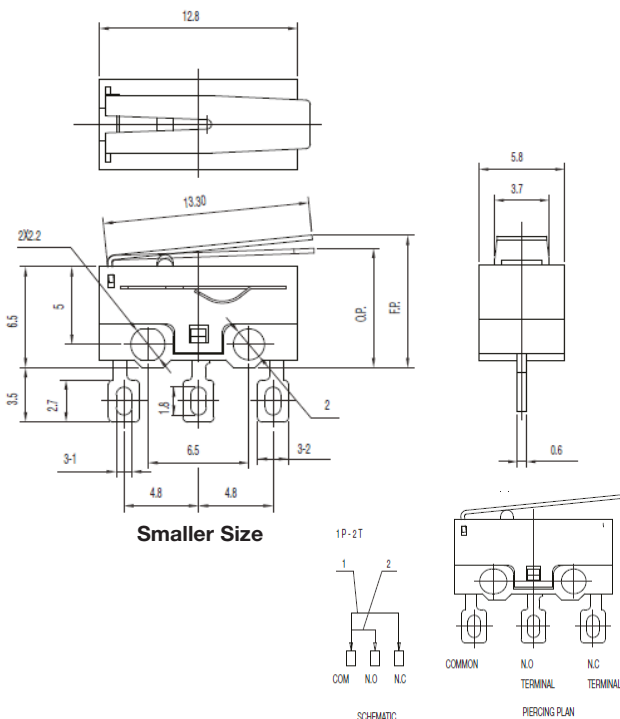
Materials

COVER: PBT (UL94V-0)
HOUSING: PBT (UL94V-0)
KNOB: PBT (UL94V-0)
TERMINALS: Silver plated

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

PART NUMBER

MS-118405-A



Specifications

CONTACT ARRANGEMENT: SPDT
CONTACT RATING: 0.1 A @ 30 VDC
OPERATING LIFE: 500,000 cycles without load
50,000 cycles with load
INITIAL CONTACT RESISTANCE: 50 mΩ max.
INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
OPERATING TEMPERATURE: -20°C to + 70°C
OPERATING FORCE: 25 ± 15 gf
OVERTRAVEL: 0.5 mm min.
OPERATING POSITION (OP): 7.5 ± 0.80 mm
FREE POSITION (FP): 10 mm max.

Materials

COVER: PBT (UL94V-0)
HOUSING: PBT (UL94V-0)
KNOB: PBT (UL94V-0)
TERMINALS: Silver plated

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



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

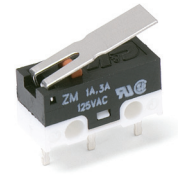
ZM Series Mini Size Snap-acting Switches

Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compliant / compatible**

Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**
- **Automotive: door latch, seat position detection, EV charging**



UL61058-1



Specifications

CONTACT RATING: F7: 3 A @ 125 VAC

M9: 0.2 A @ 60 VDC.

ELECTRICAL LIFE: 10,000 Cycles. @ 3 A

INSULATION RESISTANCE: 100 M ohm min.

DIELECTRIC STRENGTH: 1000 Vrms.

OPERATING TEMPERATURE: -30°C to 85°C.

OPERATING FORCE: CJ: 150 grams, CH: 90 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Materials

COVER: Nylon 6/6

ACTUATOR BUTTON: Nylon 6/6

CASE: Nylon 6/6

SPRING: SUS

MOVABLE BLADE: BeCu

MOVABLE CONTACT: Silver alloy (M9 option gold plated)

FIXED CONTACTS: Silver alloy (M9 option gold plated)

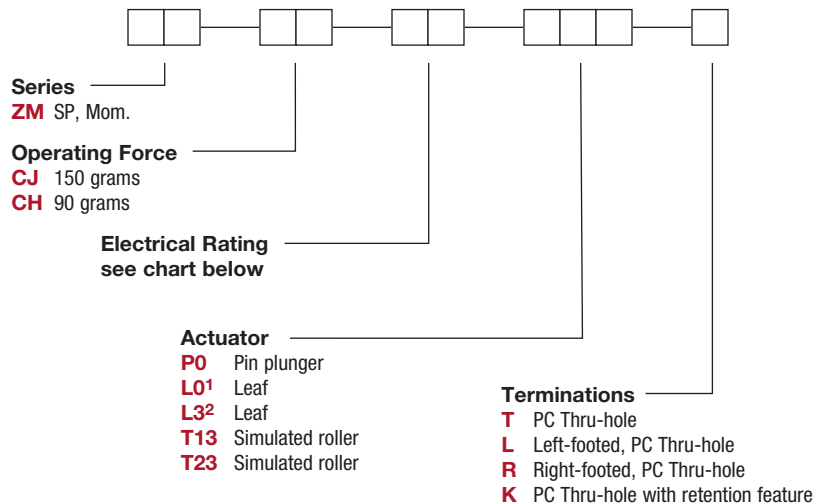
FIXED TERMINALS: Brass - Ag plated.

ACTUATOR (Leaf / Roller options): SUS

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



Option Code	UL cULus 1054	UL cULus 61058-1	
F7	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
M9	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC

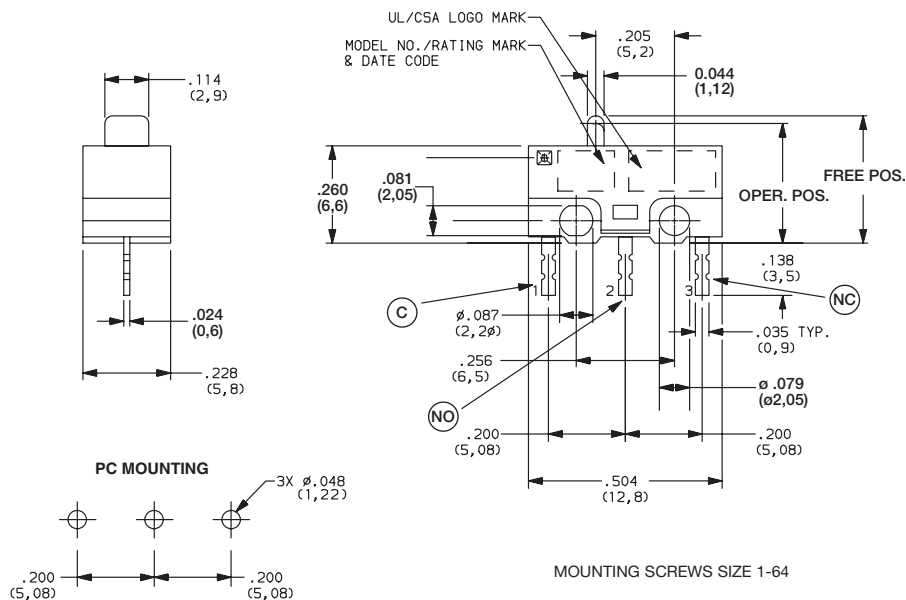
Available in Operating Force-Actuator combination:
 CJ-L01
 CH-L32



11 Nov 20

SERIES

ZM MINI SIZE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMCJF7L0T
SPDT

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
CJ	5.29 150
CH	3.15 90

ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
F7	Yes	Yes	Silver alloy		see chart
M9	Yes	Yes	Gold plating or silver alloy		see chart

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models **cRU[®]**US with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

Option Code	UL c  US 1054	UL c  US 61058-1	
F7	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
M9	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC



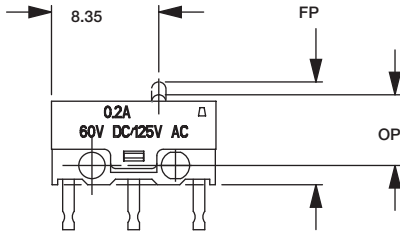
Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

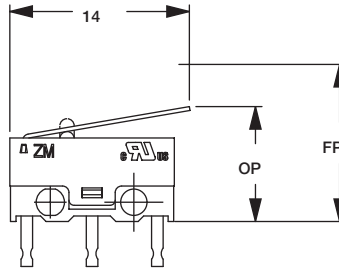
ZM Series Mini Size Snap-acting Switches

ACTUATOR

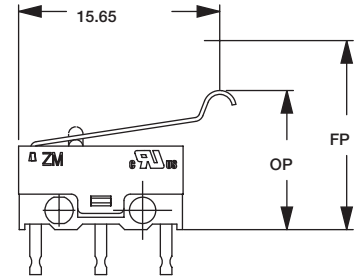
P0 PIN PLUNGER



L0 LEAF, 50 GRAMS (CJ ONLY)
L3 LEAF, 30 GRAMS (CH ONLY)



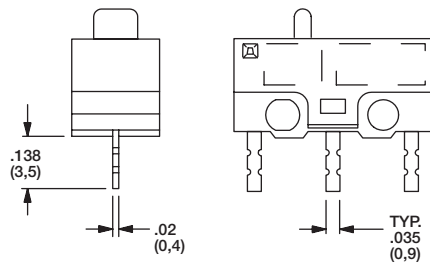
T13 SIMULATED ROLLER, 40 GRAMS (CJ ONLY)
T23 SIMULATED ROLLER, 25 GRAMS (CH ONLY)



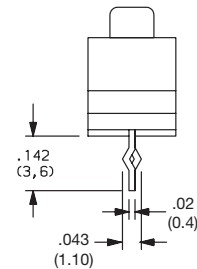
ACTUATOR OPTION CODE	A (mm)	B Ref (mm)	C (mm)	D (mm)	E (mm)	DIFF. MOTION mm MAX	OPER. FORCE grams MAX		RELEASED FORCE Grams MAX	OVER TRAVEL MIN
	LENGTH OF LEVER	LEVER LENGTH MTG. HOLE TO OP	PRE- TRAVEL MAX	OPERATING POSITION	FREE POSITION MAX		CJ	CH		
P0 PIN PLUNGER	NA	NA	1.3	7.0 ± 0.3	8.0	0.3	150	90	15-20	0.2
L0 LEAF	13.0	4.03	3.4	8.4 ± 0.8	11.0	1.3	50	-	8	0.6
L3 LEAF	13.0	4.03	3.4	8.4 ± 0.8	11.0	1.3	-	30	5	0.6
T13 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ± 0.8	13.0	1.5	40	-	7	0.6
T23 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ± 0.8	13.0	1.5	-	25	4	0.6

TERMINATIONS

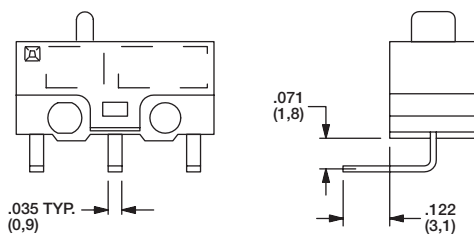
T (STD.) PC THRU-HOLE



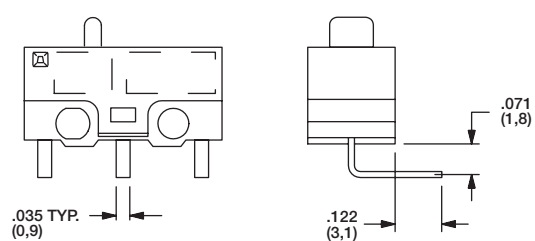
K PC THRU-HOLE WITH RETENTION FEATURE



L LEFT FOOTED, PC THRU-HOLE



R RIGHT FOOTED, PC THRU-HOLE

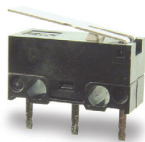


Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ZMA Series

Mini Size Snap-acting Switches



UL61058-1



Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Compact size - ideal when space is limited
- Various PCB terminals & actuators
- RoHS compatible & compliant

Typical Applications

- PCB detection switch
- Communication devices
- Testing equipment
- Security/Alarm systems
- Consumer electronics
- Automotive: door latch, seat position detection, EV charging

Specifications

CONTACT RATING: 3A @ 125 V AC 24 V DC

1 A @ 125 / 250 V AC 24 V DC

0.1A @ 125 V AC 60 V DC

ELECTRICAL LIFE: 300,000 cycles @ 0.1A / 10,000 cycles @ 3A.

MECHANICAL LIFE: 1,000,000 cycles.

INSULATION RESISTANCE: 100 M ohm min.

DIELECTRIC STRENGTH: 500 Vrms.

OPERATING TEMPERATURE: -40°C to 85°C

OPERATING FORCE: 80 or 150 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.
@ 20 V AC or DC max.

Materials

CASE/COVER: PBT

ACTUATOR: Button nylon 6/6

MOVABLE CONTACTS: Silver alloy or gold plated

STATIONARY CONTACTS: Silver alloy or gold plated

TERMINALS: Brass, silver plated.

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Z	M	A							C
Series			ZMA SP, Mom.						
Electrical Rating			See charts below						
Operating Force			150 5.29 oz. / 150 grams 080 2.82 oz. / 80 grams						
Actuator			P00 Pin plunger S03 Simulated roller 5.8mm L30 Lever 20.5mm L11 Lever 7.2mm L21 Lever 14mm L08 Lever 3.95mm A03 Roller 1.3mm L04 Lever 3.9mm S06 Simulated roller 2.03mm S07 Simulated roller 0.75mm						
Terminations			P PC Thru-hole L Left-footed, PC Thru-hole R Right-footed, PC Thru-hole E Solder K PC Thru-hole with retention feature						
			C SPDT						

Silver Contacts

Option Code	UL 1054	UL 61058-1	EKL4	EKL5
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

Gold Plated Contacts

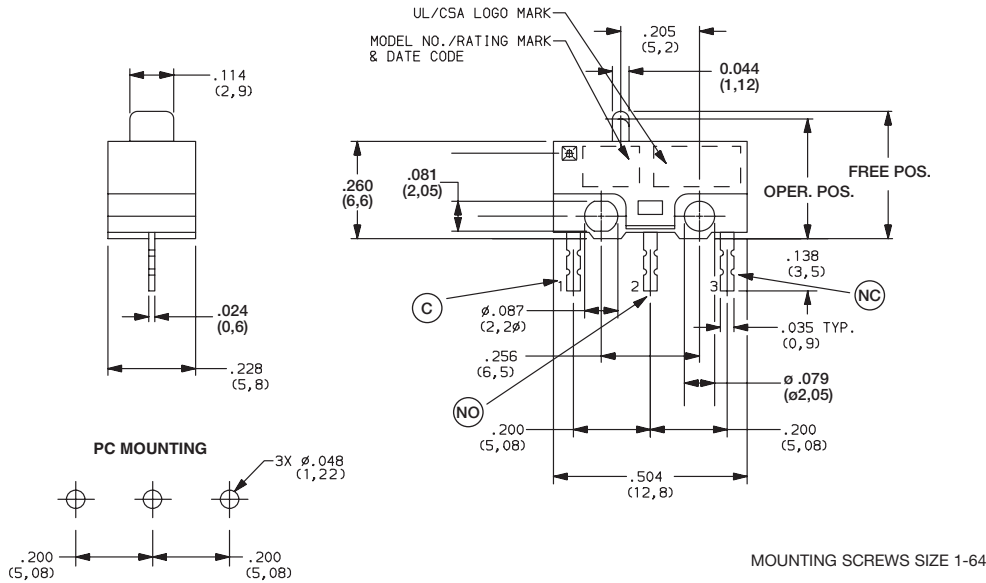
Option Code	UL 1054	UL 61058-1	EKL4	EKL5
G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC



ZMA Series Mini Size Snap-acting Switches

SERIES

ZMA MINI SIZE SNAP-ACTING SWITCHES – SP MOMENTARY



ELECTRICAL RATING

Silver Contacts

Option Code	UL cULUS 1054	UL cULUS 61058-1	4	15
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

Gold Plated Contacts

Option Code	UL cULUS 1054	UL cULUS 61058-1	4	15
G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

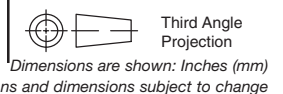
* Note: See Technical Data in section N of this catalog for RoHS compliant and compatible definition and specifications.

All models cULUS with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
080	2.82 80
150	5.29 150

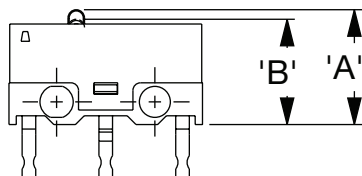


17 Nov 20

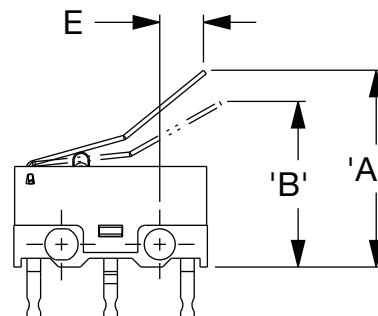
ZMA Series Mini Size Snap-acting Switches

ACTUATOR

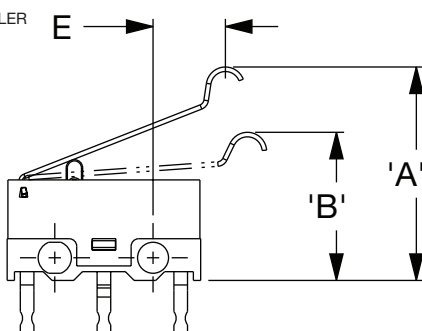
P00 PIN PLUNGER



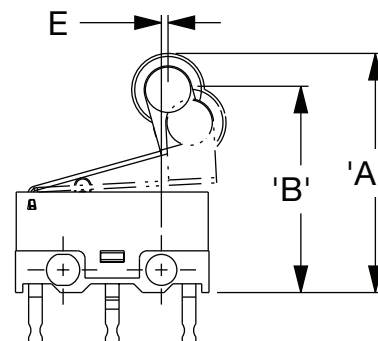
L08 LEVER
3.95MM



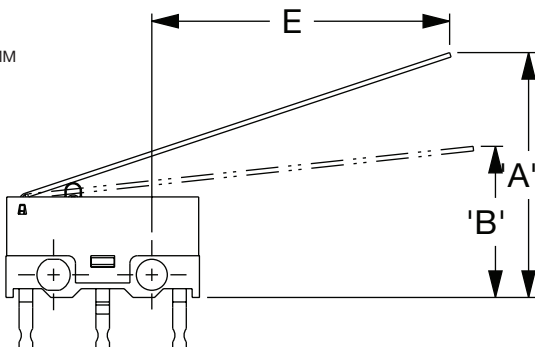
S03 SIMULATED ROLLER
5.8MM



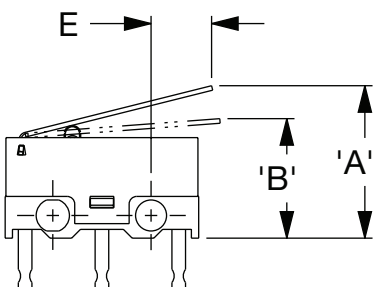
A03 ROLLER
1.3MM



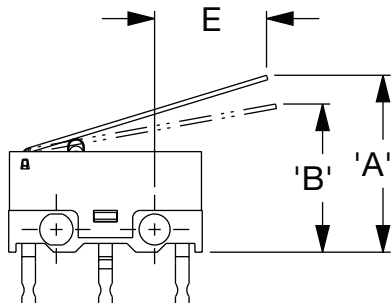
L30 LEVER
20.5MM



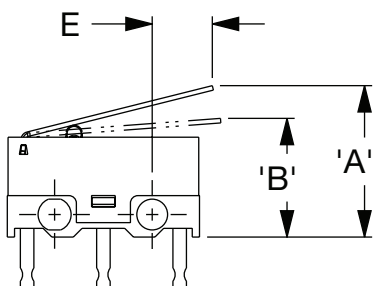
L04 LEVER
3.49MM



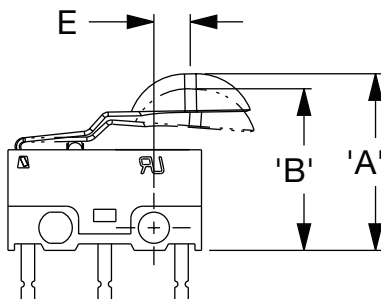
L11 LEVER
7.2MM



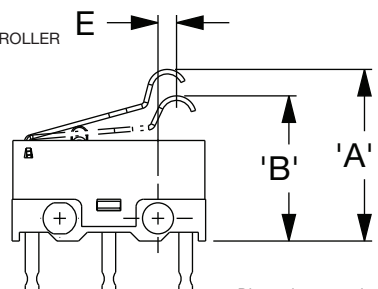
L21 LEVER
14MM



S06 SIMULATED ROLLER
2.03MM



S07 SIMULATED ROLLER
0.75MM



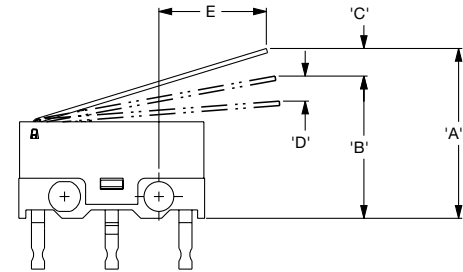
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

ZMA Series

Mini Size Snap-acting Switches

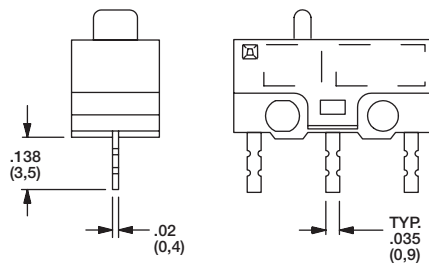
SWITCH CHARACTERISTICS

CODE	OPER. FORCE MAX. (GRAMS)		REL. FORCE MIN. (GRAMS)		'A' FP MAX. (MM)	'B' OP MAX. (MM)	'C' PT MAX. (MM)	'D' OT MIN. (MM)	'E' MIN. (MM)
P00	80	150	21	35	7.35	6.9 ± 0.3	0.62	0.2	
S03	25	43	5	7	14.2	9.8 ± 0.9	3.5	0.7	5.8
L30 (80 GF)	13	21	2	3	16.8	9.5 ± 1.9	6.9	0.55	20.55
L30 (150 GF)	13	21	2	3	16.8	9.75 ± 1.9	6.9	0.55	20.55
L11	25	39	4	6	11.7	8.68 ± 1	4.4	0.6	7.75
L21	30	47	2	7	10.0	8.35 ± 0.7	2.35	0.62	4.55
L08	27	48	3	8	13.5	10.75 ± 0.8	3.5	0.3	4.3
A03	34	65	6	10	16.55	13.65 ± 1	3.9	0.5	0.9
L04	30	50	5	8	10.1	7.9 ± 0.8	3.0	0.6	3.6
S06	33	49	5	11	12.43	10.7 ± 0.8	1.43	1.25	2.1
S07	40	65	2	5	13.0	9.7 ± 1	4.3	0.5	1

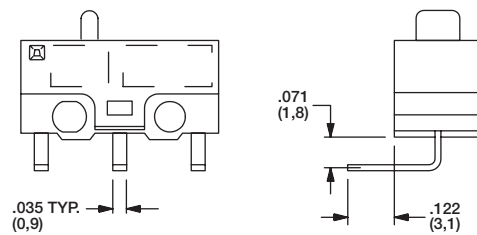


TERMINATIONS

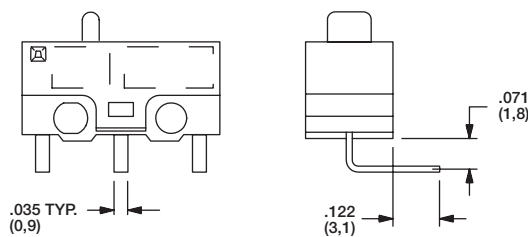
P PC THRU-HOLE



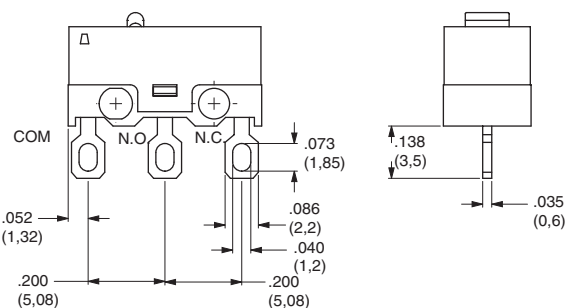
L LEFT FOOTED, PC THRU-HOLE



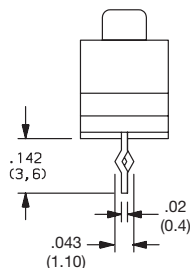
R RIGHT FOOTED, PC THRU-HOLE



E SOLDER



K PC THRU-HOLE WITH RETENTION FEATURE



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ZMS Series

Mini Size Snap-acting Switches

Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size - ideal when space is limited**
- **Various PCB terminals & actuators**
- **RoHS compatible**
- **IP67 for standalone switch except the metal terminal part; Full IP67 protection when potted with wire version**

Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**
- **Automotive: door latch, seat position detection, EV charging**



UL61058-1
UL1054



Specifications

CONTACT RATING: 3A@ 125 V AC/ 3A@ 12 V DC, 0.01A @ 12 V DC
ELECTRICAL LIFE: 100,000 cycles @ 0.01A 12V DC
100,000 cycles @ 3A 12 V DC
6,000 cycles @ 3A 125 V AC
MECHANICAL LIFE: 500,000 cycles
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 500 Vrms.
OPERATING TEMPERATURE: -40°C + 85°C.
OPERATING FORCE: 130 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.
@ 20 V AC or DC max.

Materials

CASE: Nylon
COVER/ACTUATOR: PBT
MOVABLE CONTACTS: 3 Amp silver alloy, 0.01A gold plating over silver alloy
STATIONARY CONTACTS: 3 Amp silver alloy, 0.01 A gold plating over silver alloy
TERMINALS: Brass, silver plated
LEVER: Stainless steel

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

Sealing cap could possibly be damaged in case of contacts with oils or greases. Please try to avoid direct contact. If more support is needed, consult Customer Service Centre.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

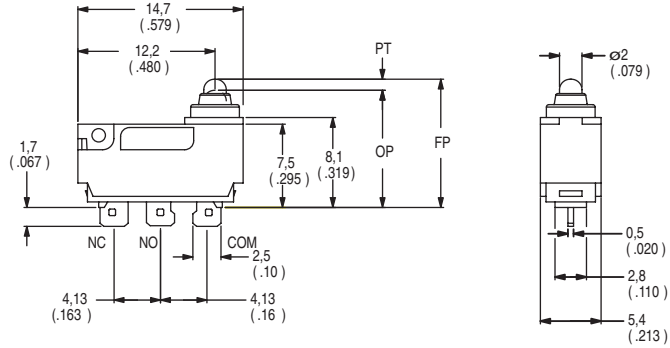
Z M S															
Series ZMS SP, Mom.		Over Travel H High Travel L Low Travel		Electrical Rating 00 0.01 A @ 12 V DC 03 3A 125 V AC 3A 12 V DC		Operating Force 130 130 grams / 4.59		Actuator P00 Pin plunger T10 .25 lever T11 .28 simulated roller		Terminations P PC Thru-hole L Left form, PC Thru-hole R Right form, PC Thru-hole S Solder type J Wire leads out bottom * K Wire leads out right side * W Wire leads out left side *		Circuitry C SPDT W SPST N.C. Y SPST N.O.			
						Mounting Styles S Std (No support post) L Support post left R Support post right									

* Standard Wire: 20 AWG UL 1007

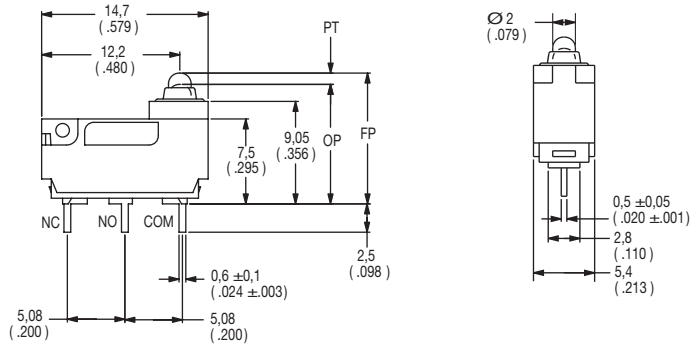
ZMS Series Mini Size Snap-acting Switches

SERIES

ZMSH HIGH OVER TRAVEL



ZMSL LOW OVER TRAVEL



ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL	UL61058-1 UL1054	ENEC
	MOVABLE CONTACT / STATIONARY CONTACT	ELECTRICAL RATING	ELECTRICAL RATING
00	Gold plating over silver alloy	0.01 AMP @ 12 V DC 0.1 AMP @ 12 V DC	10m AMP @ 12 V DC 5E5
03	Silver alloy	3 AMPS @ 125 V AC 3 AMPS @ 12 V DC	3 AMPS @ 12 V DC 1E5

Consult Customer Service center for availability and delivery of nonstandard ratings.

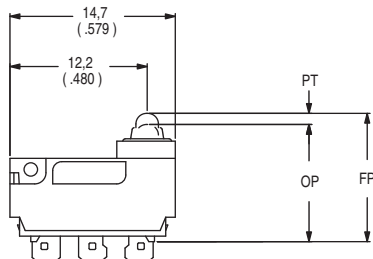
OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
130	130 4.59

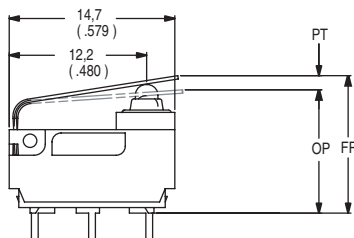
ZMS Series Mini Size Snap-acting Switches

ACTUATOR

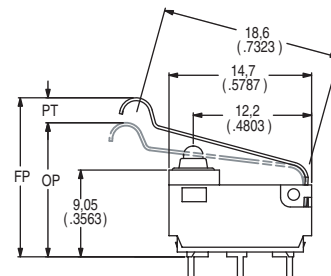
P00 PIN PLUNGER (IP65)



T10 .25 LEVER (IP65)



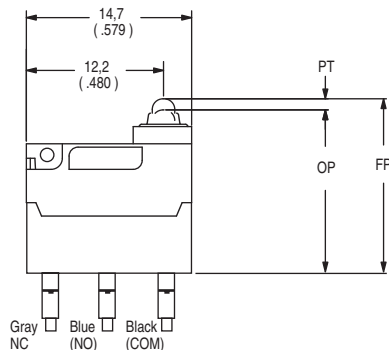
T11 LEVER (IP65)



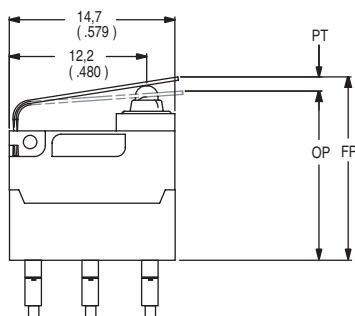
SWITCH CHARACTERISTICS

Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max	Maximum Pre-travel	Operate Position	Maximum Differential	Low Overtravel min. (L)	High Overtravel min. (H)
P00	130 4.59	13 0.45	.472 (12)	0.032 (0,8)	.415 ± .012 (10.55 ± .3)	.012 (0,3)	0.031 (0,8)	0.068 (1,72)
T10	195 6.88	55 1.93	.604 (15.35)	0.152 (3.85)	.440 ± .020 (11.2 ± .5)	0.020 (0,5)	0.053 (1,35)	0.084 (2,14)
T11	160 5.64	45 1.58	.726 (18.45)	0.186 (4.8)	.539 ± .032 (13.7 ± .8)	0.030 (0,7)	0.062 (1,65)	0.101 (2,57)

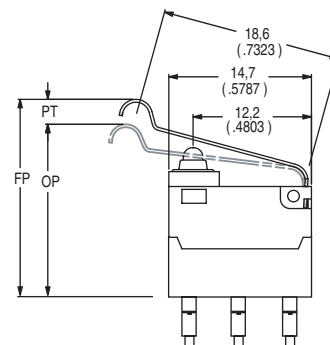
P00 PIN PLUNGER (IP67)



T10 .25 LEVER (IP67)



T11 .28 LEVER (IP67)



SWITCH CHARACTERISTICS "J" TERMINATION ONLY

Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max	Maximum Pre-travel	Operate Position	Maximum Differential	Low Overtravel min. (L)	High Overtravel min. (H)
P00	130 4.59	13 0.45	.650 (16.50)	0.032 (0,8)	.593 ± .020 (15.05 ± 0.5)	.012 (0,3)	0.031 (0,8)	0.068 (1,72)
T10	195 6.88	55 1.93	.781 (19.85)	0.152 (3.85)	.618 ± .028 (15.7 ± .7)	0.020 (0,5)	0.053 (1,35)	0.084 (2,14)
T11	160 5.64	45 1.58	.904 (22.95)	0.188 (4.8)	.717 ± .039 (18.2 ± 1.0)	0.030 (0,7)	0.062 (1,65)	0.101 (2,57)



Third Angle
Projection

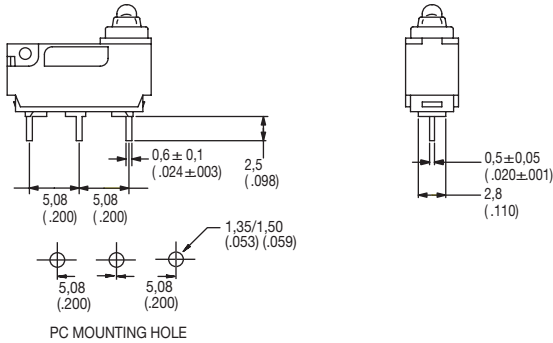
Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

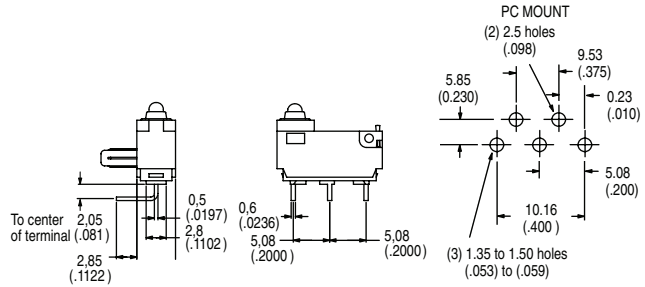
ZMS Series Mini Size Snap-acting Switches

TERMINATIONS

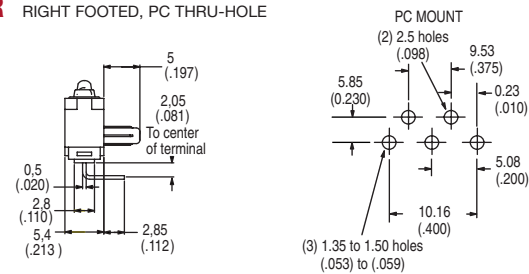
P PC THRU-HOLE



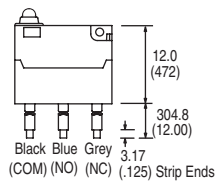
L LEFT FOOTED, PC THRU-HOLE



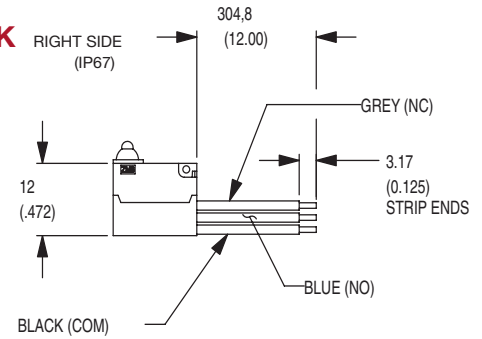
R RIGHT FOOTED, PC THRU-HOLE



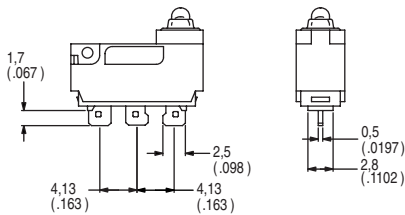
J WIRE LEADS BOTTOM (IP67)



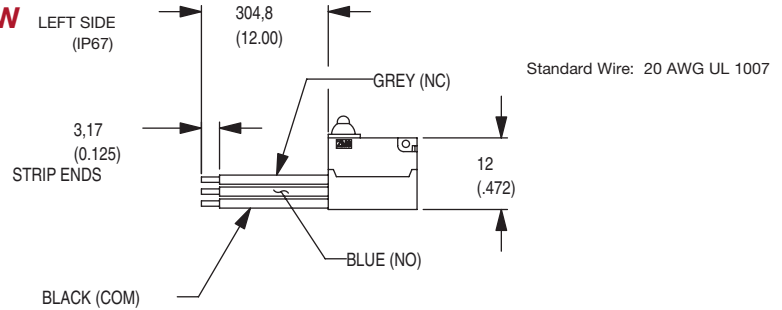
K RIGHT SIDE (IP67)



S SOLDER TYPE

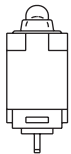


W LEFT SIDE (IP67)

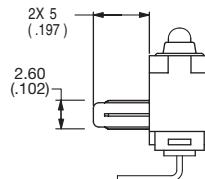


MOUNTING STYLES

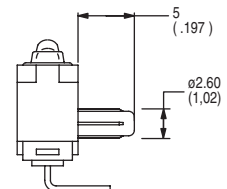
S STD (NO SUPPORT POST)



L SUPPORT POST LEFT



R SUPPORT POST RIGHT

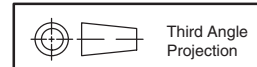


CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST, NC (Single Pole, Single Throw, Normally Closed)

Y SPST, NO (Single Pole, Single Throw, Normally Open)



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

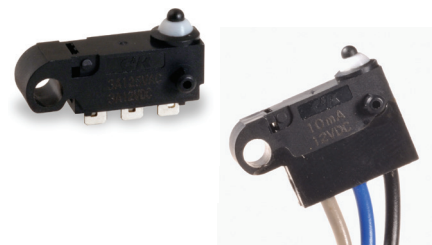
ZMSM Series with Mounting Hole Mini Size Snap-acting Switches

Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Various PCB terminals & actuators
- RoHS compatible
- IP67 for standalone switch except the metal terminal part; Full IP67 protection when potted with wire version

Typical Applications

- Communication devices
- Testing equipment
- Security/Alarm systems
- Automotive: door latch, seat position detection, EV charging



UL61058-1  US

Specifications

CONTACT RATING: 3A@ 125 V AC/ 3A@ 12 V DC, 0.01 A@ 12 V DC.
ELECTRICAL LIFE: 100,000 cycles @ 0.01 A, 12 V DC / 100,000 cycles @ 3A, 12 V DC, 6,000 cycles @ 3A, 125 VAC
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 500 Vrms.
OPERATING TEMPERATURE: -40°C + 85°C.
OPERATING FORCE: 130 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.
@ 20 V AC or DC max.

Materials

CASE: Nylon
COVER/ACTUATOR: PBT
MOVABLE CONTACTS: 3 Amp silver, 0.01A gold
STATIONARY CONTACTS: 3 Amp silver, 0.01A gold
TERMINALS: Brass, Pre-plated with silver
LEVER: Stainless steel

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

 Sealing cap could possibly be damaged in case of contacts with oils or greases. Please try to avoid direct contact. If more support is needed, consult Customer Service Centre.

Build-A-Switch

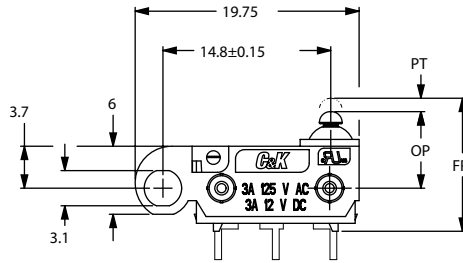
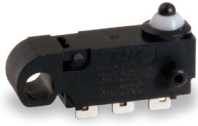
To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Z M S M H							
Series ZMSM SP, Mom.	Over Travel H High Travel	Electrical Rating 0 0.01 A @ 12 V DC 3 3A 125 V AC 3A 12 V DC	Operating Force 130 130 grams / 4.59	Actuator P00 Pin plunger T10 .25 lever T11 .28 simulated roller	Terminations P PC Thru-hole S Solder type J Wire leads 20 AWG UL 1007 K Wire leads 22 AWG UL1430 W Wire leads 24 AWG UL1061 N Wire leads 26 AWG UL1330	Mounting Styles M No support post L Two support post left R Two support post right T One support post left and right	Circuitry C SPDT W SPST N.C. Y SPST N.O.

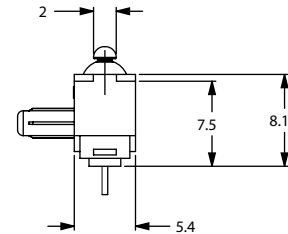
ZMSM Series with Mounting Hole Mini Size Snap-acting Switches

SERIES

ZMSMH HIGH OVER TRAVEL



MODEL SHOWN: ZMSMHXXXXP00PLC



ELECTRICAL RATING

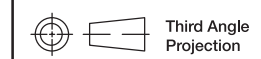
OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
0	Yes	Yes	Gold alloy		0.01 A @ 12 V DC
3	Yes	Yes	Silver alloy		3 AMPS @ 125 V AC 3 AMPS @ 12 V DC

Model **C&K** US with option "S" (solder type) only.

Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
130	130 4.59



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



12 Nov 20

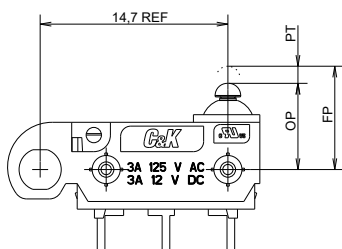


Snap-acting

ZMSM Series with Mounting Hole Mini Size Snap-acting Switches

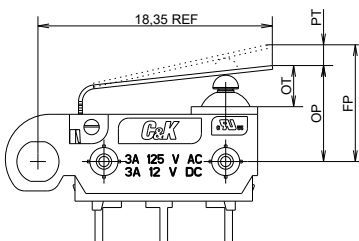
ACTUATOR

P00 PIN PLUNGER (IP65)



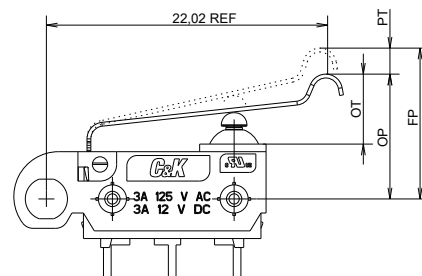
MODEL SHOWN: ZMSMHXXXP00PLC

T10 .25 LEVER (IP65)



MODEL SHOWN: ZMSMHXXXT10PLC

T11 LEVER (IP65)



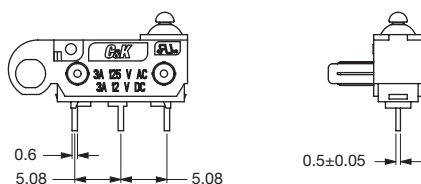
MODEL SHOWN: ZMSMHXXXT11PLC

SWITCH CHARACTERISTICS

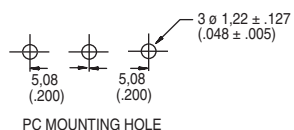
Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max (mm)	Maximum Pre-travel (mm)	Operate Position (mm)	Maximum Differential (mm)	Overtravel min. (mm)
P00	130 4.59	13 0.45	7.35	0.8	6.75 ± 0.3	0.3	1.75
T10	195 6.88	55 1.93	10.70	3.85	7.40 ± 0.8	0.5	2.3
T11	160 5.64	45 1.58	13.80	4.8	9.90 ± 0.8	0.7	2.6

TERMINATIONS

P PC THRU-HOLE (IP65)

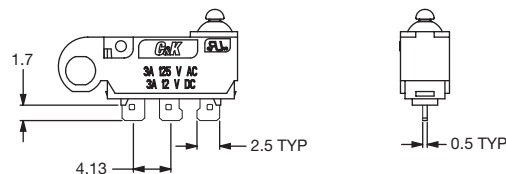


MODEL SHOWN: ZMSMHXXXP00PLC



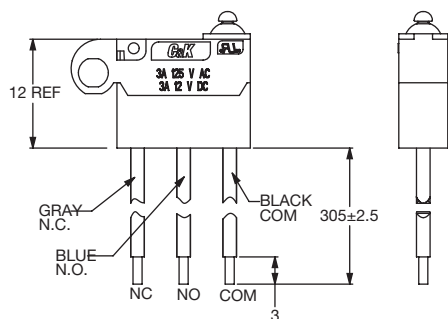
PC MOUNTING HOLE

S SOLDER TYPE (IP65)



MODEL SHOWN: ZMSMHXXXP00SMC

J, K, W, N WIRE LEADS BOTTOM (IP67)



Standard Wire: 20 AWG UL 1007

Available options - must specify

J - 20AWG UL1007 (Standard)

K - 22AWG UL1430

W - 24AWG UL1061

N - 26AWG UL1330



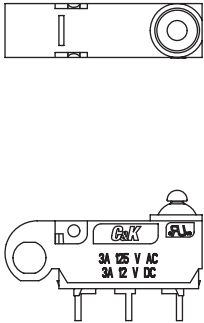
Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

ZMSM Series with Mounting Hole Mini Size Snap-acting Switches

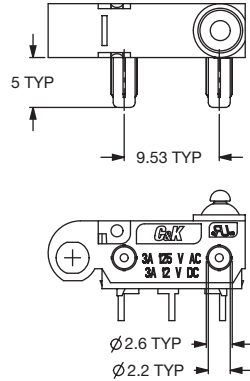
MOUNTING STYLES

M NO SUPPORT POSTS



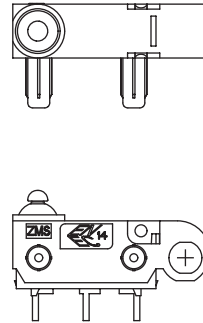
MODEL SHOWN:
ZMSMHXXXP00PMC

L TWO SUPPORT POSTS LEFT



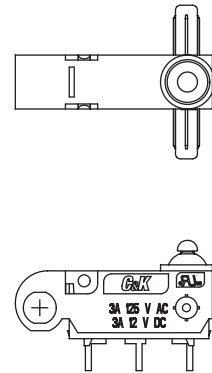
POSTS LEFT
MODEL SHOWN:
ZMSMHXXXP00PLC

R TWO SUPPORT POSTS RIGHT



POSTS RIGHT
MODEL SHOWN:
ZMSMHXXXP00PRC

T ONE SUPPORT POST LEFT & RIGHT



LEFT & RIGHT
MODEL SHOWN:
ZMSMHXXXP00PTC

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST, NC (Single Pole, Single Throw, Normally Closed)
- Y** SPST, NO (Single Pole, Single Throw, Normally Open)



Snap-acting

ZMW Series Mini Size Snap-acting Switches

NEW



Features/Benefits

- Long & adequate stroke setting for high reliability & insulation
- Silent actuation for reduced audible click
- Compact size – ideal when space is limited
- Twin contacts design – sliding contacts prevent pollution of foreign materials
- IP67 for standalone switch except the metal terminal part; Full IP67 protection when potted with wire version
- RoHS compatible & compliant

Typical Applications

- Industrial
- Home appliances
- Automotive: door latch, seat position detection, EV charging

Specifications

CONTACT RATING: 100mA 30VDC @ 300,000 cycles min.
50mA 16VDC @ 500,000 cycles min.
1mA 5VDC @ 500,000 cycles min.

MECHANICAL LIFE: 500,000 cycles min.

INSULATION RESISTANCE: 100 M ohm min.

DIELECTRIC STRENGTH: Min. 600VAC (50-60Hz)/minute
between Live Parts

OPERATING TEMPERATURE: -40°C to 85°C

OPERATING FORCE: 150 gf max.

Materials

CASE: Nylon

COVER: PBT

ACTUATOR BUTTON: POM

MOVABLE CONTACTS: Silver alloy or gold plated

STATIONARY CONTACTS: Silver alloy or gold plated

TERMINALS: Brass, silver plated.

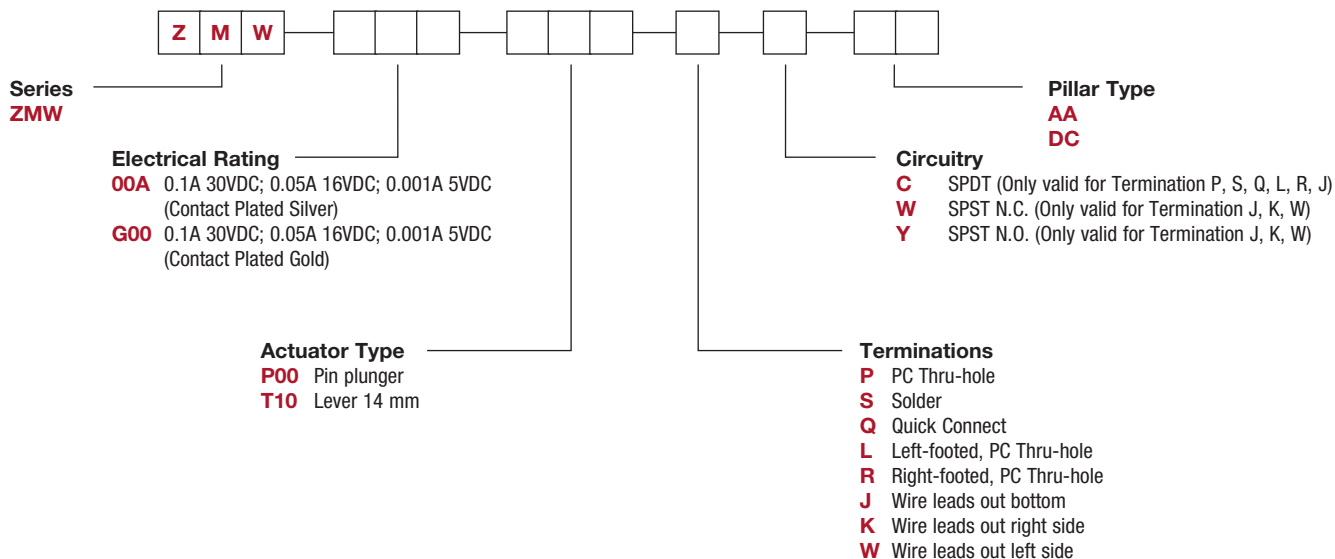
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Sealing cap could possibly be damaged in case of contacts with oils or greases. Please try to avoid direct contact. If more support is needed, consult Customer Service Centre.

Build-A-Switch

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

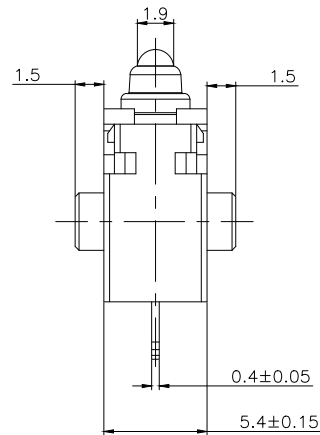
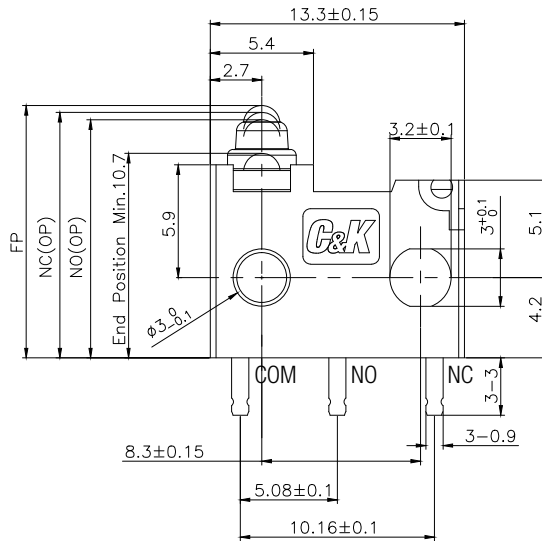


NEW

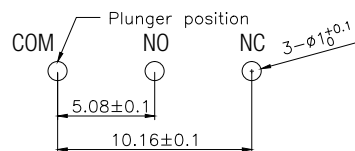
ZMW Series Mini Size Snap-acting Switches

SERIES

ZMW MINI SIZE SNAP-ACTING SWITCHES

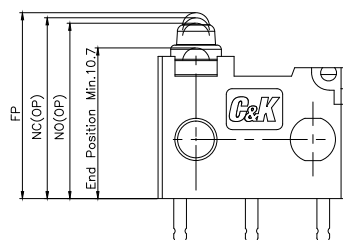


MOUNTING HOLES

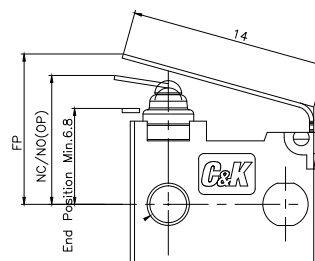


ACTUATOR TYPE

P00 PIN PLUNGER



T10 LEVER
14 MM



Snap-acting

C&K

27 Aug 20

J-31



Dimensions are shown: mm
Specifications and dimensions subject to change

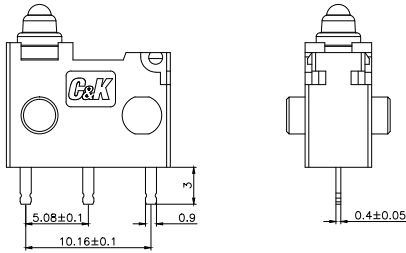
www.ckswitches.com

ZMW Series Mini Size Snap-acting Switches

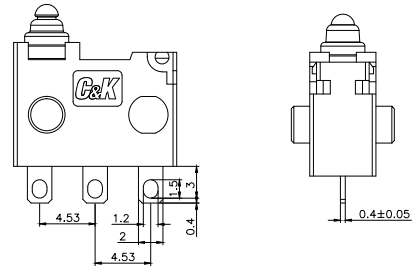
NEW

TERMINATIONS

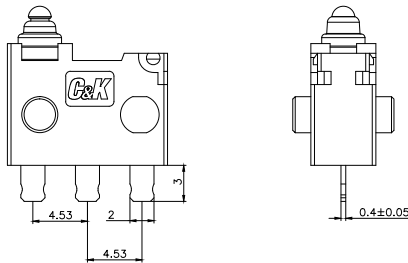
P PC THRU-HOLE



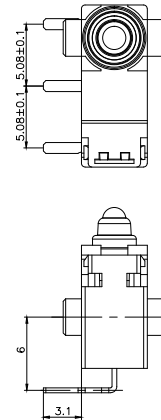
S SOLDER



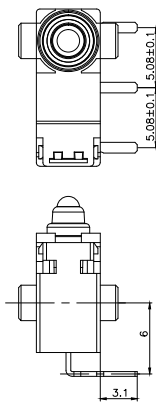
Q QUICK CONNECT



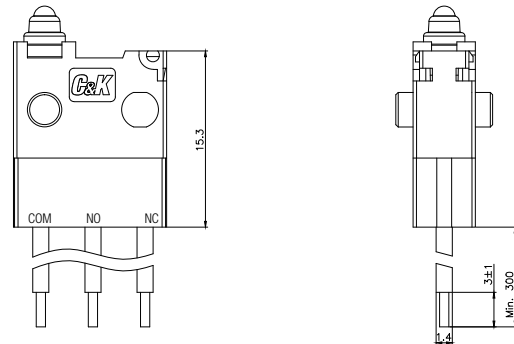
L LEFT-FOOTED, PC THRU-HOLE



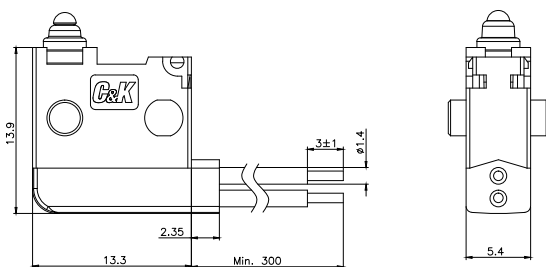
R RIGHT-FOOTED, PC THRU-HOLE



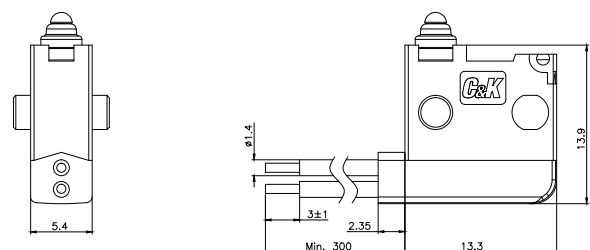
J WIRE LEADS OUT BOTTOM



K WIRE LEADS OUT RIGHT SIDE



W WIRE LEADS OUT LEFT SIDE



COM: AVSS 0.3 MM² BLACK OR EQUIVALENT
NO: AVSS 0.3 MM² BLUE OR EQUIVALENT
NC: AVSS 0.3 MM² GRAY OR EQUIVALENT

Dimensions are shown: mm
Specifications and dimensions subject to change

C&K

27 Aug 20

J-32

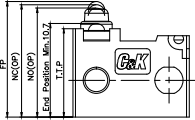
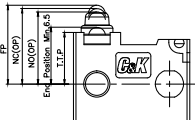
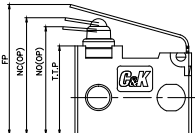
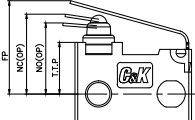
www.ckswitches.com

Snap-acting

NEW

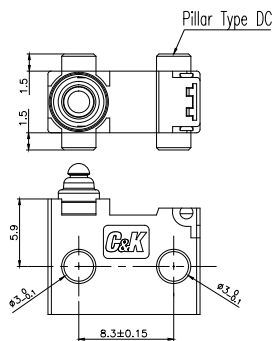
ZMW Series Mini Size Snap-acting Switches

SWITCH CHARACTERISTICS

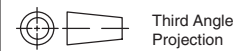
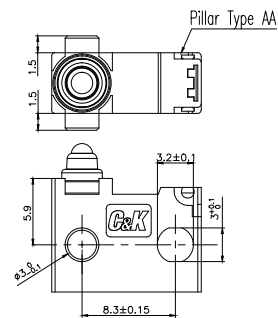
SWITCH TYPE	PART SUFFIX	OF Max (gf)	FP Max (mm)	NC-OP (mm)	NO-OP (mm)	NC-OT Min.(mm)	NO-OT Min. (mm)
ZMWXXXP00XXXX	 Datum from Bottom	S	153	13.4	12.9±0.3	2.5	2.2
	 Datum from Centre			9.2	8.7±0.3		
ZMWXXXT10XXXX	 Datum from Bottom	S	185	15.7	14.0±0.6	3.0	2.45
	 Datum from Centre			11.5	9.8±0.6		

PILLAR TYPE

DC



AA



Dimensions are shown: mm
Specifications and dimensions subject to change

C&K

27 Aug 20

J-33

www.ckswitches.com

Snap-acting

ZPA Series

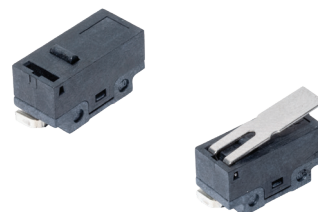
Surface Mount Snap-acting Switches

Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Mini packaging size
- Surface mount terminations
- RoHS compatible & compliant

Typical Applications

- PCB detection switch
- Communication devices
- Testing equipment
- Security/Alarm systems
- Consumer electronics



Specifications

CONTACT RATING: 0.1A @ 125 V AC 30 V DC

ELECTRICAL LIFE: 1,000,000 cycles @ 0.1A

MECHANICAL LIFE: 1,000,000 cycles

INSULATION RESISTANCE: 100 M ohm min.

DIELECTRIC STRENGTH: 500 Vrms

OPERATING TEMPERATURE: -40°C to +85°C

OPERATING FORCE: 80 or 150 grams

PACKAGING: Switches are supplied in rigid dispensing tubes in full-tube quantities only, this may affect order quantities. Tape and reel packing also available.

Materials

CASE/COVER: LCP

ACTUATOR: LCP

MOVABLE CONTACT: Silver alloy

STATIONARY CONTACTS: Silver alloy

TERMINALS: Brass, silver plated.

NOTE: Specifications and materials listed above are for switches with standard options.

Build-A-Switch

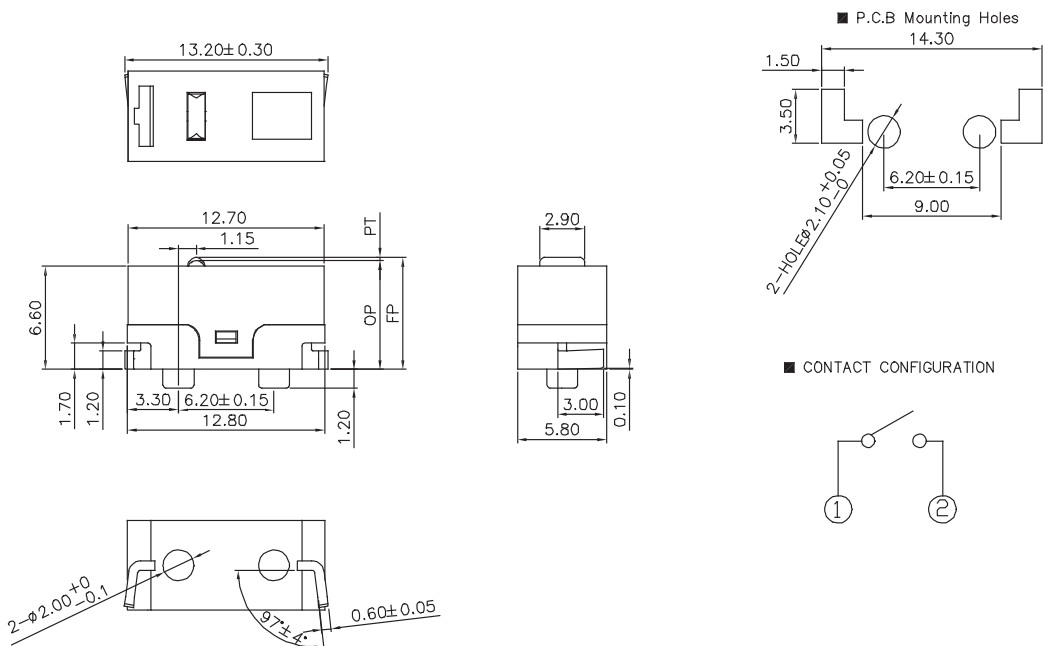
To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Z	P	A	0	0	A					T		
Series ZPA SP, Mom.			Electrical Rating 00A 0.1A 30 V DC 0.1A 125 V AC			Operating Force 080 2.82 oz. / 80 grams 150 5.29 oz. / 150 grams			Actuator P00 Pin plunger L04 Lever 3.9mm L11 Lever 7.2mm			Terminations T Surface Mount
Packaging NONE Tape & Reel TB Tube												

ZPA Series Surface Mount Snap-acting Switches

SERIES

ZPA SURFACE MOUNT SNAP-ACTING SWITCHES – SP MOMENTARY



ELECTRICAL RATING

Option Code	Silver Contacts
00A	0.1A 30 V DC 0.1A 125 V AC

OPERATING FORCE

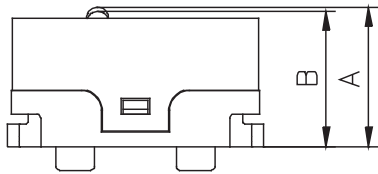
OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
080	2.82 80
150	5.29 150

ZPA Series

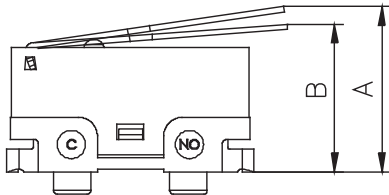
Surface Mount Snap-acting Switches

ACTUATOR

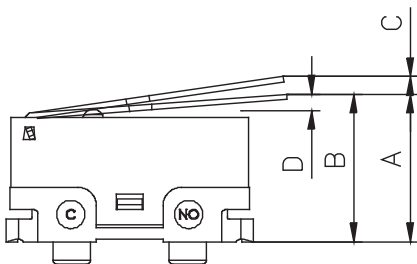
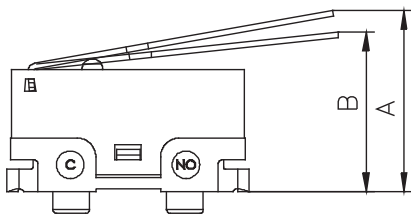
P00 PIN PLUNGER



L04 LEVER
3.9MM



L11 LEVER
7.2MM



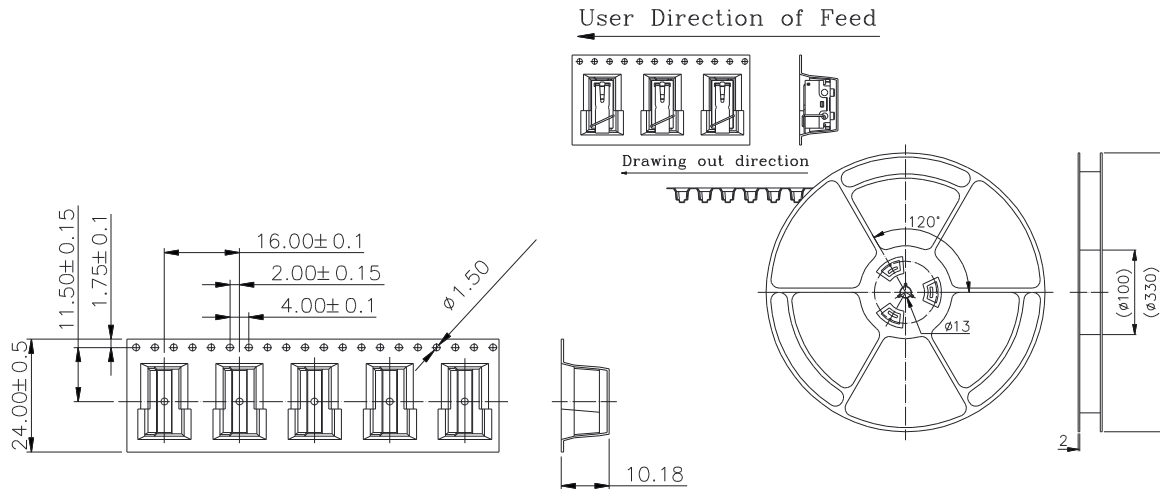
SWITCH CHARACTERISTICS

OPTION CODE	ACTUATOR	OPE. FORCE MAX.	REL. FORCE MIN.	'A' FP MAX	'B' OP MAX	'C' PT MAX	'D' OT MIN	MOVEMENT DIFFERENTIAL
80	P00	Max. 80 gf	Min. 21 gf	Max. 7.35mm	7.0±0.2 mm	Max. 0.62 mm	Min. 0.2 mm	Max. 0.12 mm
	L04	Max. 30 gf	Min. 5 gf	Max. 10.1 mm	7.9±0.8 mm	Max. 3.0 mm	Min. 0.6 mm	Max. 0.8 mm
	L11	Max. 25 gf	Min. 4 gf	Max. 11.7 mm	8.68±1.0 mm	Max. 4.4 mm	Min. 0.6 mm	Max. 0.8 mm
150	P00	Max. 150 gf	Min. 35 gf	Max. 7.35 mm	7.0±0.2 mm	Max. 0.62 mm	Min. 0.2 mm	Max. 0.12 mm
	L04	Max. 50 gf	Min. 8 gf	Max. 10.1 mm	7.9 ± 0.8 mm	Max. 3.0 mm	Min. 0.6 mm	Max. 0.8 mm
	L11	Max. 39 gf	Min. 6 gf	Max. 11.7 mm	8.68 ± 1.0 mm	Max. 4.4 mm	Min. 0.6 mm	Max. 0.8 mm

Snap-acting

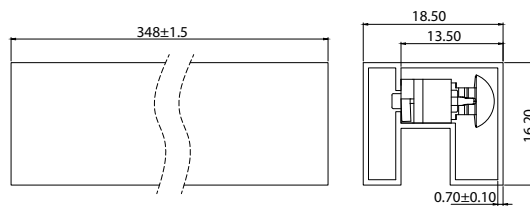
ZPA Series Surface Mount Snap-acting Switches

TAPE AND REEL



Package: 400pcs/ reel

TUBE



Package: 25pcs/ tube



Snap-acting

MDS Series

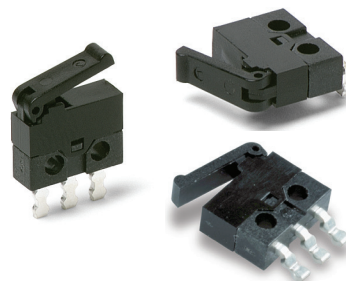
Mini Size Snap-acting Switches

Features/Benefits

- Snap-acting tactile feel
- Mini package size
- Available in vertical or right angle PCB mount
- RoHS compliant and compatible

Typical Applications

- Detect the presence of a mechanical device
- Medical devices
- Consumer electronic devices
- ATCA applications



Specifications

CONTACT RATING: 300mA @ 30 VDC.
 MECHANICAL & ELECTRICAL LIFE: 30,000 operations.
 CONTACT RESISTANCE: 100 m Ω max. initial
 OPERATING TEMPERATURE: -25°C to +70°C.
 SOLDERABILITY: According to lead free solder profiles.
 PACKAGING: Available in bulk or tape and reel.
 OPERATING FORCE: 50g Max.
 RELEASE FORCE: 3g Min.

Materials

BASE: PA9T
 COVER & ACTUATOR: PA9T
 MOVABLE CONTACT: Copper alloy, silver plated.
 STATIONARY CONTACTS: Copper alloy, silver plated.
 TERMINALS: Copper alloy, silver plated.

NOTE: MDS series is RoHS compliant, and compatible. See technical data section of this catalog for RoHS compliant and compatible definitions and specifications.

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

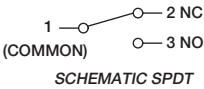
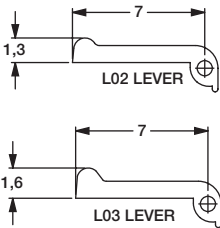
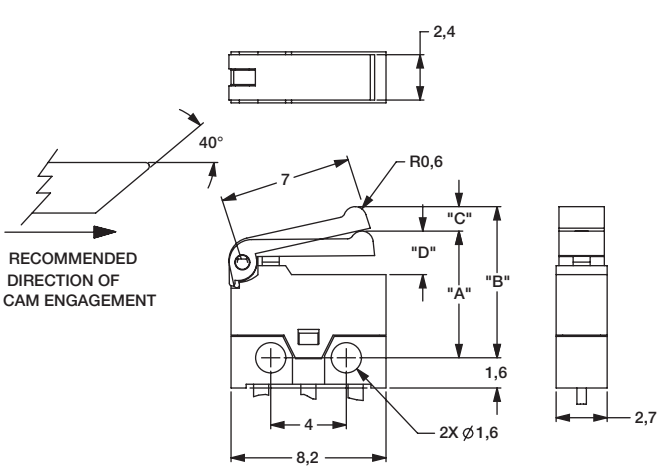
Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

	M	D	S								
Series	MDS SPDT										
Operating Force	65 50 grams										
Electrical Rating	00A 300mA @ 30 VDC										
Actuator	L02 Standard lever L03 Higher OP lever										
Termination Style	PS PC Thru-hole, Short PL PC Thru-hole, Long RS PC Thru-hole, Short, Right bend RL PC Thru-hole, Long, Right bend LS PC Thru-hole, Short, Left bend LL PC Thru-hole, Long, Left bend SL SMT, Left SR SMT, Right SV SMT, Vertical CL SMT, Left bracket with pins CR SMT, Right bracket with pins BL SMT, Left bracket no pins BR SMT, Right bracket no pins WC Wire lead, 6 inches										

MDS Series Mini Size Snap-acting Switches

SERIES



OPERATING CHARACTERISTICS			
		LEVER L02	LEVER L03
OPERATING POSITION	DIM 'A'	6.7±0.5	7.0 +/-0.5
FREE POSITION	DIM 'B'	8 MAX	8.5 MAX
PRETRAVEL	DIM 'C'	1.8 MAX	1.8 MAX
OVER TRAVEL	DIM 'D'	0.3 MIN	0.3 MIN
CONTACT RATING		0.3A @ 30 VDC	0.3A @ 30VDC
OPERATING FORCE		50 GRAMS F. MAX	50 GRAMS F. MAX

OPERATING FORCE

OPTION CODE	OPERATING FORCE
65	50 grams max.

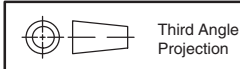
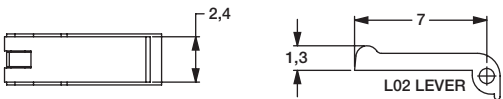
ELECTRICAL RATING

OPTION CODE	ELECTRICAL RATING
00A	300mA @ 30 V DC

ACTUATOR

L02 STANDARD LEVER

L03 HIGHER OP LEVER



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



27 Sep 19

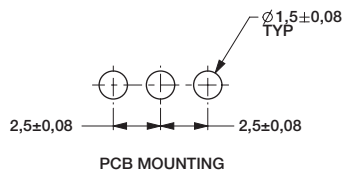


Snap-acting

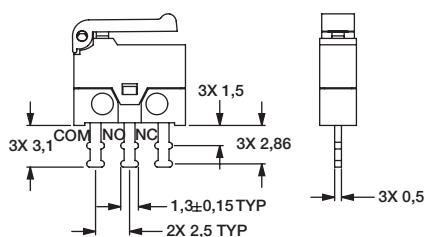
MDS Series Mini Size Snap-acting Switches

TERMINATIONS

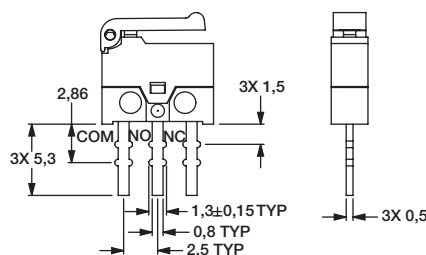
PCB Mounting Pattern



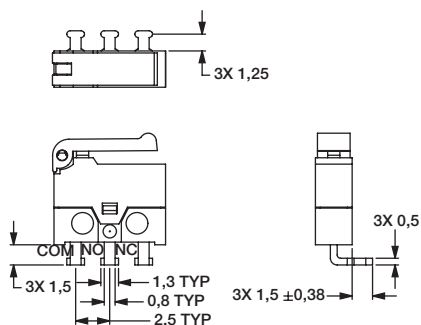
PS PC THRU-HOLE, SHORT STRAIGHT



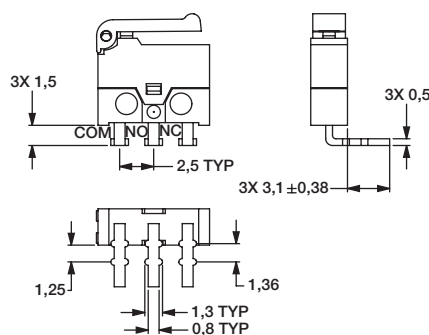
PL PC THRU-HOLE, LONG STRAIGHT



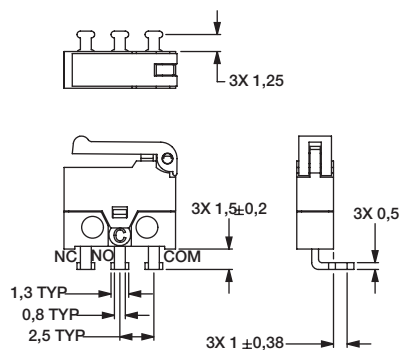
RS PC THRU-HOLE, SHORT RIGHT BEND



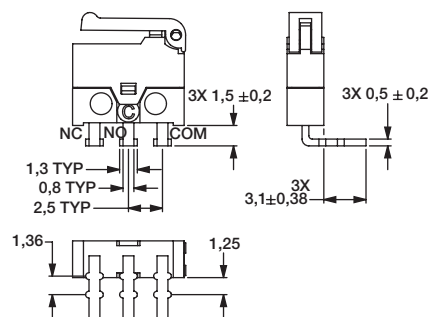
RL PC THRU-HOLE, LONG RIGHT BEND



LS PC THRU-HOLE, SHORT LEFT BEND



LL PC THRU-HOLE, LONG LEFT BEND

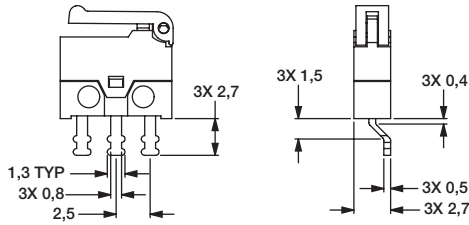


Snap-acting

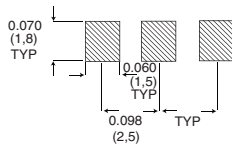
MDS Series Mini Size Snap-acting Switches

TERMINATIONS

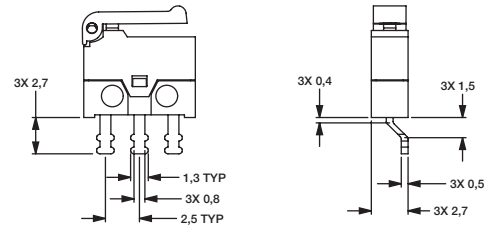
SL SMT, LEFT MOUNT



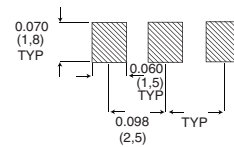
SMT Mounting Pattern



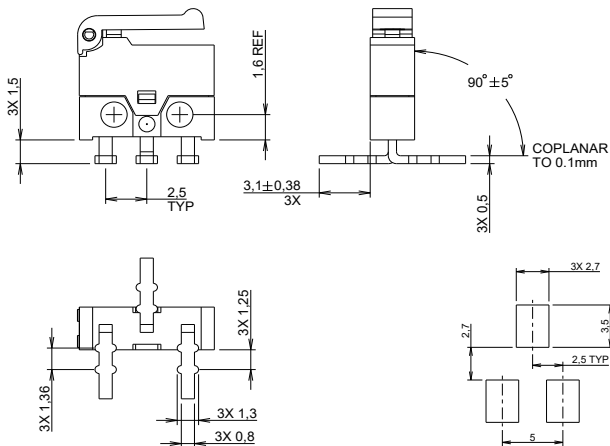
SR SMT, RIGHT MOUNT



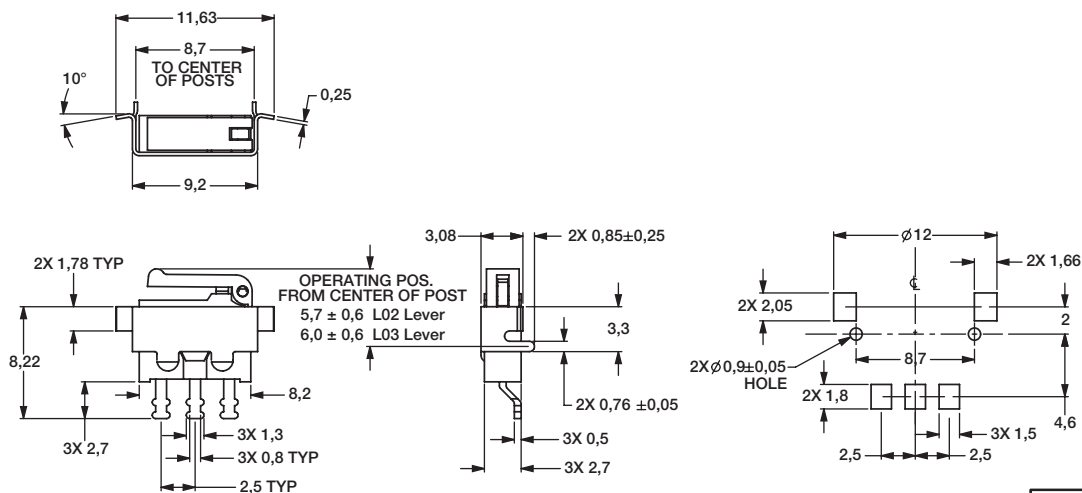
SMT Mounting Pattern



SV SMT, VERTICAL



CL SMT, LEFT BRACKET WITH PINS



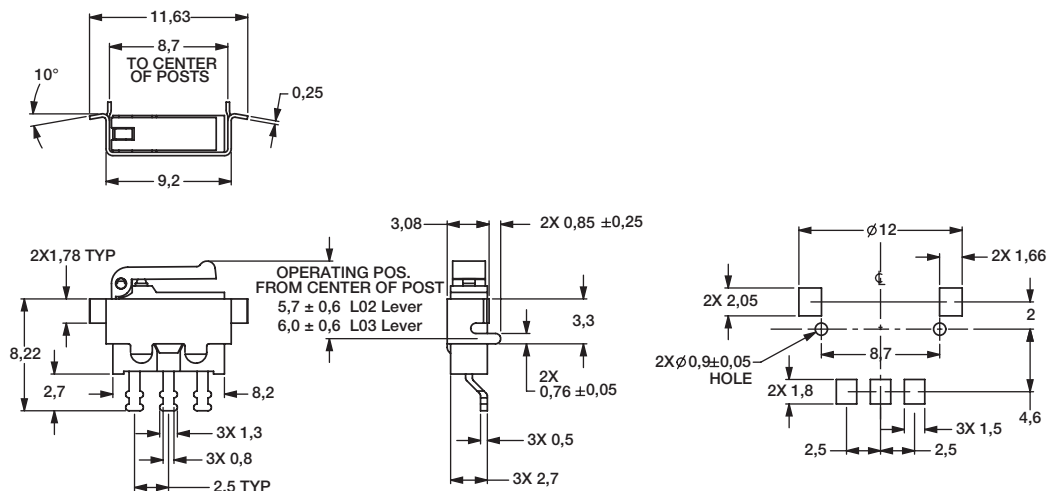
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

MDS Series

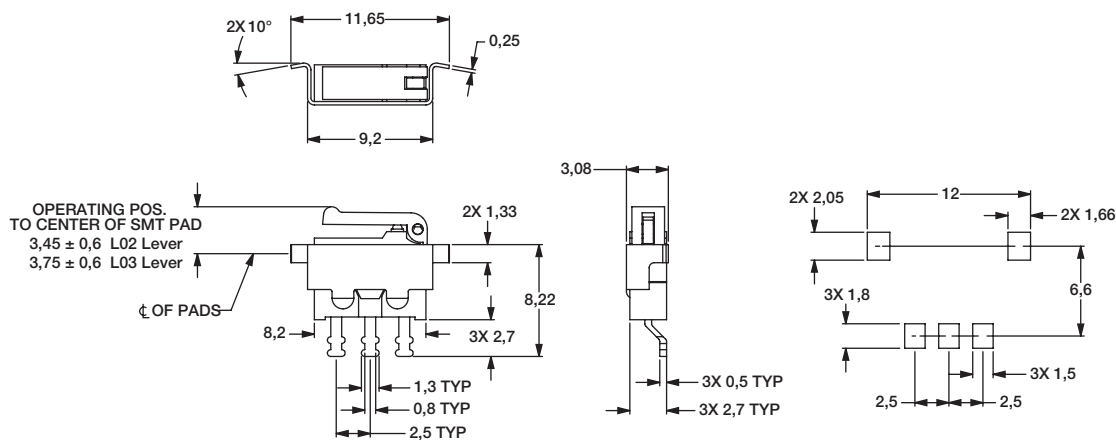
Mini Size Snap-acting Switches

TERMINATIONS

CR SMT, RIGHT BRACKET WITH PINS



BL SMT, LEFT BRACKET NO PINS

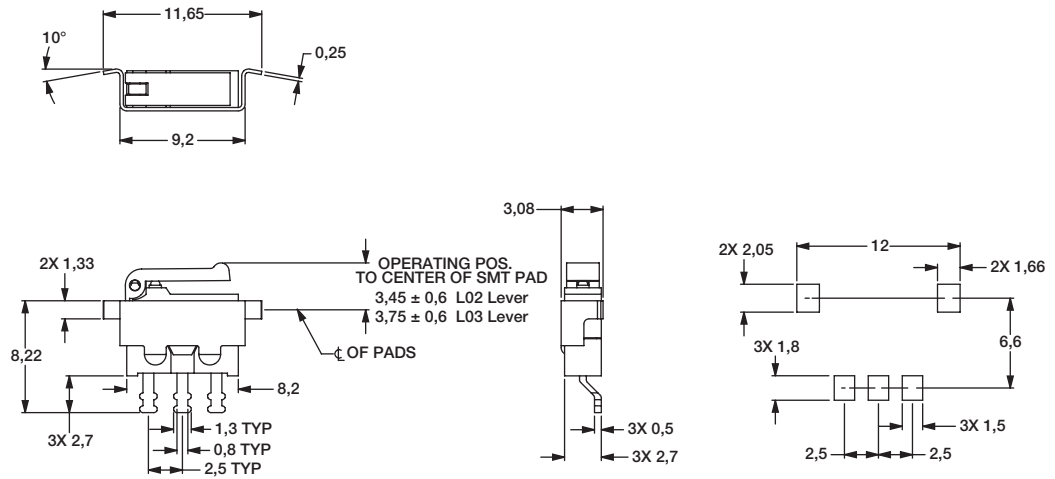


Third Angle
Projection

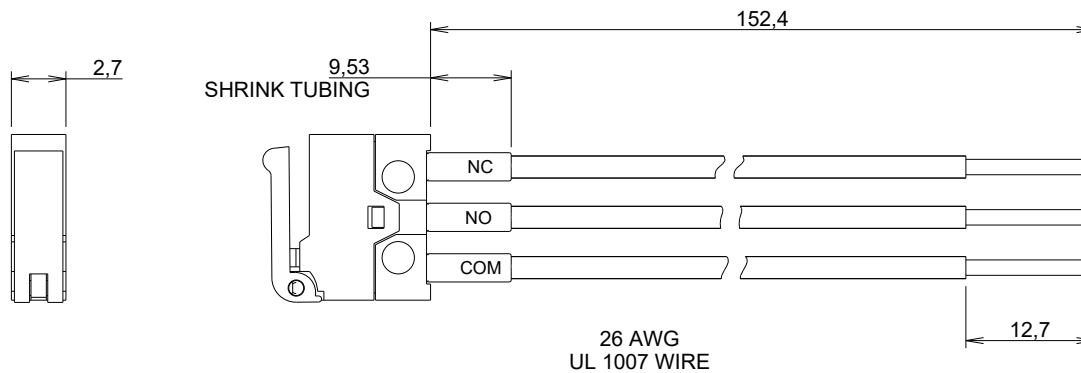
MDS Series Mini Size Snap-acting Switches

TERMINATIONS

BR SMT, RIGHT BRACKET NO PINS



WC WIRE LEAD, 6 INCHES



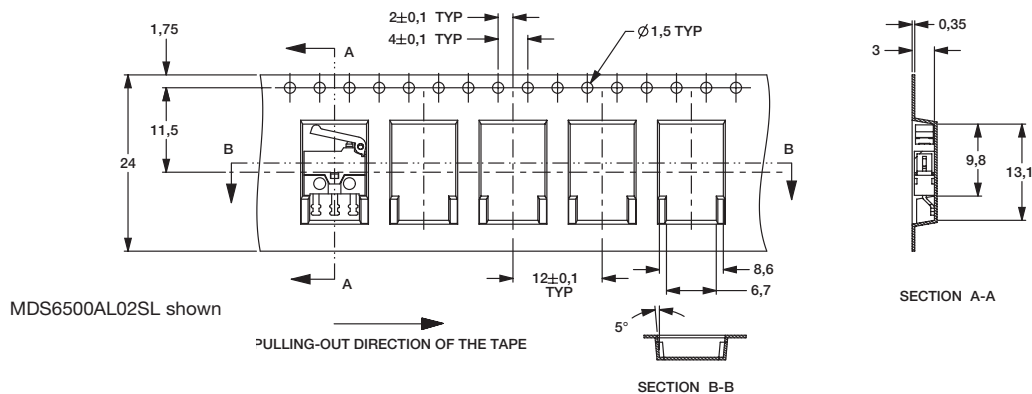
Snap-acting

MDS Series Mini Size Snap-acting Switches

TAPE AND REEL

SL SMT, LEFT MOUNT

SR SMT, RIGHT MOUNT

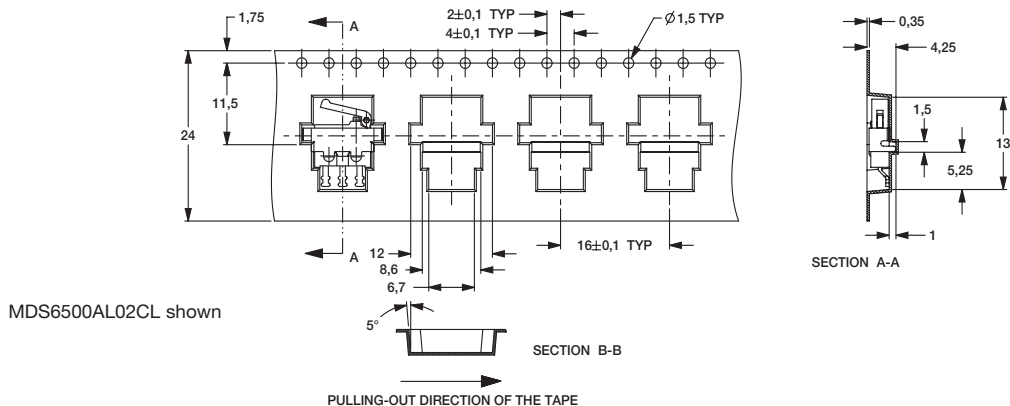


CL SMT, LEFT MOUNT

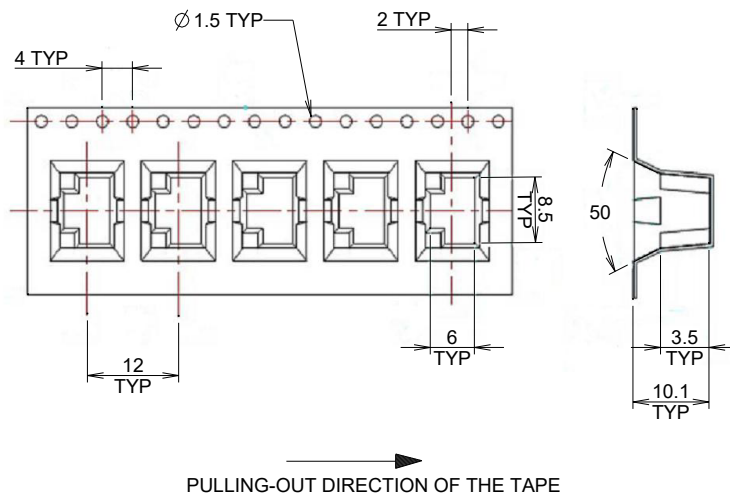
CR SMT, RIGHT MOUNT

BL SMT, LEFT MOUNT

BR SMT, RIGHT MOUNT



SV SMT, VERTICAL MOUNT



Supplied in carrier tape meeting the EIA-481-2 standard for 24mm tape.

Packaging quantity: SL and SR: 1,600 pieces per reel
CL, CR, BL and BR: 1,000 pieces per reel
SV: 400 pieces per reel
WC: consult factory



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

SSW Series

Surface Mount Mini Size 2 Pole Snap-acting Switches



Features/Benefits

- Surface mount terminations
- IP67
- Redundant contacts
- Change over time <15ms
- Top and side actuation
- Low acoustics

Typical Applications

- Automotive, ASIL related applications (electronic parking brake, by-wire functions)

Specifications

FUNCTION: momentary action

CONTACT ARRANGEMENT: 2 change over contacts = DPDT

SWITCHING MODE: non shorting

TERMINAL: SMD terminals

Environmental

OPERATING TEMPERATURE: -40°C to 85°C

STORAGE TEMPERATURE: -40°C to 85°C

SEALING: IP67

Mechanical

Type	Force (N)	Operating life* (cycles)	Travel (mm)
SSW 115S	2.0 +/- 1	Up to 300 000	1,2

* Under Max. electrical load

SHEAR FORCE RESISTANCE:

40N

SIDE ACTUATION:

cam angle at 40°

Process

SOLDERING: Depending on the application, this component is suited to the following methods:

- Infrared Reflow Soldering in accordance with C&K product specification

TERMINALS: Silver plated

Packaging

Reel containing 900 pieces

Reel dimensions according to EIA RS481. External diameter 560 mm

NOTE: This datasheet is describing main product characteristics. It cannot be considered as a contractual document for design in and subject to change without prior notice. We recommend contacting your closest sales representative to obtain contractual specifications. Product compliance to final application requirement remains customer responsibility.

Specifications

MAXIMUM POWER: 0.36 W

MAXIMUM VOLTAGE: 18 VDC

MINIMUM VOLTAGE: 5 V

MAXIMUM CURRENT: 20 mA

MINIMUM CURRENT: 1 mA

DIELECTRIC STRENGTH (50 Hz, 1min.): > 250 Vrms

CHANGEOVER TIME: < 15 ms

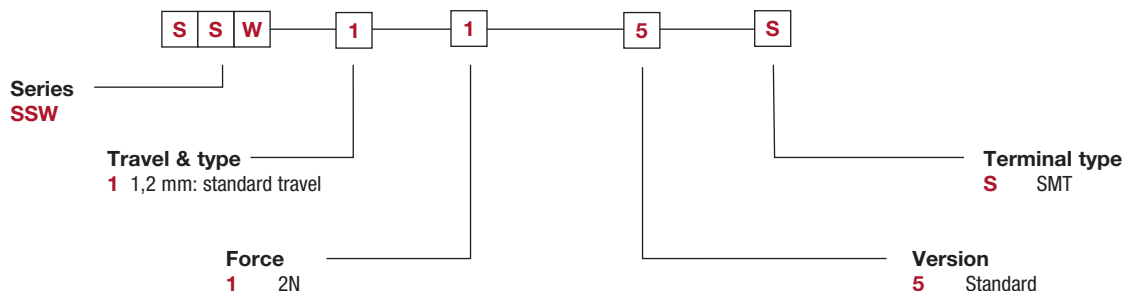
INSULATION RESISTANCE (100 V): > 100 MΩ

CONTACT RESISTANCE initial: 100 mΩ

How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

For any part number different from those listed above, please consult your local representative.



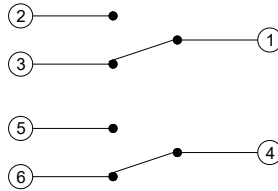
NOTE: other versions available upon request. Please consult your customer service.

SSW Series Surface Mount Mini Size 2 Pole Snap-acting Switches

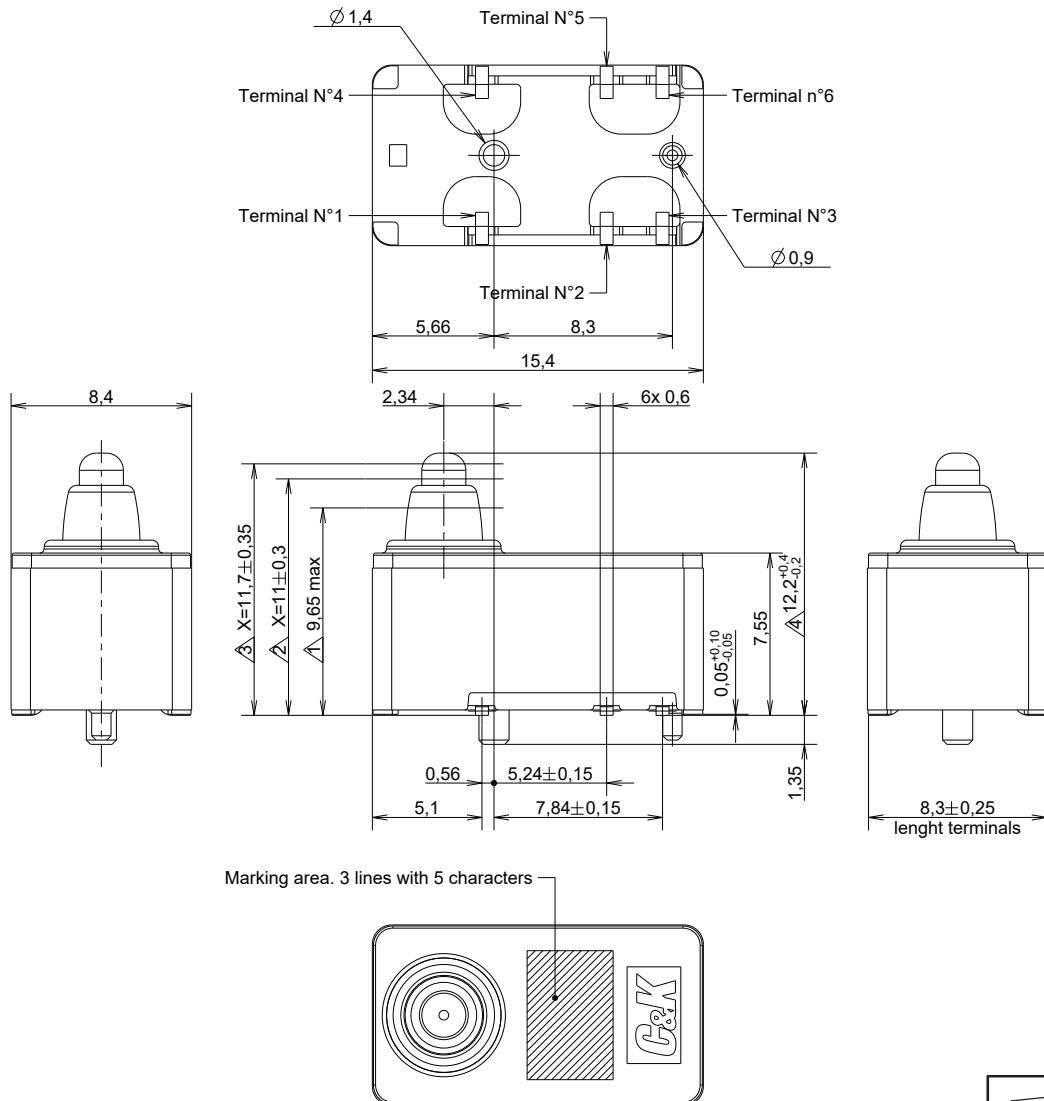
TYPE CONFIGURATION

Type	Actuator height (mm)	Terminal 1-3 / 4-6 ON Terminal 1-2 / 4-5 OFF (mm)	Terminal 1-3 / 4-6 OFF Terminal 1-2 / 4-5 ON (mm)	Minimum height (mm)
1	12.2 + 0.4 / - 0.2	11.7 +/- 0.35	11.0 +/- 0.3	9.65

ELECTRICAL ARRANGEMENT



DIMENSIONS

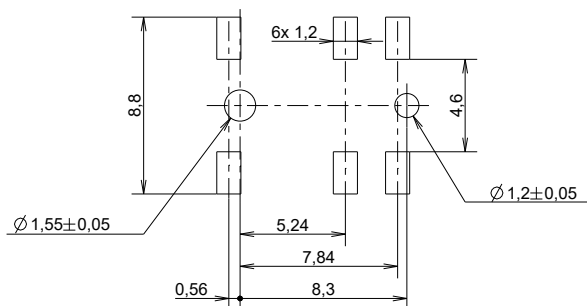


Snap-acting

SSW Series

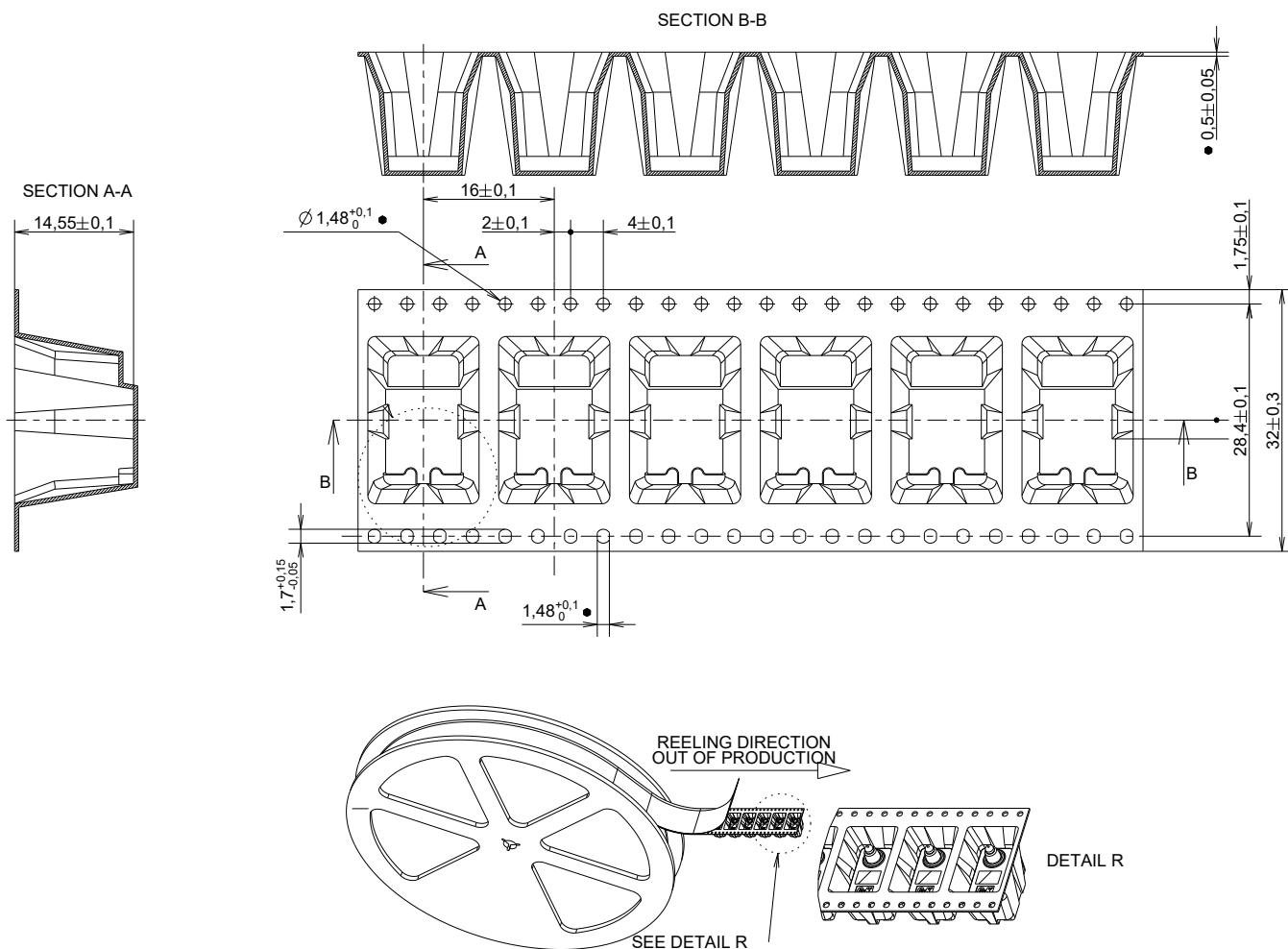
Surface Mount Mini Size 2 Pole Snap-acting Switches

RECOMMENDED PCB LAYOUT



TYPE & REEL

Snap-acting



PACKAGING OF SWITCHES

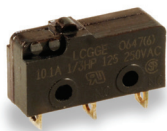


First Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

LC Series

Small Size Precision Snap-acting Switches



Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, wire lead or PC mounting
- Wide variety of actuator styles

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls

UL61058-1



Specifications

CONTACT RATING: From low level* to 10.1 AMPS @ 250 V AC.

ELECTRICAL LIFE: 100,000 cycles

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -17°F to 185°F (-25°C to 85°C).

OPERATING FORCE: From 142 to 170 grams at actuator button.

Forces are less at free end of lever actuators; (see OPERATING FORCE and ACTUATOR option sections).

MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

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

Materials

SWITCH HOUSING: Thermoplastic polyester or high temperature thermoplastic (PTS) (UL 94V-0).

ACTUATOR BUTTON: Thermoplastic polyester (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Copper alloy.

MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. Fine silver with 24K gold plate for 1 AMP @ 125 V AC or less.

STATIONARY CONTACTS: Fine silver welded on copper alloy for ratings greater than 1 AMP @ 125 V AC. Gold alloy welded on copper alloy for ratings less than 1 AMP @ 125 V AC.

TERMINALS: Copper alloy.

TERMINAL SEAL: Epoxy.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

L C															
Series LC SP, Mom.															
Operating Force GG 5 oz./142 grams GD 3.3 oz./94 grams GH 6 oz./170 grams															
Electrical Rating X1 UL 61058-1 (see chart) V6 UL 61058-1 (see chart) V7 UL 61058-1 (see chart) F5 UL 1054 (see chart) L9 UL 1054 (see chart) M1 UL 1054 (see chart)		Actuator P00 Pin plunger A10 .28" lever roller, high force A15 .51" lever roller, high force A20 .39" lever roller, low force A25 .61" lever roller, low force T10 .29" lever, high force T13 .22" simulated roller, high force T15 .57" lever, high force T20 .38" lever, low force T23 .32" simulated roller, low force T25 .67" lever, low force		Terminations E Solder H .110" quick connect J Wire lead L Left formed PC thru-hole R Right formed PC thru-hole S PC Thru-hole		Circuitry C SPDT W SPST N.C. Y SPST N.O.		Electrical Life NONE 6,000 operations U* Extended 100,000 operations							
										Seal NONE (STD.) No seal E Epoxy seal					

* Extended operations only available on Electrical Rating options F5, L9 and M1

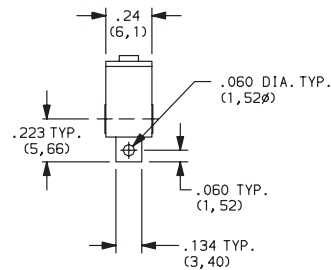
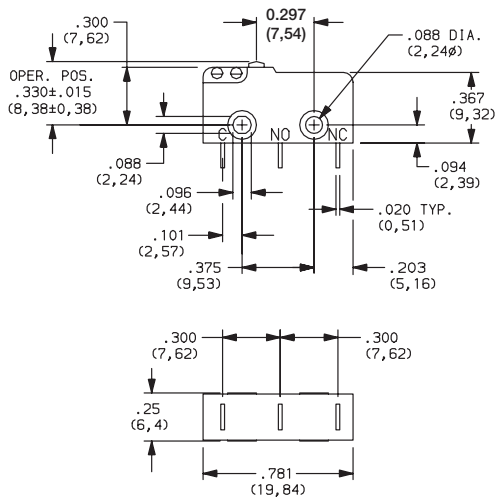


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

LC Series Small Size Precision Snap-acting Switches

SERIES

LC SMALL SIZE PRECISION SNAP-ACTING SWITCHES
SP MOMENTARY



OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCES (OZ./GRAMS)
GG	5 142
GD	3.3 94
GH	6 170

NOTE: Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

UL 61058-1		CONTACT MATERIAL		RoHS COMPLIANT*	RoHS COMPATIBLE*
OPTION CODE	ELECTRICAL RATING	MOVABLE CONTACT	STATIONARY CONTACT		
X1	1A GP, 250 Vac, 50/60 Hz, 25E3, T85 1RA, 30 Vdc, 1E4, T85	Fine silver with 24K gold plate	Fine silver with 24K gold plate on copper base alloy	Yes	Yes
V6	5(2)A RM, 250 Vac, 50/60 Hz, 1E4, T85 5A GP, 250 Vac, 50/60 Hz, 1E4, T85 5RA, 30 Vdc, 1E4, T85 1/3 HP, 125/250 Vac, 50/60 Hz, 1E4, T85	Fine silver	Fine silver welded on copper base alloy	Yes	Yes
V7	10(2)A RM, 250 Vac, 50/60 Hz, 1E4, T85 10A GP, 250 Vac, 50/60 Hz, 1E4, T85 10RA, 30 Vdc, 1E4, T85 1/3 HP, 125/250 Vac, 50/60 Hz, 1E4, T85	Fine silver	Fine silver welded on copper base alloy	Yes	Yes

UL 1054		CONTACT MATERIAL		RoHS COMPLIANT*	RoHS COMPATIBLE*
OPTION CODE	ELECTRICAL RATING	MOVABLE CONTACT	STATIONARY CONTACT		
F5	1A, 125 V AC, 30 VDC 100,000 cycles ("U" option)	Fine silver with 24K gold plate	Fine silver with 24K gold plate on copper base alloy	Yes	Yes
L9	5A, 1/3 HP @ 125 and 250 V AC 100,000 cycles ("U" option)	Fine silver	Fine silver welded on copper base alloy	Yes	Yes
M1	10.1A, 1/3 HP @ 125 and 250 V AC 100,000 cycles ("U" option)	Fine silver	Fine silver welded on copper base alloy	Yes	Yes



* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

Consult Customer Service Center for availability and delivery of nonstandard ratings.

*Low Level = conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



Snap-acting

LC Series

Small Size Precision Snap-acting Switches

ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C
P00	1	0.297 (7,6)	.330 ± .015 (8,38 ± 0,38)	—
A10	7	0.28 (7,1)	.570 ± .070 (14,48 ± 1,78)	.19 dia. (4,80)
A25	2	0.61 (15,5)	.570 ± .175 (14,22 ± 4,45)	.19 dia. (4,80)
T10	3	0.29 (7,4)	.340 ± .070 (8,64 ± 1,78)	—
T13	5	0.220 (5,3)	.455 ± .065 (11,56 ± 1,65)	—
T20	4	0.39 (9,9)	.340 ± .140 (8,64 ± 3,56)	—
T23	6	0.32 (8,1)	.455 ± .125 (11,56 ± 3,18)	—
T25	4	0.67 (17,0)	.340 ± .091 (8,64 ± 4,70)	—
A15	7	0.51 (13,0)	.560 ± .090 (14,22 ± 2,29)	.19 dia. (4,80)
A20	2	0.38 (9,7)	.560 ± .135 (14,22 ± 2,29)	.19 dia. (4,80)
T15	3	0.57 (14,51)	.340 ± .100 (8,64 ± 2,54)	—

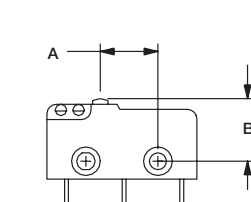


FIG. 1
Pin Plunger

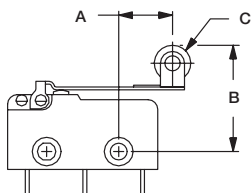


FIG. 2
Lever Roller

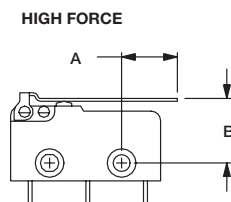


FIG. 3
Lever

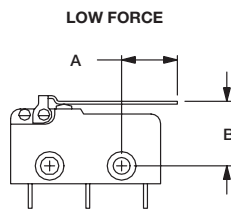


FIG. 4
Lever

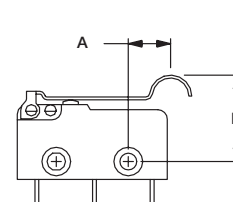


FIG. 5
Simulated Roller

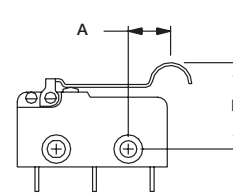


FIG. 6
Simulated Roller

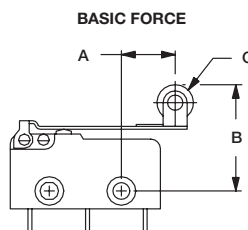


FIG. 7
Lever Roller

SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)			MINIMUM RELEASE FORCE (OZ./GRAMS)			MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
	GG	GD	GH	GG	GD	GH	ALL FORCES	ALL FORCES	ALL FORCES
A10	1.69 48	1 28	2.0 57	.21 6	.11 3	.42 12	.034 (0,86)	.140 (3,56)	.029 (0,74)
A15	1.3 37	.68 19	1.6 44	.16 4.5	.07 2	.32 9	.044 (1,12)	.180 (4,57)	.037 (0,94)
A20	0.9 26	.52 15	1.1 31	.11 3	.05 15	.21 6	.067 (1,70)	.272 (6,91)	.053 (1,53)
A25	.70 20	.42 12	.85 24	.07 2	.04 1	.16 4.5	.086 (2,18)	.351 (8,92)	.068 (1,73)
P00	5 142	3.3 95	6 170	1 28	.05 14	2.0 57	.004 (0,10)	.030 (0,76)	.010 (0,25)
T10	1.7 48	1 28	2.1 60	.21 6	.10 3	.39 11	.035 (0,90)	.140 (3,56)	.029 (0,74)
T13	1.8 52	1.2 34	2.2 62	.21 6	.03 1	.42 12	.032 (0,81)	.130 (3,30)	.026 (0,66)
T20	0.9 26	.52 15	1.1 30	.10 3	.03 1	.21 6	.067 (1,70)	.276 (7,01)	.053 (1,35)
T23	1.0 28	.52 15	1.2 34	.10 3	.03 1	.21 6	.062 (1,57)	.252 (6,40)	.049 (1,24)
T25	0.7 19	.05 14	0.8 24	.07 2	.03 1	.14 4	.090 (2,29)	.372 (9,45)	.072 (1,83)
T15	1.2 35	1.3 39	1.5 42	0.14 4	.21 6	.28 81	.047 (1,19)	.190 (4,83)	.040 (1,02)

NOTE: For basic switch operating forces, see page J-32.



Third Angle
Projection

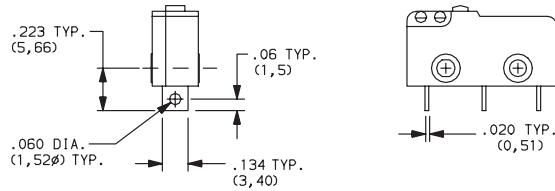
Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

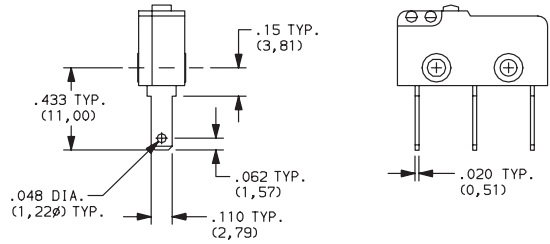
LC Series Small Size Precision Snap-acting Switches

TERMINATIONS

E SOLDER

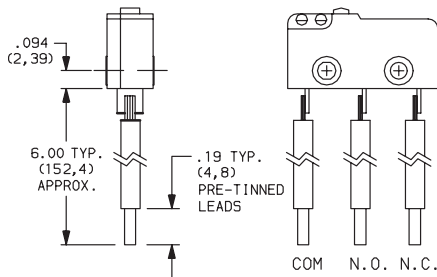


H .110" QUICK CONNECT



NOTE: Use Amp Quick Connect Part No. 640932-1.

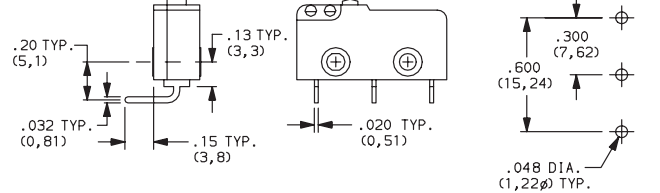
J WIRE LEAD



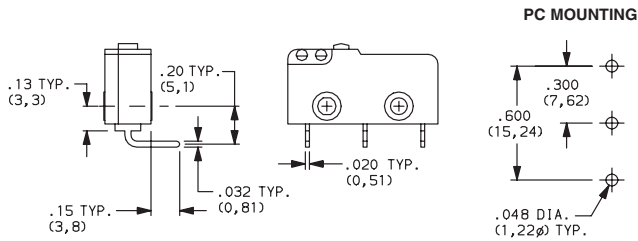
RATING	WIRE SIZE
1 AMP	22 AWG
5 AMPS	20 AWG
10.1 AMPS	18 AWG

TERMINAL	WIRE COLOR
COMMON	BLACK
NORMALLY OPEN	WHITE
NORMALLY CLOSED	RED

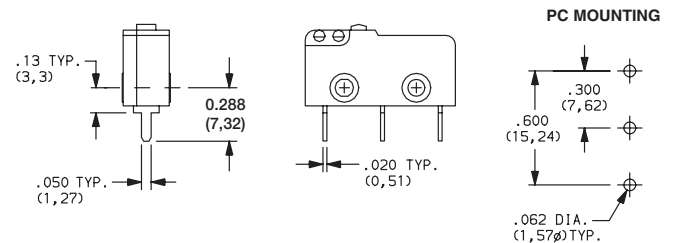
L LEFT FORMED PC THRU-HOLE



R RIGHT FORMED PC THRU-HOLE



S PC THRU-HOLE



CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST N.C. (Single Pole, Single Throw, Normally Closed)

Y SPST N.O. (Single Pole, Single Throw, Normally Open)

ELECTRICAL LIFE

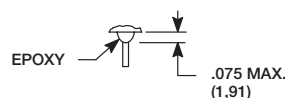
NONE 6,000 OPERATIONS

U EXTENDED 100,000 OPERATIONS

SEAL

NONE NO SEAL

E EPOXY SEAL



Dimensions are shown: mm

Specifications and dimensions subject to change

C&K

LCA Series

Small Size Snap-acting Switches



Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, solder terminals, PC terminals
- Wide variety of actuator styles
- RoHS compatible

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls
- Automotive: door latch, seat position detection, EV charging

UL61058-1



Specifications

CONTACT RATING: From low level to 10.1 AMPS @ 125/250 V AC

ELECTRICAL LIFE: 0.1A @ 125/250VAC up to 1M cycles

6A & 10A @ 125/250VAC 10k cycles

5A @ 125/250VAC 100k cycles

INSULATION RESISTANCE: 100 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -40°C to +125°C

OPERATING FORCE: 150 grams at actuator button MAX.

Forces are less at free end of lever actuators; (see ACTUATOR'S option sections).

MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

Materials

SWITCH HOUSING: Thermoplastic polyester

ACTUATOR BUTTON: Thermoplastic polyester.

SPRING: Copper alloy.

PIVOT: Copper alloy.

MOVABLE CONTACTS: Silver alloy

STATIONARY CONTACTS: Silver alloy

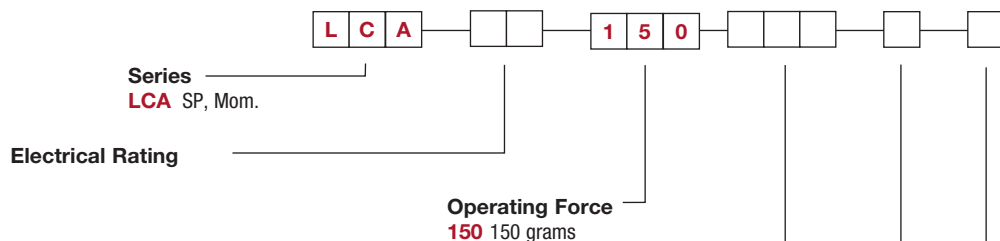
TERMINALS: Copper alloy.

ACTUATOR LEVER: Stainless steel.

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



Option Code	UL cULUS 1054	UL cULUS 61058-1	RoHS
01	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4
06	6 A 125/250 V AC 1E4	6 A 125/250 V AC 1E4	6 (2)A 125/250 V AC 1E4
10	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4
S5	NA	5 A 125/250 V AC 1E5	NA

Actuator

- P00** Pin plunger
- T05** 4.8 mm short lever
- T06** 6.8 mm lever
- T09** 8.8 mm lever
- T12** 12.9 mm lever
- T16** 15.2 mm lever
- T18** 18.1 mm lever
- T21** 20.1 mm lever
- T23** 23.4 mm lever
- T43** 43.5 mm lever
- S06** 6.0 mm simulated lever
- S09** 9.2 mm simulated lever
- A05** 5.0 mm lever roller

Terminations

- S** Solder
- Q** .110 Quick Connect
- P** PC Thru Hole
- L** Left Form PC
- R** Right Form PC

Circuitry

- C** SPDT
- W** SPST N.C.
- Y** SPST N.O.



Third Angle
Projection

Dimensions are shown: mm

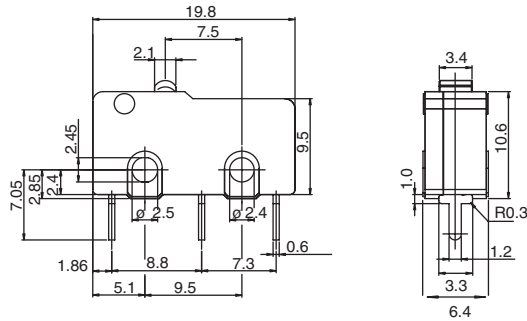
Specifications and dimensions subject to change



LCA Series Small Size Snap-acting Switches

SERIES

LCA



ELECTRICAL RATING

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	01	0.1A, 125/250 VAC
YES	YES	06	6A, 125/250 VAC
YES	YES	10	10.1A, 125/250 VAC
YES	YES	S5	5A, 125/250 VAC

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

OPERATING FORCE

OPTION CODE	OPERATING FORCES (grams)
150	150 grams max.

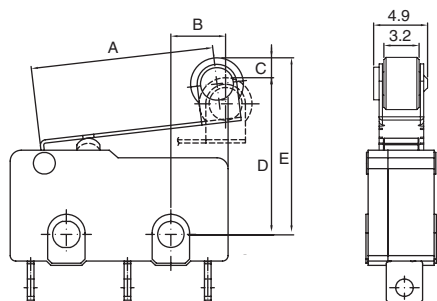


Snap-acting

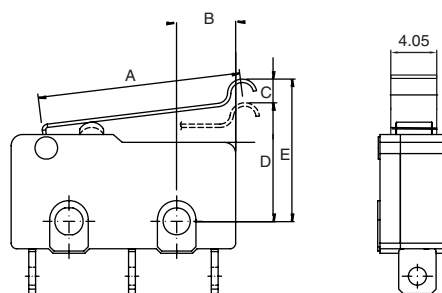
LCA Series Small Size Snap-acting Switches

ACTUATOR

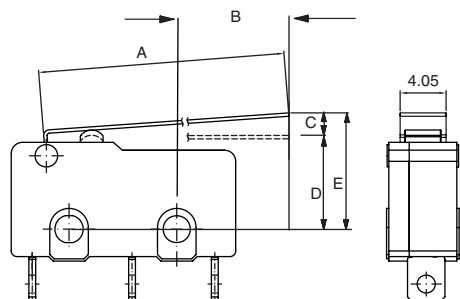
A05 LEVER ROLLER



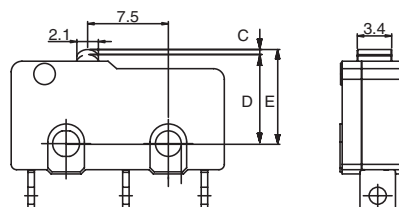
SXX SIMULATED ROLLER



TXX LEVER



P00



ACTUATOR OPTION CODE	A mm	B ref. mm	C mm	D mm	E mm	Diff. Motion mm	Oper. Force	Release Force	Over Travel
	LENGTH OF LEVER	Lever length for front mtg. hole to OP	PRE TRAVEL (MAX)	OPERATING POSITION	FREE POSITION (MAX)	max	max. grams	min. grams	min.
P00	NA	NA	1.10	8.55 ± 0.3	9.35	0.20	150	25	0.4
T05	16.70	4.80	3.60	8.95 ± 0.8	11.75	0.80	50	6	0.6
T06	18.70	6.80	4.03	8.9 ± 0.9	12.09	0.90	45	5	0.67
T09	20.60	9.10	5.64	9.15 ± 1.35	13.45	1.83	33	2	0.75
T12	24.80	12.90	3.35	8.95 ± 1.5	13.10	1.19	34	2	0.89
T16	27.10	15.20	7.20	9.15 ± 1.7	15.15	1.30	40	1	0.70
T18	30.00	18.10	7.70	8.95 ± 1.9	14.65	1.50	32	1	1.2
T21	32.00	20.10	8.00	8.15 ± 1.85	15.55	1.60	35	1	1.0
T23	35.20	23.40	8.60	8.95 ± 2.0	15.55	1.80	25	1	1.5
T43	55.20	43.50	10.45	8.95 ± 3.0	19.25	2.90	15	1	1.0
S06	17.90	6.00	3.86	10.85 ± 0.9	17.81	0.86	47	5	0.64
S09	21.10	9.20	5.7	16.15 ± 1.5	20.35	1.00	42	2	1.0
A05	16.60	5.00	3.8	14.65 ± 0.8	17.65	0.80	50	6	0.6



Third Angle
Projection

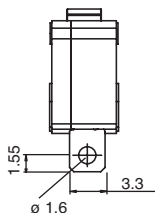
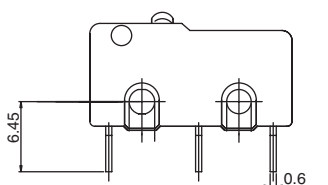
Dimensions are shown: mm

Specifications and dimensions subject to change

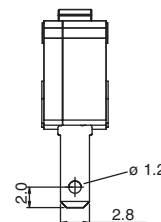
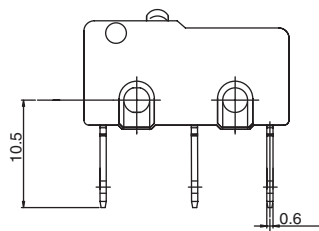
LCA Series Small Size Snap-acting Switches

TERMINATIONS

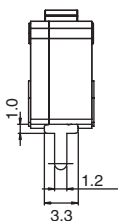
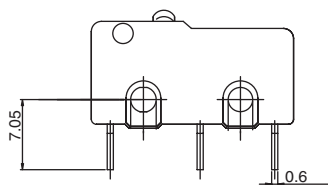
S SOLDER



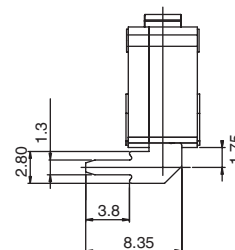
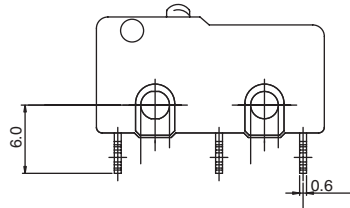
Q QUICK CONNECT



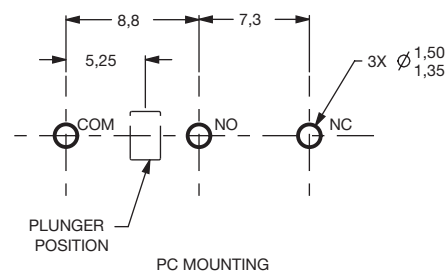
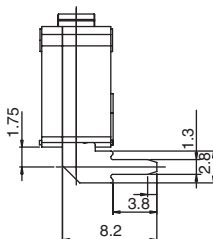
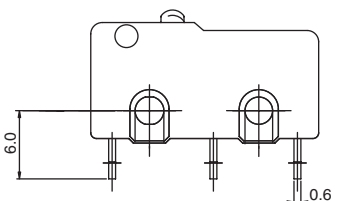
P PC THRU HOLE



L LEFT FORM PC



R RIGHT FORM PC



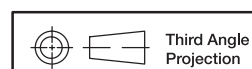
Snap-acting

CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST N.C. (Single Pole, Single Throw, Normally Closed)

Y SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

C&K

24 Nov 20

J-57

www.ckswitches.com

LCS Series

Small Size Sealed Snap-acting Switches



UL61058-1



Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, solder terminals, PC terminals, wire leads
- Wide variety of actuator styles
- RoHS compatible, RoHS compliant
- IP67 for standalone switch except the metal terminal part; Full IP67 protection when potted with wire version

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls
- Computers
- Air conditioners
- Automotive: door latch, seat position detection, EV charging

Specifications

CONTACT RATING: from low level to 5 Amp
ELECTRICAL LIFE: 10,000 cycles for 5A; 1M cycles for 0.1A
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 1,000 VAC
OPERATING TEMPERATURE:
-40°C to +120°C (without wire)
-40°C to +85°C (with UL1007 wire)
-40°C to +105°C (with UL1015 wire)
-40°C to +105°C (with UL1430 wire)
-40°C to +80°C (with UL1061 wire)
-40°C to +120°C (with UL1330 wire)
OPERATING FORCE: (see ACTUATOR'S option sections).
MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

Materials

SWITCH HOUSING: Thermoplastic polyester or high temperature thermoplastic (PTS) (UL 94V-0).
ACTUATOR BUTTON: Thermoplastic polyester.
SPRING: Copper alloy.
PIVOT: Copper alloy.
MOVABLE CONTACTS: Option "01" Gold plating over silver alloy
Option "05" Silver alloy
STATIONARY CONTACTS: Option "01" Gold plating over silver alloy
Option "05" Silver alloy
TERMINALS: Copper alloy.
ACTUATOR LEVEL: Stainless steel.

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

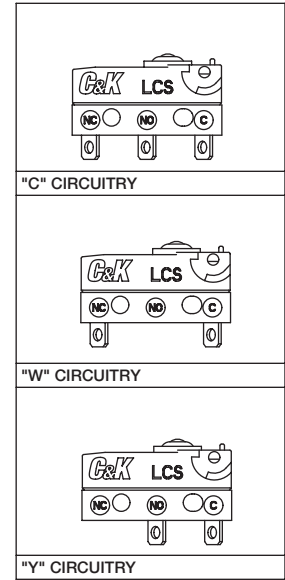
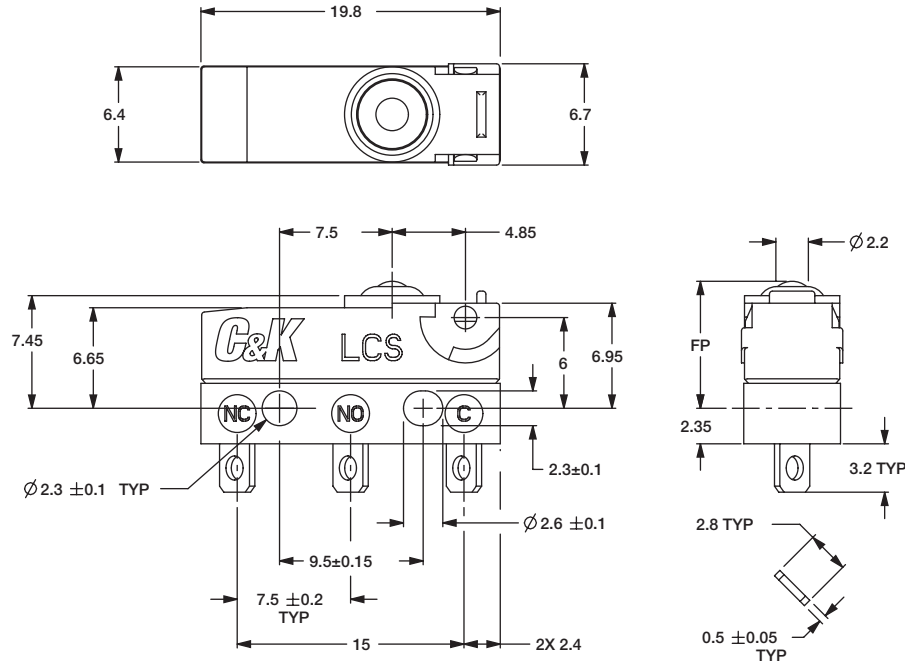
Option Code	UL 61058-1	Operating Force	Actuator	Terminations	Wire Type AWG (when required)	Wire UL # (when required)
01	0.1 A 125/250 V AC	2 203 grams	P00 Pin plunger	S Solder	20 20 AWG	A UL1007
05	5 A 125/250 V AC		T00 11.9 mm short lever	Q 0.110 Quick Connect	22 22 AWG	B UL1015
			T05 17.4 mm short lever	P PC Thru Hole	24 24 AWG	C UL1430
			T07 19.4 mm short lever	W Wire leads potted	26 26 AWG	D UL1061
			T13 25.5 mm lever	Z Wire leads non-potted		
			T19 33.3 mm lever			
			T28 40.7 mm lever			
			T43 55.9 mm lever			
			S26 18.6 mm simulated lever			
			A05 17.2 mm lever roller			



LCS Series Small Size Sealed Snap-acting Switches

SERIES

LCS



ELECTRICAL RATING

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	05	5 AMP, 125/250 V AC
YES	YES	01	0.1 AMP, 125/250 V AC

OPERATING FORCE

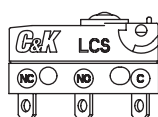
OPTION CODE	OPERATING FORCES (grams)
2	203 g. max.

LCS Series

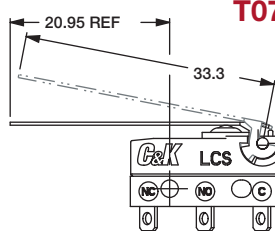
Small Size Sealed Snap-acting Switches

ACTUATOR

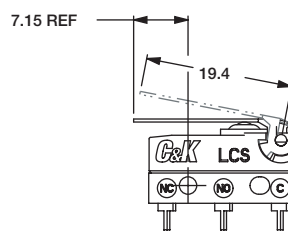
P00



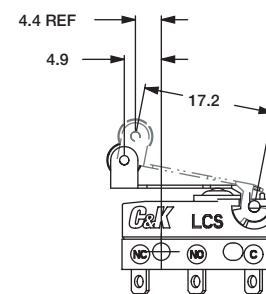
T19



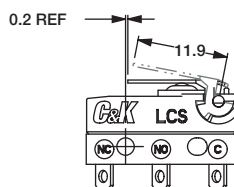
T07



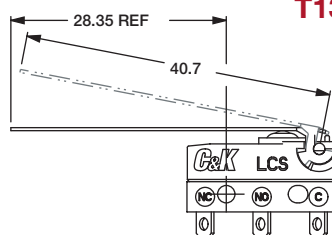
A05



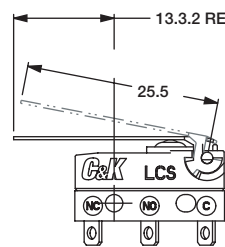
T00



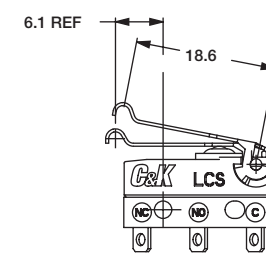
T28



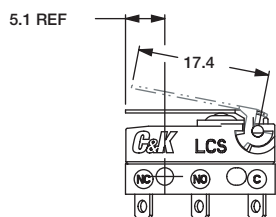
T13



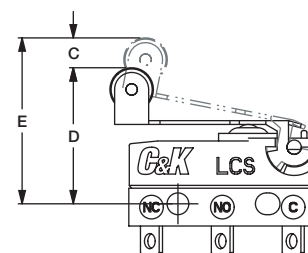
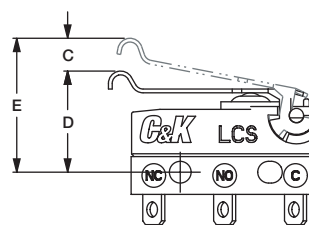
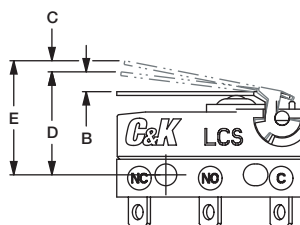
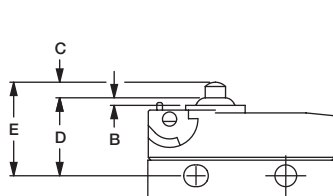
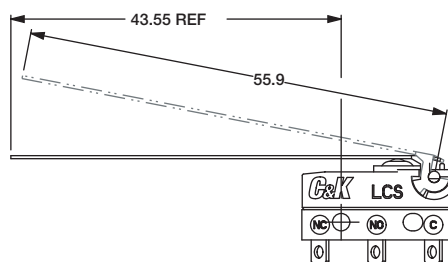
S26



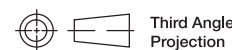
T05



T43



ACTUATOR OPTION CODE	A LENGTH OF LEVER	B OVER TRAVEL (MIN)	C PRE TRAVEL (MAX)	D OPERATING POSITION	E FREE POSITION (MAX)	DIFFERENTIAL MOTION (MAX)	OPERATING FORCE (MAX)	RELEASE FORCE (MIN)
						203	203	203
P00	N/A	0.6	1.2	8.4 ± 3	9.9	0.2	203	50
T00	11.9	0.6	3.2	8.8 ± 9	11.1	0.5	98	21
T05	17.40	0.9	4.3	8.8 ± 1.1	12	0.6	82	16
T07	19.40	1	4.8	8.8 ± 1.2	12.4	0.7	66	13
T13	25.5	1.6	6.3	8.8 ± 1.6	13.5	0.9	54	11
T19	33.3	1.95	8	8.8 ± 2.0	15	1.75	40	5
T28	40.7	2.1	10.1	8.8 ± 2.6	16.3	2.3	39	8
T43	55.9	2.9	13.8	8.8 ± 3.5	19.1	3.6	33	7
S26	18.6	1	4.6	10.7 ± 1.2	14.1	0.65	68	14
A05	17.20	0.9	4.3	14.5 ± 1.1	17.7	0.6	72	15



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

TF Series

Mid Size Snap-acting Switches



Features/Benefits

- Broad range of operating forces
- Ratings up to 21 AMPS
- Wide variety of actuator styles
- Quick connect terminations

Typical Applications

- Motor controls
- Thermostatics
- Portable tools



Specifications

CONTACT RATING: From low level* to 21 AMPS @ 277 V AC.

ELECTRICAL LIFE: 300,000 cycles at 10 AMPS @ 250 V AC, consult Customer Service Center for typical life of higher rated switches.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -40°F to 185°F (-40°C to 85°C).

OPERATING FORCE: From 15 to 400 grams at actuator button available.

MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Materials

SWITCH HOUSING: Thermoplastic (UL 94V-0).

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings greater than 1 AMP up to 15 AMPS.

Precious metal alloy for ratings greater than 15 AMPS.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings greater than 1 AMP.

TERMINALS: Brass alloy for ratings up to 10 AMPS.

Copper alloy for ratings greater than 10 AMPS.

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



Series

TF SP, Mom.

Operating Force

CJ 5.29 oz./150 grams

CC .53 oz./15 grams

CD .88 oz./25 grams

CF 1.76 oz./50 grams

CG 2.65 oz./75 grams

EC 7.94 oz./225 grams

EE 14.11 oz./400 grams

Electrical Rating

J6 15 A, 277 V AC; 1/2 HP, 125, 250 V AC;
5 A, 125 V AC "L", 0.5 A, 125 V DC;
0.25 A, 250 V DC

F5 1 A, 125 V AC; 1 A, 30 V DC

H8 5 A, 277 V AC; 1/10 HP, 125, 250 V AC

J3 21 A, 277 V AC; 1 HP, 125 V AC; 2 HP,
250 V AC; 5 A, 125 V AC "L"

K6 11 A, 277 V AC; 1/3 HP, 125, 250 V AC;
0.5 A, 125 V DC; 0.25 A, 250 V DC

L3 20 A, 250 V AC; 1 HP, 125 V AC;
2 HP 250 V AC

Mounting Style

S Standard

V Metric

Actuator

P00 Pin plunger

A10 .81" lever roller, high force

A15 1.34" lever roller, high force

A20 1.05" lever roller, low force

A25 1.56" lever roller, low force

T10 .84" lever, high force

T13 1.34" simulated roller, high force

T14 1.29" simulated roller, high force

T15 1.40" lever, high force

T16 2.34" lever, high force

T18 2.75" lever, high force

T20 1.10" lever, low force

T23 1.56" simulated roller, low force

T24 1.50" simulated roller, low force

T25 1.62" lever, low force

T26 2.57" lever, low force

T28 2.97" lever, low force

WP0 Wide pin plunger

Circuitry

C SPDT

W SPST N.C.

Y SPST N.O.

Terminations

40 .187" quick connect

4A .250" quick connect

5A .250" offset quick connect

5B .187" offset quick connect

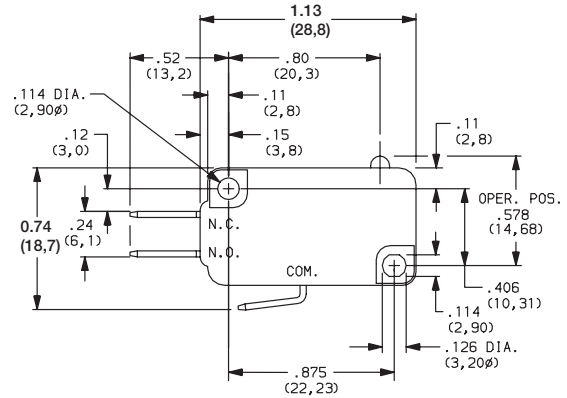
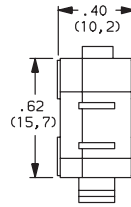


Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

TF Series Mid Size Snap-acting Switches

SERIES

TF MID SIZE SNAP-ACTING SWITCHES – SP MOMENTARY



OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
CC	.53 15
CD	.88 25
CF	1.76 50
CG	2.65 75
CJ	5.29 150
EC	7.94 225
EE*	14.11 400

*Minimums may apply, consult Customer Service Center.

Operating Force option 'CC' not available with 'T18 & T26' Actuator options.
Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL		ELECTRICAL RATING 
			MOVABLE CONTACT	STATIONARY CONTACT	
F5	Yes	Yes	Gold alloy	Gold alloy	From low level* to 1 AMP @ 125 V AC, 1 AMP @ 30 V DC.
H8	Yes	Yes	Fine Silver	Fine Silver	5 AMPS @ 277 V AC; 1/10 HP @ 125 & 250 V AC.
J3	Yes	Yes			21 AMPS @ 277 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 5 AMPS @ 125 V AC "L".
J6	Yes	Yes			15 AMPS @ 277 V AC; 1/2 HP @ 125 & 250 V AC; 5 AMPS @ 125 V AC "L". 0.5 AMP @ 125 V DC; 0.25 AMP @ 250 V DC.
K6	Yes	Yes			11 AMPS @ 277 V AC; 1/3 HP @ 125 & 250 V AC; 0.5 AMP @ 125 V DC; 0.25 AMP @ 250 V DC.
			Silver alloy		
L3	Yes	Yes			20 AMPS @ 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

All models 

Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

C&K

TF Series

Mid Size Snap-acting Switches

ELECTRICAL RATING

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)
F5	1	•	•	•	•	•	•	
H8	5	•	•	•	•	•	•	•
J3	21	X	X	X	X	•	•	•
J6	15	X	X	X	X	•	•	•
K6	11	X	•	•	•	•	•	•
L3	20	X	X	X	X	•	•	•

- AVAILABLE
- X NOT AVAILABLE
- ** Available with 4A & 5A terminations only, see page J-10.

All models  US

Consult Customer Service center for availability and delivery of nonstandard ratings.

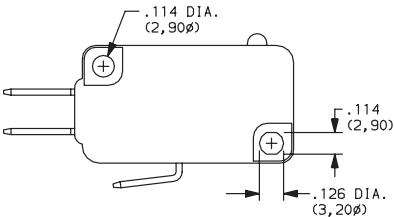
* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



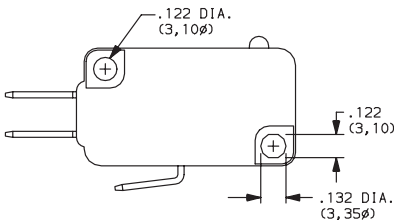
Snap-acting

MOUNTING STYLE

S STANDARD
For 4-40 screw size



V Metric
For 3 mm screw size



TF Series Mid Size Snap-acting Switches

ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
P00	1	.80 (20,3)	—	.578 ± .015 (14,68 ± 0,38)	—
A10	2	.81 (20,6)	.32 (8,1)	.810 ± .020 (20,57 ± 0,51)	.19 dia. (4,8Ø)
A15	2	1.34 (34,0)	.32 (8,1)	.810 ± .030 (20,57 ± 0,76)	.19 dia. (4,8Ø)
A20	2	1.05 (26,7)	.54 (13,7)	.810 ± .050 (20,57 ± 1,27)	.19 dia. (4,8Ø)
A25	2	1.56 (39,6)	.54 (13,7)	.810 ± .075 (20,57 ± 1,91)	.19 dia. (4,8Ø)
T10	3	.84 (21,3)	.32 (8,1)	.600 ± .020 (15,24 ± 0,51)	—
T15	3	1.40 (35,6)	.32 (8,1)	.600 ± .040 (15,24 ± 1,02)	—
T16	3	2.34 (59,4)	.32 (8,1)	.600 ± .065 (15,24 ± 1,65)	—
T18	3	2.75 (69,9)	.32 (8,1)	.600 ± .080 (15,24 ± 2,03)	—
T20	3	1.10 (27,9)	.54 (13,7)	.600 ± .050 (15,24 ± 1,27)	—
T25	3	1.62 (41,1)	.54 (13,7)	.600 ± .070 (15,24 ± 1,78)	—
T26	3	2.57 (65,3)	.54 (13,7)	.600 ± .150 (15,24 ± 3,81)	—
T28	3	2.97 (75,4)	.54 (13,7)	.600 ± .187 (15,24 ± 4,75)	—
T13	4	1.34 (34,0)	.32 (8,1)	.810 ± .030 (20,57 ± 0,76)	.19 dia. (4,8Ø)
T14	4	1.29 (32,8)	.32 (8,1)	.730 ± .030 (18,54 ± 0,76)	.19 dia. (4,8Ø)
T23	4	1.56 (39,6)	.54 (13,7)	.810 ± .065 (20,57 ± 1,65)	.19 dia. (4,8Ø)
T24	4	1.50 (38,1)	.54 (13,7)	.730 ± .060 (18,54 ± 1,52)	.25 dia. (6,4Ø)
WP0	5	.80 (20,3)	—	.635 ± .015 (16,13 ± 0,38)	—

NOTE: Switch characteristics chart on following page.

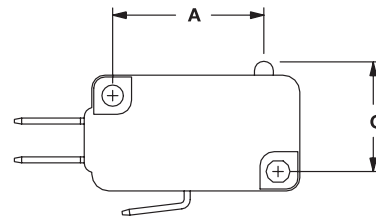


FIG. 1
Pin Plunger

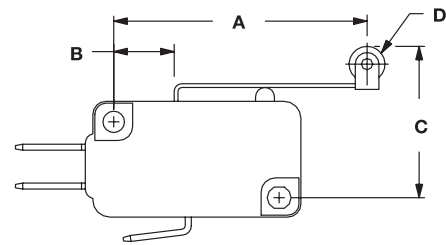


FIG. 2
Lever Roller

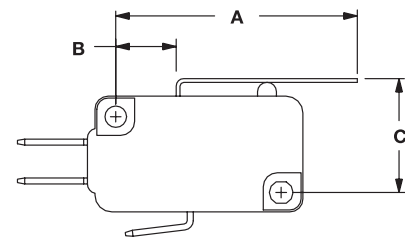


FIG. 3
Lever

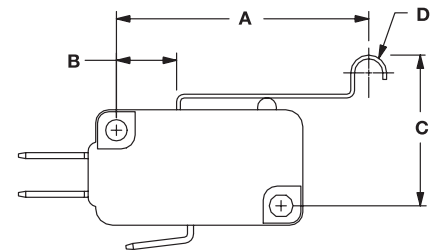


FIG. 4
Simulated Roller

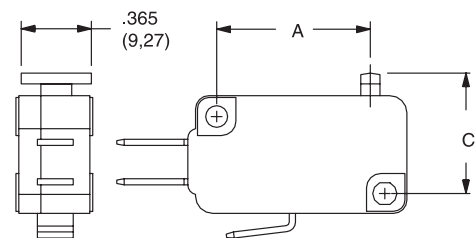


FIG. 5
Wide Pin



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

TF Series

Mid Size Snap-acting Switches

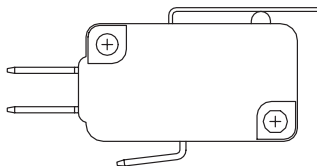
ACTUATOR

SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)							MINIMUM RELEASE FORCE (OZ./GRAMS)							MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)	CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)	ALL FORCES	ALL FORCES	ALL FORCES
A10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
A15	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
A20	0.53 15	0.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	0.07 2	0.11 3	0.11 3	0.18 5	0.42 12	0.71 20	1.41 40	0.025 (0,64)	0.12 (3,05)	0.055 (1,40)
A25	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
P00	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.98 56	3.88 110	.010 (0,25)	.047 (1,19)	.050 (1,27)
T10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
T13	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
T14	.28 8	.42 12	1.23 35	1.76 45	3.17 90	4.76 135	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.060 (1,52)
T15	.25 7	.42 12	1.06 30	1.41 40	2.82 80	4.41 125	7.94 225	.07 2	.14 4	.14 4	.18 5	.28 8	.63 18	2.82 80	.030 (0,76)	.110 (2,79)	.065 (1,65)
T16	.18 5	.28 8	.53 15	.78 22	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.28 8	.35 10	.71 20	.045 (1,14)	.250 (6,35)	.125 (3,18)
T18	N/A	.21 6	.42 12	.71 20	1.41 40	2.12 60	3.53 100	N/A	.04 1	.04 1	.07 2	.18 5	.28 8	.56 16	.062 (1,57)	.300 (7,62)	.155 (3,94)
T20	.53 15	.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.030 (0,76)	.140 (3,56)	.060 (1,52)
T23	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
T24	0.18 5	0.28 8	0.56 16	0.88 25	1.76 50	2.65 75	4.76 135	0.04 1	0.07 2	0.07 2	0.11 3	0.21 6	0.35 10	0.71 20	.005 (1,27)	0.23 (5,84)	0.11 (2,79)
T25	.18 5	.28 8	.53 15	.88 25	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.99 28	.055 (1,40)	.250 (6,35)	.125 (3,18)
T26	N/A	.14 4	.28 8	.42 12	.85 24	1.27 36	2.26 64	N/A	.04 1	.04 1	.05 1.5	.12 3.5	.21 6	.39 11	.100 (2,54)	.500 (12,70)	.235 (5,97)
T28	N/A	N/A	N/A	0.42 12	0.71 20	1.06 30	1.94 55	N/A	N/A	N/A	0.04 1	0.11 3	0.18 5	0.32 9	.012 (3,05)	.0560 (14,22)	.0285 (7,24)
WP0	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.97 56	3.88 110	.010 (0,25)	.047 (1,19)	.030 (0,51)

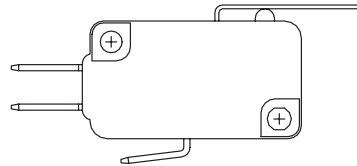
NOTE: For basic switch operating forces, see page J-6.

HIGH FORCE, LOW MOTION PIVOT POSITION



Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

NOTE: Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.



Third Angle Projection

Dimensions are shown: Inch (mm)

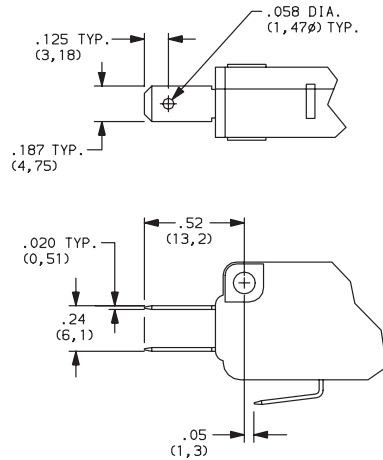
Specifications and dimensions subject to change

C&K

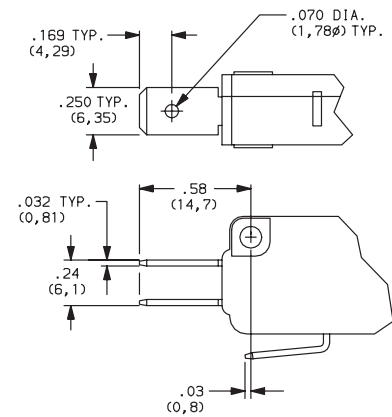
TF Series Mid Size Snap-acting Switches

TERMINATIONS

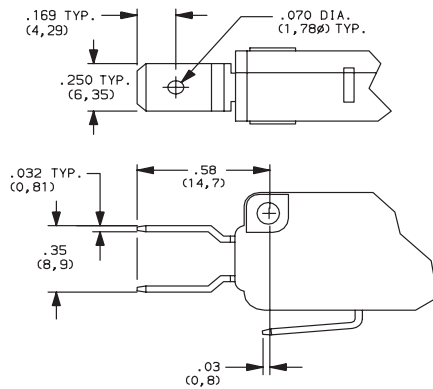
40 .187" QUICK CONNECT



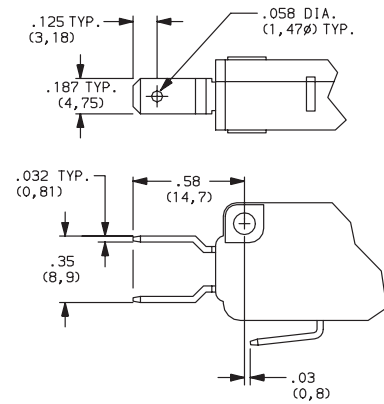
4A .250" QUICK CONNECT



5A OFFSET .250" QUICK CONNECT



5B OFFSET .187" QUICK CONNECT



Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)

TFS Series

Splash Proof Mid Size Snap-acting Switches



Features/Benefits

- Reliable snap action mechanism
- Low cost - high performance
- RoHS compatible

Typical Applications

- Alarm devices / Home security
- Air conditioner
- Food processor
- Water heaters
- Industrial
- Forklifts

UL61058-1



Specifications

CONTACT RATING / ELECTRICAL LIFE:

- 0.1A @ 125/250 V AC / 10,000 operations
- 3A @ 125/250 VAC / 10,000 operations
- 6A @ 125/250 VAC / 10,000 operations
- 10A @ 125/250 VAC / 10,000 operations

ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.

MECHANICAL LIFE: 1,000,000 operations

MECHANICAL OPERATING FREQUENCY: 120 operations per min.

INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.

DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)

OPERATING TEMPERATURE: -40°C to 85°C (with no icing)

OPERATING FORCE: 200 grams.

Materials

CASE: Nylon

COVER: PBT

ACTUATOR: PBT

MOVABLE CONTACTS: Silver alloy

TERMINALS: Brass

LEVER: Stainless steel

WIRE: PVC+CU

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Electrical Rating

ELECTRICAL RATING	AMPS (GRAMS)	OPERATING FORCE				
		S (200)	D (50)	J (100)	L (150)	H (300)
01	0.1	•	•	•	•	•
03	3	•	•	•	•	•
06	6	•	•	•	•	•
10	10	•	X	X	X	•

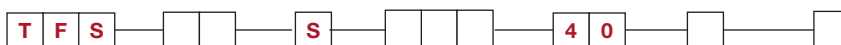
- Available
- X Not available

Operating Force

- S 200 grams
- D 50 grams
- J 100 grams
- L 150 grams
- H 300 grams

Actuator Lever Fixed

- P00 Button
- T10 Lever - high force
- T20 Lever - low force
- A05 Lever roller - High force, short lever
- A10 Lever roller - high force
- A20 Lever roller - low force
- A25 Lever roller - Low force, short lever



Circuit Arrangement

- C SPDT
- Y SPST N.O.
- W SPST N.C.

Mounting Hole Size

- NONE 3.1 mm (3 mm screw clearance hole)
- S 2.9 mm (4-40 screw clearance hole)

Terminal Type

- 40 .187" quick connect



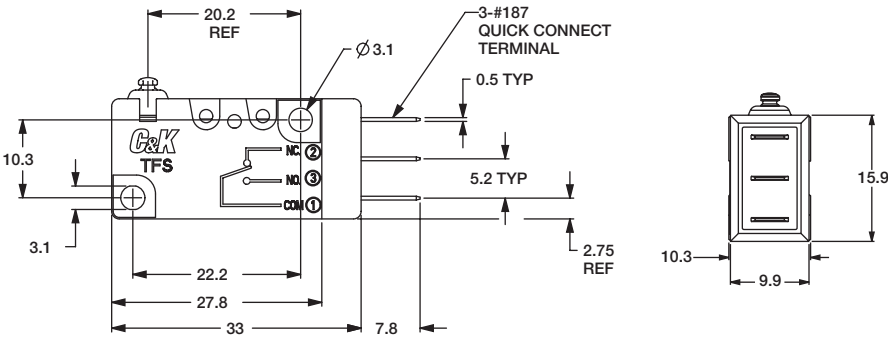
Dimensions are shown: mm
Specifications and dimensions subject to change

www.ckswitches.com

TFS Series Splash Proof Mid Size Snap-acting Switches

SERIES

TFS MID SIZE SNAP-ACTING SWITCHES



ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
10	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
06	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
03	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
01	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
S	200 GRAMS
D	50 grams
J	100 grams
L	150 grams
H	300 grams

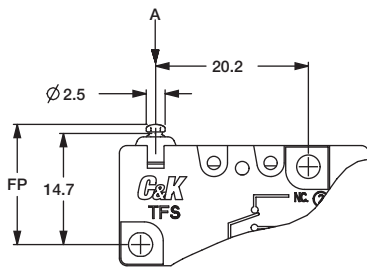


Snap-acting

TFS Series Splash Proof Mid Size Snap-acting Switches

ACTUATOR

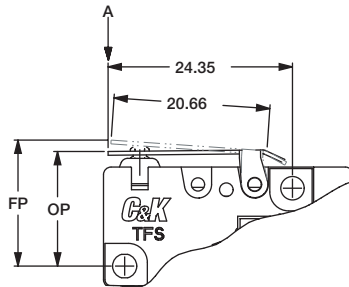
P00 BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

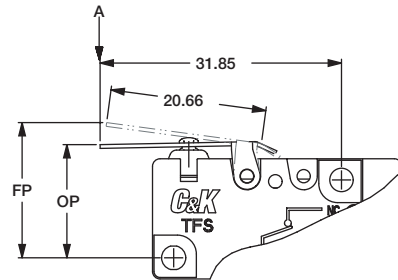
T10 LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

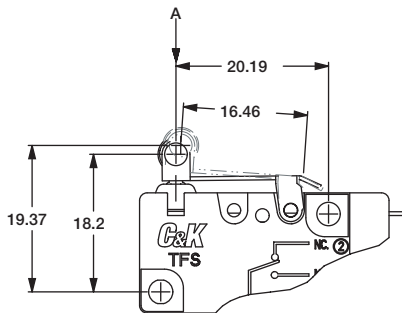
T20 LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

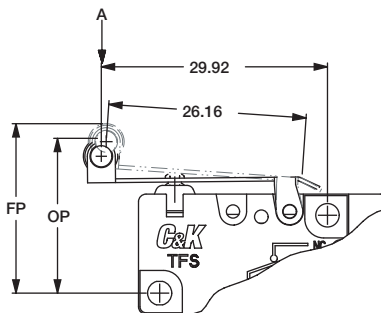
A05 LEVER ROLLER
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

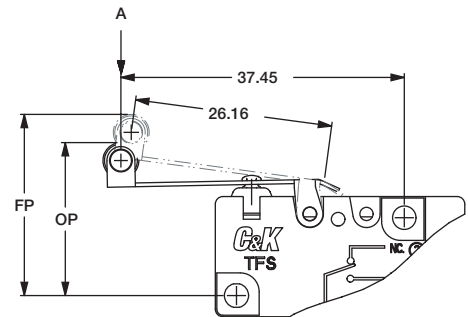
A10 LEVER ROLLER
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

A20 LEVER ROLLER
LOW FORCE



Measure at Point "A"

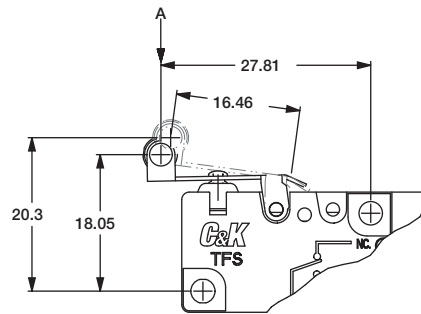
Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm

Snap-acting

TFS Series Splash Proof Mid Size Snap-acting Switches

ACTUATOR

A25 LEVER ROLLER
LOW FORCE, SHORT LEVER

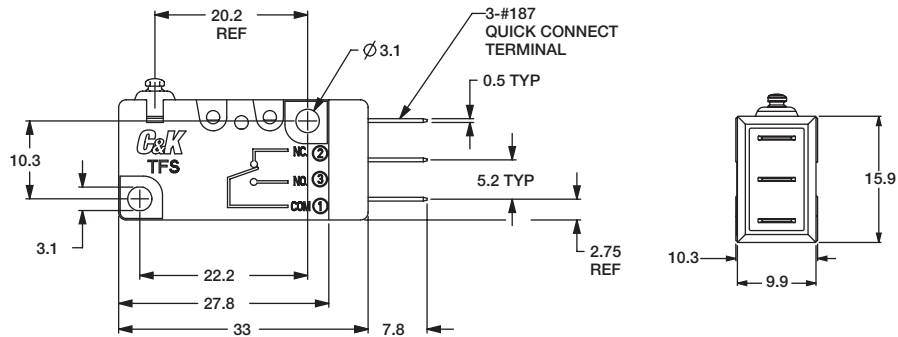


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

TERMINAL TYPE

40 .187" QUICK CONNECT



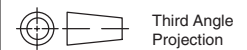
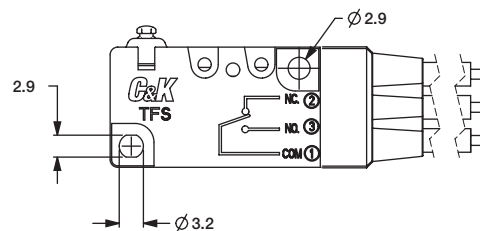
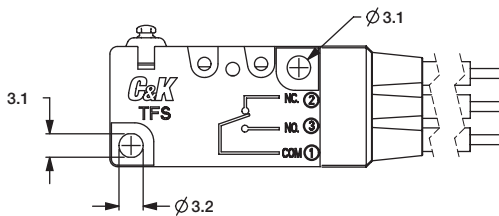
CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

MOUNTING HOLE SIZE

NONE 3.1 mm (3mm SCREW CLEARANCE HOLE)

S 2.9 mm (4-40 SCREW CLEARANCE HOLE)



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

C&K

TFS Series

Sealed Mid Size Snap-acting Switches (Water Proof)



Features/Benefits

- IP67
- Reliable snap action mechanism
- Low cost - high performance
- RoHS compatible

Typical Applications

- Alarm devices / Home security
- Air conditioner
- Food processor
- Water heaters
- Industrial
- Forklifts

UL61058-1



Specifications

CONTACT RATING / ELECTRICAL LIFE:

- 0.1A @ 125/250 V AC / 10,000 operations
- 3A @ 125/250 VAC / 10,000 operations
- 6A @ 125/250 VAC / 10,000 operations
- 10A @ 125/250 VAC / 10,000 operations

ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.

MECHANICAL LIFE: 1,000,000 operations

MECHANICAL OPERATING FREQUENCY: 120 operations per min.

INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.

DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)

OPERATING TEMPERATURE: see wire type

OPERATING FORCE: 200 grams.

Materials

CASE: Nylon

COVER: PBT

ACTUATOR:PBT

MOVABLE CONTACTS: Silver alloy.

TERMINALS: Brass.

LEVER: Stainless steel

WIRE: PVC+CU

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Electrical Rating see chart below		Operating Force S 200 grams D 50 grams J 100 grams L 150 grams H 300 grams		Actuator Lever Fixed P00 Button T10 Lever - high force T20 Lever - low force A05 Lever roller - High force, short lever A10 Lever roller - high force A20 Lever roller - low force A25 Lever roller - Low force, short lever		Circuit Arrangement C SPDT Y SPST N.O. W SPST N.C.		Wire UL # B UL1015 (T55)		Mounting Hole Size NONE 3.1 mm (3 mm screw clearance hole) S 2.9 mm (4-40 screw clearance hole)	
Terminal Type W Wire		Wire Type C 16 AWG D 18 AWG E 20 AWG F 22 AWG G 24 AWG H 26 AWG		OPERATING TEMPERATURE -40°C to + 85°C (with UL1015 wire)							

ELECTRICAL RATING	AMPS	WIRE TYPE					
		C 16AWG	D 18AWG	E 20AWG	F 22AWG	G 24AWG	H 26AWG
01	0.1	•	•	•	•	•	•
03	3	•	•	•	X	X	X
06	6	•	•	X	X	X	X
10	10	•	X	X	X	X	X

• Available
X Not available



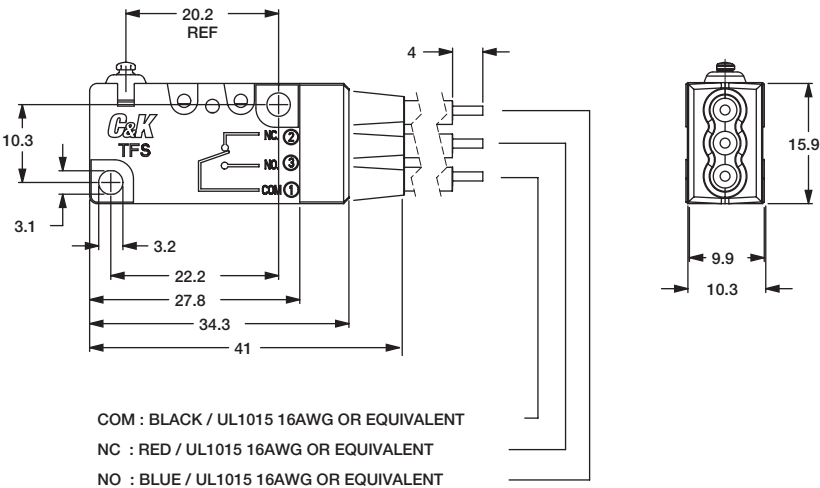
Dimensions are shown: mm
Specifications and dimensions subject to change

TFS Series

Sealed Mid Size Snap-acting Switches (Water Proof)

SERIES

TFS MID SIZE SNAP-ACTING SWITCHES – WATERPROOF



ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
10	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
06	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
03	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
01	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations

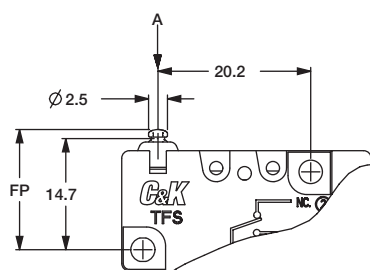
OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
S	200 GRAMS
D	50 grams
J	100 grams
L	150 grams
H	300 grams

TFS Series Sealed Mid Size Snap-acting Switches (Water Proof)

ACTUATOR

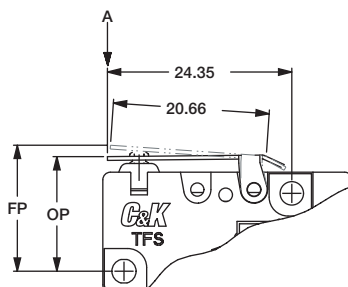
P00 BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

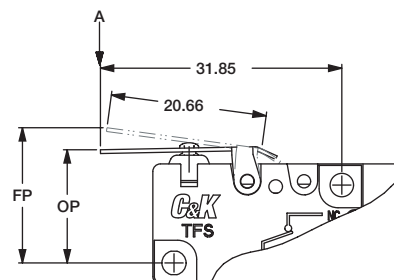
T10 LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

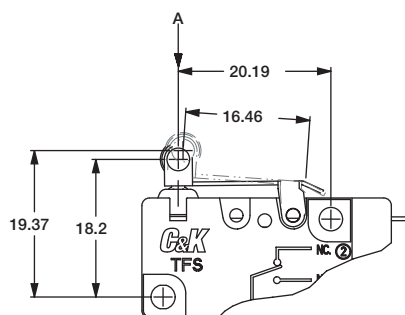
T20 LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

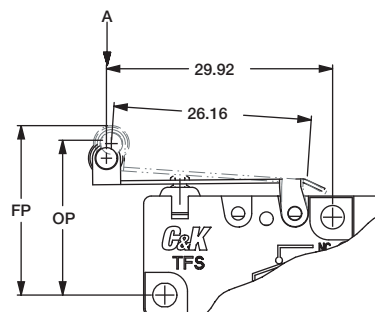
A05 LEVER ROLLER
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

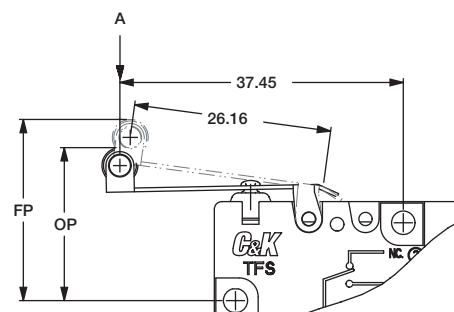
A10 LEVER ROLLER
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

A20 LEVER ROLLER
LOW FORCE



Measure at Point "A"

Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm



Third Angle
Projection

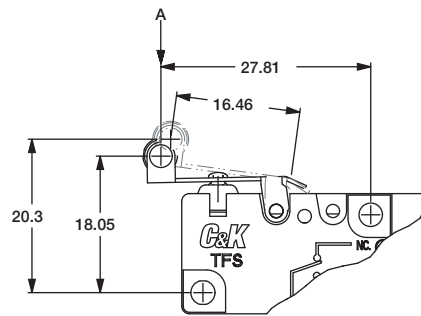
Dimensions are shown: (mm)

Specifications and dimensions subject to change

TFS Series Sealed Mid Size Snap-acting Switches (Water Proof)

ACTUATOR

A25 LEVER ROLLER
LOW FORCE, SHORT LEVER

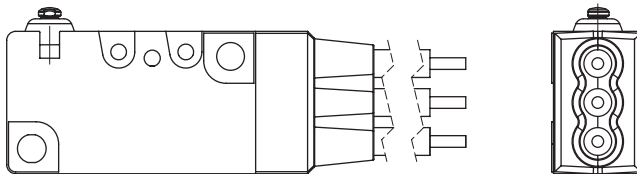


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

TERMINAL TYPE

W WIRE UL1015



CIRCUITRY

C SPDT (Single Pole, Double Throw)
Y SPST N.O. (Single Pole, Single Throw, Normally Open)
W SPST N.C. (Single Pole, Single Throw, Normally Closed)

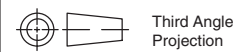
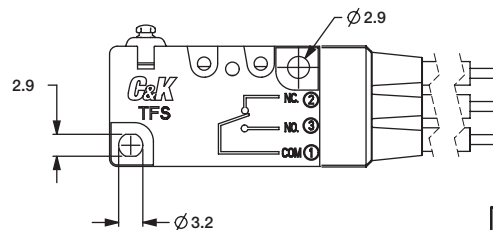
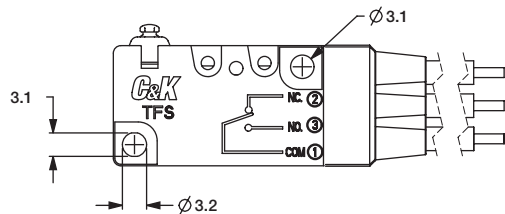
WIRE TYPE

C 16 AWG
D 18 AWG
E 20 AWG
F 22 AWG
G 24 AWG
H 26 AWG

MOUNTING HOLE SIZE

NONE 3.1 mm (3mm SCREW CLEARANCE HOLE)

S 2.9 mm (4-40 SCREW CLEARANCE HOLE)



Third Angle
Projection

C&K

Dimensions are shown: (mm)
Specifications and dimensions subject to change

TF2 Series Mid Size Snap-acting Switches



Features/Benefits

- Broad range of operating forces
- Ratings up to 10 AMPS
- Wide variety of actuator styles
- Quick connect terminations

Typical Applications

- Motor controls
- Thermostatics
- Portable tools
- Air Conditioner

Specifications

CONTACT RATING: From low level* to 10 AMPS @125/250 V AC.

ELECTRICAL LIFE: 10,000 cycles

MECHANICAL LIFE: 1,000,000 cycles at 0.1A and 6A

400,000 cycles at 10A

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -40°C to 125°C (-40°C to 85°C).

OPERATING FORCE: From 18 to 330 grams at actuator button available.

MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Materials

SWITCH HOUSING: Nylon 6/6

ACTUATOR BUTTON: Nylon 6/6

SPRING: Stainless Steel

PIVOT: Brass Alloy

MOVABLE CONTACTS: See electric rating page J-21

MOVABLE BLADE: BeCu

STATIONARY CONTACTS: See electric rating page J-21

TERMINALS: Brass Alloy

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



Series

TF2 SP, Mom.

Operating Force

CC 18 grams
CF 45 grams
CG 75 grams
CH 110 grams
CJ 170 grams
EC 230 grams
EE 330 grams

Electrical Rating Chart

OPTION CODE	61058-1	
F5	0.1A 125/250 V AC (T85) Min. 10,000 operations	0.1A 125/250 V AC μT125, 1E4
H8	6A 125/250 V AC (T85) Min. 10,000 operations	6A 125/250 V AC μT125, 1E4
K6	10A 125/250 V AC (T85) Min. 10,000 operations	10(4)A 125/250 V AC μT125, 1E4

Mounting Style

S Standard
V Metric

Actuator

P00 Pin plunger
A10 Lever roller 12.5 mm
A15 Lever roller 25.9 mm
A20 Lever roller 12.5 mm
A25 Lever roller 25.9 mm
T10 Lever 14 mm
T14 Simulated roller 24.5 mm
T15 Lever 27.5 mm
T16 Lever 31.7 mm
T17 Lever 35 mm
T20 Lever 14 mm
T24 Simulated lever 24.5 mm
T25 Lever 27.5 mm
T26 Lever 31.7 mm
T27 Lever 35 mm

Circuitry

C SPDT
W SPST N.C.
Y SPST N.O.

Terminations

40 .187" quick connect
4A .250" quick connect
5A .250" off set quick connect
5B .187" off set quick connect
60 Screw style *
10 Solder

* Note: No UL & ENEC 15 safety for Termination option "60"

see chart on following pages for detailed information



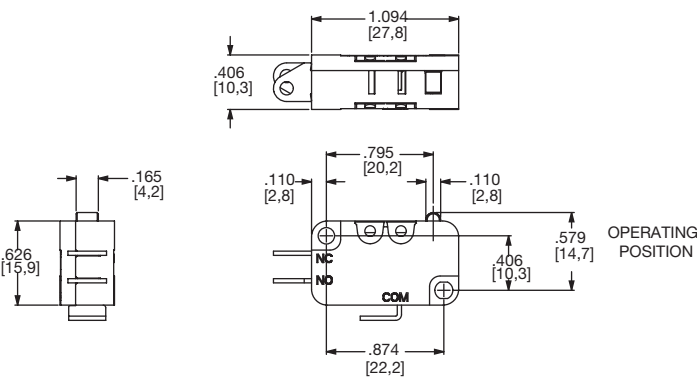
Dimensions are shown: mm
Specifications and dimensions subject to change

www.ckswitches.com

TF2 Series Mid Size Snap-acting Switches

SERIES

TF2 MID SIZE SNAP-ACTING SWITCHES



OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (grams)
CC	18
CF	45
CG	75
CH	110
CJ	170
EC	230
EE*	330

*Minimums may apply, consult Customer Service Center.

ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		MOVABLE CONTACT	STATIONARY CONTACT
	RoHS COMPLIANT *	RoHS COMPATIBLE *		
F5	Yes	Yes	Silver alloy	Silver alloy
H8	Yes	Yes		
K6	Yes	Yes		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

All models  



Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

TF2 Series

Mid Size Snap-acting Switches

ELECTRICAL RATING

INTERNATIONAL RATING SYMBOLS	
μ	Microgap construction (less than 3 mm).
~	Alternating current.
T__	Maximum rated use temperature.
50E3	Cycles over 50,000 at rated current.
10E3	Cycles over 10,000 at rated current.
10(3)	Current Rating: First number represents resistive rating; second number represents inductive (motor) rating.

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (18)	CF (45)	CG (75)	CH (110)	CJ (170)	EC (230)	EE (330)
F5	0.1	•	•	•	•	•	•	X
H8	6	X	•	•	•	•	•	•
K6	10	X	X	X	•	•	•	•

• AVAILABLE
 x NOT AVAILABLE

All models 

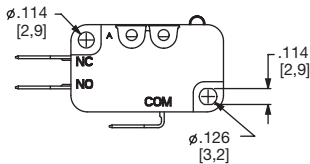
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Snap-acting

MOUNTING STYLE

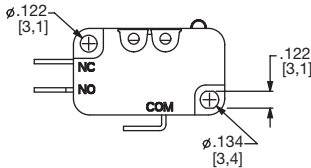
S STANDARD
 For 4-40 screw size



TF2 SWITCH WITH TYPE 40 (.187 QC) TERMINALS AND P00 ACTUATOR SHOWN

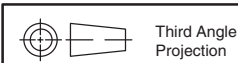
NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.

V Metric
 For 3 mm screw size



TF2 SWITCH WITH TYPE 10 (SOLDER) TERMINALS AND P00 ACTUATOR SHOWN

NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.



Dimensions are shown: inches (mm)
 Specifications and dimensions subject to change

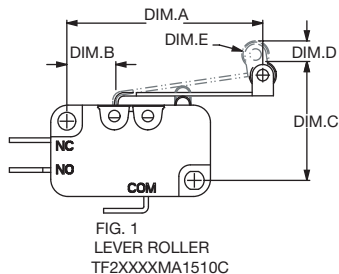
TF2 Series Mid Size Snap-acting Switches

ACTUATOR

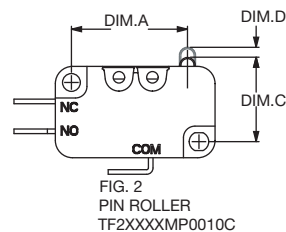
OPTION CODE	FIG	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E
P00	2	.795 (20,2)	-	.578 ± .019 (14,70 ± 0,05)	0.068 (1,72)	-
A10	1	.822 (20,9)	.33 (8,4)	.816 ± .050 (20,73 ± 1,27)	.106 (2,70)	Ø .19 (Ø 4,8)
A15	1	1.35 (34,3)	.33 (8,4)	.816 ± .059 (20,73 ± 1,5)	.165 (4,20)	Ø .19 (Ø 4,8)
A20	1	1.05 (26,8)	.56 (14,3)	.816 ± .050 (20,73 ± 1,27)	.183 (4,65)	Ø .19 (Ø 4,8)
A25	1	1.58 (40,2)	.56 (14,3)	.816 ± .086 (20,73 ± 2,2)	.366 (9,30)	Ø .19 (Ø 4,8)
T10	3	.882 (22,39)	.33 (8,4)	.602 ± .020 (15,3 ± 0,50)	.110 (2,80)	-
T14	4	1.295 (32,9)	.33 (8,4)	.737 ± .059 (18,72 ± 1,5)	.216 (5,50)	Ø .275 (Ø 7,0)
T15	3	1.405 (35,69)	.33 (8,4)	.600 ± .059 (15,24 ± 1,5)	.232 (5,90)	-
T16	3	1.58 (40,01)	.33 (8,4)	.604 ± .068 (15,35 ± 1,75)	.196 (5,0)	-
T17	3	1.708 (43,39)	.33 (8,4)	.603 ± .062 (15,33 ± 1,57)	.216 (5,50)	-
T20	3	1.11 (28,3)	.56 (14,3)	.604 ± .045 (15,34 ± 1,14)	.204 (5,20)	-
T24	4	1.527 (38,8)	.56 (14,3)	.742 ± .090 (18,84 ± 2,29)	.342 (8,70)	Ø .275 (Ø 7,0)
T25	3	1.631 (41,43)	.56 (14,3)	.609 ± .090 (15,47 ± 2,3)	.381 (9,70)	-
T26	3	1.811 (46,00)	.56 (14,3)	.616 ± .125 (15,65 ± 3,18)	.389 (9,90)	-
T27	3	1.94 (49,3)	.56 (14,3)	.598 ± .150 (15,2 ± 3,8)	.433 (11,0)	-

NOTE: Switch characteristics chart on following page.

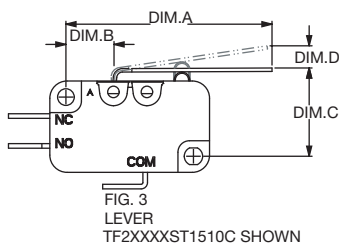
Lever Roller



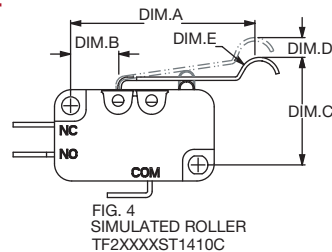
Pin Roller



Lever



Simulated Roller



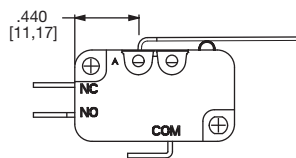
Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

TF2 Series Mid Size Snap-acting Switches

ACTUATOR

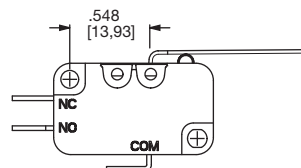
Lever Type		CC	CF	CG	CH Grams	CJ	EC	EE	Pre-Travel max. mm	Max Differential max. mm	Over Travel Min. mm
P00	OF	18	45	75	110	170	230	330	1.72	0.4	0.8
	RF	3	7	14	20	34	42	60			
T10	OF	18	45	75	110	170	230	330	2.8	0.5	0.6
	RF	-	6	11	17	25	35	50			
T20	OF	8	27	43	50	85	120	175	5.2	0.9	1.55
	RF	-	3	5	7	13	17	25			
T14	OF	10	28	43	65	110	140	205	5.5	1.1	1.4
	RF	-	3	5	8	14	17	31			
T24	OF	7	16	24	35	56	70	100	8.7	1.7	3.2
	RF	-	-	-	4	5	9	12			
A10	OF	20	55	80	110	170	230	330	2.7	0.45	0.6
	RF	-	5	11	16	28	31	45			
A20	OF	8	35	55	70	100	120	175	4.65	0.8	1.4
	RF	-	3	5	7	14	18	28			
A15	OF	8	30	45	65	100	125	180	4.2	1.25	1.6
	RF	-	-	5	7	12	16	25			
A25	OF	7	20	30	40	51	65	90	9.3	1.8	2.8
	RF	-	-	-	-	6	8	9			
T17	OF	16	25	35	50	80	100	140	5.5	1.2	0.55
	RF	-	2	4	6	11	14	20			
T27	OF	13	18	24	32	45	55	90	11	2.3	3.6
	RF	-	-	2	3	5	7	10			
T16	OF	15	17	32	55	85	110	150	5	1.05	1.8
	RF	-	-	4	6	12	15	22			
T26	OF	10	12	18	35	45	65	90	9.9	2.05	3.6
	RF	-	-	2	4	6	8	11			
T15	OF	18	22	37	50	86	125	180	5.9	1	1.6
	RF	-	3	5	9	14	17	24			
T25	OF	5	16	25	30	51	65	90	9.7	2.2	3.1
	RF	-	-	3	4	6	8	11			

HIGH FORCE, LOW MOTION PIVOT POSITION



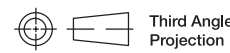
Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

NOTE: Lever actuator options are available in either of two pivot positions.
Levers located in the forward pivot position have lower forces and higher motions.
Levers located in the rear pivot position have higher forces and lower motions.



Third Angle
Projection

Dimensions are shown: mm

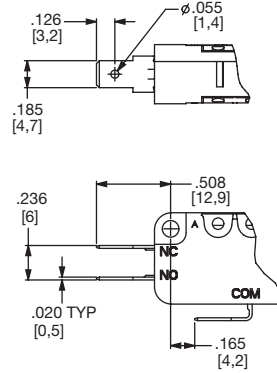
Specifications and dimensions subject to change



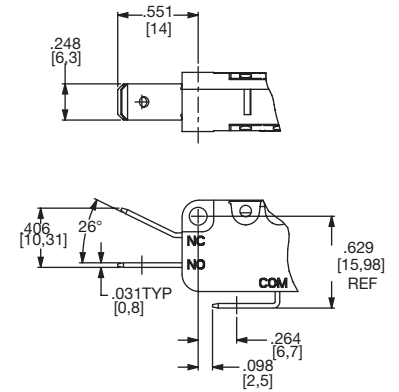
TF2 Series Mid Size Snap-acting Switches

TERMINATIONS

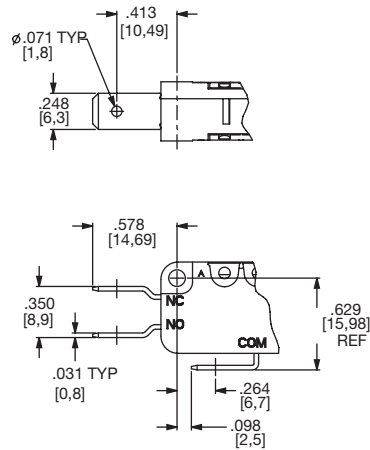
40 .187" QUICK CONNECT



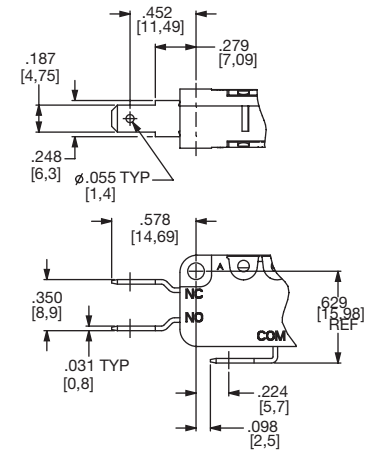
4A .250" QUICK CONNECT



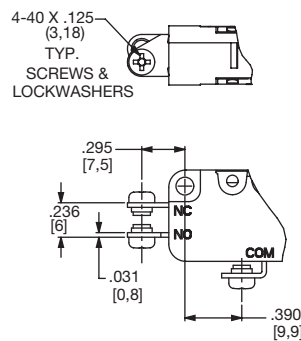
5A .250" OFF SET QUICK CONNECT



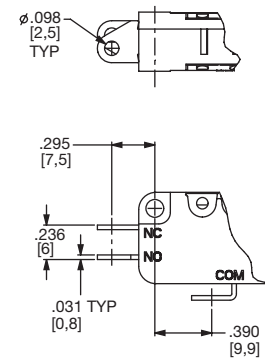
5B .187" OFF SET QUICK CONNECT



60 SCREW STYLE



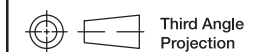
10 SOLDER



Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle
Projection

Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

C&K

TF3 Series

Mid Size Snap-acting Switches (Full Disconnection - Gap >3 mm)



UL61058-1



Features/Benefits

- Broad range of operating forces
- Ratings up to 25 AMPS
- Wide variety of actuator styles
- Quick connect terminations
- Extreme operating temperature up to 125°C

Typical Applications

- Heavy duty power tools
- Motor controls
- HVAC

Specifications

CONTACT RATING: From 10A to 25A @ 125/250 V AC
 ELECTRICAL LIFE: 10,000 cycles
 MECHANICAL LIFE: 500,000 cycles
 INSULATION RESISTANCE: 100 M ohm min.
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level
 OPERATING TEMPERATURE: -40°C to 125°C
 OPERATING FORCE: Refer to chart for lever style forces
 MOUNTING: Torque screws 2-5 in/lbs.

Materials

SWITCH HOUSING: PBT
 COVER: PBT
 ACTUATOR BUTTON: Nylon
 SPRING: SWP
 PIVOT: Copper
 MOVABLE CONTACTS: Silver Alloy
 MOVABLE BLADE: Copper Alloy
 STATIONARY CONTACTS: Silver Alloy
 TERMINALS: Copper

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Series
TF3 SP, Mom.

Electrical Rating
10 10.1A 125/250 VAC
16 16A 125/250 VAC
20 20.1A 125/250 VAC
25 25A 125/250 VAC

Operating Force

OPTION CODE	OPERATING FORCE
CF	Refer to operating force table
CG	
CJ	
EC	
EK	

Actuator
P00 Pin plunger
T10 Lever 14 mm
T15 Lever 27.5 mm
T30 Lever 51.3 mm
T24 Simulated roller 24.5 mm
A10 Lever roller 12.5 mm
A15 Lever roller 25.9 mm

Circuitry
Y SPST N.O.

Terminations
40 .187" quick connect
4A .250" quick connect

T

F

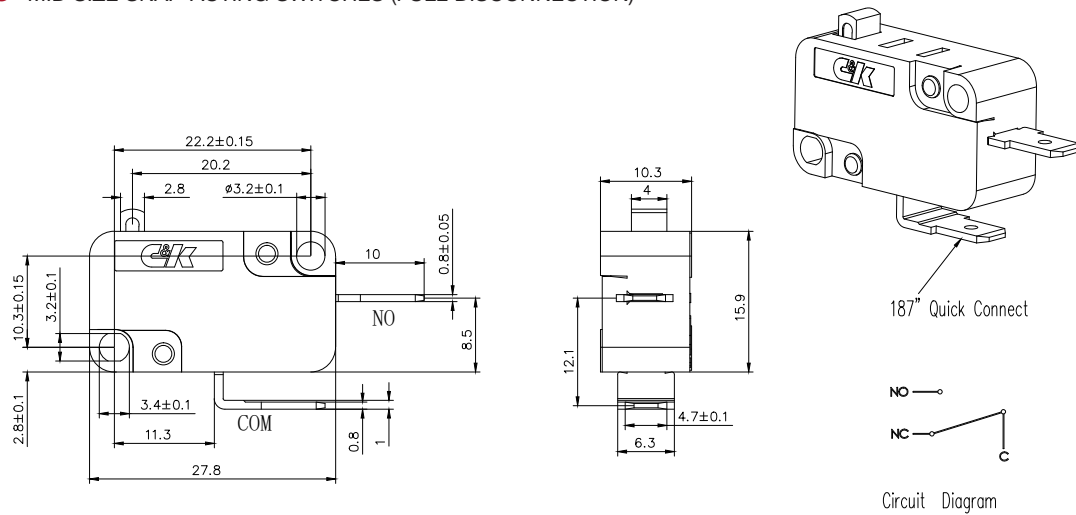
3



TF3 Series Mid Size Snap-acting Switches (Full Disconnection - Gap >3 mm)

SERIES

TF3 MID SIZE SNAP-ACTING SWITCHES (FULL DISCONNECTION)



ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
10	Yes	Yes	10.1A @ 125/250 V AC
16	Yes	Yes	16A @ 125/250 V AC
20	Yes	Yes	20A @ 125/250 V AC
25	Yes	Yes	25A @ 125/250 V AC

OPERATING FORCE WITH ASSOCIATED ACTUATOR

OPTION CODE	OPERATING FORCE MAX. (grams)		
	CF	CG	CJ
P00	190	510	842
T10	190	510	753
T15	100	260	374
A10	190	510	842
A15	102	275	395
	EC	EE	EK
T30	46	80	115
T24	88	170	235

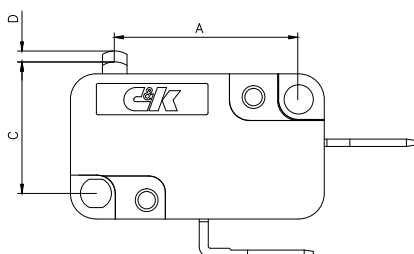
TF3 Series

Mid Size Snap-acting Switches (Full Disconnection - Gap >3 mm)

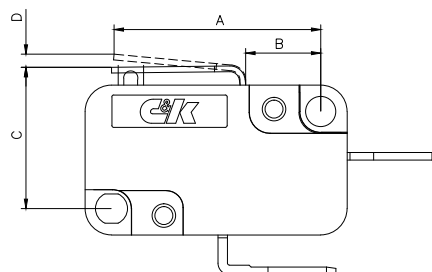
ACTUATOR

OPTION CODE	'A'	'B'	'C'	'D'	'E'
P00	20.2	8	14.4 ± 0.5	1.9	-
T10	21.94	8	15.0 ± 0.8	2.4	-
T15	35.38	8	15.0 ± 1.5	4.8	-
A10	20.61	8	20.4 ± 0.7	2.2	Ø 4.8
A15	33.57	8	20.4 ± 1.4	4.5	Ø 4.8
T30	65.11	14	15.0 ± 4.7	15	-
T24	38.43	14	18.4 ± 2.0	7.2	Ø 7

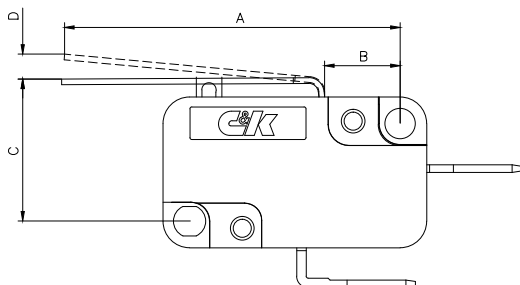
P00 Pin Plunger



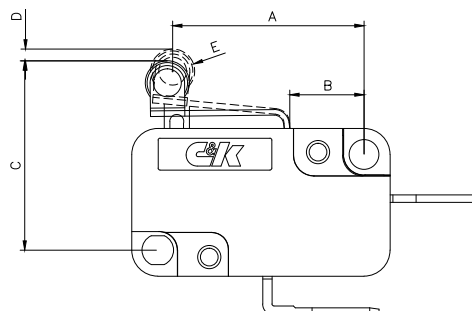
T10 Lever 14 mm



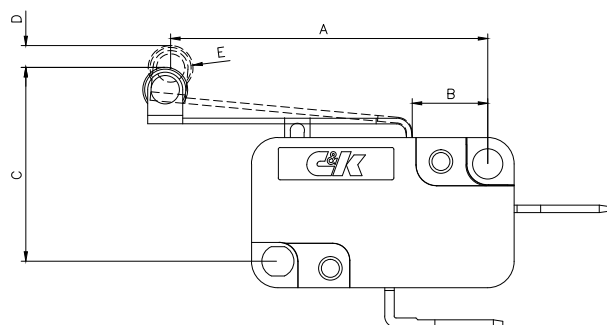
T15 Lever 27.5 mm



A10 Lever Roller 12.5 mm



A15 Lever Roller 25.9 mm

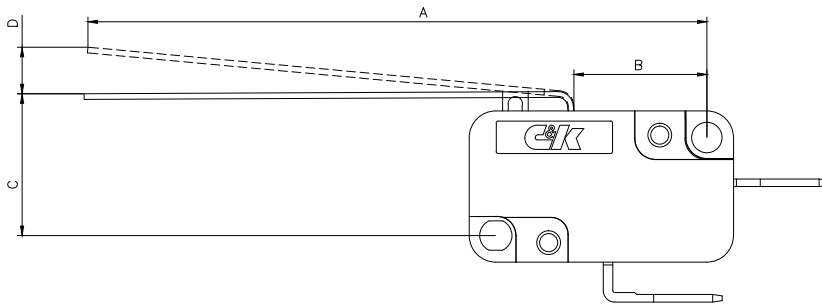


Snap-acting

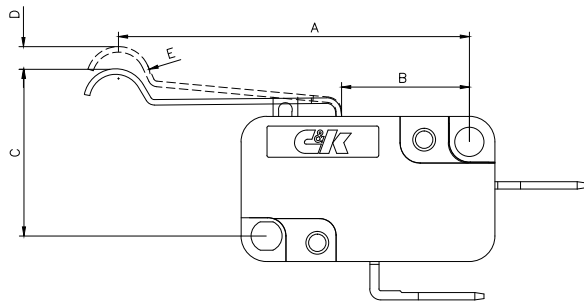
TF3 Series Mid Size Snap-acting Switches (Full Disconnection - Gap >3 mm)

ACTUATOR

T30 Lever 51.3 mm



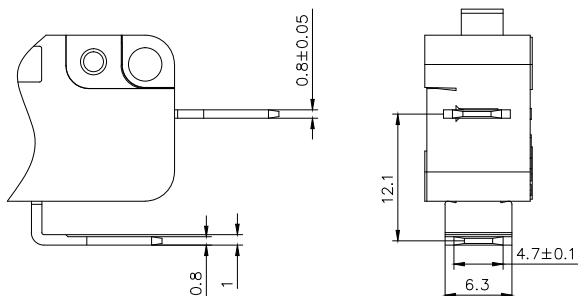
T24 Simulated Roller 24.5 mm



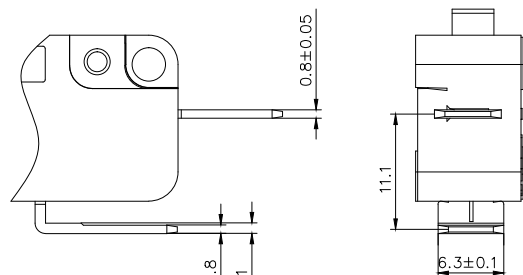
OPTION CODE	OPERATING FORCE MAX. (grams)			OPERATING POSITION (mm)	PRE-TRAVEL MAX. (mm)	OVER-TRAVEL MIN. (mm)	MAX. DIFFERENTIAL MAX. (mm)
	CF	CG	CJ				
P00	190	510	842	14.4 ± 0.5	1.9	0.7	1.2
T10	190	510	753	15.0 ± 0.8	2.4	0.5	1.4
T15	100	260	374	15.0 ± 1.5	4.8	1.0	2.7
A10	190	510	842	20.4 ± 0.7	2.2	0.4	1.2
A15	102	275	395	20.4 ± 1.4	4.5	0.9	2.6
	EC	EE	EK				
T30	46	80	115	15.0 ± 4.7	15	3.1	7
T24	88	170	235	18.4 ± 2.0	7.2	1.5	2.9

TERMINATIONS

40 .187" Quick Connect



4A .250" Quick Connect



Third Angle Projection

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

TM Series Mid Size Snap-acting Switches



Features/Benefits

- Broad range of operating forces available
- Wide variety of actuator and terminal styles
- Cost-effective solution

Typical Applications

- Pumps and motors
- White goods
- Consumer appliances



Specifications

CONTACT RATING: From low level* to 15 AMPS @ 250 V AC.

ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC, models with 150 grams operating force. 350,000 cycles at 10 AMPS @ 250 V AC, models with 75 grams operating force.

INSULATION RESISTANCE: 1,000 M ohms min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

OPERATING FORCE: 50, 75 and 150 grams at actuator available; refer to chart for lever style forces.

MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP @ 125 V AC or less. Fine silver for ratings greater than 1 AMP @ 125 V AC.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP.

TERMINALS: Brass alloy for ratings up to 10 AMPS @ 250 V AC. Copper alloy for 15 AMPS @ 250 V AC ratings.

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Available extended electrical life per UL 1054, rated for 100,000 operations, consult factory.

Series TM SP, Mom.	Mounting Style S Standard V Metric
Operating Force CG 2.65 oz./75 grams CJ 5.29 oz./150 grams CF 1.76 oz./50 grams	Actuator P00 Pin plunger A10 .81" lever roller, high force A15 1.34" lever roller, high force A20 1.02" lever roller, low force A25 1.56" lever roller, low force T10 .84" lever, high force T13 1.34" simulated roller, high force T14 1.29" simulated roller, high force T15 1.40" lever, high force T16 2.34" lever, high force T17 2.00" lever, high force T18 2.75" lever, high force T20 1.06" lever, low force T23 1.56" simulated roller, low force T24 1.50" simulated roller, low force T25 1.62" lever, low force T26 2.56" lever, low force T27 2.22" lever, low force T28 2.97" lever, low force
Electrical Rating D6 10 A @ 125 & 250 V AC; 1/3 HP @ 125 & 250 V AC; 1/2 A @ 125 V DC; 1/4 A @ 250 V DC G6 15 A @ 125 & 250 V AC; 1/4 A @ 250 V DC; 1/2 A @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 A @ 125 V AC "L" F5 1 A @ 125 V AC; 1 A @ 30 V DC H3 5 A @ 250 V AC; 1/6 HP @ 125 & 250 V AC	Terminations 40 .187" quick connect 10 Solder 4A .250" quick connect 60 Screw
Circuitry C SPDT W SPST N.C. Y SPST N.O.	

* All models



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

SERIES

[illegible]

Snap-acting

www.ckswitches.com

TM Series

Mid Size Snap-acting Switches

ELECTRICAL RATING

AVAILABLE COMBINATIONS

ELECTRICAL RATING	MAXIMUM OPERATING FORCE (OZ./GRAMS)		
	1.76/50 CF	2.65/75 CG	5.29/150 CJ
D6	•	•	•
F5	•	•	•
G6	X	X	•
H3	•	•	•

• AVAILABLE
X NOT AVAILABLE



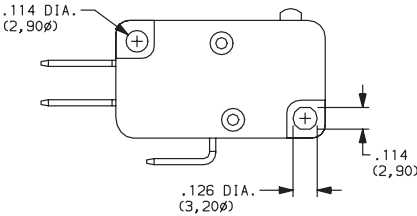
* All models  us
Contact Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

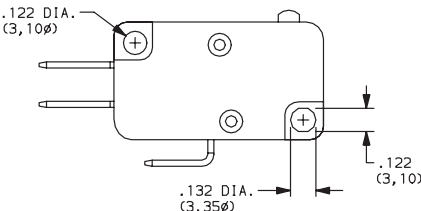
MOUNTING STYLE

S Standard

V Metric



Recommended maximum screw size: 4-40.



Recommended maximum screw size: 3 mm.

NOTE: Torque mounting screws 2-5 in/lbs.

TM Series Mid Size Snap-acting Switches

ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
P00	2	.80 (20,3)	—	.578 ± .015 (14,68 ± 0,38)	—
A10	1	.81 (20,6)	.36 (9,1)	.810 ± .020 (20,57 ± 0,51)	.19 dia. (4,80)
A15	1	1.34 (34,0)	.36 (9,1)	.810 ± .040 (20,57 ± 1,02)	.19 dia. (4,80)
A20	1	1.03 (26,2)	.58 (14,7)	.810 ± .050 (20,57 ± 1,27)	.19 dia. (4,80)
A25	1	1.56 (39,6)	.58 (14,7)	.810 ± .080 (20,57 ± 2,03)	.19 dia. (4,80)
T10	3	.84 (21,3)	.36 (9,1)	.600 ± .020 (15,24 ± 0,51)	—
T13	4	1.34 (34,0)	.36 (9,1)	.810 ± .040 (20,57 ± 1,02)	.19 dia. (4,80)
T14	4	1.28 (32,5)	.36 (9,1)	.743 ± .050 (18,9 ± 1,3)	.236 dia. (6,00)
T15	3	1.40 (35,6)	.36 (9,1)	.600 ± .040 (15,24 ± 1,02)	—
T16	3	2.34 (59,4)	.36 (9,1)	.600 ± .062 (15,24 ± 1,57)	—
T17	3	2.00 (50,8)	.36 (9,1)	.600 ± .052 (15,24 ± 1,57)	—
T18	3	2.75 (69,9)	.36 (9,1)	.600 ± .093 (15,24 ± 2,36)	—
T20	3	1.06 (26,9)	.58 (14,7)	.600 ± .045 (15,24 ± 1,14)	—
T23	4	1.56 (39,6)	.58 (14,7)	.810 ± .065 (20,57 ± 1,65)	.19 dia. (4,80)
T24	4	1.50 (38,1)	.58 (14,7)	.743 ± .090 (18,80 ± 2,29)	.236 dia. (6,00)
T25	3	1.62 (41,1)	.58 (14,7)	.600 ± .080 (15,24 ± 2,03)	—
T26	3	2.56 (65,0)	.56 (14,7)	.600±.125 (15,24±3.18)	—
T27	3	2.22 (56,4)	.58 (14,7)	.600±.125 (15,24±3.18)	—
T28	3	2.97 (75,4)	.58 (14,7)	.600±.187 (15,24±4.75)	—

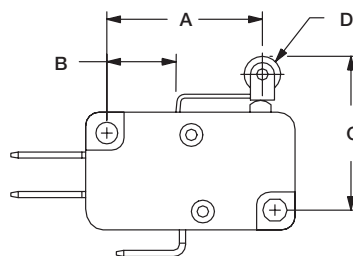


FIG. 1
Lever Roller

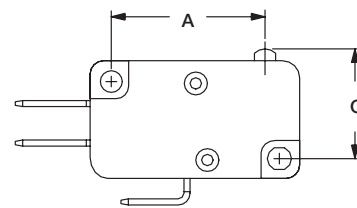


FIG. 2
Pin Roller

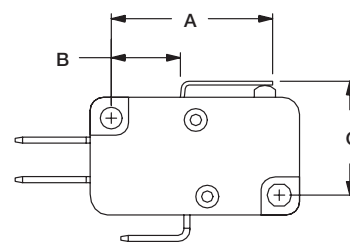


FIG. 3
Lever

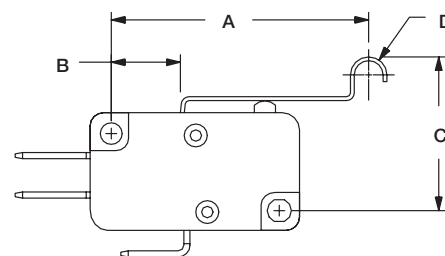
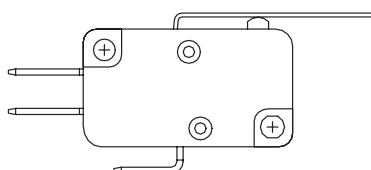


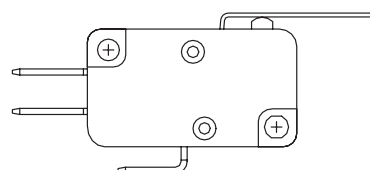
FIG. 4
Simulated Roller

HIGH FORCE, LOW MOTION PIVOT POSITION



Available with actuators A10, A15, T10, T13, T14, T15, T16, T17 and T18.

LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, T27 and T28.

NOTE: Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.

TM Series

Mid Size Snap-acting Switches

ACTUATOR

SWITCH CHARACTERISTICS

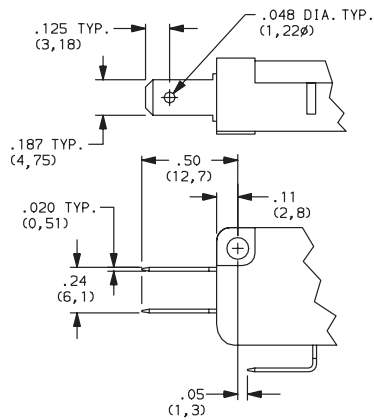
OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)			MINIMUM RELEASE FORCE (OZ./GRAMS)			MINIMUM RETURN FORCE (OZ./GRAMS)			MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
	CF (50)	CG (75)	CJ (150)	CF (50)	CG (75)	CJ (150)	CF (50)	CG (75)	CJ (150)	ALL FORCES	ALL FORCES	ALL FORCES
T10	2.12 60	3.17 90	6.35 180	.49 14	.99 28	1.69 48	.25 7	.53 15	1.06 30	.013 (0,33)	.080 (2,03)	.035 (0,89)
T13	1.06 30	1.59 45	2.82 80	.21 6	.35 10	.71 20	.11 3	.14 4	.35 10	.030 (0,76)	.160 (4,06)	.065 (1,65)
T13	1.06 30	1.76 50	3.17 90	.25 7	.35 10	.71 20	.11 3	.14 4	.35 10	.050 (1,27)	.140 (3,56)	.062 (1,57)
T15	1.06 30	1.59 45	2.28 80	.21 6	.32 9	.71 20	.11 3	.14 4	.35 10	.032 (0,81)	.160 (4,06)	.075 (1,90)
T16	.53 15	.71 20	1.41 40	.11 3	.18 5	.35 10	.05 1.5	.07 2	.18 5	.090 (2,29)	.312 (7,92)	.140 (3,56)
T17	.71 20	.88 25	1.76 50	.14 4	.21 6	.42 12	.07 2	.07 2	.21 6	.062 (1,57)	.220 (5,59)	.110 (2,79)
T18	N/A	.71 20	1.23 35	N/A	.14 4	.28 8	N/A	.04 1	.14 4	.078 (1,98)	.375 (9,52)	.160 (4,06)
T20	1.06 30	1.59 45	3.17 90	.21 6	.32 9	.71 20	.11 3	.18 5	.35 10	.030 (0,76)	.160 (4,06)	.065 (1,65)
T23	.53 15	1.06 30	1.59 45	.11 3	.18 5	.35 10	.04 1	.07 2	.18 5	.070 (1,78)	.312 (7,92)	.125 (3,18)
T24	.53 15	1.23 35	1.76 50	.11 3	.18 5	.35 10	.05 1.5	.07 2	.18 5	.080 (2,03)	.312 (7,92)	.110 (2,79)
T25	.71 20	1.06 30	1.41 40	.07 2	.14 4	.32 9	.04 1	.07 2	.16 4.5	.070 (1,78)	.330 (8,38)	.100 (2,54)
T26	N/A	.35 10	.71 20	N/A	.07 2	.18 5	N/A	.04 1	.07 2	.110 (2,79)	.500 (12,7)	.250 (6,35)
T27	N/A	.60 17	.88 25	N/A	.11 3	.21 6	N/A	.04 1	.11 3	.125 (3,18)	.500 (12,70)	.200 (5,08)
T28	N/A	.42 12	.63 18	N/A	.07 2	.14 4	N/A	.04 1	.07 2	.187 (4,75)	.750 (19,05)	.280 (7,11)
A10	2.12 60	3.17 90	6.35 180	.49 14	.99 28	1.69 48	.25 7	.53 15	1.06 30	.013 (0,33)	.070 (1,78)	.035 (0,89)
A15	1.06 30	1.59 45	2.82 80	.21 6	.35 10	.71 20	.11 3	.14 4	.35 10	.030 (0,76)	.160 (4,06)	.065 (1,65)
A20	1.06 30	1.76 50	3.17 90	.25 7	.35 10	.71 20	.11 3	.18 5	.35 10	.025 (0,64)	.140 (3,56)	.060 (1,52)
A25	.53 15	1.06 30	1.59 45	.11 3	.18 5	.35 10	.04 1	.07 2	.18 5	.070 (1,78)	.312 (7,92)	.125 (3,18)
P00	1.76 50	2.65 75	5.29 150	.71 20	.99 28	2.12 60	.35 10	.53 15	1.06 30	.013 (0,33)	.056 (1,42)	.035 (0,89)

NOTE: For basic switch operating forces, see page J-26.

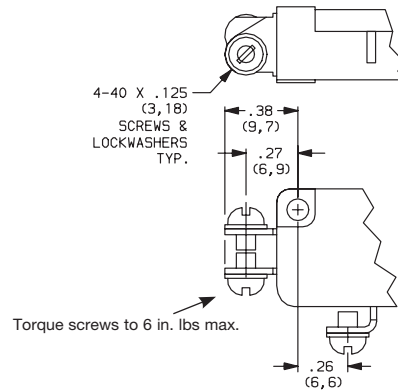
TM Series Mid Size Snap-acting Switches

TERMINATIONS

40 .187" QUICK CONNECT

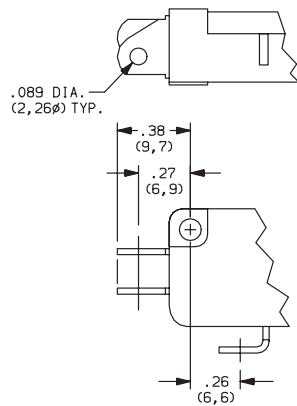


60 SCREW TERMINALS



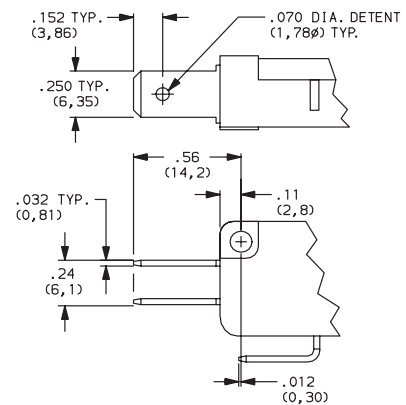
Not available with 'F5' rating option.

10 SOLDER



Not available with 'F5' rating option.

4A .250" QUICK CONNECT



Not available with 'F5' rating option.

Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)

HB Series Single Pole Standard Precision Snap-acting Switches

Features/Benefits

- Low differential travel, high repeatability
- Long life—150,000 cycles typical
- Single and double pole circuitry
- Sealed actuator and case

Typical Applications

- Thermostats
- Motors
- Industrial controls



C&K

Specifications

CONTACT RATING: From low level* to 20 AMPS @ 480 V AC;
see ELECTRICAL RATING option section for complete listings.

ELECTRICAL LIFE: 150,000 cycles at 20 AMPS @ 250 V AC.
consult Customer Service Center for typical life at other ratings.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

OPERATING FORCE: From 4 oz. to 26 oz. max. at actuator
button available.

MOUNTING SCREWS: Torque 3 in/lbs max.
(Note: Exceeding 3 in/lbs torque may change operating
characteristics and increase the possibility of cracking
switch case).

TERMINAL SCREWS: Torque 4 in/lbs max.

PANEL MOUNTING BUSHING: Torque 4-6 in/lbs max.

DEGREE OF PROTECTION: IP65; Dust-proof, water splash and
dew condensation.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @
20 V AC or DC max.

Materials

SWITCH HOUSING: Heat resistant/electrical grade phenolic.

INSERTS: Brass alloy.

ACTUATOR BUTTON: Moisture resistant phenolic.

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.
Fine silver for ratings greater than 1 AMP and motor load
ratings less than 1/2 HP @ 125 V AC. Silver alloy for motor
load ratings 1/2 HP @ 125 V AC or greater.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less.
Fine silver welded to copper base for ratings greater than
1 AMP and motor load ratings less than 1/2 HP @ 125 V AC.
Silver alloy on copper base for motor load ratings 1/2 HP @
125 V AC or greater.

TERMINALS: Brass alloy, bright tin plated.

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Series		Function		Contact Separation		Operating Force		Mounting Style		Circuitry	
HB Precision Snap-acting Switches		S SP		2 .020" 1 .010" 4 .040" 7 .070"		KG 18 oz./510 grams GF 4 oz./113 grams KA 9 oz./255 grams KC 13 oz./368 grams KH 20 oz./567 grams PB 26 oz./737 grams		S Standard		C SPDT	
Electrical Rating		Actuator		Terminations							
B4 20 A, 125, 250, 480 V AC; 0.25 A, 250 V DC; 0.5 A, 125 V DC		P0 Pin plunger		11 Flat base, solder, 4-40 screws							
A2 5 A, 125, 250 V AC		A0 Lever roller		41 Flat base, .250" quick connect							
B6 20 A, 125, 250, 480 V AC; 0.25 A, 250 V DC; 0.5 A, 125 V DC; 3/4 HP, 125 V AC; 1 1/2 HP, 250 V AC		D0 Stub plunger		55 Step base, cup washers, 6-32 screws							
F5 1 A, 125 V AC; 1 A, 30 V DC		F0 Reverse acting lever roller									
F9 22 A, 125, 277 V AC; 15 A, 480 V AC; 1/4 HP, 125 V AC; 1/2 HP, 250 V AC		J0 High overtravel plunger									
		R5 Perpendicular roller plunger									
		T0 Lever									
		TS Sealed Lever									
		Y0 Reverse acting lever									

C&K

18 Jan 21

J-93

Dimensions are shown: mm
Specifications and dimensions subject to change

www.ckswitches.com

HB Series

Single Pole Standard Precision Snap-acting Switches

Sealed Actuator and Case

To provide reliable service under environmental conditions that might damage standard precision switches, various HB Series switch models are sealed against the entrance of airborne contaminants and/or splashing liquids. The clearance between the operating plunger and the cover is sealed with a silicone boot and the base cover joint is sealed with an epoxy adhesive. These models are designed to meet requirements of IP65 (dust proof, water splash and dew condensation). For additional information on sealed switches, consult our Customer Service Center.

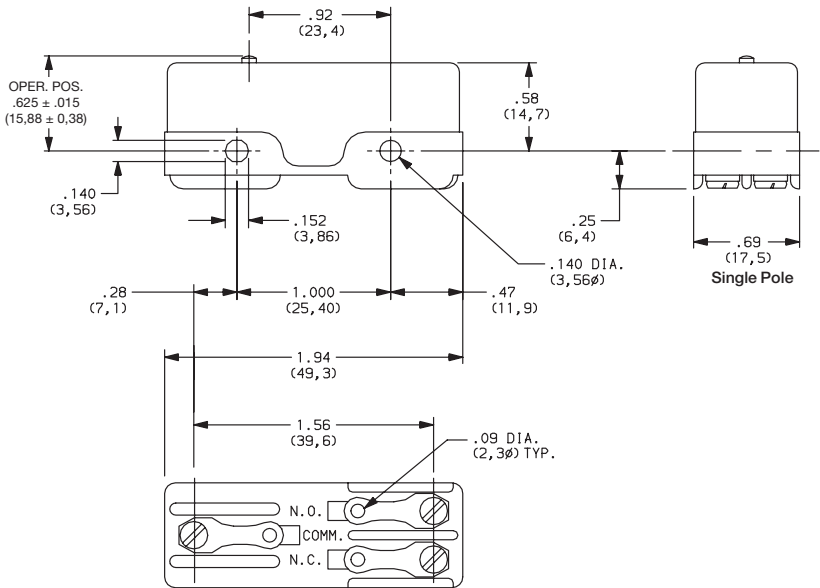
SERIES

HB PRECISION SNAP-ACTING SWITCHES

FUNCTION

S SINGLE POLE SWITCH

Snap-acting

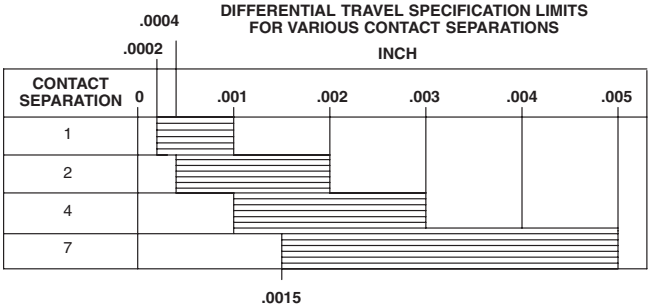


NOTE: To select switching function, see CIRCUITRY section, page J-52.

CONTACT SEPARATION

OPTION CODE	NOMINAL CONTACT SEPARATION (in./mm)
2	.020 (0,51)
1	.010 (0,25)
4	.040 (1,02)
7	.070 (1,78)

Switches with 1 AMP rating (option code 'F5') are available only with .020 contact separation (option '2').
Switches with 1/2 HP, 125 V AC rating or greater (option codes 'B5 and B6') are not available with .010 contact separation (option code '1').



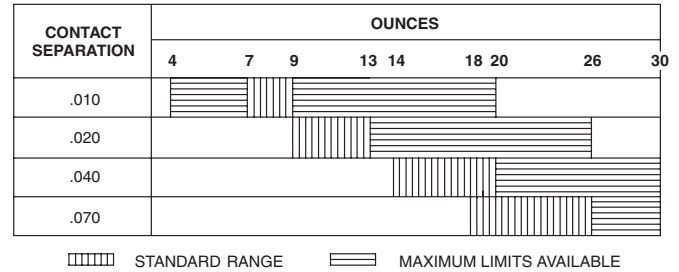
Third Angle Projection
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

OPERATING FORCE

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	STANDARD CONTACT SEPARATION (inch)
KG	18 510	.020
GF	4 115	.010
KA	9 255	.010
KC	13 370	.020
KH	20 570	.040
PB	26 740	.070

OPERATING FORCE SPECIFICATION LIMITS
FOR VARIOUS CONTACT SEPARATIONS



NOTE: All listed differential travel characteristics are based on standard operating force and contact separation. For any other force or contact separation, consult Customer Service Center.
Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	MOVABLE CONTACT	STATIONARY CONTACT	ELECTRICAL RATING
B4	Fine silver.	Fine silver welded to copper base.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMPS @ 250 V DC; 0.5 AMPS @ 125 V DC (UL).
A2			5 AMPS @ 125 & 250 V AC (UL).
B6	Precious metal alloy.	Precious metal alloy.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 3/4 HP @ 125 V AC; 1 1/2 HP @ 250 V AC (UL).
F5	Gold alloy.	Gold alloy.	Low level* to 1 AMP @ 125 V AC; 1 AMP @ 30 V DC (UL).
F9	Fine silver.	Fine silver welded to copper base.	22 AMPS @ 125 & 277 V AC; 15 AMPS @ 480 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC; 277 V AC (UL).

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (oz.)					
	4 GF	9 KA	13 KC	18 KG	20 KH	26 PB
A2	•	•	•	•	•	•
B4	x	•	•	•	•	•
B6	x	x	x	•	•	•
F5	x	x	•	•	•	•
F9	x	x	x	•	•	•

• AVAILABLE
x NOT AVAILABLE

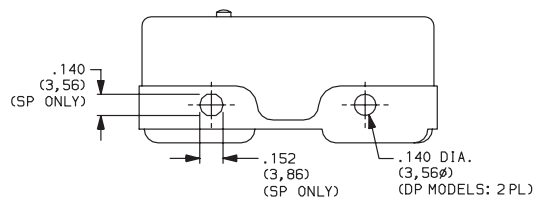
All models  with all options
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching,
i.e., 0.4 VA max. @ 20 V AC or DC max.

HB Series Single Pole Standard Precision Snap-acting Switches

MOUNTING STYLE

S Standard



NOTE: Mounting holes will accept pins or screws of .139 dia. (3,53) max. on 1.000 ± .002 (25,4 ± 0,05) centers.

NOTE: Torque mounting screws 3 inlbs max.

ACTUATOR

OPTION CODE	NO. POLES	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
A0	SP	1	.86 (21,8)	1.120 ± .060 (28,45 ± 1,52)	.38 dia. (9,70)	1.03 (26,2)
D0	SP	3	.92 (23,4)	.844 ± .020 (21,44 ± 0,51)	—	—
F0	SP	2	.09 (2,3)	1.120 ± .050 (28,45 ± 1,27)	.38 dia. (9,70)	.74 (18,8)
J0	SP	4	.86 (21,8)	.860 ± .030 (21,84 ± 0,76)	—	—
P0	SP	5	.92 (23,4)	.625 ± .010 (15,88 ± 0,25)	—	—
R5	SP	6	.92 (23,4)	.62 (15,7)	.50 dia. (12,70)	0.61 (15,5)
T0	SP	7	1.310 (33,27)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
TS*	SP	7	1.47 (37,3)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
Y0	SP	8	.05 (1,3)	.720 ± .030 (18,29 ± 0,76)	.74 dia. (18,80)	2.65 (6,73)

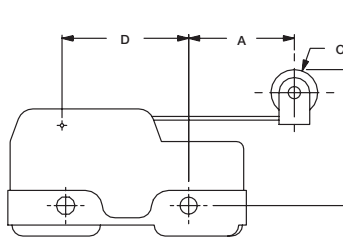


FIG. 1
Lever Roller

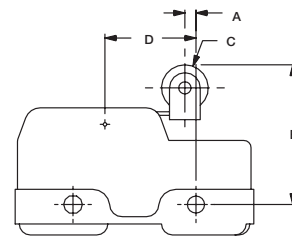


FIG. 2
Lever Roller

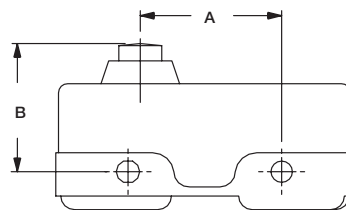


FIG. 3
Stub Plunger

* Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

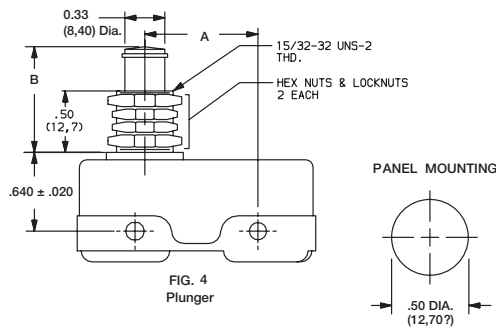


FIG. 4
Plunger

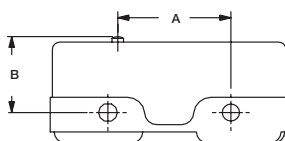


FIG. 5
Pin Plunger

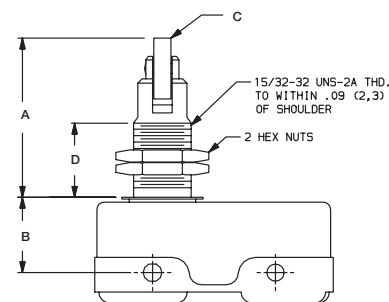


FIG. 6
Perpendicular Roller Plunger

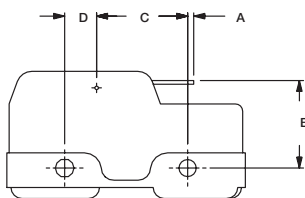


FIG. 8
Reverse Acting Lever

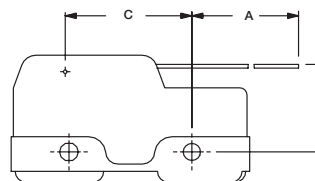


FIG. 7
Lever



Third Angle
Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

ACTUATOR

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM OPERATING FORCE (OZ./GRAMS)	GF	—	—	—	—	4 115	—	—	—	—
	KA	3 85	9.5 269	10 284	10 284	9 255	10 284	2 60	10 284	2 56
	KC	—	13 370	10 284	13 370	13 370	13 370	—	10 284	—
	KG	3.5 100	—	—	—	18 510	—	2.5 71	—	2.5 71
	KH	4 115	20 570	20 570	20 570	20 570	20 570	3 85	20 570	3 85
	PB	4.5 130	26 740	20 570	26 740	26 740	26 740	3.5 100	20 570	3.5 100
MINIMUM RELEASE FORCE (OZ./GRAMS)	GF	—	—	—	—	1 28	—	—	—	—
	KA	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	KC	1.7 48	4 110	3 85	4 110	4 110	4 110	—	3 85	—
	KG	.75 21	—	—	—	4 110	—	.5 14	—	.5 14
	KH	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	PB	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14

NOTE: For basic switch operating forces, see page J-71. * Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

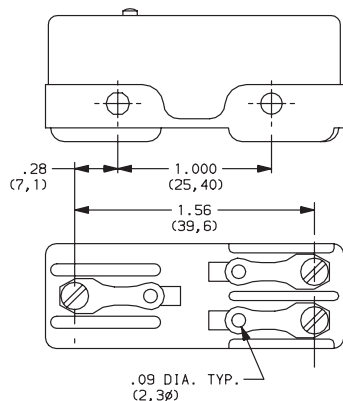
	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM DIFFERENTIAL TRAVEL (IN/MM)	GF	—	—	—	—	.0005 (0,013)	—	—	—	—
	KA	.020 (0,51)	.0005 (0,013)	.005 (0,13)	—	.0005 (0,013)	—	.047 (1,19)	.005 (0,13)	.047 (1,19)
	KC	—	.002 (0,05)	.008 (0,20)	—	.002 (0,05)	—	—	.009 (0,23)	—
	KG	.062 (1,57)	—	—	—	.003 (0,08)	—	.078 (1,98)	—	.078 (1,98)
	KH	.080 (2,03)	.003 (0,76)	.020 (0,51)	—	.003 (0,08)	—	.093 (2,36)	.020 (0,51)	.093 (2,36)
	PB	.125 (3,18)	.007 (0,18)	.030 (0,76)	—	.005 (0,13)	—	.156 (3,96)	.031 (0,79)	.156 (3,96)
MAXIMUM PRETRAVEL (IN/MM)	GF	—	—	—	—	.020 (0,51)	—	—	—	—
	KA	.312 (7,92)	.020 (0,51)	0.8 (2,0)	.015 (0,38)	.015 (0,38)	.015 (0,38)	.38 (9,7)	.09 (2,3)	.38 (9,7)
	KC	—	.020 (0,51)	0.8 (2,0)	.020 (0,51)	.020 (0,51)	.020 (0,51)	—	.09 (2,3)	—
	KG	.312 (7,92)	—	—	—	.025 (0,64)	—	.38 (9,7)	—	.38 (9,7)
	KH	.38 (9,7)	.025 (0,64)	0.9 (2,3)	.025 (0,64)	.025 (0,64)	.025 (0,64)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
	PB	.38 (9,7)	.030 (0,76)	0.9 (2,3)	.030 (0,76)	.030 (0,76)	.030 (0,76)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
MINIMUM OVERTRAVEL (IN/MM)	GF	—	—	—	—	.005 (0,13)	—	—	—	—
	KA	.156 (3,96)	.055 (1,40)	.06 (1,5)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	.06 (1,5)	.19 (4,8)
	KC	—	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	—	0.9 (2,3)	—
	KG	.156 (3,96)	—	—	—	.005 (0,13)	—	.19 (4,8)	—	.19 (4,8)
	KH	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)
	PB	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)

HB Series

Single Pole Standard Precision Snap-acting Switches

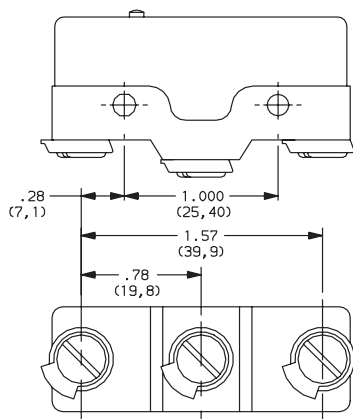
TERMINATIONS

11 FLAT BASE, SOLDER TERMINALS AND 4-40 SCREWS



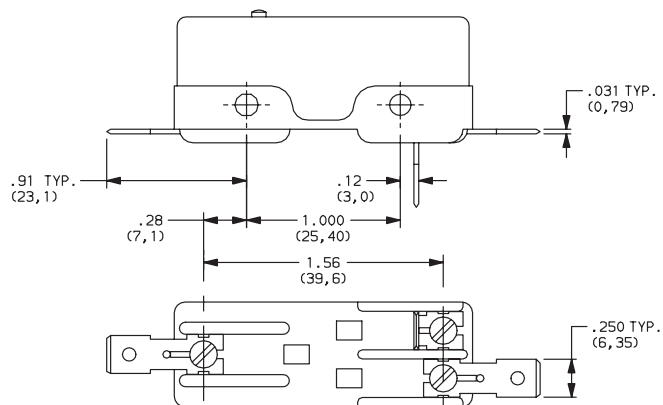
NOTE: Switches with flat base option have molded ribs that provide increased creep distance.

55 STEP BASE, 6-32 SCREWS AND CUP WASHERS



NOTE: Switches with step base option provide wide electrical clearance for screw terminal options.

41 FLAT BASE, .250" QUICK CONNECT TERMINALS



Snap-acting

CIRCUITRY

C DT (Double Throw, Normally Closed & Normally Open)

A Series General Purpose Snap-acting Switches

Features/Benefits

- Low cost—high performance
- Long electrical life
- Single and double pole
- Sealed actuator option available

Typical Applications

- Enclosure equipment
- Garage door openers
- Vending machines



Specifications

CONTACT RATING: From low level* to 25 AMPS @ 277 V AC.

ELECTRICAL LIFE: 75,000 cycles at 25 AMPS @ 250 V AC,
200,000 cycles at 15 AMPS @ 250 V AC.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 185°F (-55°C to 85°C).

OPERATING FORCE: 20 oz. (567 grams) max. SP models.

40 oz. (1134 grams) max. DP models at actuator button.

MOUNTING: Torque screws 3 in/lbs max.

MOUNTING NUT: 20 in/lbs max. torque

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

NOTE: Specifications and materials listed above are for switches with standard options. C&K does provide specific and custom switches at 30 AMPS @ 277 VAC. Please consult Customer Service Center.

Materials

SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).

ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy for models up to 15 AMPS.

Copper for 25 AMP models.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings up to 15 AMPS. Silver alloy
for ratings of 25 AMPS.

STATIONARY CONTACTS: Gold alloy on brass base alloy
for ratings 1 AMP or less. Fine silver welded on brass base
alloy for ratings greater than 1 AMP up to 15 AMPS.

Fine silver welded on copper alloy for ratings 25 AMPS.

TERMINALS: Brass alloy for 1 AMP up to 15 AMPS.

Copper alloy for 25 AMPS.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Series A General Purpose Snap-acting Switches No. Poles S SP D DP Operating Force KH* 20 oz./567 grams PD** 30 oz./850 grams GG* 5 oz./142 grams PF** 40 oz./1134 grams Electrical Rating C2 15 A, 125, 250 V AC; 3/4 HP, 125 V AC; 1 1/2 HP, 250 V AC F3 25 A, 125, 250 V AC; 1 HP, 125 V AC; 2 HP, 250 V AC; 2 A, 24 V DC F5 1 A, 125 V AC, 30 V DC	Actuator P0 Pin plunger T0 Lever A0 Lever roller A2 Lever roller, high force BB Large red button B1 Large black button J0 High overtravel plunger L0 Leaf Q0 High operating position plunger W0 Leaf roller	Terminations 4A .250" quick connect Circuitry C DT W ST N.C. Y ST N.O.
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* Single Pole
** Double Pole



14 Jan 19

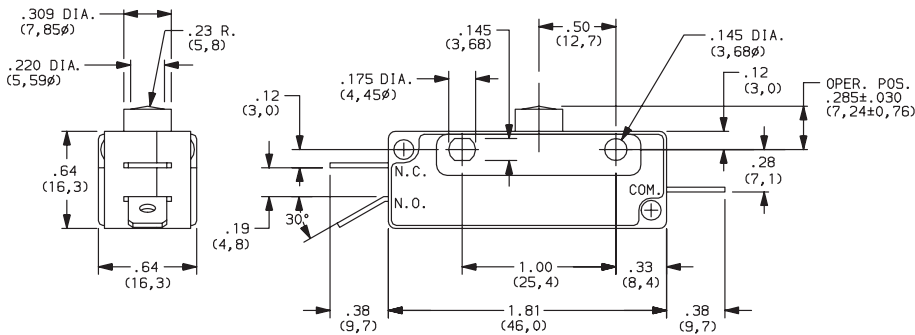
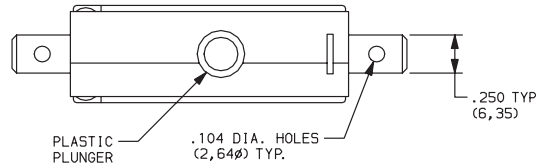
A Series General Purpose Snap-acting Switches

SERIES

A GENERAL PURPOSE SNAP-ACTING SWITCHES

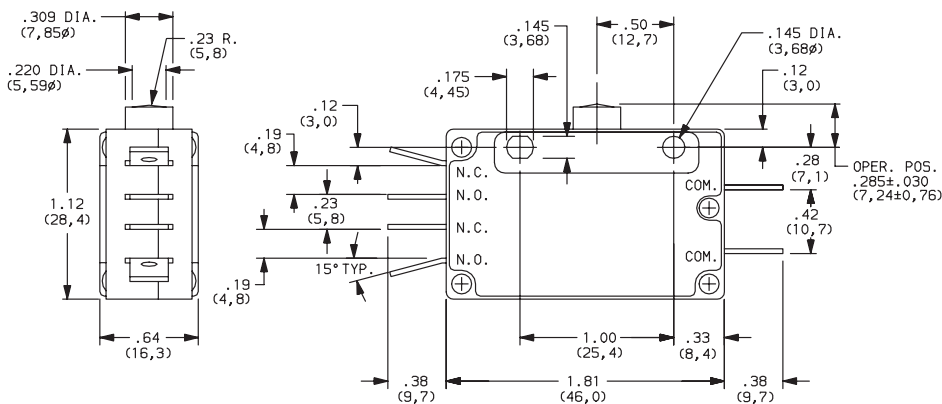
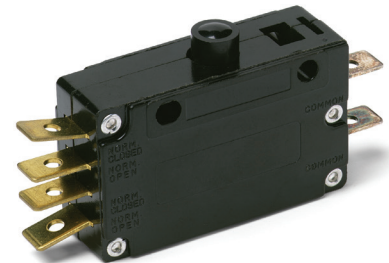
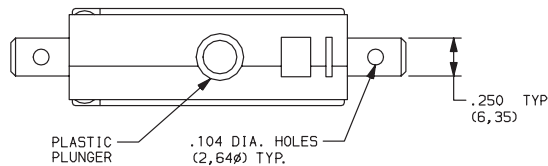
NO. POLES

S SINGLE POLE SWITCH



Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

D DOUBLE POLE SWITCH



Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

NOTE: To select switching function, see CIRCUITRY section, page J-81.



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

A Series General Purpose Snap-acting Switches

OPERATING FORCE

OPTION CODE	NO. POLES	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
KH	SP	20 567
PD	DP	30 850
GG	SP	5 142
PF	DP	40 1134

NOTE: Operating force varies with actuator, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		ELECTRICAL RATING
	MOVABLE CONTACT	STATIONARY CONTACT	
C2	Fine silver.	Fine silver welded on brass base alloy.	15 AMPS @ 125 & 250 V AC; 3/4 HP @ 125 V AC; 1-1/2 HP @ 250 V AC.
F3	Silver alloy.	Silver welded on copper base alloy.	25 AMPS @ 125 & 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 2 AMPS @ 24 V DC.
F5	Gold alloy.	Gold alloy on brass base alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

All models **C** **F** **US** with all options.

Contact Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching,
i.e., 0.4 VA max. @ 20 V AC or DC max.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (OZ./GRAMS)			
	GG 5 142	KH 20 567	PD 30 850	PF 40 1134
C2	•	•	•	•
F3	x	•	•	•
F5	•	•	•	•

• AVAILABLE

x NOT AVAILABLE

A Series General Purpose Snap-acting Switches

ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E	DIM. F
P0	1	.50 (12,7)	.285 ± .030 (7,24 ± 0,76)	—	—	—	—
A0	3	1.38 (35,1)	.718 ± .062 (18,24 ± 1,57)	.375 dia. (9,53Ø)	.50 (12,7)	.50 (12,7)	—
A2	4	1.25 (31,8)	.718 ± .062 (18,24 ± 1,57)	.375 dia. (9,53Ø)	.50 (12,7)	—	—
B1	6	1.50 (38,1)	.40 ± 0.1 (10,2 ± 2,54)	.98 dia. (24,9Ø)	—	—	—
BB	6	1.50 (38,1)	.40 ± 0.1 (10,2 ± 2,54)	.98 dia. (24,9Ø)	—	—	—
J0	5	.50 (12,7)	.810 ± .030 (20,6 ± 0,8)	.38 (9,7)	.25 dia. (6,4Ø)	—	—
L0	2	1.62 (41,1)	.312 ± .062 (7,92 ± 1,57)	.50 (12,7)	—	—	—
Q0	5	.50 (12,7)	.670 ± .030 (17,02 ± 0,76)	.38 (9,6)	.25 dia. (6,4Ø)	—	—
T0	7	1.50 (38,1)	.318 ± .062 (8,08 ± 1,57)	.50 (12,7)	.50 (12,7)	—	—
W0	8	1.50 (38,1)	.801 ± .062 (20,34 ± 1,57)	.375 dia. (9,53Ø)	.50 (12,7)	—	—

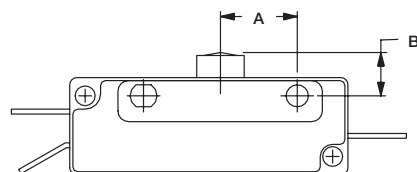


FIG. 1
High Overtravel Plunger

NOTE: The "H0" high overtravel plunger option provides .100 (2,54) min. overtravel and longer mechanical life (1,000,000 operations typical).

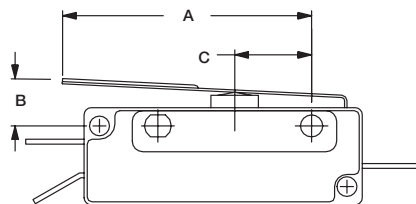


FIG. 2
Leaf

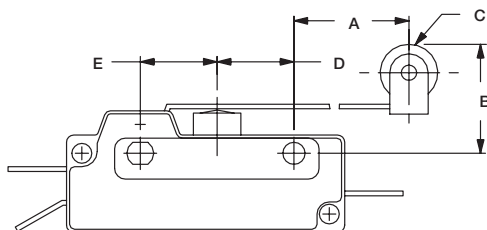


FIG. 3
Lever Roller

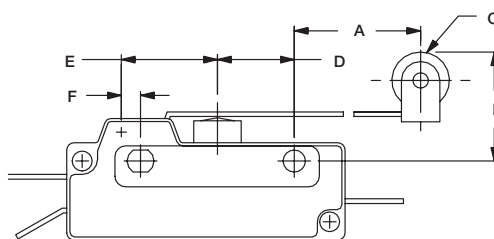


FIG. 4
Lever roller (High Force)

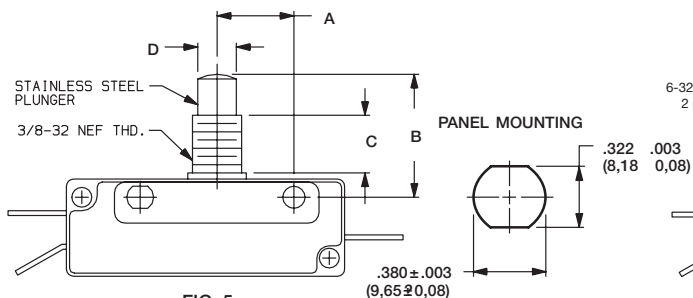


FIG. 5
High Overtravel Plunger

Torque 20 in/lbs max. (Nut)

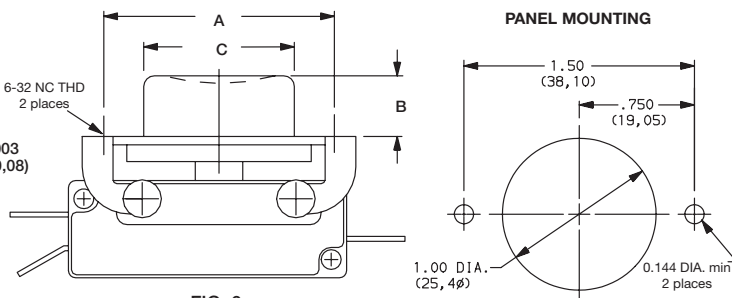


FIG. 6
B1 - Black Button
BB - Red Button

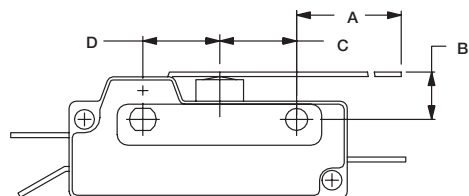


FIG. 7
Lever

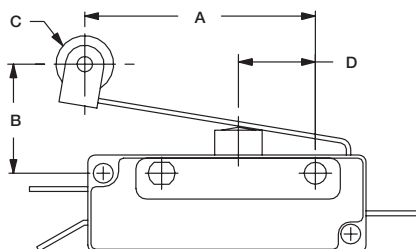
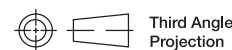


FIG. 8
Leaf Roller



Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change

A Series General Purpose Snap-acting Switches

ACTUATOR

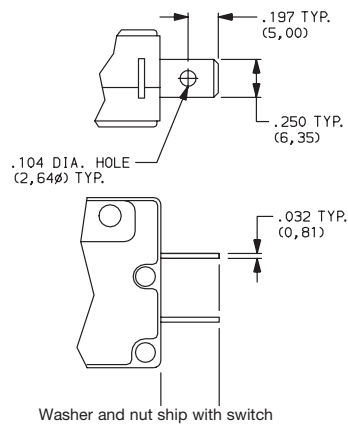
SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)				MINIMUM RELEASE FORCE (OZ./GRAMS)				MAXIMUM PRETRAVEL				MINIMUM OVERTRAVEL				OPERATING POSITION			
	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.	GG S.P.	KH S.P.	PD D.P.	PF D.P.
A0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				312 (7,92)	.187 (4,75)			.718 (18,24)			
A2	1.5 42.5	4 113	6 170	10 283	0.4 11	0.5 14	1 28		.25 (6,4)				.14 (5,6)				.718 (18,24)			
B1	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
BB	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
J0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.187 (4,75)				—			
L0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)				.312 (7,92)			
P0	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
Q0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)				—			
T0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				.187 (4,75)				312 (7,92)			
W0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)				.718 (18,24)			

NOTE: For basic switch operating forces, see page J-77.

TERMINATIONS

4A .250" QUICK CONNECT



NOTE: Terminals can be supplied at various angles. Other terminal styles can be supplied for special applications. Consult Customer Service Center for special requirements.

CIRCUITRY

- C** DT (Double Throw, Normally Open & Normally Closed)
- W** ST N.C. (Single Throw, Normally Closed)
- Y** ST N.O. (Single Throw, Normally Open)

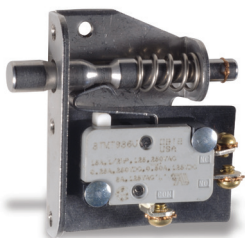
NOTE: To select number of poles, see NO. POLES section, page J-56



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

TL Series Door Interlock Switches



Features/Benefits

- Push/pull motion
- Multiple mounting configurations
- Wide variety of termination options
- Ratings up to 15 AMPS

Typical Applications

- Computer enclosures
- Panel builders
- Industrial enclosures

Specifications

CONTACT RATING: 15 AMPS @ 125 & 250 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 AMPS @ 125 V AC "L".

ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

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

Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).

MOUNTING BRACKET: Stainless steel.

PLUNGER: Stainless steel.

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACT: Fine silver.

STATIONARY CONTACTS: Fine silver.

TERMINALS: Copper alloy.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Model

- 11TL** One TM Series SPDT switch
- 12TL** One TM Series SPDT switch
- 23TL** Two TM Series SPDT switches

Terminations

- 60** Screw
- 40** .187" Quick connect
- 4A** .250" Quick connect

Plunger

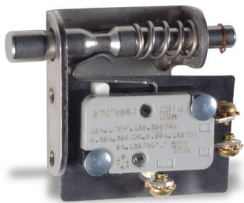
- 2** Stainless steel, not tapped
- 4** Stainless steel, tapped



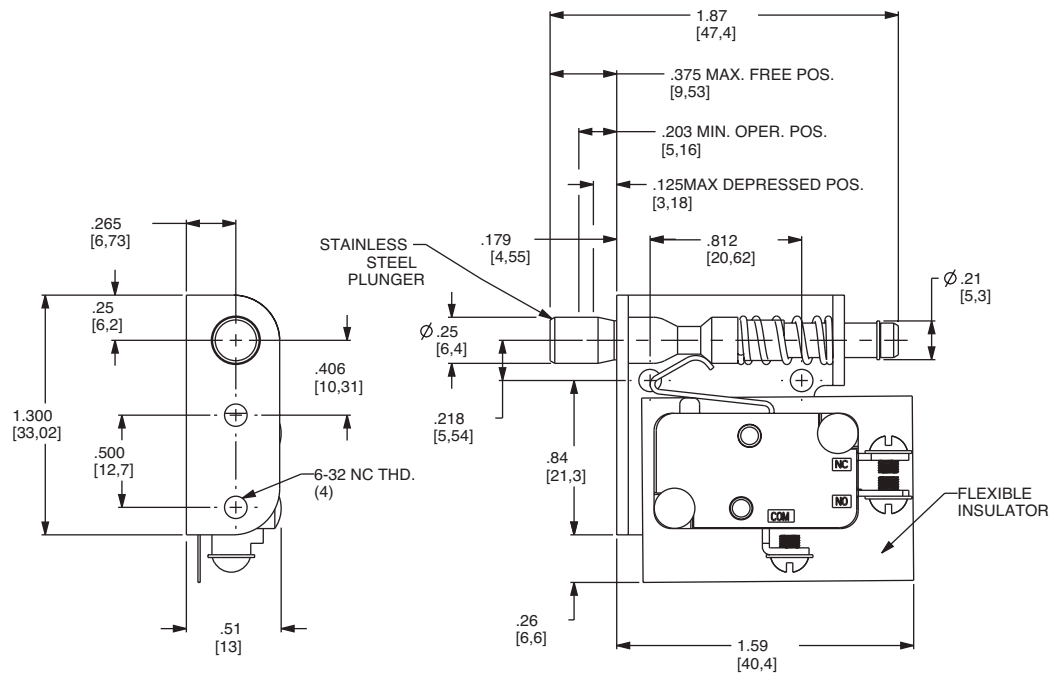
TL Series Door Interlock Switches

MODEL

11TL WITH SMALL BRACKET

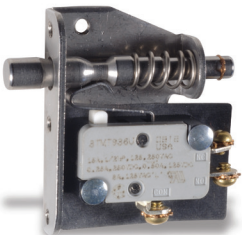


11TL602
SPDT

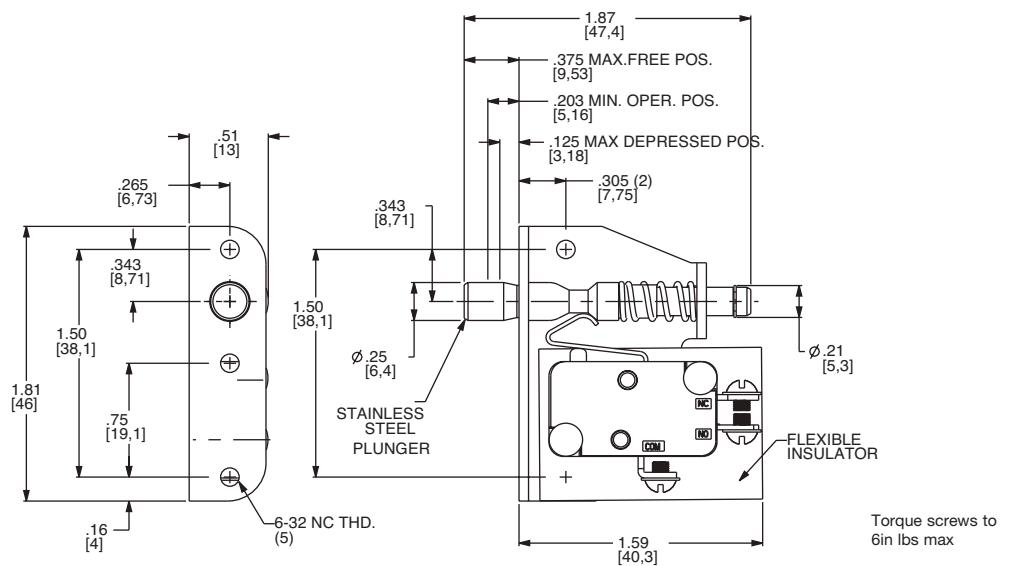


Snap-acting

12TL WITH LARGE BRACKET



12TL602
SPDT



Torque screws to
6in lbs max

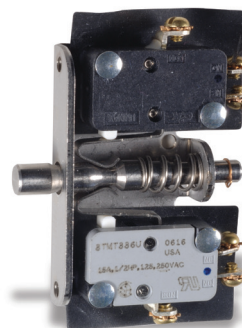
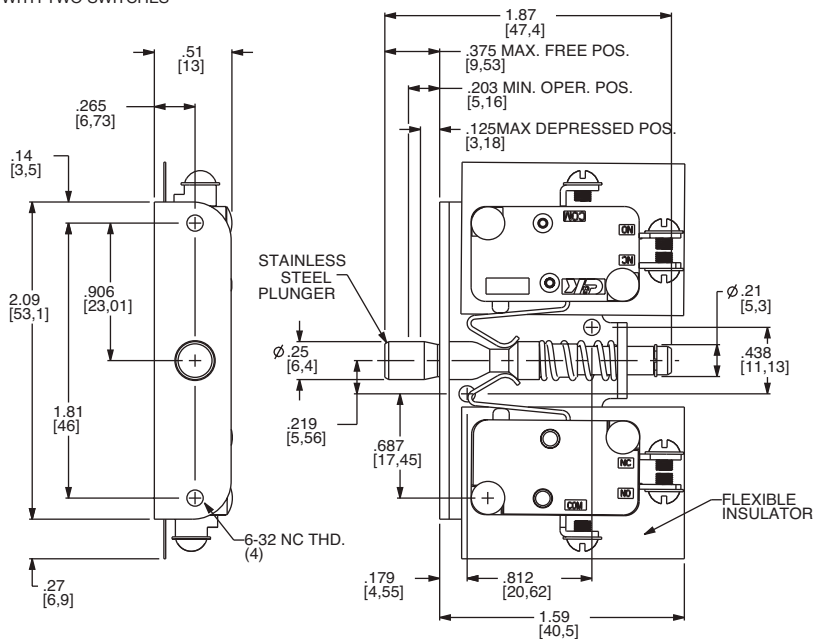


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

TL Series Door Interlock Switches

MODEL

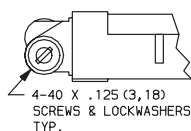
23TL WITH TWO SWITCHES



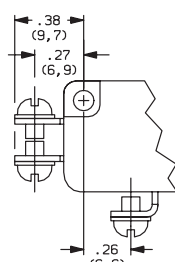
23TL602
SPDT

TERMINATIONS

60 SCREW TERMINALS

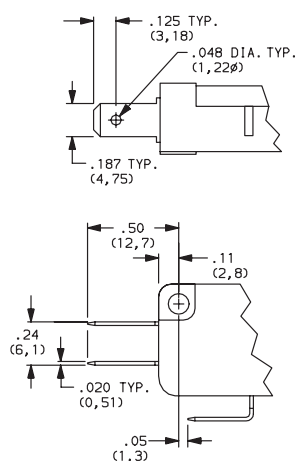


4-40 X .125 (3, 18)
SCREWS & LOCKWASHERS
TYP.

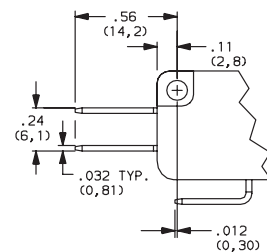
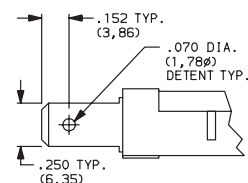


Torque screws to
6in lbs max

40 .187" QUICK CONNECT



4A .250" QUICK CONNECT



PLUNGERS

2 STAINLESS STEEL, NOT TAPPED

4 STAINLESS STEEL, TAPPED 4-40 x .375 (9,52) min. depth



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

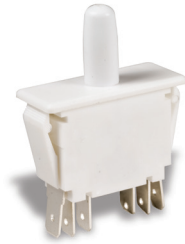
DS Series Interlock Snap Switches

Features/Benefits

- Snap-in mounting
- Reliable snap action mechanism
- Latch or momentary
- RoHS compliant
- Halogen free material

Typical Applications

- Interlock switch
- Detection switch
- Circuit interrupt



UL61058-1

Specifications

FUNCTION: Single pole double throw / Double pole double throw
MOUNTING TYPE: Snap in style

Electrical

ELECTRICAL LIFE: see ratings chart below
DIELECTRIC STRENGTH: 1500 V (50-60 Hz @ sea level)
INSULATION RESISTANCE: 100 M Ω min.
INITIAL CONTACT RESISTANCE: 30 milli-ohms

Materials

HOUSING, COVER, ACTUATOR, KNOB: PA 66/6 halogen free, UL94V-0
NO & NC FIXED TERMINALS: Copper alloy
COMMON TERMINALS: Copper alloy, silver plate
CONTACTS: Silver alloy / F5 rating gold plated over silver alloy
RETURN SPRINGS: Stainless steel

Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C

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

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.

D S		
Designation		Housing Color
DS DS Series		NONE White
Number of Poles		B Black
1 SPDT		
2 DPDT		
Rating		Terminals
F5 0.1 (0.5)A @ 125/250 V AC 50/60 Hz 50E3 0.1A G.P. @ 125/250 V AC 50/60 Hz 50E3		Q1 4.8 x 0.5
F7 0.1 (0.5)A @ 125/250 V AC 50/60 Hz 10E4 0.1A G.P. @ 125/250 V AC 50/60 Hz 10E4		Q2 4.8 x 0.8
D6 10 (4)A @125/250 V AC 50/60 Hz 50E3 10A G.P. @ 125 / 250 V AC 1/3HP @ 125/250 V AC 50/60 Hz 10E3		Q3 6.3 x 0.8
D7* 16A G.P. @125/250 V AC 3/4HP 125/250 V AC 50/60 Hz 10E3 16 (6) A @125/250 V AC 50/60 Hz 10E3		Actuator Style
* Note - 16A version has Q3 terminals only		A Momentary, Short button
		B Momentary, Long button
		C Momentary/Pulled out button (not available on D7 rating)

International Rating Symbols

10E3	Cycles 10,000
10E4	Cycles 100,000
50E3	Cycles 50,000
10(4)	Current rating: First number represents resistive rating. Second number represents inductive (motor) rating
GP	General purpose rating UL1054

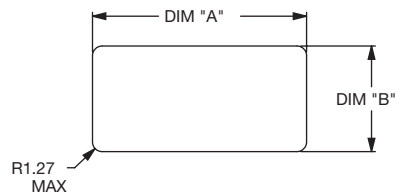
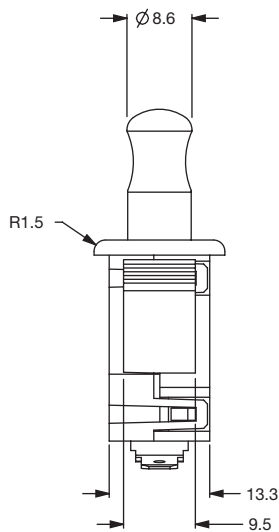
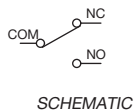
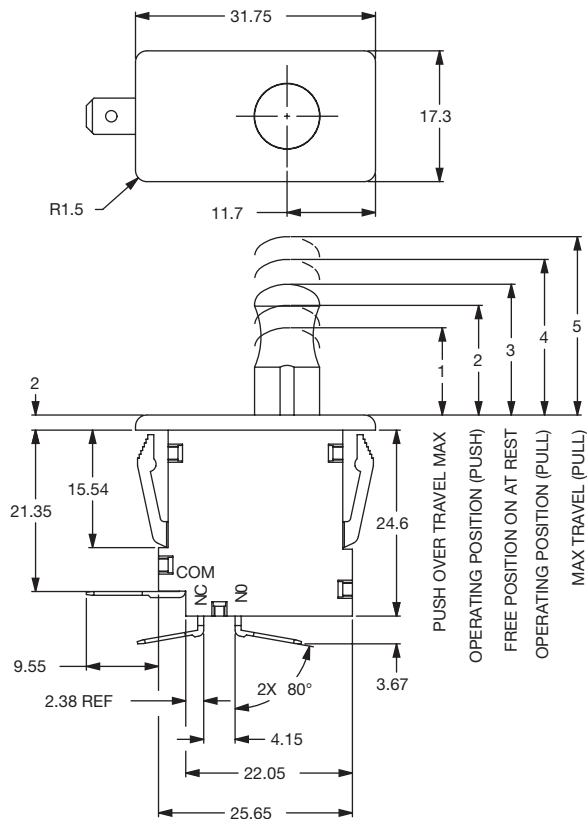


31 oct 16

DS Series Interlock Snap Switches

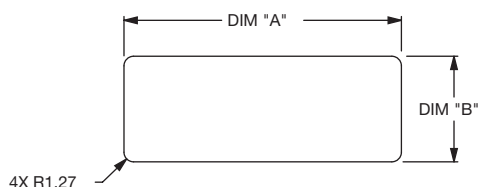
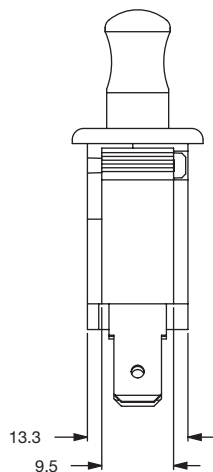
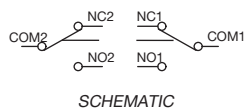
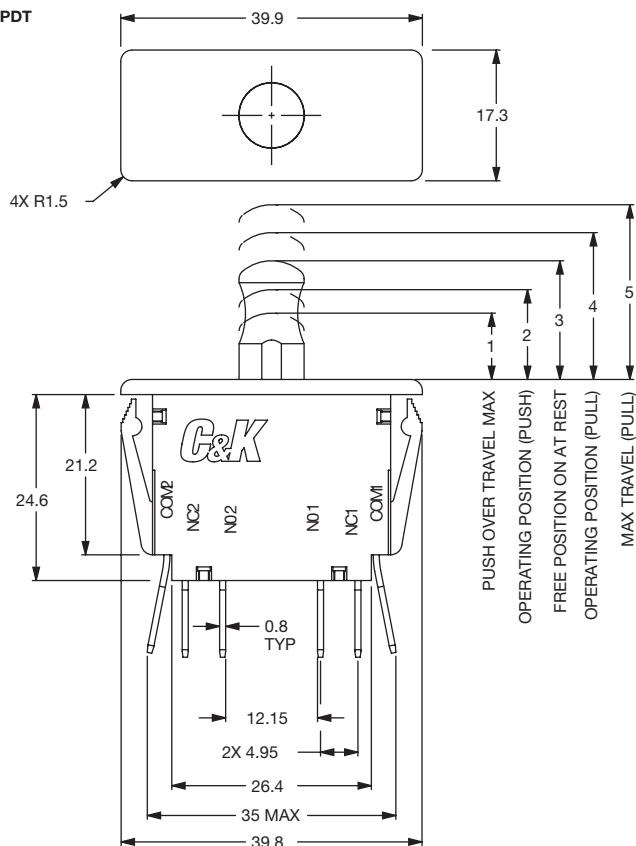
NUMBER OF POLES

1 SPDT

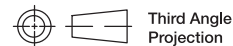


PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	28.32	13.97
2.54	28.58	13.97

2 DPDT

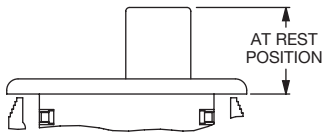


PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	36.70	13.97
2.54	36.96	13.97



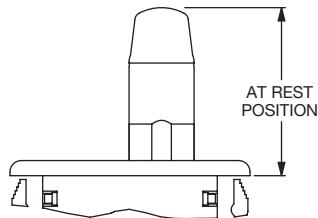
ACTUATOR STYLE / SPECIFICATIONS

A SHORT BUTTON



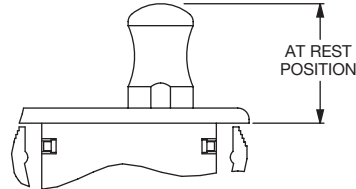
SHORT BUTTON

B LONG BUTTON

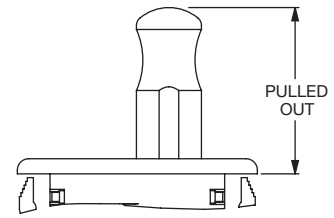


LONG BUTTON

C MOMENTARY/PULLED OUT



FREE POSITION



PULLED OUT POSITION

SPDT Specification

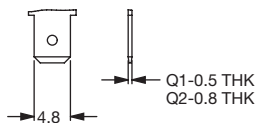
BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	425 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	425 gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 385gf	PULL 475gf

DPDT Specification

BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	680 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	680gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 560gf	PULL 750gf

TERMINALS

Q1 4.8 x 0.5
Q2 4.8 x 0.8



Q3 6.3 x 0.8

