







# Detect Switches

## Product Selection Guide

Detect						
Series	HDT	KSU	KSR2D	KSC4D	KSM	SDS
Travel to Make (mm)	0,3	0,5	0,3	0,6	0,35 to break	0,35
Overtravel (mm)	0,75	1,0	N/A	N/A	1,15	1,65
Total Travel (mm)	1,05	1,5	0,3	0,6	1,5	2,0
Actuator Length (mm)	1,4	1,5	0,8	2,6	1,8	2,5
Life Expectancy	100,000 cycles	100,000 cycles	100,000 cycles	100,000 cycles	50,000 cycles	50,000 cycles
Contact Type	SPST N.O.	SPST N.O.	SPST N.O.	SPST N.O.	SPST N.C.	SPST N.O. SPST N.C.
Max. Voltage (V)	5	50	32	32	24	12
Max. Switching Current (mA)	1 mA	50 mA	10 mA	50 mA	50 mA	100 mA
Sealing	Flux tight	Dust and water drop proof	Dust and flux tight	IP67	Flux tight	No
Mounting	Surface mount	Surface mount	Surface mount	Surface mount	Surface mount	Surface mount
Page number	F-3	F-4	F-6	F-7	F-9	F-11

Detect						
Series	SDT	DDS	MDS	ZMA	KDS	MPS
Travel to Make (mm)	30° or more	0,45	2,5 max.	1,3 max.	1,25 max.	See actuation charts on pages F-23 through F-26
Overtravel (mm)	90°	1,95	0,15 min.	0,2 min.	8,9	
Total Travel (mm)	90°	2,4	2,9	1,5	10,16	
Actuator Length (mm)	1,3	2,6	R 8,4		10,16	N/A
Life Expectancy	100,000 cycles	50,000 cycles	10,000 cycles	50,000 cycles	10,000 cycles	10,000,000 cycles
Contact Type	SPDT N.O.	SPST N.O.	SPDT	SPDT	SPST N.O. SPST N.C.	SPST N.O.
Max. Voltage (V)	5	30	6 VDC	125 V	20	30 AC
Max. Switching Current (mA)	1 mA	100 mA	0.3 A	3 Amps	.4 VA	300 mA
Sealing	Flux tight	Flux tight	No	No	No	Yes
Mounting	Surface Mount	Thru-hole	Thru-hole	Thru-hole	Snap-in panel	Wire lead
Page Number	F-12	F-13	F-15	F-18	F-21	F-22



F

Detect



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

# HDT Series Micro Mini Surface Mount Detect Switches

## Features/Benefits

- Low profile package sits just 3,35 mm off PCB
- Design allows top or side actuation
- Low actuation force, 35 grams max.
- Pick and place compatible, available in tape & reel packaging
- RoHS compliant and compatible

## Typical Applications

- Consumer electronics
- Computers
- Medical devices



## Specifications

CONTACT RATING: 1 mA 5 VDC  
 MECHANICAL AND ELECTRICAL LIFE: 100,000 cycles min.  
 CONTACT RESISTANCE: 500 m Ω max. initial.  
 INSULATION RESISTANCE: 100 M Ω min. between adjacent contacts.  
 OPERATING TEMPERATURE: -40°C to + 85°C  
 STORAGE TEMPERATURE: -40°C to + 85°C  
 PACKAGING: Tape & reel, 2,450 per reel.  
 TRAVEL:  
 Pre-travel .30 mm  
 Overtravel: .75 mm  
 Total: 1.05 mm

## Materials

BASE: PA 46 (UL94V-0)  
 COVER: PA 46 (UL94V-0)  
 ACTUATOR: PA 46 (UL94V-0)  
 MOVABLE BLADE: Stainless Steel, Ag over Ni plating.  
 TERMINALS: Phosphor Bronze, Ag over Ni plating.

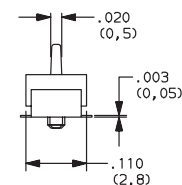
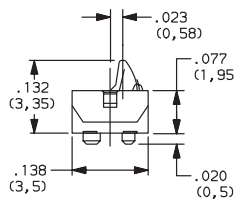
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

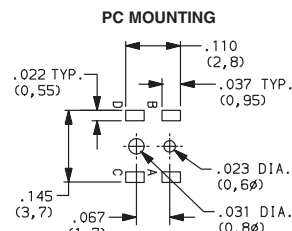
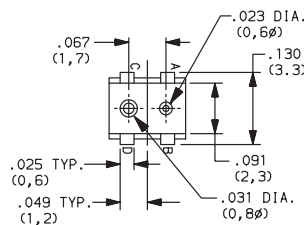
Complete part numbers for HDT Series are shown below.

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0001</b>	TAPE & REEL	

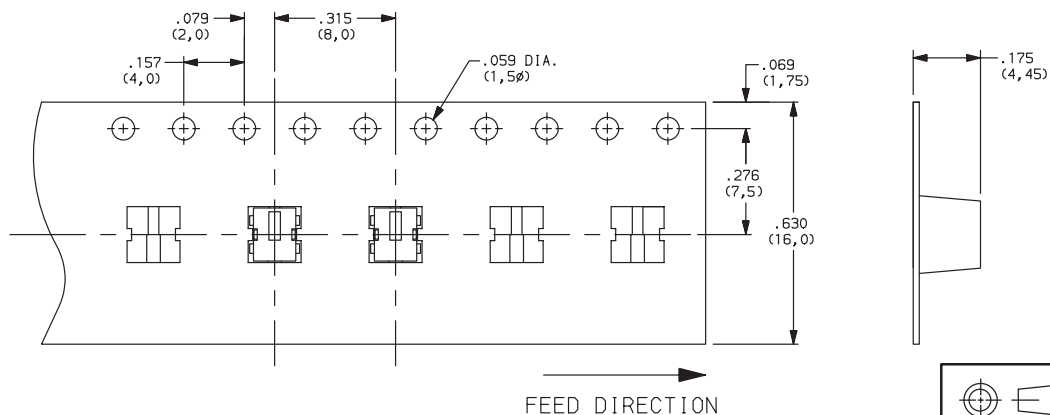
**NOTE:** Available with no locating posts by adding "NP" (HDT0001NP) to Part Number.



HDT0001



## TAPE & REEL



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



Detect

# KSU Series

## Micro Mini Surface Mount Detect Switches



### Features/Benefits

- **New multi contact construction**
- **Metal actuator**
- **Low actuating force**
- **Gold contacts**
- **Compatible with pick and place machines**
- **RoHS compliant and compatible**

### Typical Applications

- **Mobile phones and other handheld devices**
- **Portable medical devices**
- **Audio devices**
- **Automotive**
- **Alarm devices**
- **Payment terminals**

### Specifications

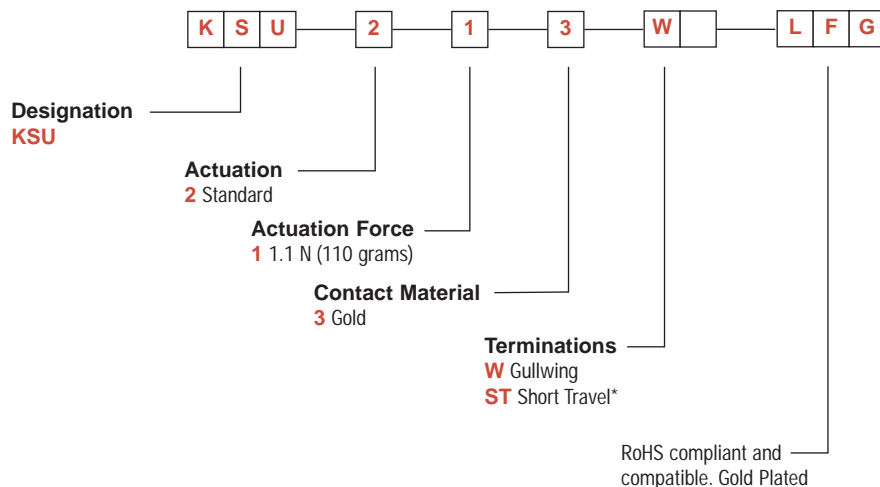
FUNCTION: Momentary action.  
 CONTACT TYPE: SPST Normally open.  
 TERMINALS: 4 SMT terminals.  
 MAXIMUM POWER: 0.2 VA  
 MIN./MAX. VOLTAGE: 20 mV – 32 VDC.  
 MIN./MAX. CURRENT: .01 mA – 0.01 A.  
 LOW LEVEL USE: 20 mV – 0.01 mA.  
 DIELECTRIC STRENGTH:  $\geq 250$  Vrms.  
 CONTACT RESISTANCE:  $\leq 100$  m $\Omega$ .  
 INSULATION RESISTANCE: (100 VDC)  $10^9$   $\Omega$ .  
 BOUNCE TIME: < 3 ms.

ACTUATING FORCE: 1,1 N  $\pm 0,8$  N  
 TRAVEL TO MAKE: 0,65 mm - 0,45/+0,25 mm  
 MAXIMUM FORCE at max travel: 1,8 N  
 OPERATING TEMPERATURE: -40°C to +125°C.  
 MECHANICAL & ELECTRICAL LIFE: 100,000 cycles.  
 SOLDERABILITY: Infrared reflow. Compatible with lead free soldering process.  
 PACKAGING: Delivered on tape & reel of 1000 pieces. The reel diameter is 330mm (12.992). The tape dimensions conform to the EIA-481 and EC-286-3 norms.  
 STORAGE TEMPERATURE: -55°C to + 125°C.

**NOTE:** Specifications 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. Available options are shown and described on page F-5. For additional options not shown in catalog, consult our Customer Service Center.



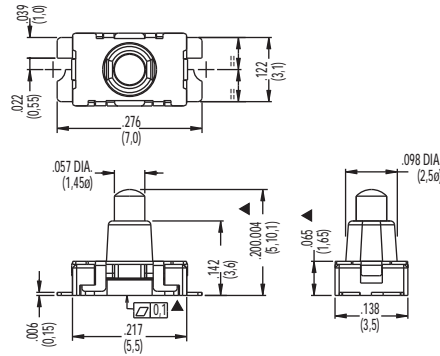
\*Travel: 0.45 + 0.1/-0.25 mm  
 Actuating Force: 0.7N  $\pm 0.5$ N



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

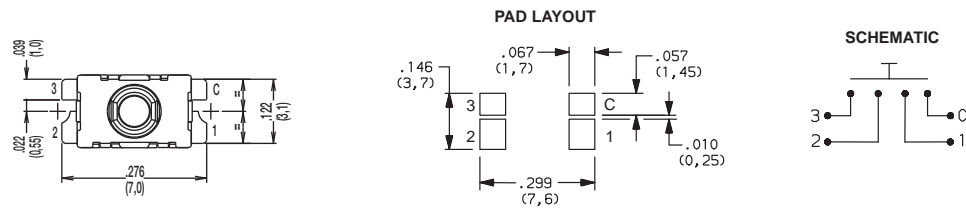
# KSU Series Micro Mini Surface Mount Detect Switches

## KSU

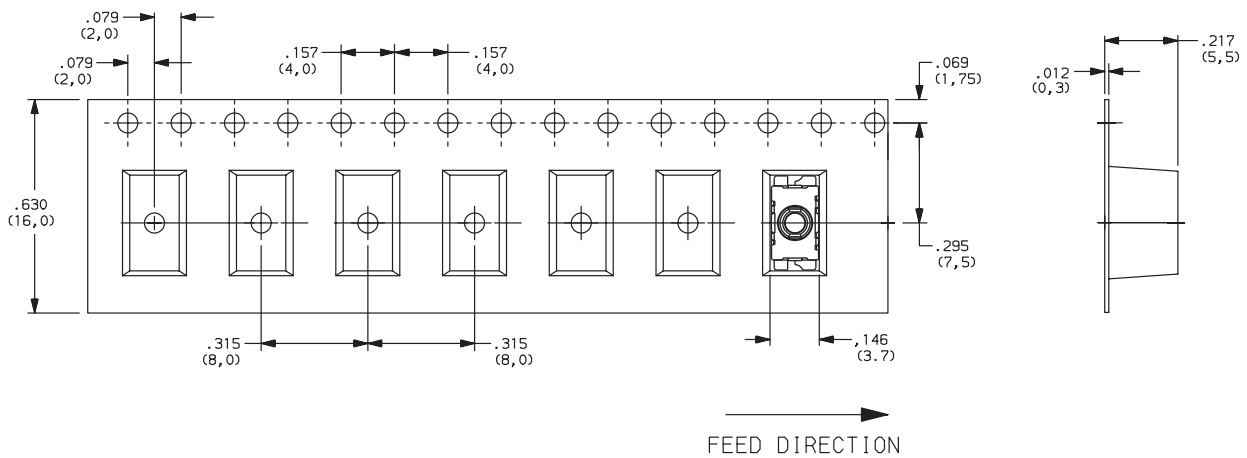


KSU213W  
SPST

## W GULLWING

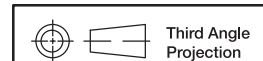


## TAPE & REEL



F

Detect



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

# KSR2D Series Subminiature Detect Switch for SMT

## Features/Benefits

- Saves PCB space
- G terminations
- Soft actuator
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Cellular phones & accessories
- Industrial electronics
- Computers & network equipment



## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: N.O.  
TERMINALS: Gullwing type for SMT

## Mechanical

Type	Operating force Newtons (grams)	Operating life (operations)	Travel
KSR2D3G	1,5 ± 0,5N	100,000	0,3 ± 0,15

## Packaging

Switches are delivered on continuous tape, in reels of 2,500 pieces.

**NOTE:** Part numbers listed above do not represent all possible configurations.

For information on specific and custom switches, consult Customer Service Center.

## Electrical

MAXIMUM POWER: 0.2 VA  
MAXIMUM VOLTAGE: 32 VDC  
MINIMUM VOLTAGE: 20 mV  
MAXIMUM CURRENT DC: 10 mA  
MINIMUM CURRENT DC: 1 mA

CONTACT RESISTANCE: 100 mΩ  
INSULATION RESISTANCE (100 V): 10<sup>9</sup> Ω  
BOUNCE TIME: 1 ms

## Environmental

OPERATING TEMPERATURE: -40°C to 125°C  
STORAGE TEMPERATURE: -55°C to 125°C

## Process

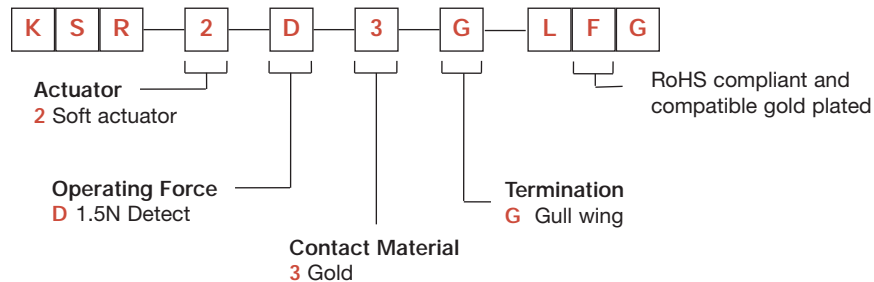
SOLDERING: Infrared reflow according to lead free soldering process

## 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.

However, please note that all the combinations of these options are not feasible.

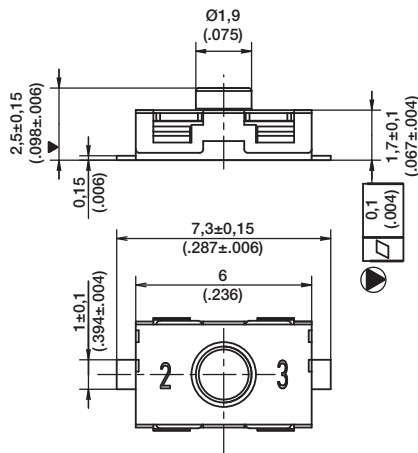
For any part number different from those listed above, please consult your local representative.



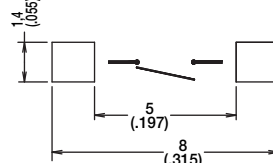
F

KSR2D

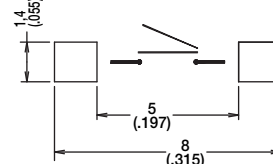
Detect



PAD LAYOUT NORMALLY OPEN



PAD LAYOUT NORMALLY CLOSED



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



# KSC4D Series Sealed Detect Switch for SMT

## Features/Benefits

- 6mm Detect
- Soft actuator
- J or G terminations
- Tape & reel
- IP 67
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Cellular phones
- Industrial electronics
- Computer infrastructure and IT



## Specification

FUNCTION: momentary action

CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.

TERMINALS: J bend & Gullwing type for SMT

## Mechanical

Type	Operating force FA <sup>1</sup> Newtons (grams)	Operating life (operations)	Travel
KSC4D1G	2,0 (200)	500,000	0,60 ± 0,4
KSC4D1J			

<sup>1</sup> Tolerances of operating force FA is ± 1N.

## Electrical

MAXIMUM POWER: 1 VA  
 MAXIMUM VOLTAGE: 32 VDC  
 MINIMUM VOLTAGE: 20 mV  
 MAXIMUM CURRENT: 50 mA  
 MINIMUM CURRENT: 1 mA  
 DIELECTRIC STRENGTH (50 Hz, 1 min.): 250 V  
 CONTACT RESISTANCE: < 100 mΩ  
 INSULATION RESISTANCE (100 V): > 10<sup>9</sup> Ω  
 BOUNCE TIME: < 1 ms

NOTE: Part numbers listed above do not represent all possible configurations.  
 For information on specific and custom switches, consult Customer Service Center.

## Electrical

OPERATING TEMPERATURE: -40°C to 85°C  
 STORAGE TEMPERATURE: -55°C to 85°C

## Process

SOLDERING:  
 - Cleaning according to typical washing processes.  
 - Infrared Reflow according to free soldering process.

## Packaging

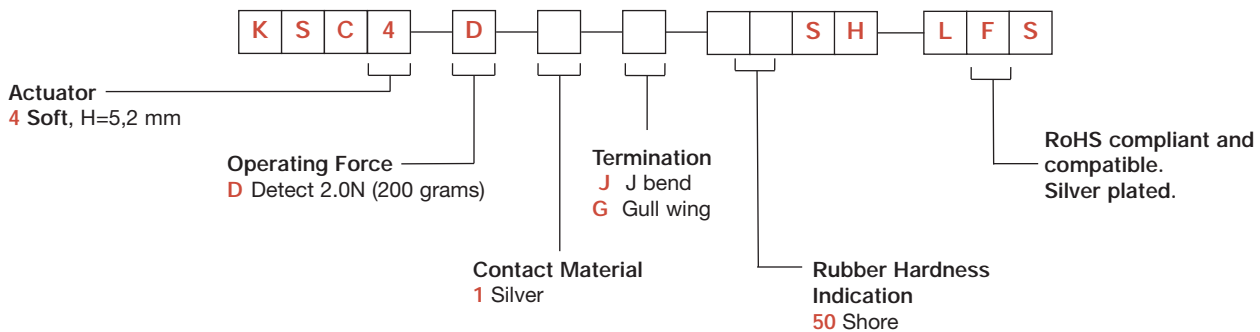
Reels of 1,000 pieces. Dimensions of reels according to EIA RS481 or IEC 2863. External diameter 330 mm ± 2 mm.

## 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.

However, please note that all the combinations of these options are not feasible.

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



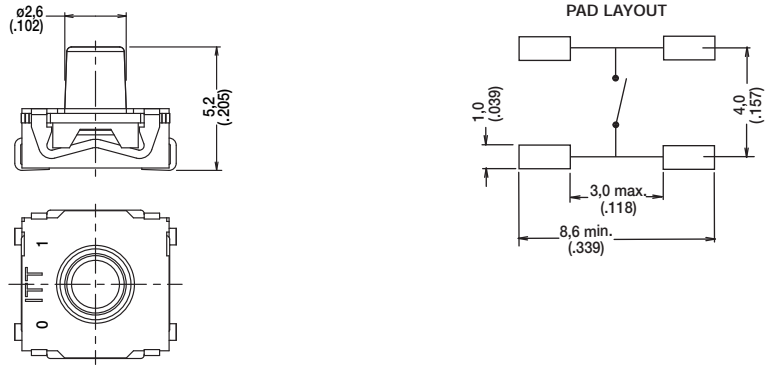
Dimensions are shown: mm (inches)  
 Specifications and dimensions subject to change



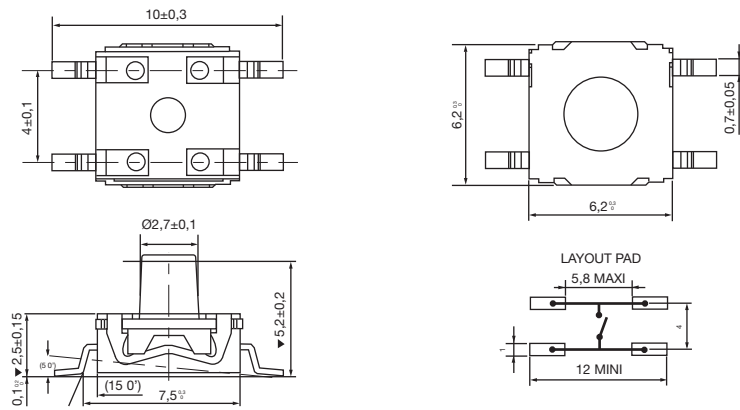
# KSC4D Series Sealed Detect Switch for SMT

ACTUATOR 

**KSC4D1J** SOFT, 5,2 mm high



**KSC4D1G** SOFT, 5,2 mm high



7

Detect



First Angle  
Projection

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

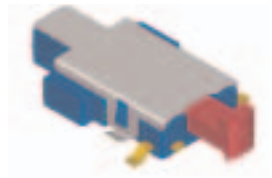
# KSM Series Side Actuated Detect Switches

## Features/Benefits

- Low profile – 1,5 mm
- Momentary, normally closed contact
- Infrared reflow soldering without cleaning
- Thermoformed tape & reel
- RoHS compliant and compatible

## Typical Applications

- Automotive
- Position sensing switch
- Edge card reset switch
- Smart card presence switch detector
- DSL and fiber optic networks



## Specifications

FUNCTION: Momentary, Normally closed.

SWITCHING POWER MAX.: 0.2 W DC

SWITCHING VOLTAGE MAX.: 24 V DC

SWITCHING CURRENT MAX.: 50 mA DC

OPERATING LIFE: 50,000 operations.

CONTACT RESISTANCE: < 200 m Ω

INSULATION RESISTANCE: > 10<sup>9</sup> Ω

BOUNCE TIME: < 3 ms

OPERATING TEMPERATURE: -40°C to +85°C

TRAVEL TO BREAK: 0,3 (.01181) ± 0,1 (.00394)

TOTAL TRAVEL: 1,2 (.047) ± 0,15 (.006)

FORCE AT MAXIMUM TRAVEL: ≤1.25N

STORAGE TEMPERATURE: -55°C to +85°C

SOLDERABILITY: According to lead free soldering profiles.

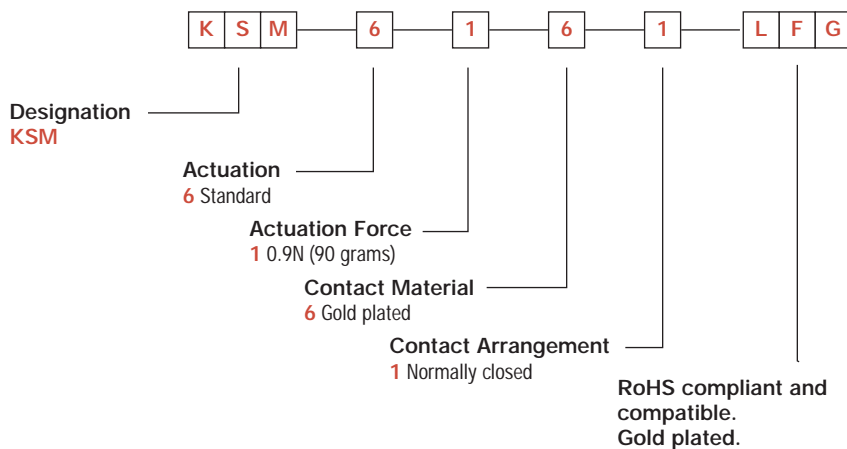
PACKAGING: Switches delivered on continuous tape & reels of 2000 pieces, 16mm width. Dimensions according to EIA RS-481 standard.

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

NOTE: Reduced force deflection tolerances are also available under request (KSM type 6141 and 6151). For further information, consult customer service.

## Build-A-Switch

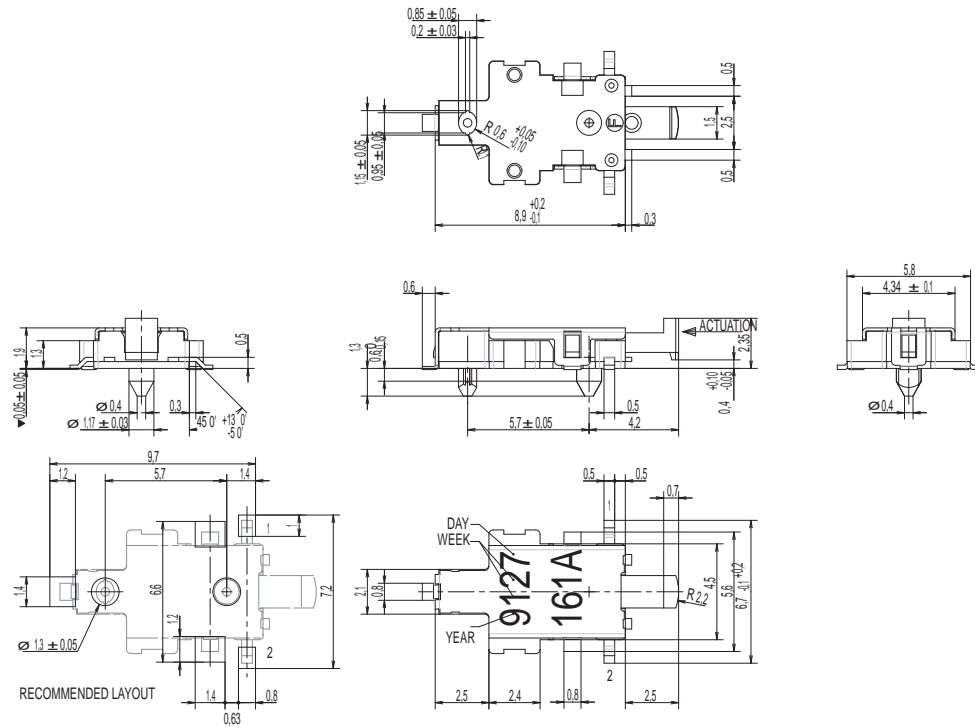
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on page F-10. For additional options not shown in catalog, consult our Customer Service Center.



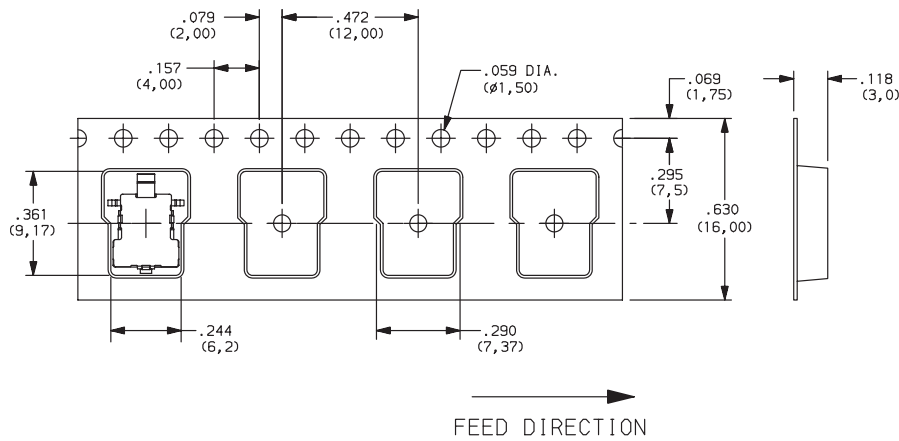


# KSM Series Side Actuated Detect Switches

KSM

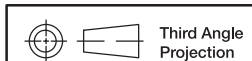


## TAPE & REEL



F

Detect



Third Angle  
Projection

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

# SDS Series Side Actuated Detect Switches

## Features/Benefits

- Low profile package sits just 2mm off PCB
- 2mm overtravel ideal for detector applications
- Low actuation force (75 grams max.)
- Pick & place compatible, available in tape & reel packaging
- RoHS compliant and compatible

## Typical Applications

- Detect the presence of a mechanical device
- Medical devices
- Consumer electronic devices
- PCB lock cam detect
- Smart card detect



## Specifications

CONTACT RATING: 100 mA @ 12 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 50,000 cycles.  
 CONTACT RESISTANCE: 100 m Ω max. initial.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100 VDC.  
 OPERATING TEMPERATURE: -40°C to +85°C.  
 SOLDERABILITY: IR compatible, no wash. 260°C max.  
 PACKAGING: Bulk or tape & reel (3000 per reel).

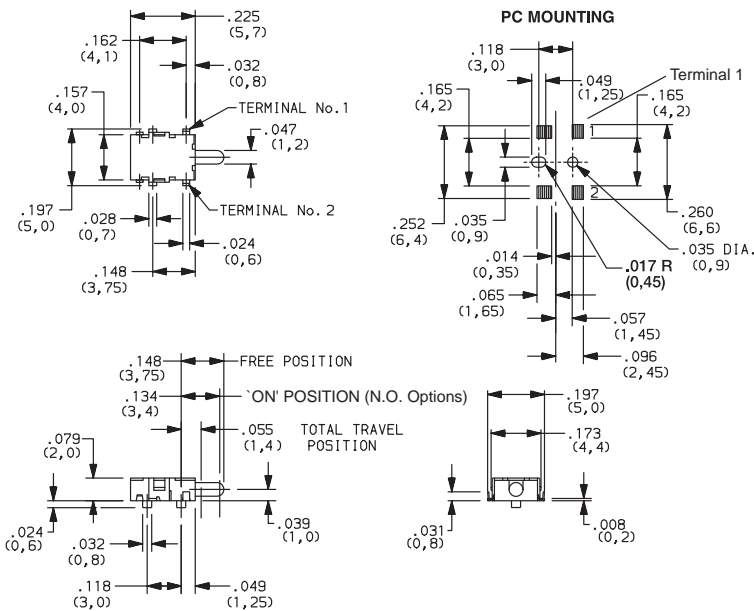
## Materials

BASE: Glass filled LCP (UL 94V-0).  
 ACTUATOR: Glass Filled Polyamide (UL94V-0).  
 SURFACE PLATE: Nickel silver w/silver plate.  
 MOVABLE CONTACT: Phosphor bronze, see table for plating.  
 TERMINALS: Phosphor bronze, see table for plating.

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

## How to Order

Complete part numbers for SDS Series Switches are shown below.

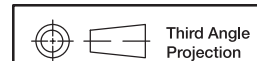
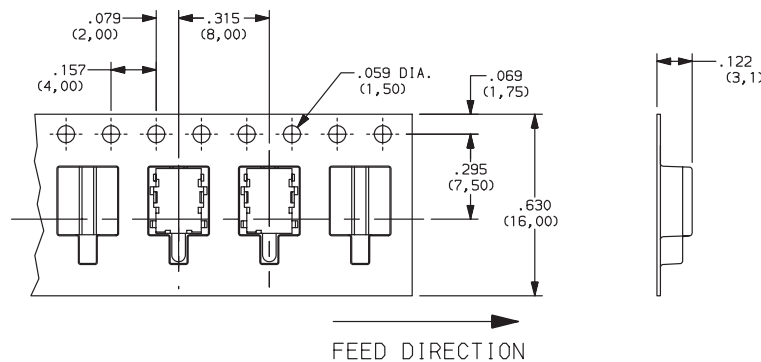


PART NUMBER	HOUSING COLOR	PACKAGING	SCHEMATIC	Contact Plating	Terminal Plating
SDS001	Black	Bulk	N.O. 2 1	Silver Clad	Silver Plate
SDS001R		Tape & Reel			
SDS002	White	Bulk	N.C. 2 1	Silver Clad	Silver Plate
SDS002R		Tape & Reel			
SDS004	Black	Bulk	N.O. 2 1	Gold Flash	Gold Flash
SDS004R		Tape & Reel			
SDS005	White	Bulk	N.C. 2 1	Silver Clad	Silver Plate
SDS005R		Tape & Reel			



SDS001  
SPST

## TAPE & REEL



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



# SDT Series NEW! Micro Mini Pendulum Surface Mount Detect Switches

## Features/Benefits

- Low profile package sits just 3,30 mm off PCB
- Design allows top or side actuation
- Low actuation force, 30 grams max.
- Pick and place compatible, available in tape & reel packaging
- RoHS compliant and compatible

## Typical Applications

- Consumer electronics
- Computers
- Medical devices



## Specifications

CONTACT RATING: 1 mA 5 VDC  
 MECHANICAL AND ELECTRICAL LIFE: 100,000 cycles min.  
 CONTACT RESISTANCE: 1 Ω max. initial.  
 INSULATION RESISTANCE: 10 M Ω min. between adjacent contacts.  
 OPERATING TEMPERATURE: -20°C to +70°C  
 STORAGE TEMPERATURE: -30°C to +80°C  
 PACKAGING: Tape & reel, 2,200 per reel.

## Materials

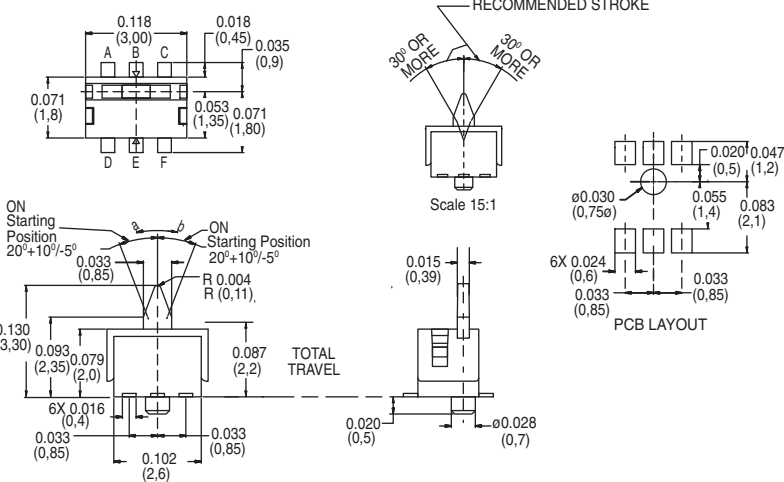
BASE: LCP  
 COVER: PA 46  
 ACTUATOR: LCP  
 MOVABLE BLADE: Stainless steel, gold over nickel plate.  
 TERMINALS: Phosphor bronze, gold over nickel plate.

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

Complete part numbers for SDT Series are shown below.

PART NUMBER	PACKAGING	SCHEMATIC
<b>SDT001</b>	TAPE & REEL	 CIRCUIT DIAGRAM

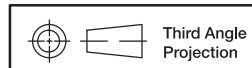
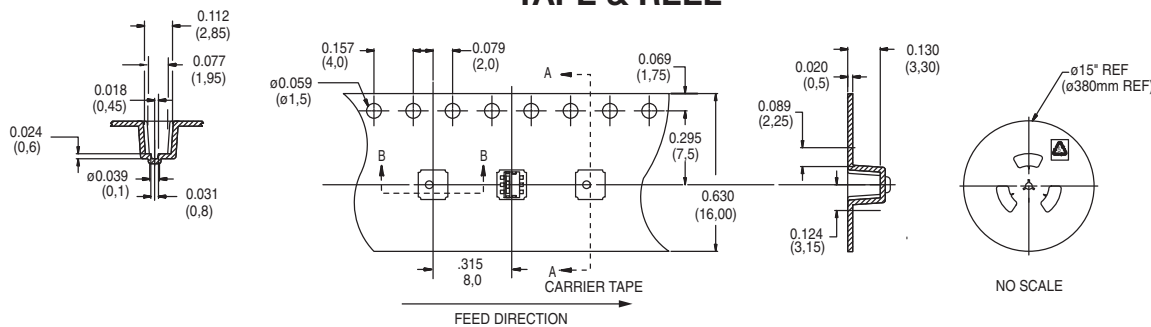


SDT001



Detect

## TAPE & REEL



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



# DDS Series Micro Mini Thru-hole Detect Switches



## Features/Benefits

- Vertical or horizontal actuation
- 2mm overtravel—Ideal for detector applications
- Low actuations force (less than 40 grams)
- RoHS compliant and compatible

## Typical Applications

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

## Specifications

CONTACT RATING: 0.1A @ 30 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 50,000 cycles.  
 CONTACT RESISTANCE: 150 m Ω max. initial.  
 INSULATION RESISTANCE: 100 M Ω min. @ 100 VDC.  
 OPERATING TEMPERATURE: -20°C to +70°C.  
 DIELECTRIC STRENGTH: 100 volts AC @ 60 Hz.  
 PACKAGING: Bulk.

## Materials

HOUSING: P.P.S.  
 ACTUATOR: PA66  
 MOVABLE CONTACT: Tin bronze, silver plated.

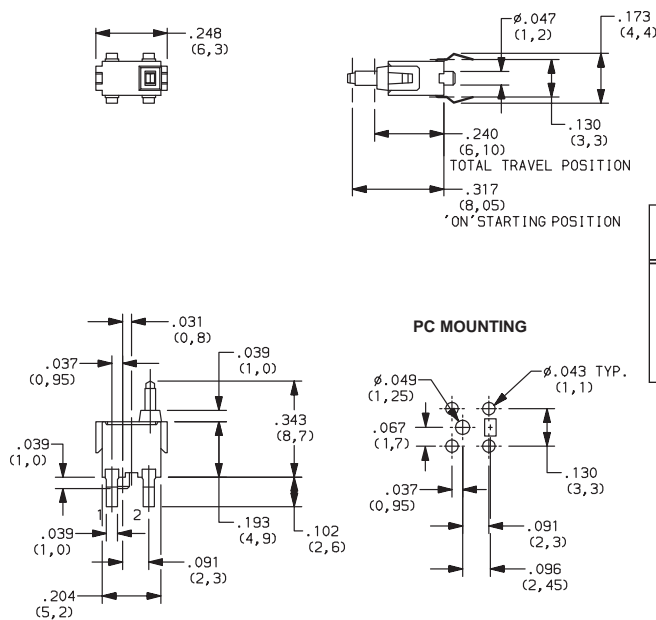
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.


## How To Order

Complete part numbers for DDS Series Switches are shown below.



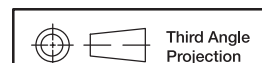
DDS001  
SPST



PART NUMBER	DESCRIPTION	SCHEMATIC
DDS001	Vertical Actuator	 SPST N.O.



Detect




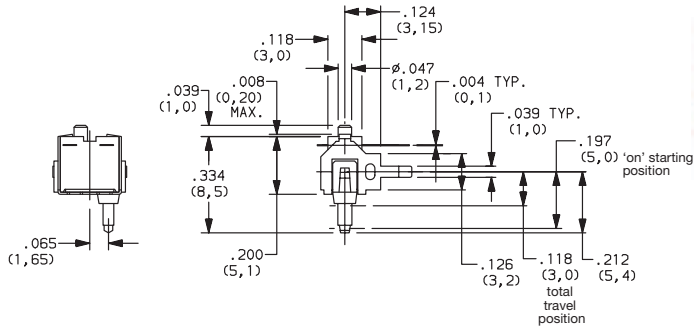
Dimensions are shown: Inches (mm)  
 Specifications and dimensions subject to change

# DDS Series

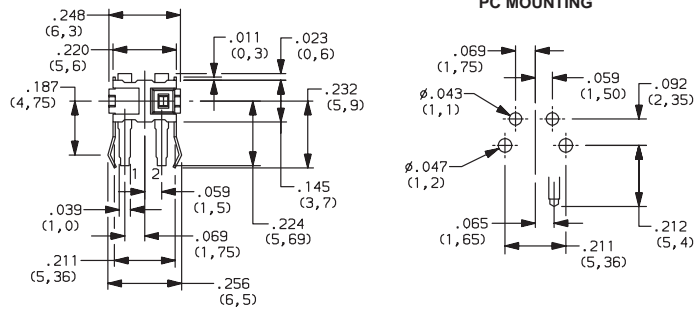
## Micro Mini Thru-hole Detect Switches




PART NUMBER	DESCRIPTION	SCHEMATIC
<b>DDS002</b>	Right angle, actuator right	 SPST N.O.

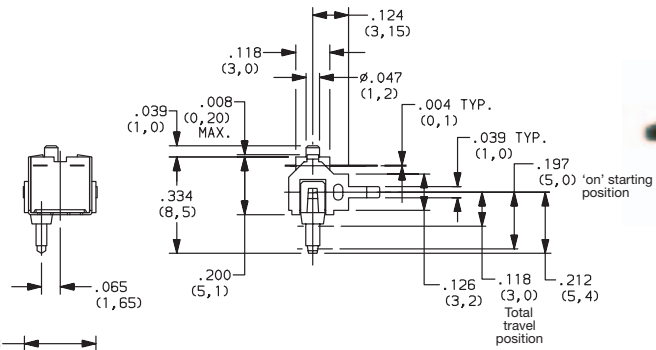


**DDS002**  
**SPST**

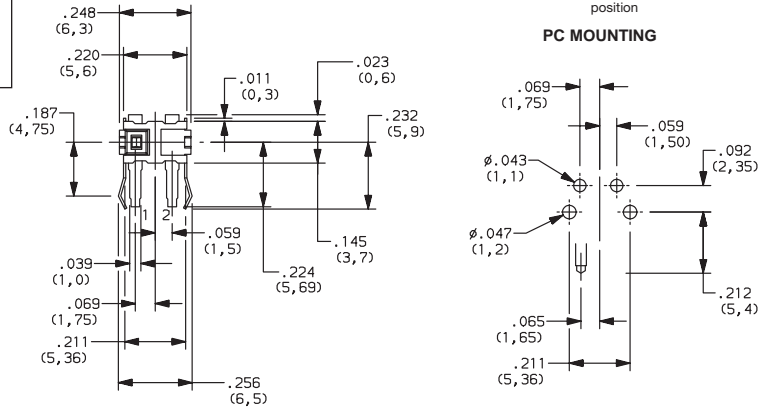


**PC MOUNTING**

PART NUMBER	DESCRIPTION	SCHEMATIC
<b>DDS003</b>	Right angle, actuator left	 SPST N.O.



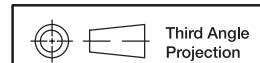
**DDS003**  
**SPST**



**PC MOUNTING**



**Detect**



Third Angle Projection

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



# MDS Series Micro Snap-acting Detect Switches



## Features/Benefits

- Snap-acting tactile feel
- Small package size
- Available in vertical or right angle PCB mount
- Long total travel of 2,9 mm
- RoHS compliant and compatible

## Typical Applications

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

## Specifications

CONTACT RATING: 0.3A @ 6 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 15,000 operations.  
 CONTACT RESISTANCE: 200 m Ω max.  
 OPERATING TEMPERATURE: -25°C to +70°C.  
 SOLDERABILITY: According to lead free solder profiles.  
 PACKAGING: Available in bulk or tape and reel.  
 OPERATING FORCE: 65g Max.  
 RELEASE FORCE: 3g Min.

## Materials

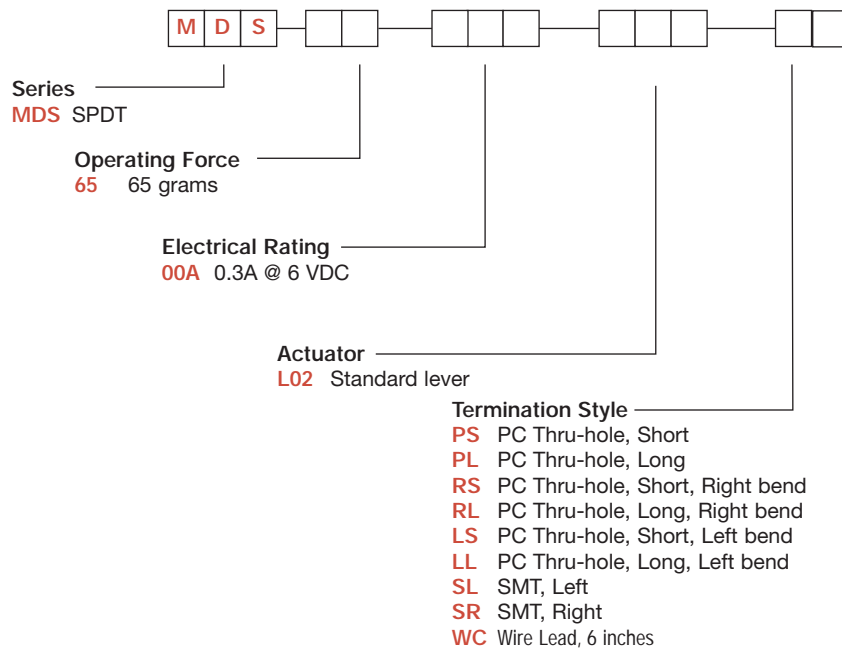
BASE: PA6T  
 COVER & ACTUATOR: PA46  
 MOVABLE CONTACT: Copper alloy, silver plated.  
 STATIONARY CONTACTS: Copper alloy, silver plated.  
 TERMINALS: Copper alloy, tin plated.

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. Available options are shown and described on pages F-15 and F-18. For additional options not shown in catalog, consult Customer Service Center.



F

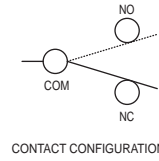
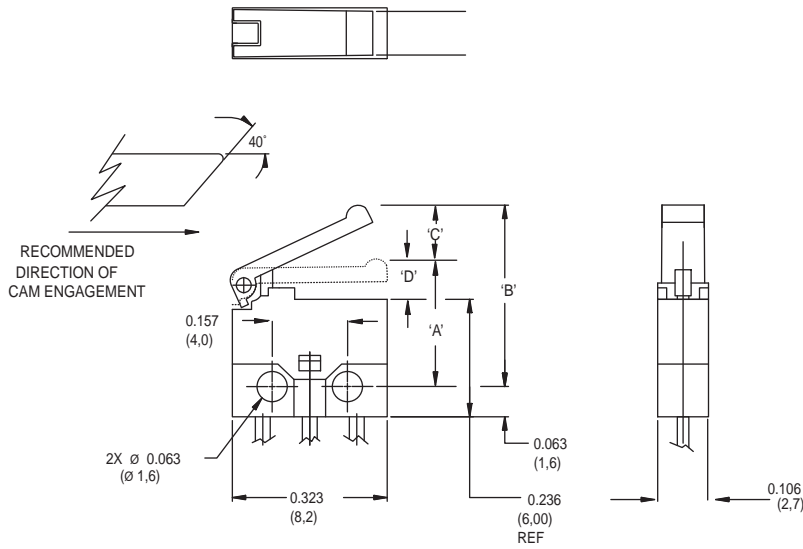
Detect



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

# MDS Series Micro Snap-acting Detect Switches

SERIES **MDS** 



OPERATING CHARACTERISTICS		
OPERATING POSITION	DIM 'A'	.276+015/-02 (7.0+0.4/-0.5)
FREE POSITION	DIM 'B'	.378(9.6) MAX
PRETRAVEL	DIM 'C'	.098(2.5) MAX
OVER TRAVEL	DIM 'D'	.006(0.15) MIN
CONTACT RATING		0.3A 6V DC
OPERATING FORCE		65 gf MAX.

## OPERATING FORCE

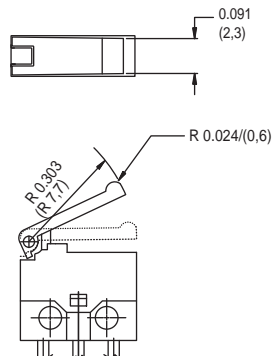
OPTION CODE	OPERATING FORCE
<b>65</b>	65 grams max.

## ELECTRICAL RATING

OPTION CODE	ELECTRICAL RATING
<b>00A</b>	0.3A @ 6 V DC

## ACTUATOR

**L02** STANDARD LEVER



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

**C&K**



**F**

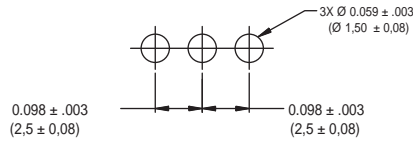
**Detect**

# MDS Series Micro Snap-acting Detect Switches

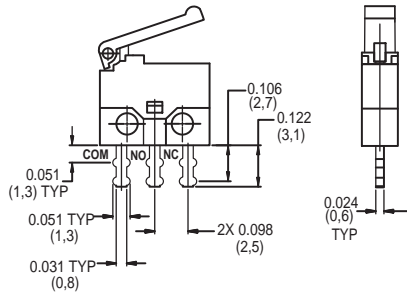
## TERMINATIONS



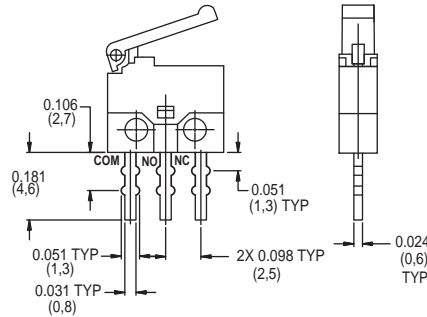
### PCB Mounting Pattern



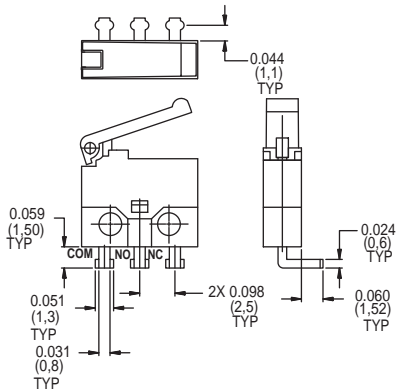
**PS** PC THRU-HOLE, SHORT STRAIGHT



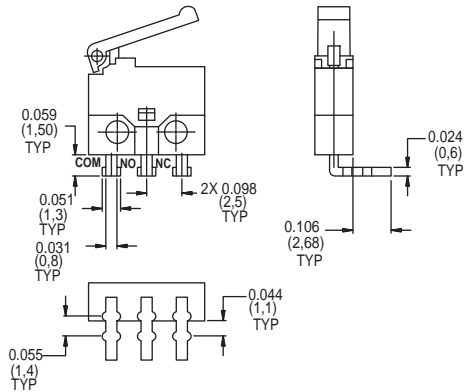
**PL** PC THRU-HOLE, LONG STRAIGHT



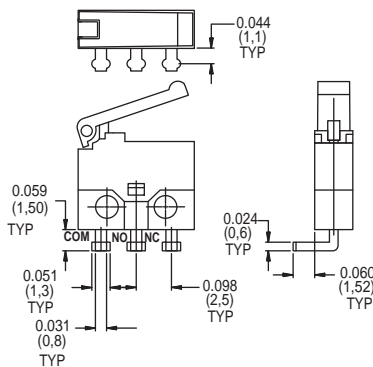
**RS** PC THRU-HOLE, SHORT RIGHT BEND



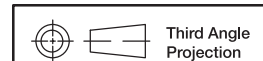
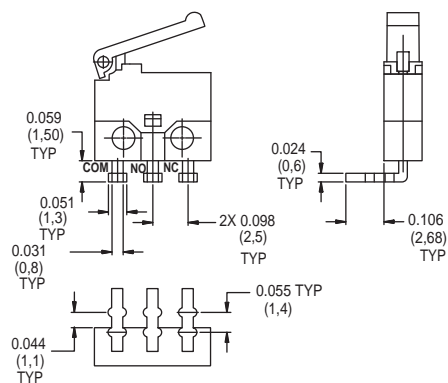
**RL** PC THRU-HOLE, LONG SHORT BEND



**LS** PC THRU-HOLE, SHORT LEFT BEND



**LL** PC THRU-HOLE, LONG LEFT BEND



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



F

Detect



# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

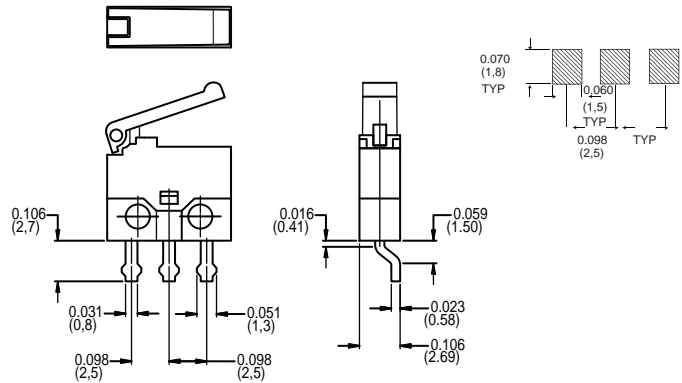
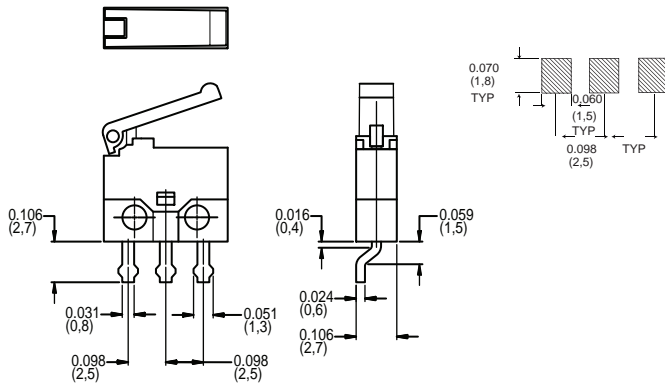


**SL** SMT, LEFT MOUNT

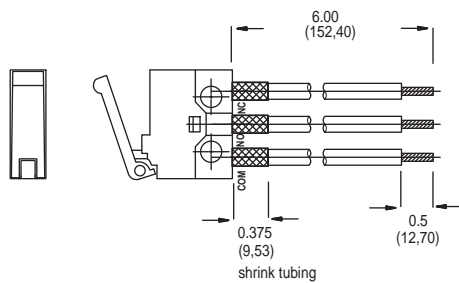
**SMT Mounting Pattern**

**SR** SMT, RIGHT MOUNT

**SMT Mounting Pattern**



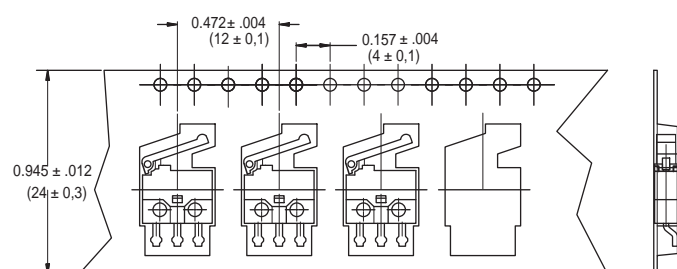
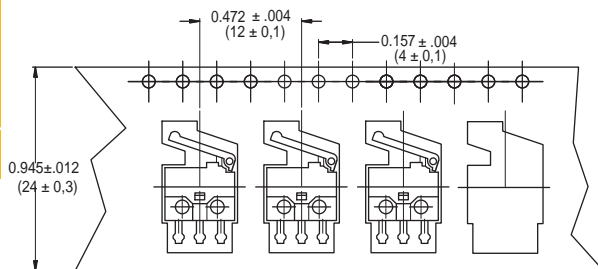
**WC** WIRE LEADS



## PACKAGING

**SL** SMT, LEFT MOUNT

**SR** SMT, RIGHT MOUNT



PULLING-OUT DIRECTION OF THE TAPE

PULLING-OUT DIRECTION OF THE TAPE  
SCALE 3:1

Note: SL and SR options supplied in carrier tape meeting the EIA-481-2 standard for 24mm tape. Packaging quantity: 1,600 pieces per reel.



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

# ZMA Series Subminiature 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 compatible*

## Typical Applications

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



Models Available

## Specifications

CONTACT RATING: 3A @ 125 V AC / 0.1A @ 30 V DC.  
 ELECTRICAL LIFE: 300,000 cycles @ 0.1A / 10,000 cycles @ 3A.  
 INSULATION RESISTANCE: 100 M ohm min.  
 DIELECTRIC STRENGTH: 500 Vrms.  
 OPERATING TEMPERATURE: -17°F to 185°F (-25°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.

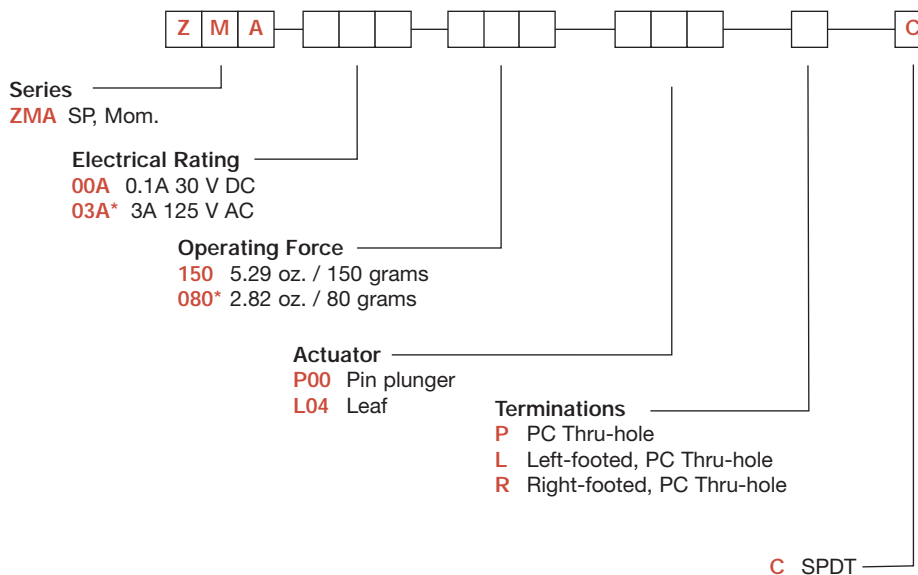
## Materials

CASE: PBT  
 COVER/ACTUATOR: Nylon 6/6  
 MOVABLE CONTACTS: Silver or gold plated.  
 STATIONARY CONTACTS: Silver or gold plated.  
 TERMINALS: Brass, 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. Available options are shown and described on pages F-19 and F-20. For additional options not shown in catalog, consult Customer Service Center.



\*Electrical rating 03A is not available with Operating Force rating of 080.

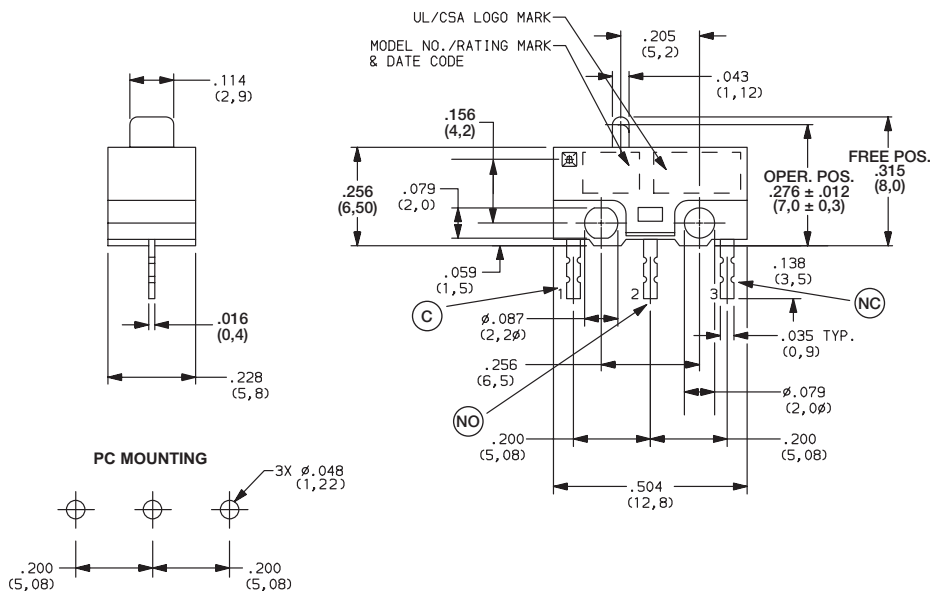


Detect

# ZMA Series Subminiature Snap-acting Switches

SERIES **Z M A**

**ZMA** SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMA03A150L04PC  
SPDT

## ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		ELECTRICAL RATING
	MOVABLE CONTACT	STATIONARY CONTACT	
<b>00A</b>	GOLD OVER FINE SILVER	GOLD OVER FINE SILVER	0.1 AMP @ 30 V DC
<b>03A*</b>	FINE SILVER	FINE SILVER	3 AMPS @ 125 V AC

All models with all options.

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

\*Electrical rating 03A is not available with Operating Force rating of 080.

## OPERATING FORCE

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

\*Electrical rating 03A is not available with Operating Force rating of 080.



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



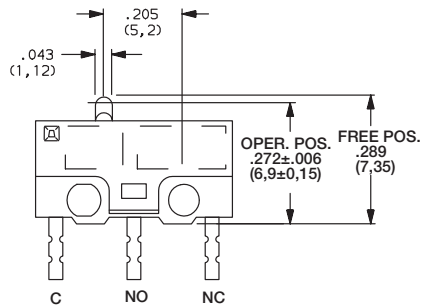
F

Detect

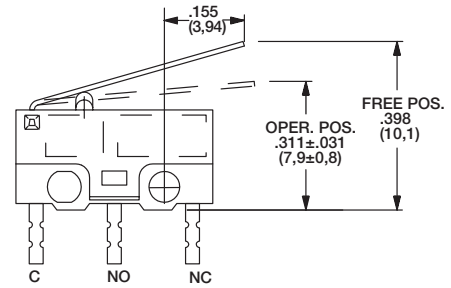
# ZMA Series Subminiature Snap-acting Switches

## ACTUATOR

### P00 PIN PLUNGER



### L04 LEAF

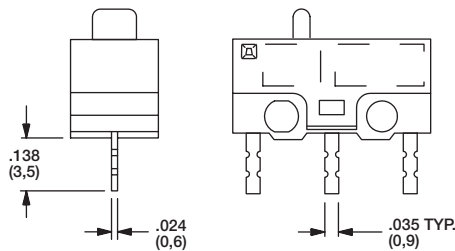


### SWITCH CHARACTERISTICS

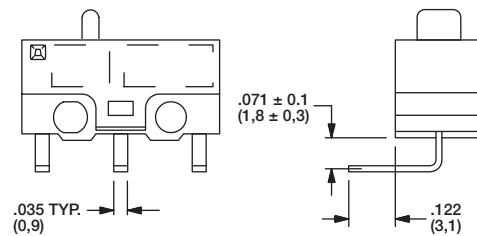
Option Code	Maximum Operate Force (oz. / grams)		Minimum Release Force (oz./grams)		Free Position Max	Maximum Pre-travel	Operate Position	Maximum Differential	Minimum Overtravel
	080	150	080	150	All	All	All	All	All
P00	2.82 80	5.29 150	0.35 10	0.71 20	0.289 (7,35)	0.024 (0,62)	0.272 +/- 0.012 (6,9 +/- 0,3)	0.005 (0,12)	0.008 (0,2)
L04	1.06 30	1.76 50	0.18 5	0.28 8	0.398 (10,1)	0.031 (3,0)	0.311 +/- 0.031 (7,9 +/- 0,8)	0.031 (0,8)	0.024 (0,6)

## TERMINATIONS

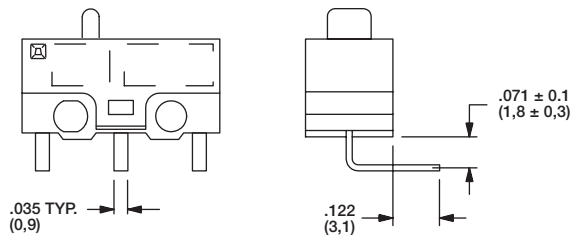
### P PC THRU-HOLE



### L LEFT FOOTED, PC THRU-HOLE

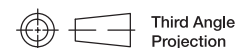


### R RIGHT FOOTED, PC THRU-HOLE



F

Detect



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

# KDS Series Intrusion Switches

## Features/Benefits

- Slot mount into chassis to reduce installation cost
- Wire harness length & connector easily customized
- Available in N.O. or N.C. configuration
- RoHS compliant



## Typical Applications

- Intrusion/Alarm switch in network desktop PC
- Intrusion/Alarm switch in telecommunication equipment
- Intrusion/Alarm switch in cellular base station

## Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC.  
 MECHANICAL & ELECTRICAL LIFE: 10,000 actuations min. at full load.  
 CONTACT RESISTANCE: 200 m Ω max. initial @ 2-4 V DC, 100mA.  
 INSULATION RESISTANCE: 10<sup>9</sup> Ω min.  
 OPERATING TEMPERATURE: -40°C to +85°C  
 TRAVEL: Pretravel: 0.050 max. Overtravel: 0.375 ±.025"  
 DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.  
 PACKAGING: Bulk packaging.

## Materials

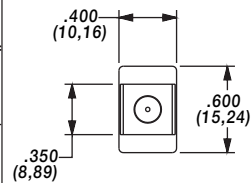
HOUSING: Nylon 6/6 (UL 94V-0)  
 ACTUATOR: Nylon 6/6 (UL 94V-0)  
 MOVABLE CONTACT: Copper alloy, gold plate over nickel plate.  
 FIXED CONTACT: Brass, gold plate over nickel plate.  
 WIRE: UL 1061-24 AWG.

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

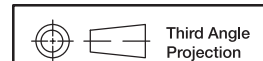
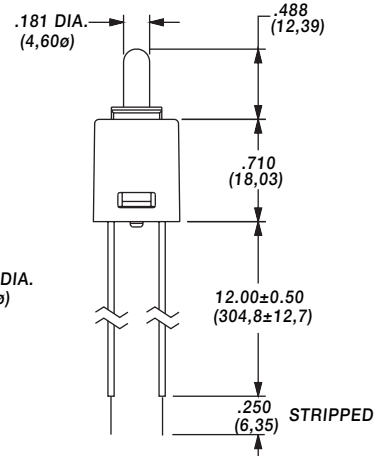
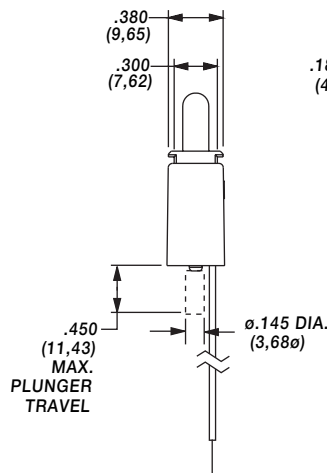
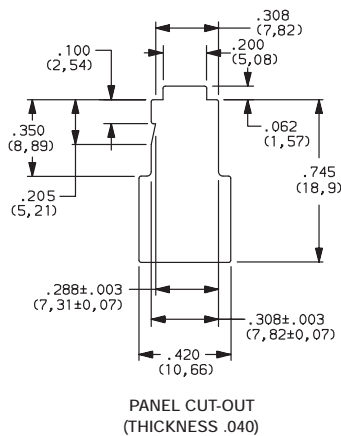
## How To Order

Complete part numbers for KDS Series Switches are shown below.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
<b>KDS11</b>	OFF	MOM.	SPST N.O.
<b>KDS33</b>	ON	MOM.	SPST N.C.



KDS33



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



F

Detect

# MPS Series Magnetic Proximity Sensors

## Features/Benefits

- Long life—10M operations
- Sealed contacts
- Quality construction
- Quick and easy installation

## Typical Applications

- Automotive sensors and indicators
- Industrial sensors
- Factory automation equipment



## Specifications

CONTACT RATINGS: 3.0 W max. @ 30 V DC or 30 V AC max. @ 0.3 AMP max.; 1.0 msec. max. operate time (including bounce); 1.0 AMP max. carry current.

CONTACT RESISTANCE: 100 m Ω max. initial.

DIELECTRIC STRENGTH: 200 V DC min.

ELECTRICAL CIRCUIT: SPST NO (Contact Form A). Reed switch opens when magnet is removed from proximity. Contacts are held closed when magnet is within actuation range.

OPERATING TEMPERATURE: -40°F to 212°F (-40°C to 100°C).

OPERATING DISTANCE/ALIGNMENT: Operate (pull-in or make) points are nominal values with ± 10% tolerance. Release points are 110% to 150% of the operating points.

MECHANICAL & ELECTRICAL LIFE: 10 million operations.

PACKAGING: Bulk packaging, 10 switch and magnet pairs per package.

## Materials

HOUSING/SPACER/COVER: ABS plastic (UL94V-0), white.

REED SWITCH: Rhodium coated reed contacts in hermetically sealed, nitrogen filled glass capsule. Closed when magnet is in close proximity. Used in closed loop circuits.

WIRE LEADS: UL 1061, 22 AWG wire: stranded, made of copper or aluminum; Length: 12 in. with ends stripped; Color: white.

POTTING (around wires): Epoxy.

MAGNETS: Alnico V (all models, except MPS80WG) and Ceramic Ferrite 8 (MPS80WG model only).

ADHESIVE MOUNTING: Foam-backed, pressure-sensitive adhesive with release liner (MPS45WGW model only).

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

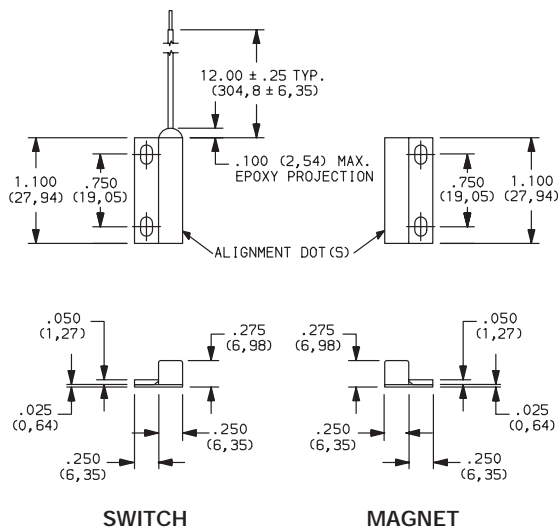
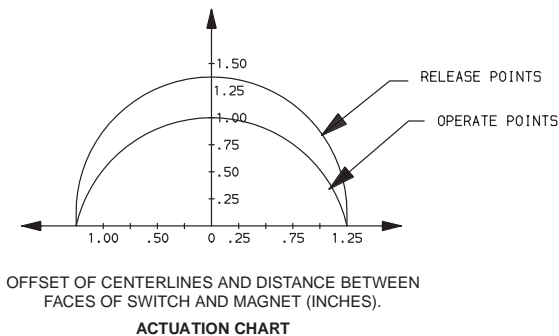
All options are RoHS compliant.

## How To Order

Complete part numbers for MPS Series Magnetic Proximity Sensors are shown on pages F-23 thru F-25.



PART NUMBER	SWITCH TYPE
MPS45WGW	Subminiature surface mount (adhesive or flange), side exit leads, 1" make gap.



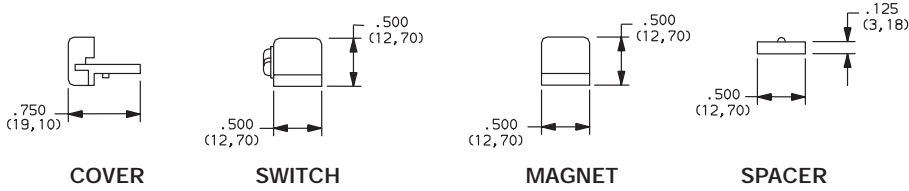
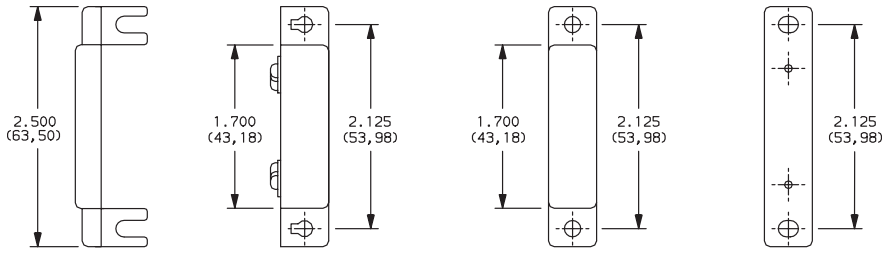
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



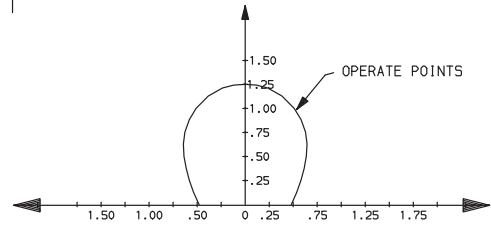
F

Detect

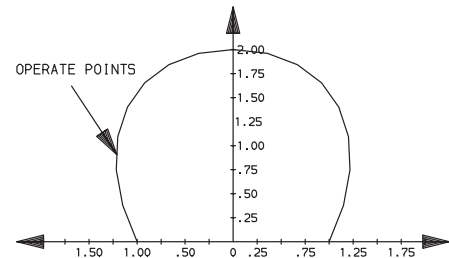
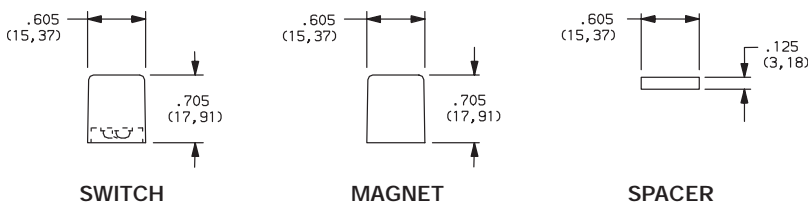
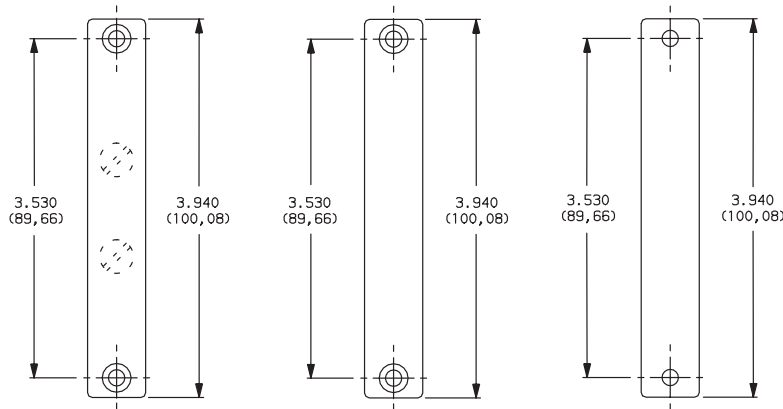
# MPS Series Magnetic Proximity Sensors



PART NUMBER	SWITCH TYPE
<b>MPS20WGW</b>	Standard surface mount, screw terminals, 1 1/4" make gap.

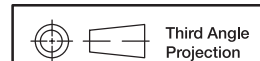


OFFSET OF CENTERLINES AND DISTANCE BETWEEN FACES OF SWITCH AND MAGNET (INCHES).  
**ACTUATION CHART**



OFFSET OF CENTERLINES AND DISTANCE BETWEEN FACES OF SWITCH AND MAGNET (INCHES).  
**ACTUATION CHART**

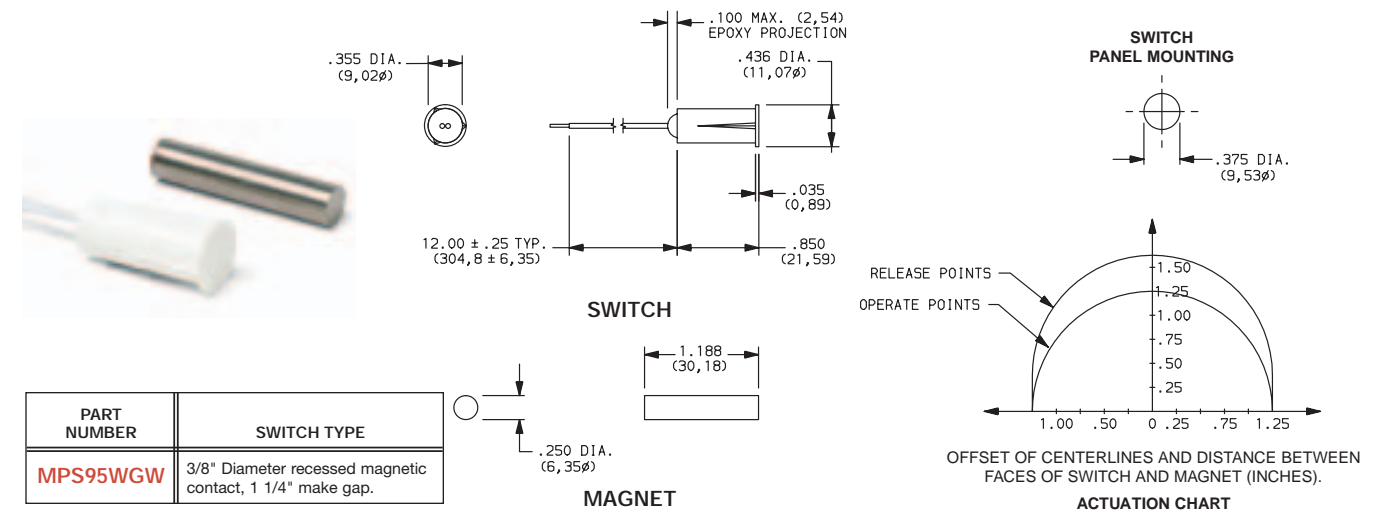
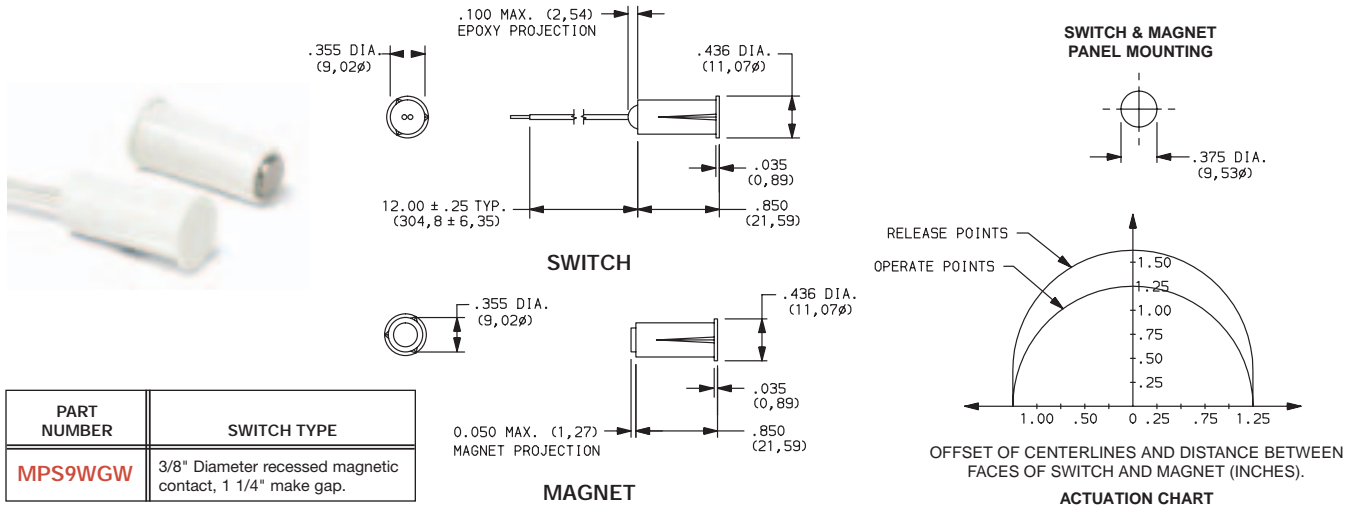
PART NUMBER	SWITCH TYPE
<b>MPS80WGW</b>	Industrial surface mount, concealed screw terminals, 2" make gap.



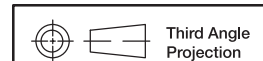
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



# MPS Series Magnetic Proximity Sensors



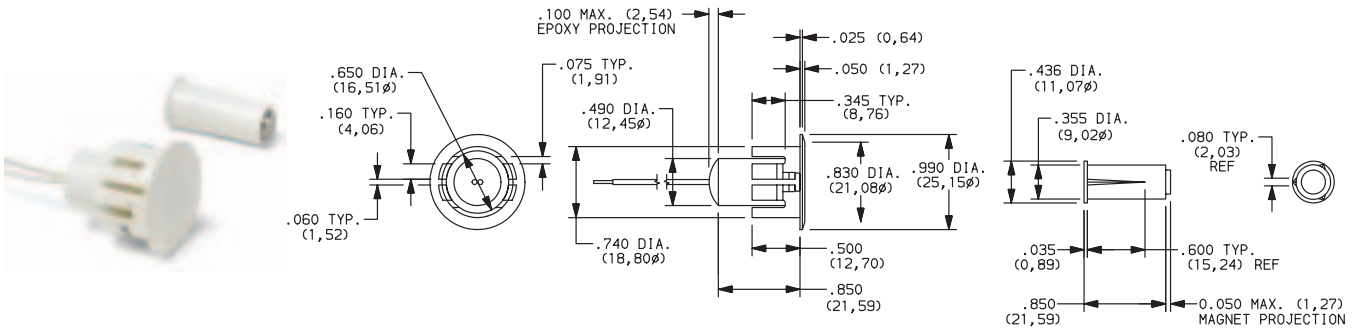
Detect



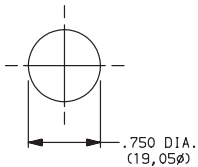
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



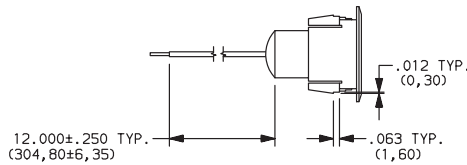
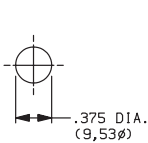
# MPS Series Magnetic Proximity Sensors



SWITCH  
PANEL MOUNTING

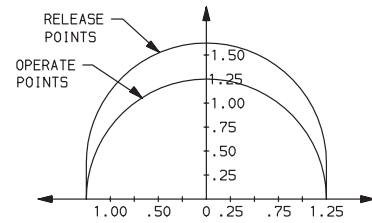


MAGNET  
PANEL MOUNTING



SWITCH

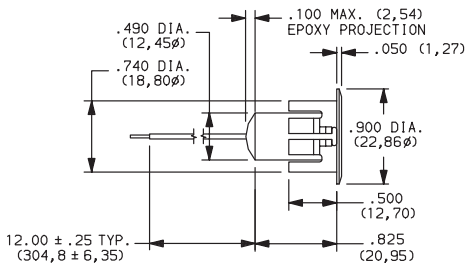
MAGNET



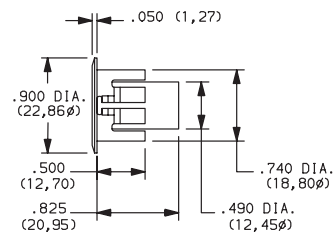
OFFSET OF CENTERLINES AND DISTANCE BETWEEN  
FACES OF SWITCH AND MAGNET (INCHES).

ACTUATION CHART

PART NUMBER	SWITCH TYPE
MPS73WGW	3/4" Diameter recessed magnetic contact, 1 1/4" make gap.



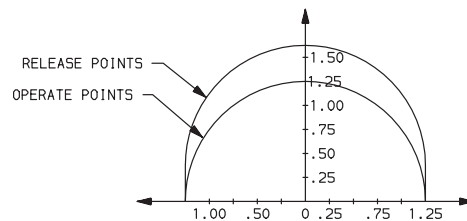
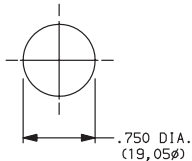
SWITCH



MAGNET



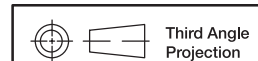
SWITCH & MAGNET  
PANEL MOUNTING



OFFSET OF CENTERLINES AND DISTANCE BETWEEN  
FACES OF SWITCH AND MAGNET (INCHES).

ACTUATION CHART

PART NUMBER	SWITCH TYPE
MPS70WGW	3/4" Diameter recessed magnetic contact, 1 1/4" make gap.



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



D

Detect

# MPS Series Magnetic Proximity Sensors

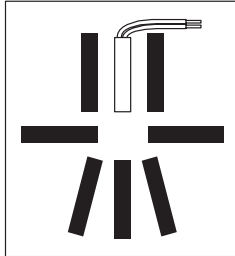
## Actuating Positions

When installing recessed and surface mount contacts, magnet position is very important. The switch and magnet must always be parallel or end to end, and never in a 'T' configuration.

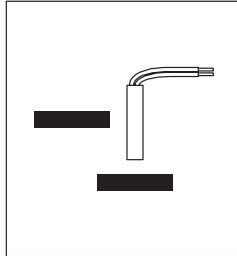
## Gap Distance

Gap distance is a combination of the horizontal and vertical plane separation of the switch and magnet. Example: if a recessed magnet is 1/4" off the centerline of the switch, the make gap is reduced by 1/4"

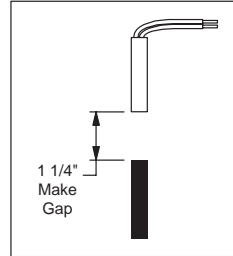
Correct Configuration



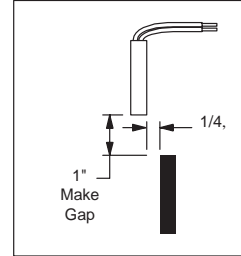
Incorrect Configuration



Center Alignment



Off Center Alignment



F

Detect