

# Detect Switches

## Product Selection Guide

Detect					
Series	HDT	HDS	GDS	SDS	
Travel to Make (mm)	0,3	0,17	0,3	0,35	
Overtravel (mm)	0,75	0,5	0,9	1,65	
Total Travel (mm)	1,05	1,07	1,6	2,0	
Actuator Length (mm)	1,4	1,17	1,8	2,5	
Life Expectancy	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.	
Max. Voltage (V)	5	5	5	12	
Max. Switching Current (mA)	1 mA	1 mA	1 mA	100 mA	
Sealing	No	No	No	No	
Mounting	Surface mount	Surface mount	Surface mount	Surface mount	
Page number	E-4	E-8	E-10	E-11	

Detect						
Series	MDS	KSU	KSR2D	KSM	DDS	KSC4D
Travel to Make (mm)	2,5 max.	0,5	0,3	0,3	0,45	0,6
Overtravel (mm)	0,15 min.	1,0	N/A	1,15	1,95	N/A
Total Travel (mm)	2,9	1,5	0,3	1,72	2,4	0,6
Actuator Length (mm)	R 8,4	1,5	0,8	1,8	2,6	2,6
Life Expectancy	100,000 cycles	100,000 cycles	100,000 cycles	50,000 cycles	50,000 cycles	100,000 cycles
Contact Type	SPDT	SPST N.O.	SPST N.O.	SPST N.C.	SPST N.O.	SPST N.O.
Max. Voltage (V)	30 VDC	32	32	32	30	32
Max. Switching Current (mA)	300 mA	50 mA	10 mA	50 mA	100 mA	50 mA
Sealing	No	Dust and water drop proof	Dust and flux tight	Flux tight	No	IP67
Mounting	Thru-hole & Surface Mount	Surface mount	Surface mount	Surface mount	Thru-hole	Surface mount
Page Number	E-12	E-18	E-20	E-21	E-23	E-25



E

Detect

# Detect Switches Product Selection Guide

Detect						
Series	<b>KSJ</b>	<b>ZMA</b>	<b>KDS</b>	<b>MPS</b>	<b>KM</b>	
Travel to Make (mm)	0,3	1,3 max.	1,25 max.	See actuation	4,06	
Overtravel (mm)	0,75	0,2 min.	8,9	charts on pages	1,78	
Total Travel (mm)	1,05	1,5	10,16	F-31 through F-33	5,84	
Actuator Length (mm)	1,4		10,16	N/A	10,11	
Life Expectancy	100,000 cycles	300,000 cycles	10,000 cycles	10,000,000 cycles	10,000 cycles	
Contact Type	SPST N.O.	SPDT	SPST N.O. SPST N.C.	SPST N.O.	SPDT	
Max. Voltage (V)	5	125 V	20	30 AC	125 V AC	
Max. Switching Current (mA)	1 mA	3 Amps	.4 VA	300 mA	250 mA	
Sealing	Flux tight	No	No	Yes	Flux tight	
Mounting	Surface mount	Thru-hole	Snap-in panel	Wire lead	Thru-hole	
Page number	E-27	E-29	E-33	E-34	E-39	



Detect

# HDT Series

## Micro Mini Surface Mount Detect Switches

### Features/Benefits

- Low profile package
- 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
- Halogen free

### Typical Applications

- Consumer electronics
- Computers
- Medical devices
- ATCA and MicroTCA 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

### 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.  
 SOLDERABILITY: Lead free compatible - No clean.

**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

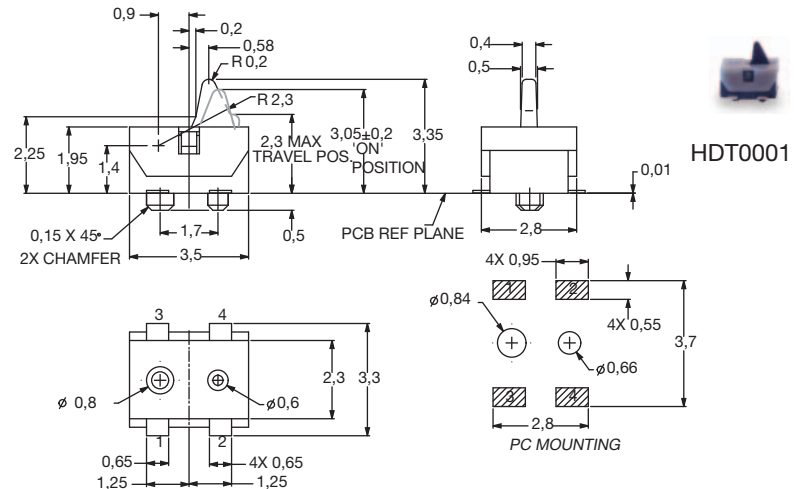
Complete part numbers for HDT Series are shown below.

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0001</b>	TAPE & REEL 2,450 per reel	N.O.

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

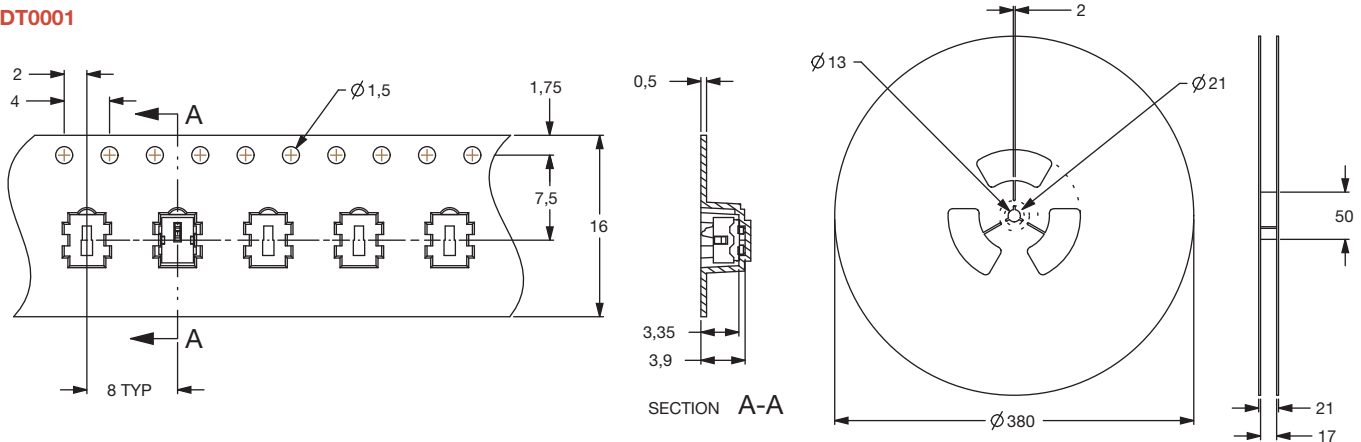
#### TRAVEL:

Pre-travel .30 mm  
 Overtravel: .75 mm  
 Total: 1.05 mm



### TAPE & REEL

#### HDT0001



Third Angle Projection

Dimensions are shown: mm  
 Specifications and dimensions subject to change



# HDT Series Micro Mini Surface Mount Detect Switches

## HDT0004

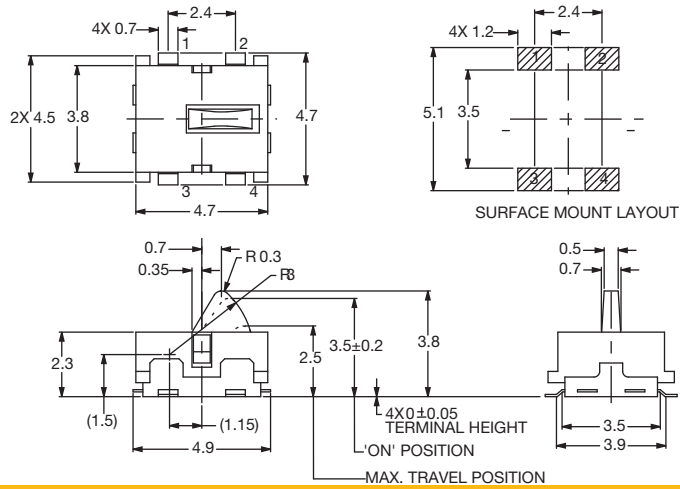


HDT0004

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0004</b>	TAPE & REEL 2,800 per reel	

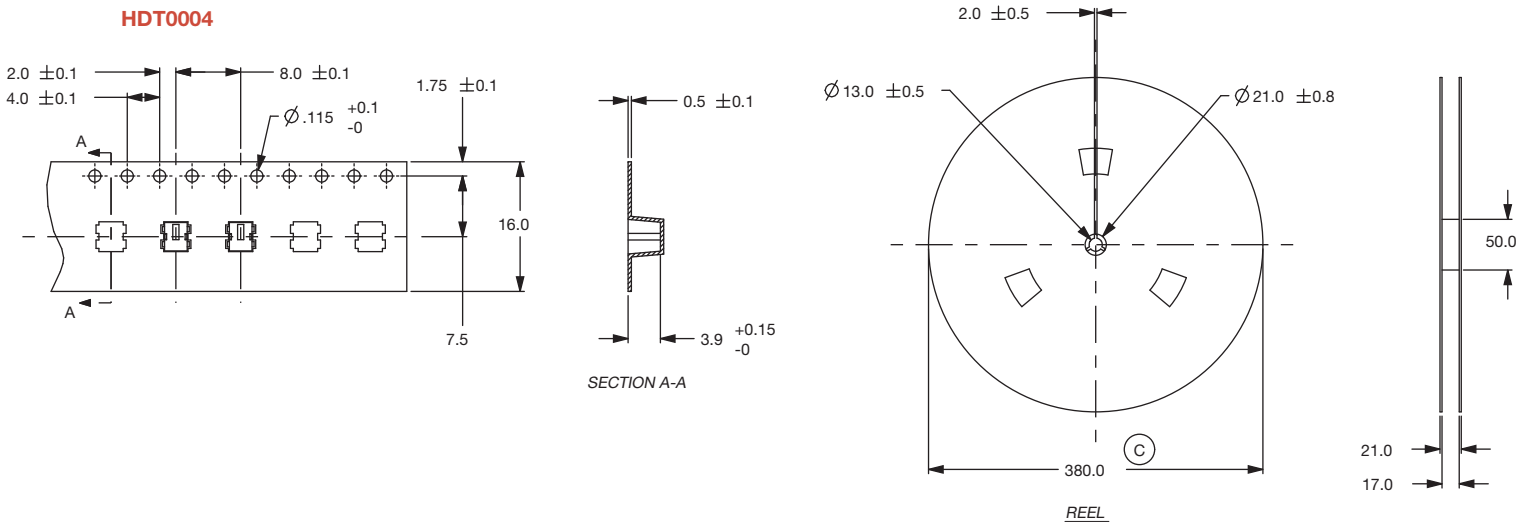
**TRAVEL:**

Pre-travel: .3 mm  
Overtravel: 1.0 mm  
Total: 1.3 mm



## TAPE & REEL

**HDT0004**



## HDT0104

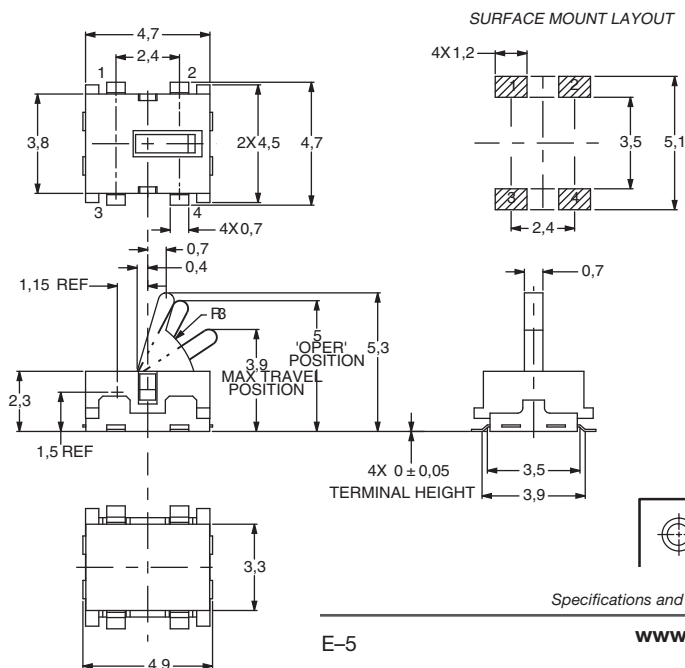


HDT0104

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0104</b>	TAPE & REEL 2,100 per reel	

**TRAVEL:**

Pre-travel: .3 mm  
Overtravel: 1.1 mm  
Total: 1.4 mm



Third Angle Projection  
Dimensions are shown in mm  
Specifications and dimensions subject to change

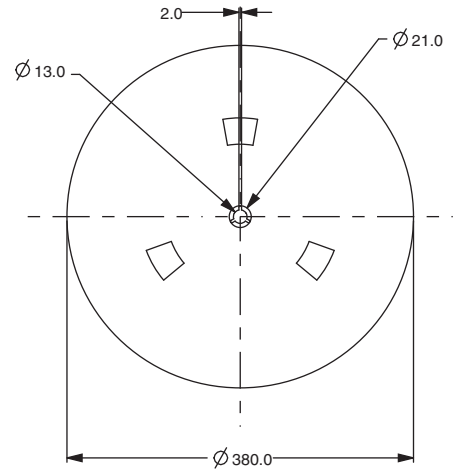
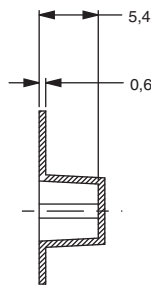
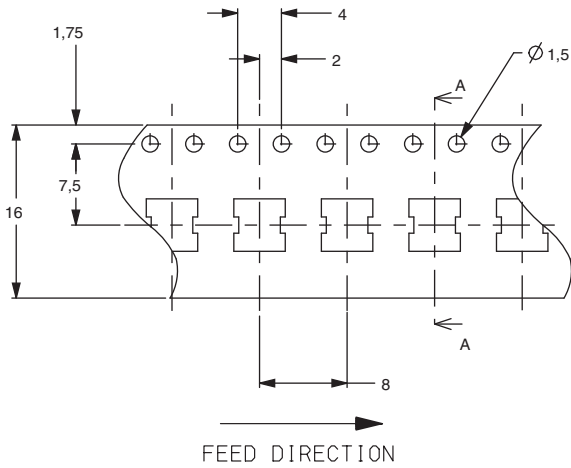


Detect

# HDT Series Micro Mini Surface Mount Detect Switches

## TAPE & REEL

### HDT0104



### HDT0204

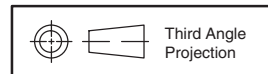
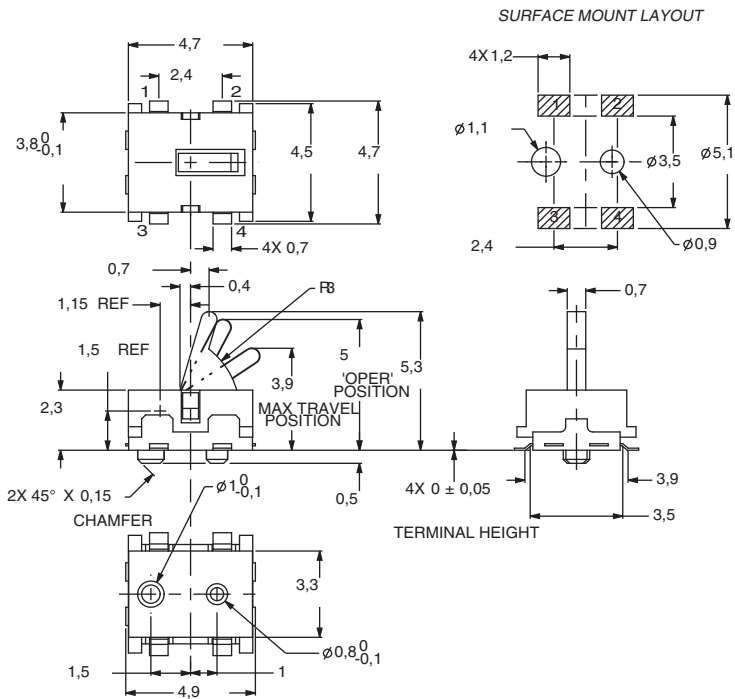


HDT0204

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDT0204</b>	TAPE & REEL 2,000 per reel	

**TRAVEL:**

- Pre-travel: .3 mm
- Overtravel: 1.1 mm
- Total: 1.4 mm



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

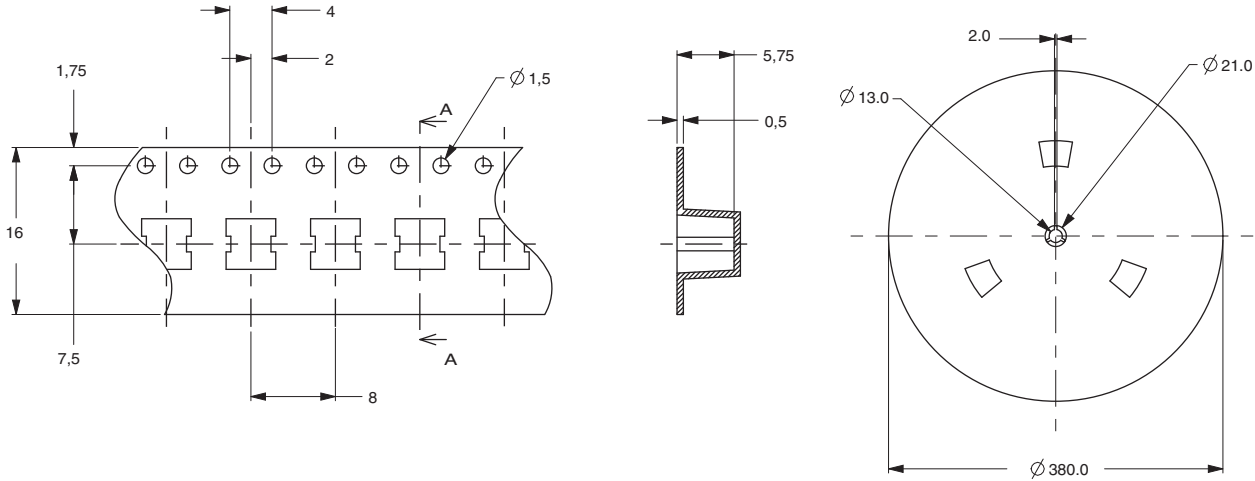


Detect

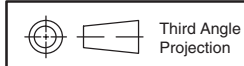
# HDT Series Micro Mini Surface Mount Detect Switches

TAPE & REEL

HDT0204



Detect



Third Angle  
Projection  
*Dimensions are shown: mm  
Specifications and dimensions subject to change*

[www.ck-components.com](http://www.ck-components.com)

# HDS Series

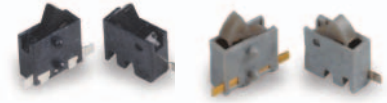
## Micro Mini Side Actuated Surface Mount Detect Switches

### Features/Benefits

- Low profile package sits just 1.4 mm off PCB
- Design allows top or side actuation
- Right and left options available
- 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
- Mobile Communications
- ATCA and MicroTCA devices



### Specifications

CONTACT RATING: 1 mA 5 VDC  
 MECHANICAL AND ELECTRICAL LIFE: 100,000 cycles min.  
 CONTACT RESISTANCE: 1 Ω max. initial.  
 INSULATION RESISTANCE: 100 M Ω min. between adjacent contacts.  
 OPERATING TEMPERATURE: -40°C to + 80°C  
 STORAGE TEMPERATURE: -40°C to + 80°C  
 PACKAGING: tape & reel; 5,000 per reel.  
 TRAVEL:  
 Pre-travel .17 mm min.  
 Overtravel: .5 mm min.  
 Total: 1.07 mm

### Materials

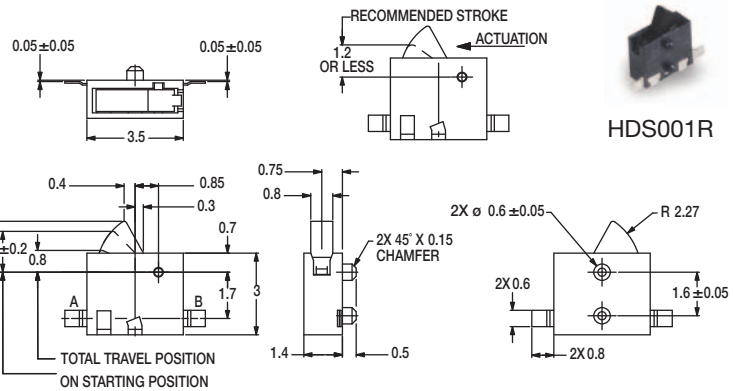
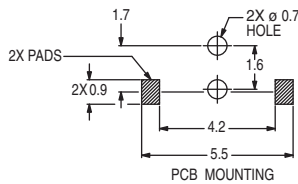
BASE: LCP HDS001L: Gray HDS001R: Black  
 COVER: PA 46 (UL94V-0)  
 ACTUATOR: PA 46 (UL94V-0) HDS001L: Gray HDS001R: Black  
 MOVABLE BLADE: Stainless Steel, Ag over Ni plating.  
 TERMINALS: Phosphor Bronze, Ag plating.

**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

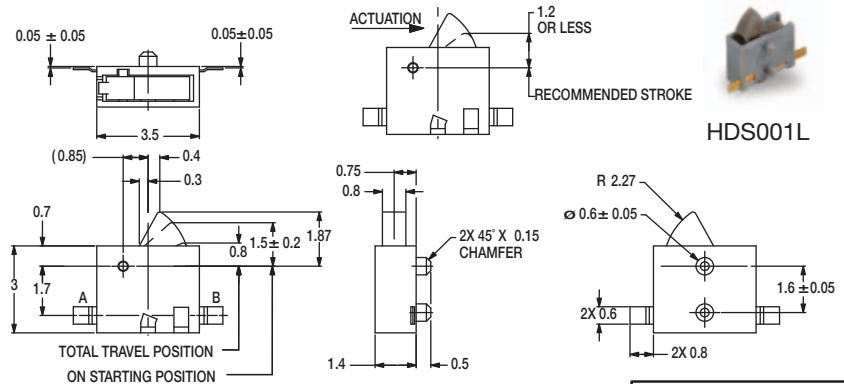
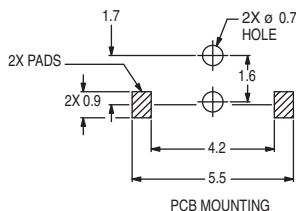
Complete part numbers for HDS Series are shown below.

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDS001R</b>	TAPE & REEL	

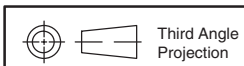


HDS001R

PART NUMBER	PACKAGING	SCHEMATIC
<b>HDS001L</b>	TAPE & REEL	



HDS001L



Third Angle Projection

Dimensions are shown: mm  
 Specifications and dimensions subject to change

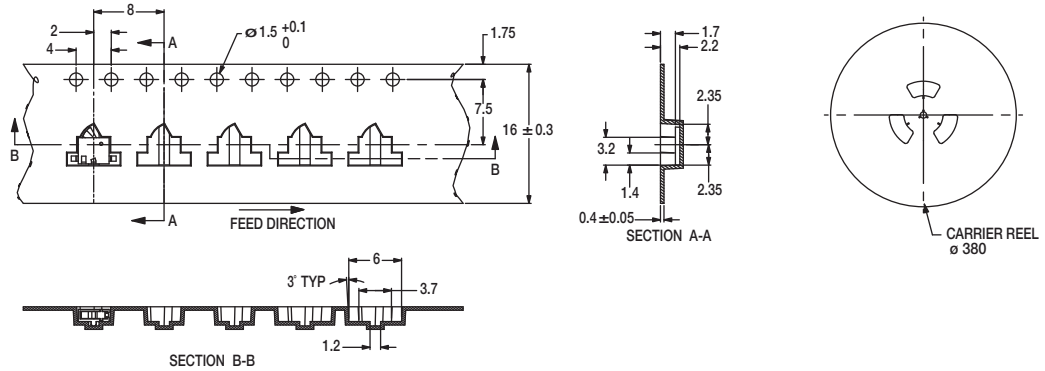


Detect

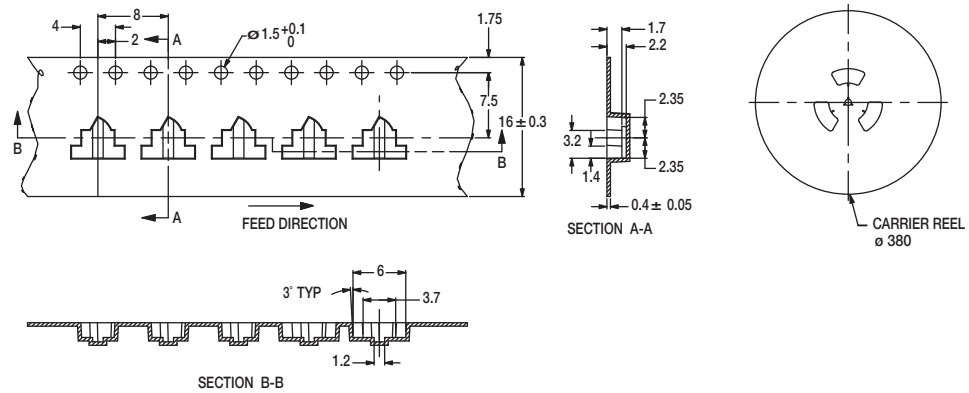
# HDS Series Micro Mini Side Actuated Surface Mount Detect Switches

## TAPE & REEL

HDS001R



HDS001L



NOTE: Quantity per reel: 5,000 pieces



# 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

- Medical devices
- Consumer electronic devices
- PCB lock cam detect
- Smart card detect
- ATCA and MicroTCA

## 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).

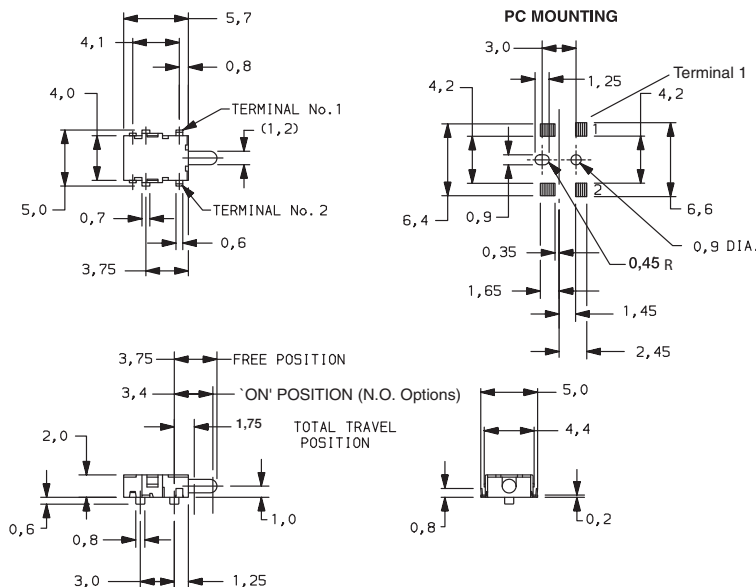
## Materials

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.

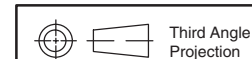
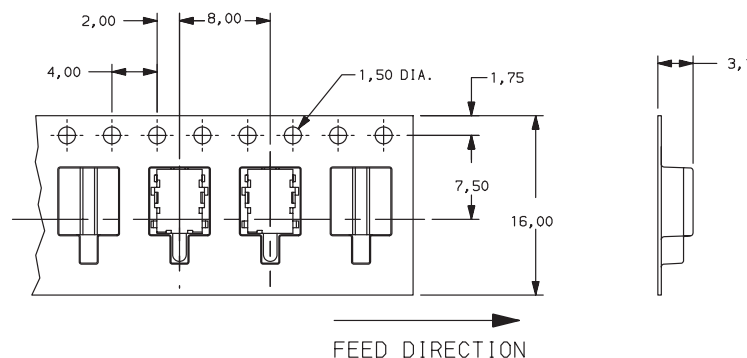


PART NUMBER	HOUSING COLOR	PACKAGING	SCHEMATIC	Contact Plating	Terminal Plating
SDS001	Black	Bulk	N.O. 2 1	Silver Clad	Silver Plate
SDS001R		Tape & Reel			
SDS002	White	Bulk	N.C. 2 1	Gold Flash	Gold Flash
SDS002R		Tape & Reel			
SDS004	Black	Bulk	N.O. 2 1	Gold Flash	Gold Flash
SDS004R		Tape & Reel			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



SDS001  
SPST

## TAPE & REEL

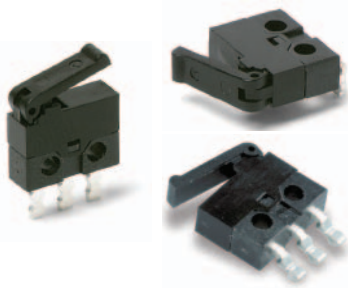


Dimensions are shown: mm  
 Specifications and dimensions subject to change



Detect

# 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 or MicroTCA devices

## Specifications

CONTACT RATING: 300mA @ 30 VDC.  
 MECHANICAL & ELECTRICAL LIFE: 100,000 operations.  
 CONTACT RESISTANCE: 100 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: 50 g Max.  
 RELEASE FORCE: 3g Min.

## Materials

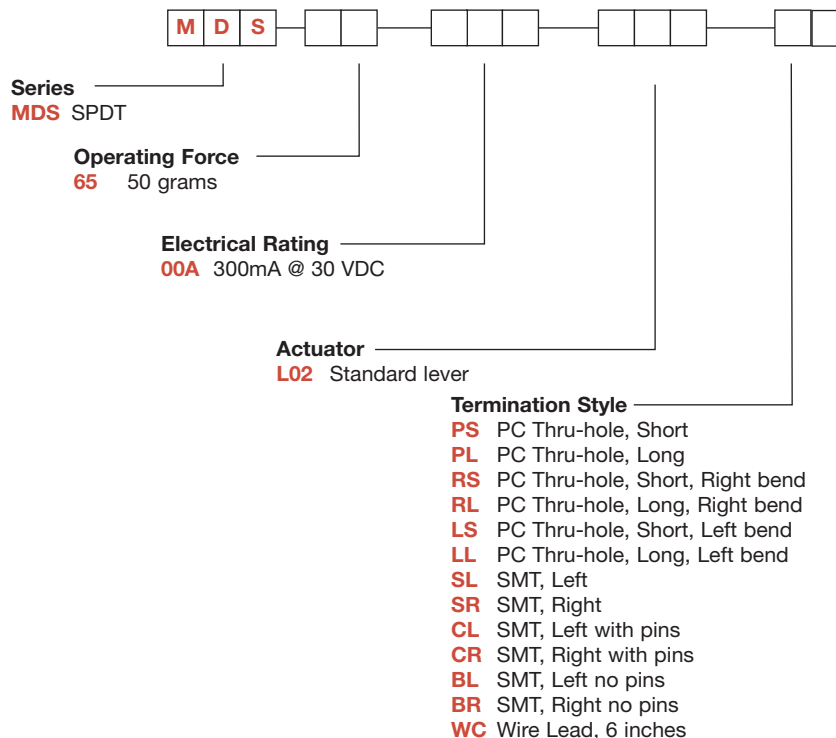
BASE: PA6T UL94HB  
 COVER & ACTUATOR: PA46 UL94HB  
 MOVABLE CONTACT: Copper alloy, silver plated.  
 STATIONARY CONTACTS: Copper alloy, silver plated.  
 TERMINALS: Copper alloy, tin plated.

**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 E-14 and E-18. For additional options not shown in catalog, consult Customer Service Center.



E

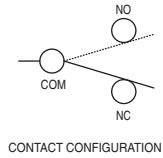
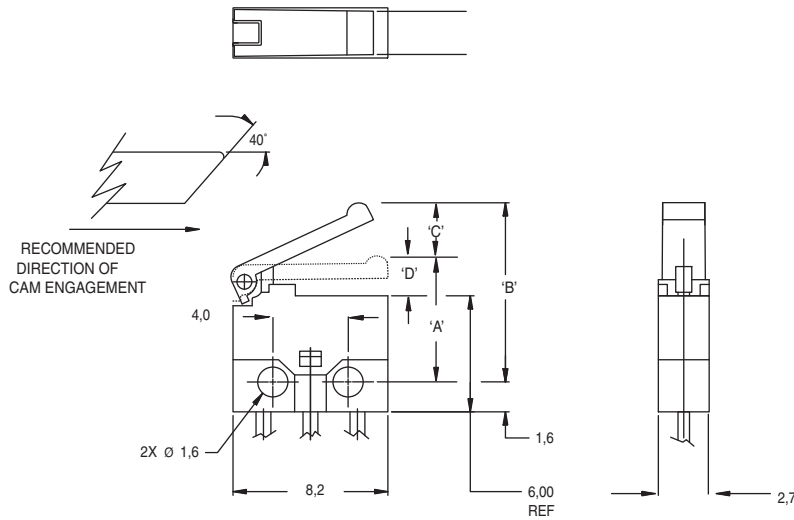
Detect



Dimensions are shown: mm  
 Specifications and dimensions subject to change

# MDS Series Micro Snap-acting Detect Switches

SERIES **MDS**



OPERATING CHARACTERISTICS		
OPERATING POSITION	DIM 'A'	7,0+0,4/-0,5
FREE POSITION	DIM 'B'	9,6 MAX
PRETRAVEL	DIM 'C'	2,5 MAX
OVER TRAVEL	DIM 'D'	0,15 MIN
CONTACT RATING		300mA 30 VDC
OPERATING FORCE		50 gf MAX.

OPERATING FORCE

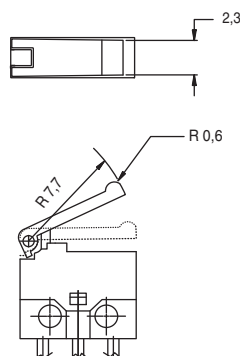
OPTION CODE	OPERATING FORCE
<b>65</b>	50 grams max.

ELECTRICAL RATING

OPTION CODE	ELECTRICAL RATING
<b>00A</b>	300mA @ 30 V DC

ACTUATOR

**L02** STANDARD LEVER



Dimensions are shown: mm  
Specifications and dimensions subject to change

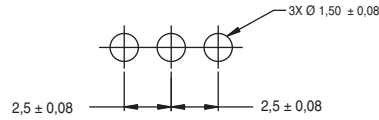


Detect

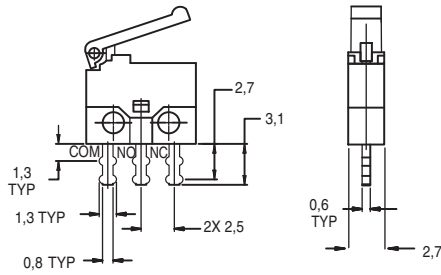
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

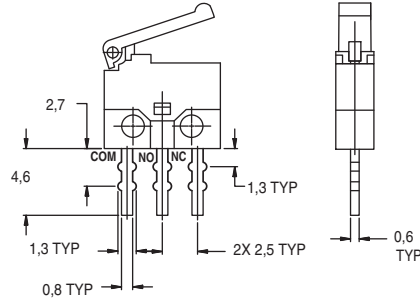
### PCB Mounting Pattern



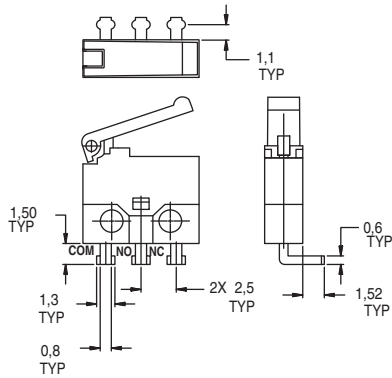
**PS** PC THRU-HOLE, SHORT STRAIGHT



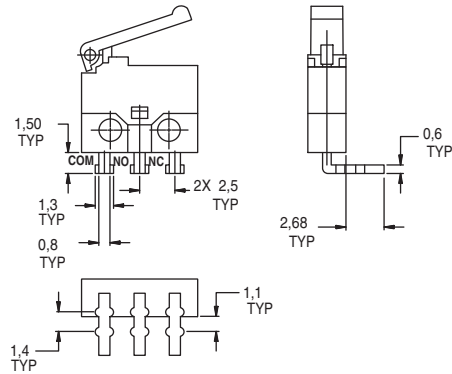
**PL** PC THRU-HOLE, LONG STRAIGHT



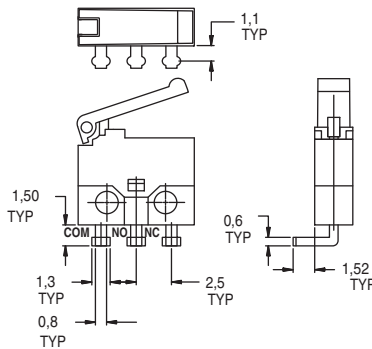
**RS** PC THRU-HOLE, SHORT RIGHT BEND



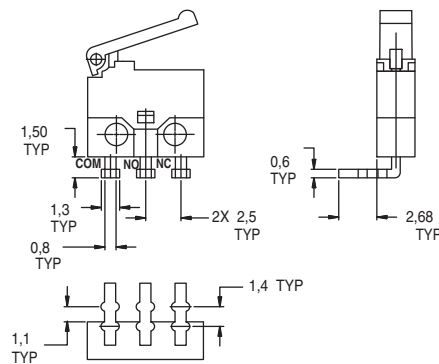
**RL** PC THRU-HOLE, LONG SHORT BEND



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



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



E

Detect



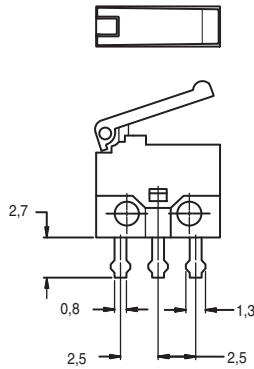
Third Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change

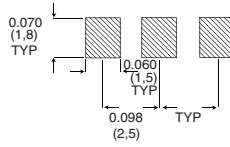
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

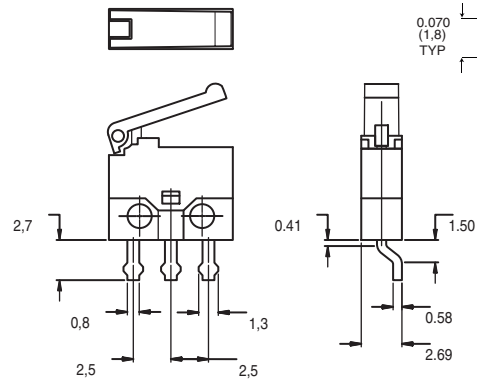
**SL** SMT, LEFT MOUNT



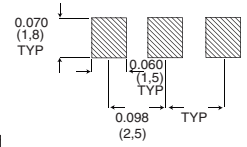
**SMT Mounting Pattern**



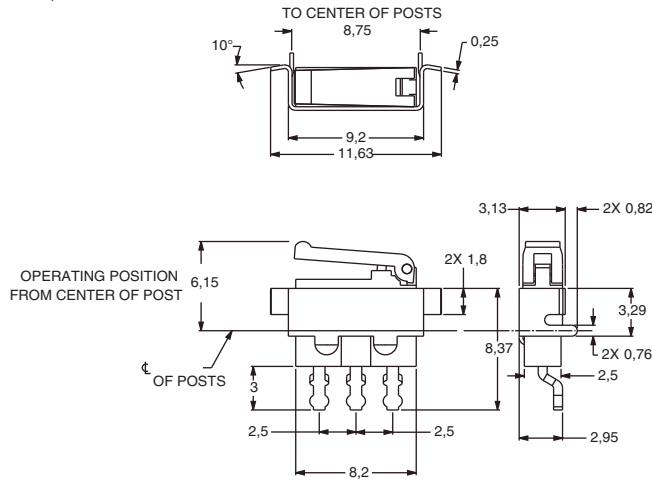
**SR** SMT, RIGHT MOUNT



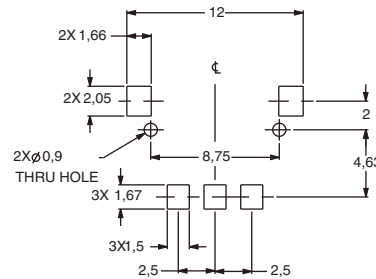
**SMT Mounting Pattern**



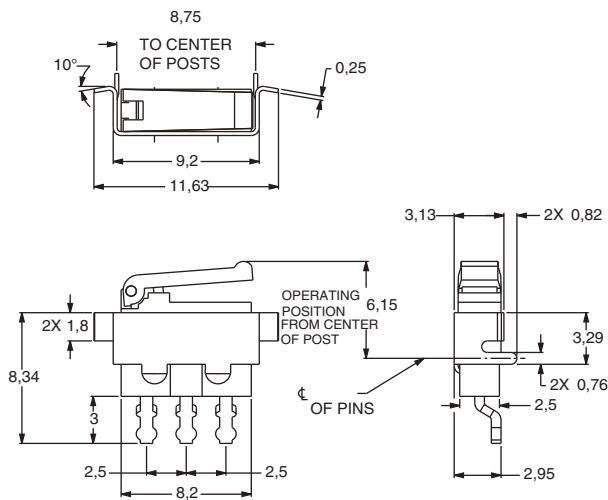
**CL** SMT, LEFT MOUNT WITH PINS



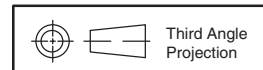
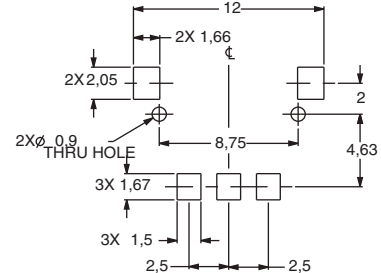
**RECOMMENDED SMT MOUNTING**



**CR** SMT, RIGHT MOUNT WITH PINS



**RECOMMENDED SMT MOUNTING**



Third Angle Projection  
Dimensions are shown in mm  
Specifications and dimensions subject to change

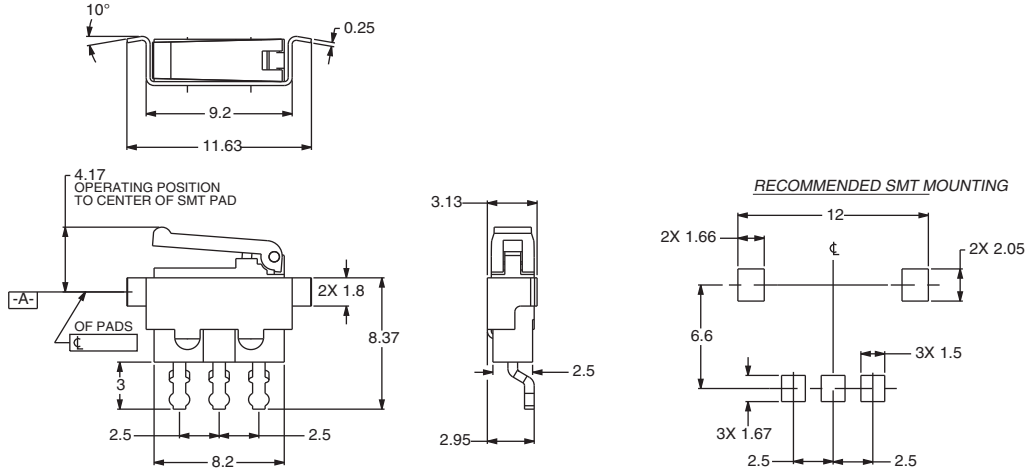


**Detect**

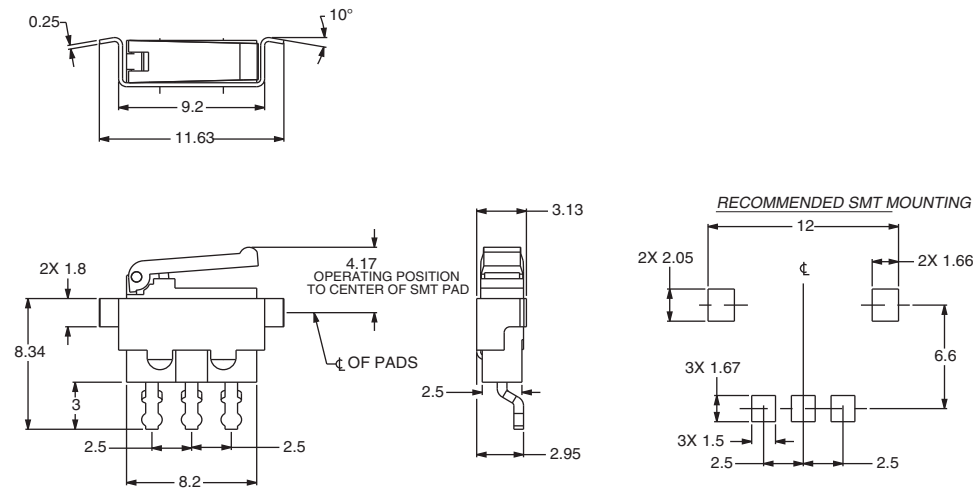
# MDS Series Micro Snap-acting Detect Switches

## TERMINATIONS

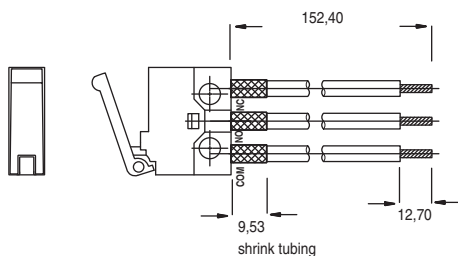
### BL SMT, LEFT NO PINS



### BR SMT, RIGHT NO PINS



### WC WIRE LEADS, 6 INCHES



E

Detect

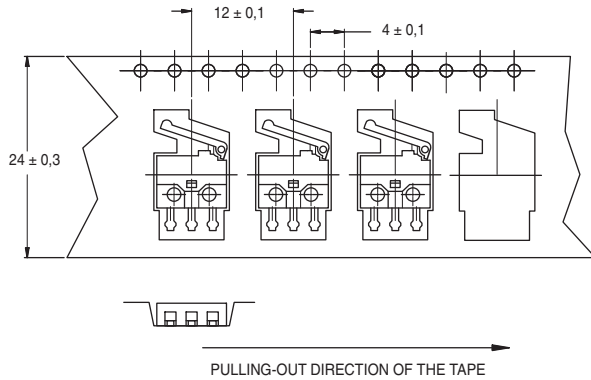


Dimensions are shown: mm  
Specifications and dimensions subject to change

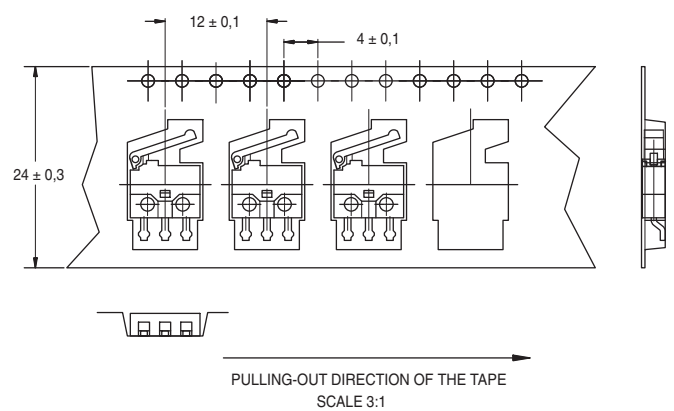
# MDS Series Micro Snap-acting Detect Switches

## TAPE & REEL

**SL** SMT, LEFT MOUNT



**SR** SMT, RIGHT MOUNT

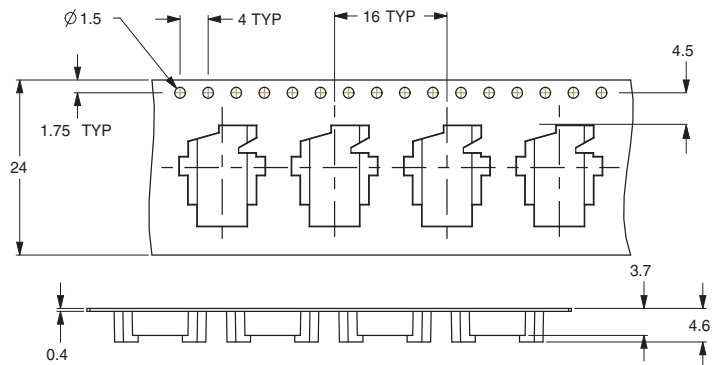
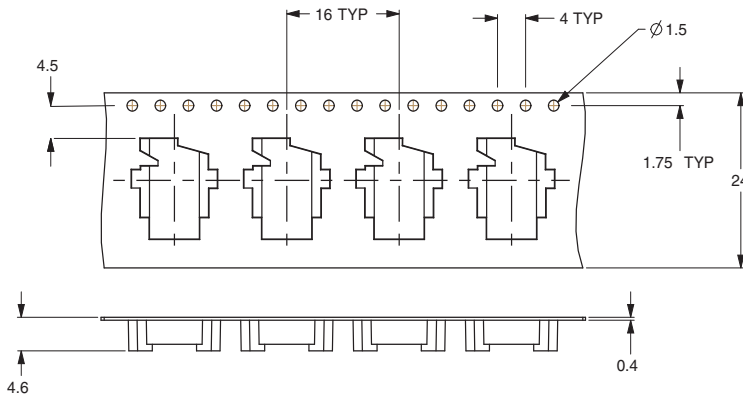


**CL** SMT, LEFT MOUNT

**CR** SMT, RIGHT MOUNT

**BL** SMT, LEFT MOUNT

**BR** SMT, RIGHT MOUNT



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.



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: Gullwing type for SMT.

### Mechanical

ACTUATING FORCE:  
 W version: 1,1 N ±0,8 N  
 ST version: 0,7 N ±0,5 N

TRAVEL TO MAKE:  
 W version: 0,65 mm - 0,45/+0,25 mm  
 ST version: 0,45 mm - 0,25/+0,1 mm

MAXIMUM FORCE AT MAXIMUM TRAVEL: 1,8 N  
 OPERATING LIFE: 100,000 cycles

### Packaging

Switches are delivered on continuous tape, in reels of 1,000 pieces

### Electrical

MAXIMUM POWER: 0.2 VA  
 MAXIMUM VOLTAGE: 32 VDC  
 MINIMUM VOLTAGE: 20 mV  
 MAXIMUM CURRENT: 0.01 A  
 MINIMUM CURRENT: 0.01 mA  
 CONTACT RESISTANCE: ≤ ≤ 100 mΩ  
 INSULATION RESISTANCE: (100 VDC) 10<sup>9</sup> Ω  
 DIELECTRIC STRENGTH: ≥ ≥ 250 Vrms  
 BOUNCE TIME: ≤ 3 ms

### Environmental

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

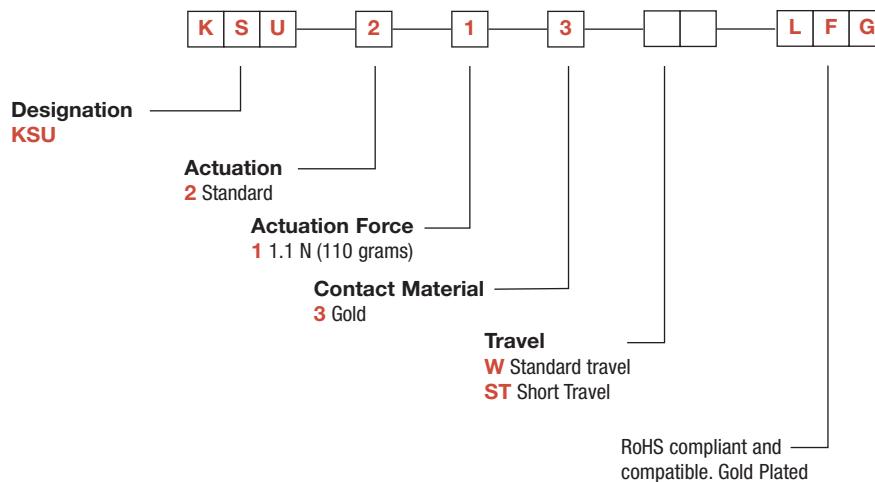
### Process

SOLDERING: Compatible with lead free reflow process

**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 E-20. For additional options not shown in catalog, consult our Customer Service Center.





# 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
KSR2D3MGLFG	1,5 ± 0,5N	100,000	0,3 ± 0,15

## Packaging

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

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

## Electrical

MAXIMUM POWER:	Gold
MAXIMUM VOLTAGE:	0.2 VA
MINIMUM VOLTAGE:	32 VDC
MAXIMUM CURRENT DC:	20 mV
MINIMUM CURRENT DC:	10 mA
CONTACT RESISTANCE:	1 mA
INSULATION RESISTANCE	100 mΩ
BOUNCE TIME:	(100 V): 10°Ω
	1 ms

## Environmental

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

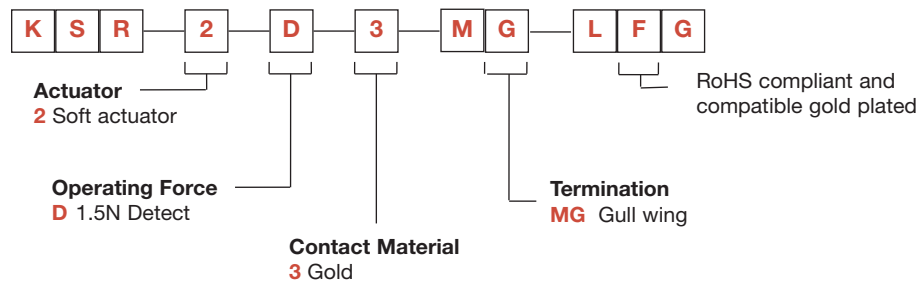
## Process

SOLDERING: Compatible with lead free reflow soldering process

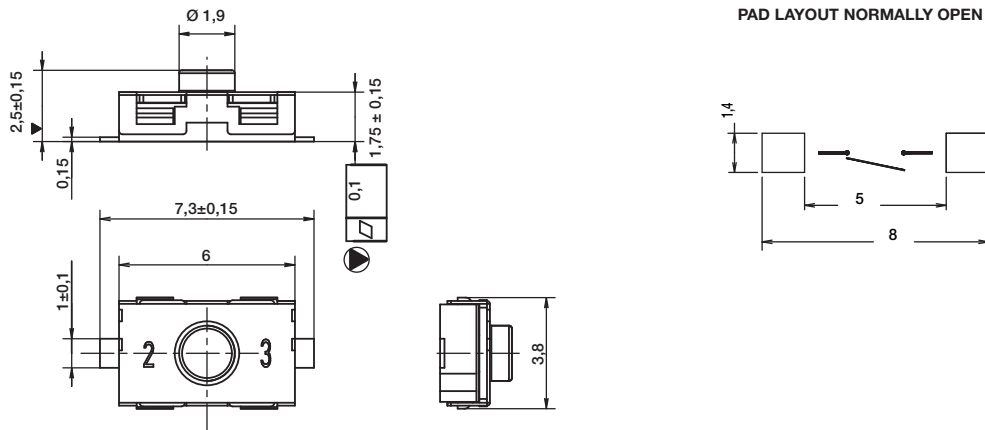
## How To Order

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.

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



## KSR2D



Dimensions are shown: mm

Specifications and dimensions subject to change



Detect

# KSM Series Side Actuated Detect Switches

## Features/Benefits

- Low profile – 1,5 mm
- Momentary, normally closed contact
- Thermo-formed 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 action

CONTACT TYPE: SPST Normally closed

## Mechanical

TRAVEL TO BREAK:  $0.3 \text{ mm} \leq T_e \leq 0.70 \text{ mm}$

TOTAL TRAVEL:  $1.72 \text{ mm} \leq T_m \leq 2.12 \text{ mm}$

FORCE AT MAXIMUM TRAVEL:  $0.99 \text{ N} \leq F_a \leq 1.34 \text{ N}$

OPERATING LIFE: 50,000 cycles

## Packaging

Switches are delivered on continuous tape, in reels of 2,000 pieces

## Electrical

MAXIMUM POWER: 1.0 VA

MAXIMUM VOLTAGE: 32 VDC

MINIMUM VOLTAGE: 20 mV

MAXIMUM CURRENT DC: 50 mA

MINIMUM CURRENT DC: 1 mA

CONTACT RESISTANCE:  $\leq 900 \text{ m}\Omega$

INSULATION RESISTANCE:  $\geq 10^9 \Omega$

DIELECTRIC STRENGTH:  $\geq 250 \text{ Vrms}$

BOUNCE TIME:  $\leq 3 \text{ ms}$

## Environmental

OPERATING TEMPERATURE:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$

STORAGE TEMPERATURE:  $-55^\circ\text{C}$  to  $+85^\circ\text{C}$

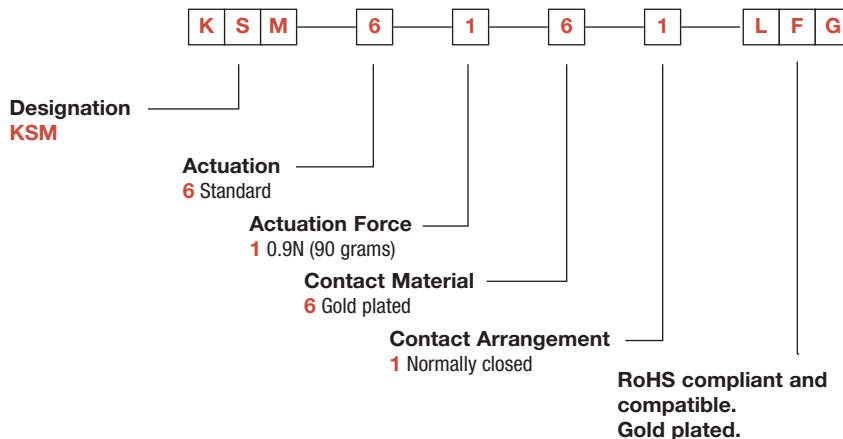
## Process

SOLDERING: Compatible with lead free reflow process

**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 E-23. For additional options not shown in catalog, consult our Customer Service Center.



D

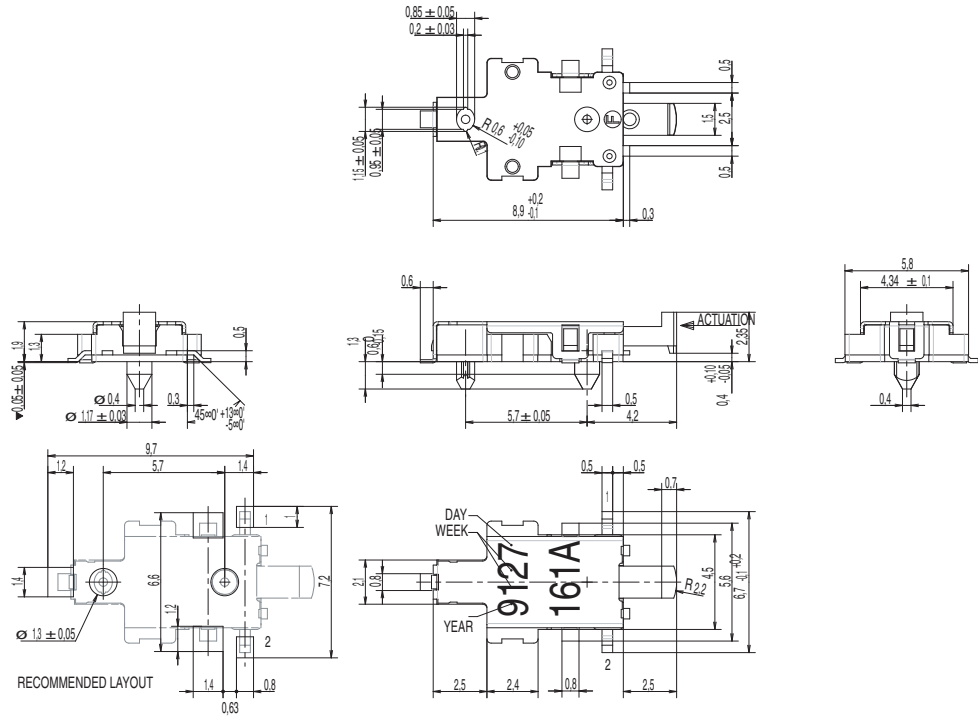
Detect



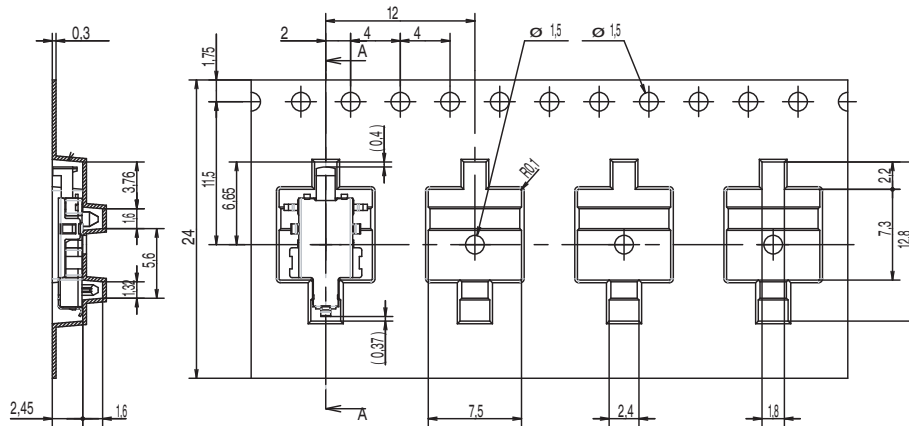
Dimensions are shown: mm  
Specifications and dimensions subject to change

# KSM Series Side Actuated Detect Switches

KSM



## TAPE & REEL



Detect



First Angle  
Projection

Dimensions are shown: 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.

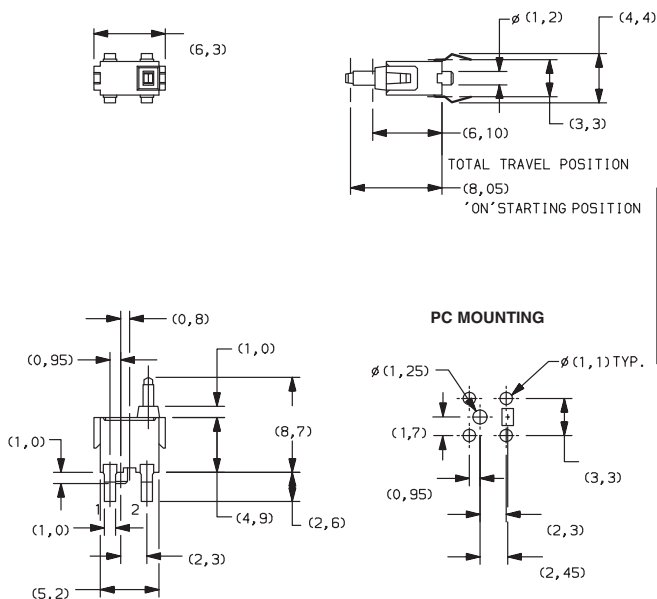
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## 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.




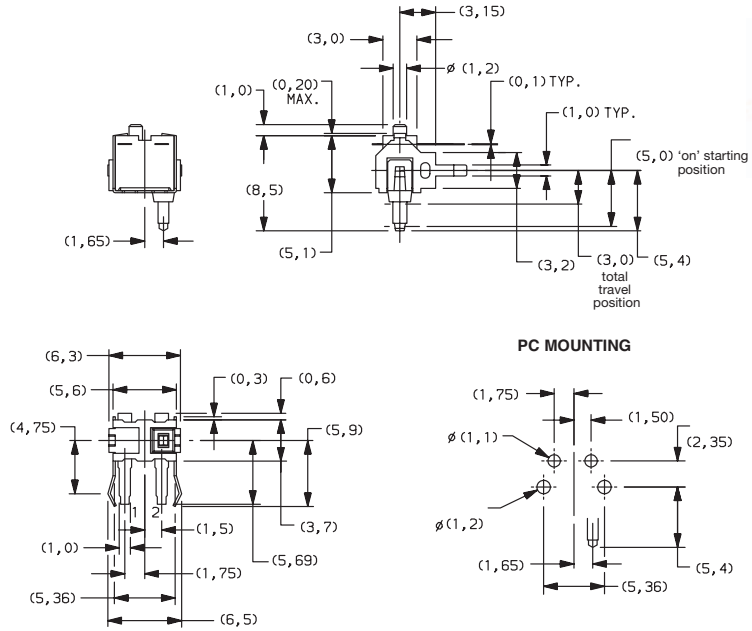
Detect


# DDS Series

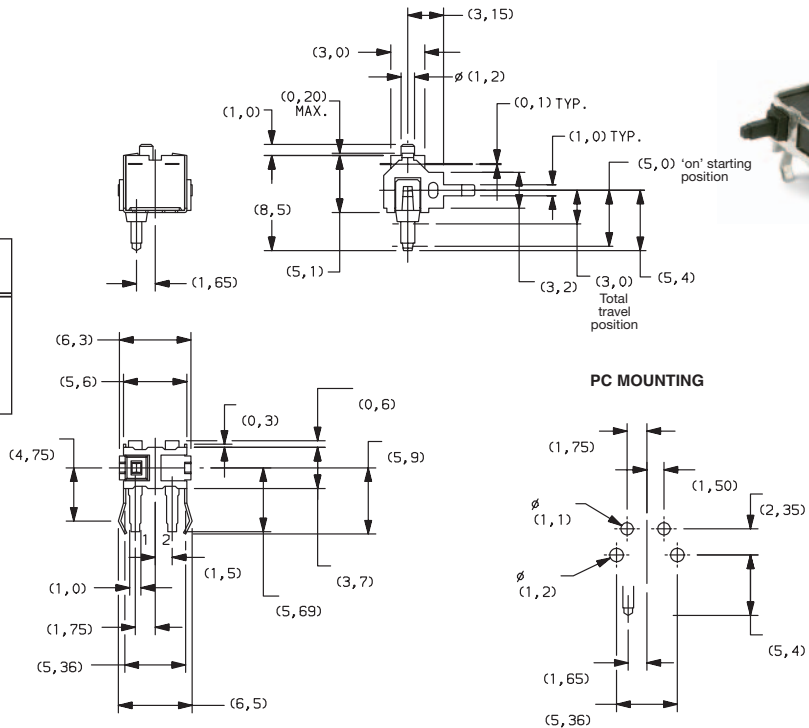
## Micro Mini Thru-hole Detect Switches



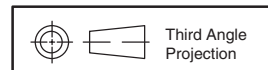
PART NUMBER	DESCRIPTION	SCHEMATIC
<b>DDS002</b>	Right angle, actuator right	 SPST N.O.



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



Detect



Dimensions are shown: mm  
Specifications and dimensions subject to change



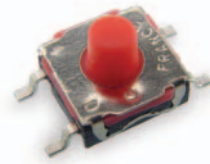
# KSC4D Series Sealed Detect Switch for SMT

## 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

<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

Silver

## Process

SOLDERING:

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

## Packaging

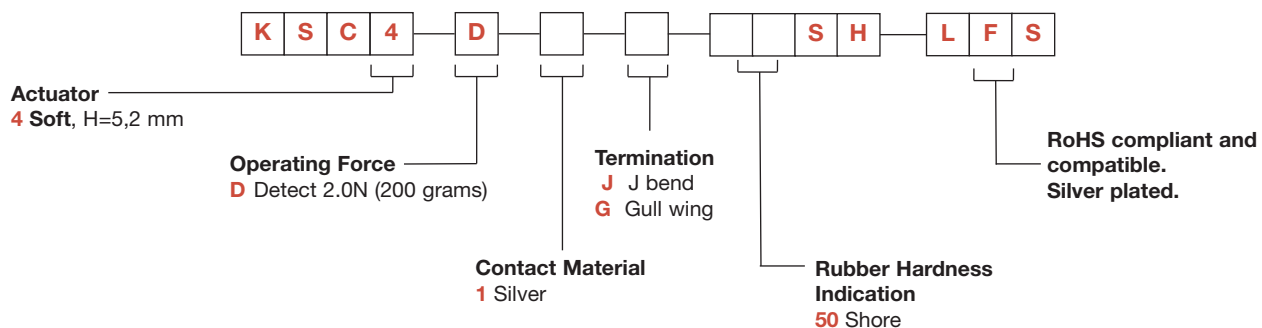
Reels of 1,000 pieces. Dimensions of reels according to EIA RS481 or IEC 2863. External diameter 330 mm ± 2 mm.

## 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.

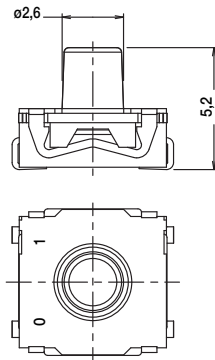
**However, please note that all the combinations of these options are not feasible.**

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

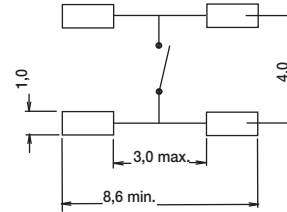


# KSC4D Series Sealed Detect Switch for SMT

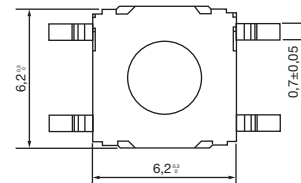
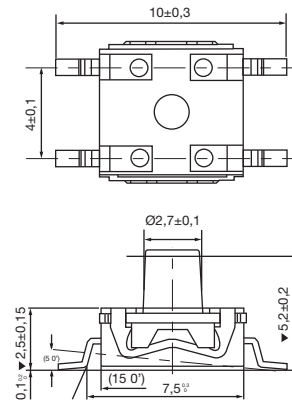
**KSC4D1J** SOFT, 5,2 mm high



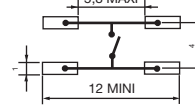
**PAD LAYOUT**



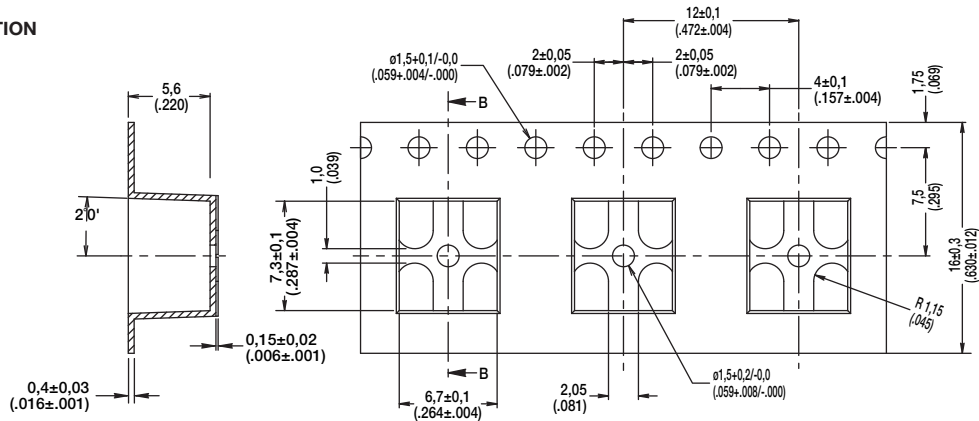
**KSC4D1G** SOFT, 5,2 mm high



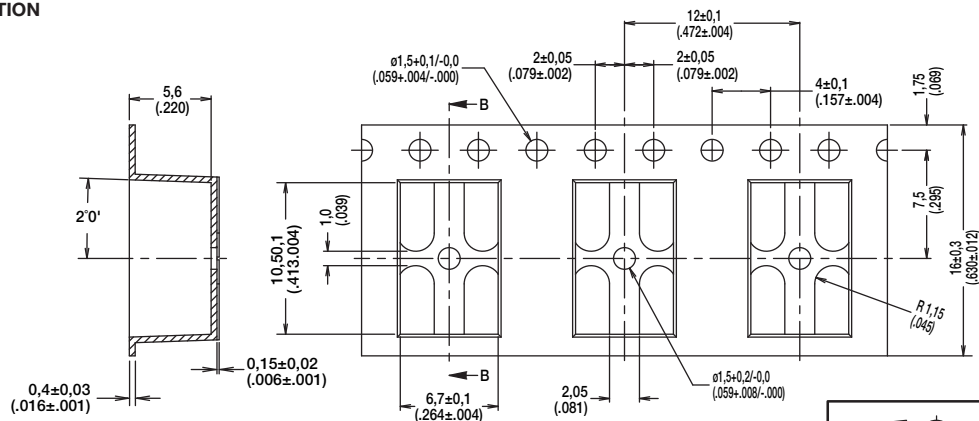
**LAYOUT PAD**



FOR KSC4 FOR J TERMINATION



FOR KSC4 FOR G TERMINATION



First Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



# KSJ Detect Series Spherical Actuator Detect Switches

## Features/Benefits

- Straight or vertical detect
- Top or side actuation
- Spherical actuator allows actuation +/- 30°
- High travel
- Adapted for cam actuation

## Typical Applications

- Automotive
- Industrial electronics
- Computer infrastructure and IT



## Specification

FUNCTION: momentary action  
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.  
TERMINALS: PC pins

## Electrical

	Silver	Gold
OPERATING TEMPERATURE:	-40°C to 85°C	-40°C to 125°C
STORAGE TEMPERATURE:	-40°C to 85°C	-40°C to 125°C

## Mechanical

Type	Operating force FA Newtons (grams)	Operating life (operations)	Travel
KSJ0VD1880SHLFT	6,0 (600)	100,000	0,50 ± 0,25

## Process

Wave soldering, compatible with lead free soldering.

## Packaging

In boxes of 250 pieces (manual insertion) or tubes of 65 pieces (automatic insertion)

## Electrical

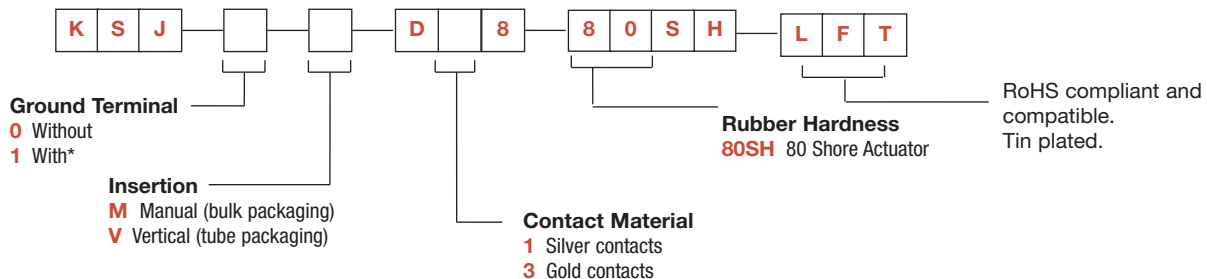
	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM CURRENT:	1 mA	1 mA
MAXIMUM CURRENT:	50 mA	50 mA
DIELECTRIC STRENGTH (50 Hz, 1 min.): 250 V		
CONTACT RESISTANCE: < 100 m ohms		
INSULATION RESISTANCE (100 V): > 10 <sup>9</sup> ohms		
BOUNCE TIME: < 1 ms		

## 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.**



\*Note: "1" ground terminal option not available with "V" version.  
The bracket for the "V" version plays this role.



Dimensions are shown: mm  
Specifications and dimensions subject to change

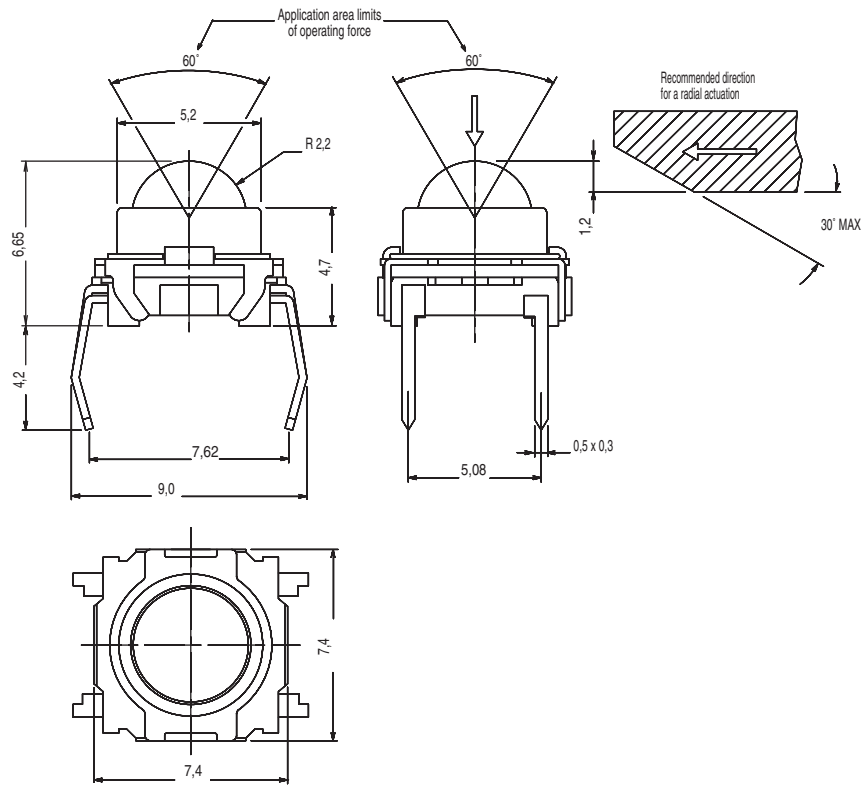


D

Detect

# KSJ Detect Series Spherical Actuator Detect Switches

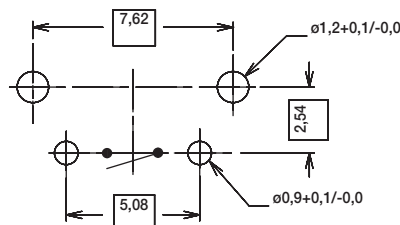
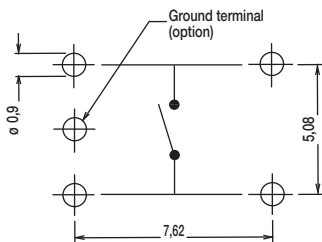
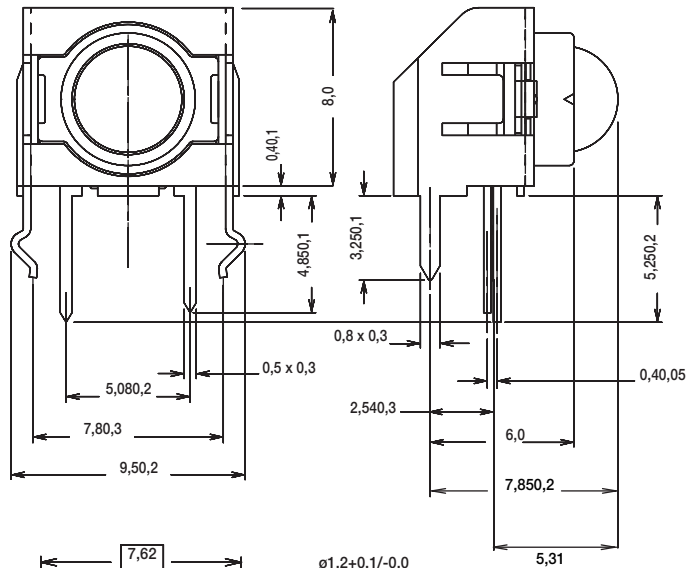
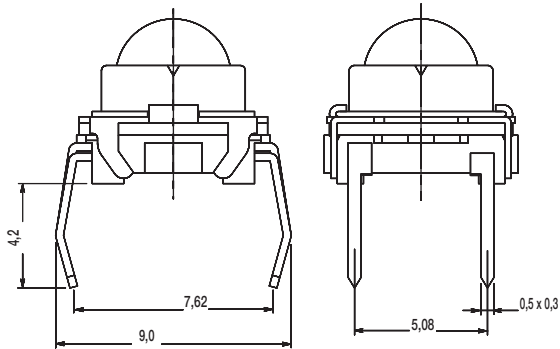
**KSJ**



## INSERTION

**M** MANUAL

**V** VERTICAL



First Angle  
Projection

Dimensions are shown: mm

Specifications and dimensions subject to change

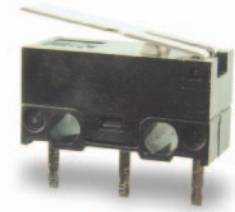
# ZMA Series Subminiature Snap-acting Switches

## 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.  
 MECHANICAL LIFE: 1,000,00 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.

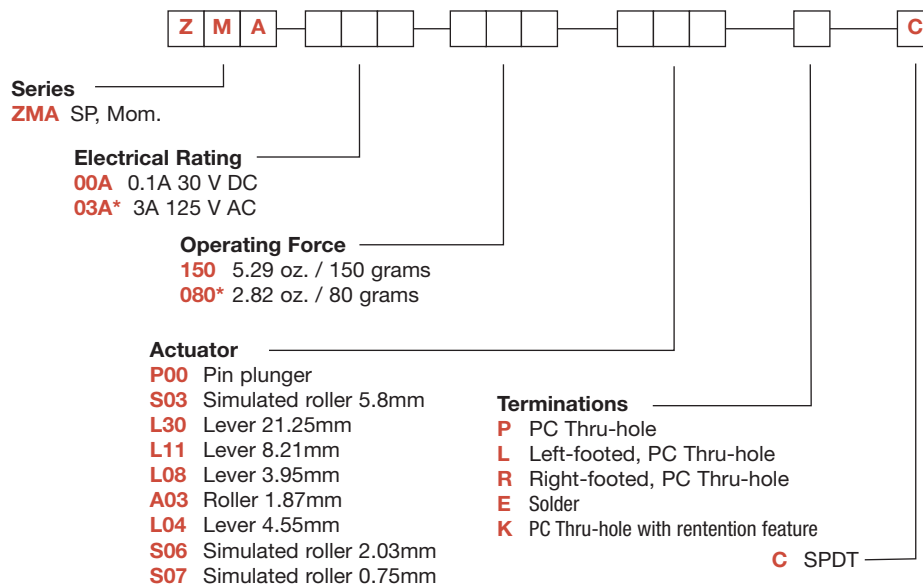
## Materials

CASE: PBT  
 COVER/ACTUATOR: Nylon 6/6  
 MOVABLE CONTACTS: Silver.  
 STATIONARY CONTACTS: Silver.  
 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. Available options are shown and described on pages E-31 thru E-32. For additional options not shown in catalog, consult Customer Service Center.



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

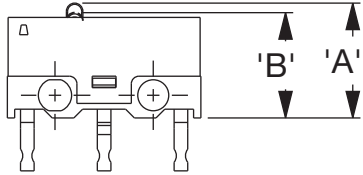




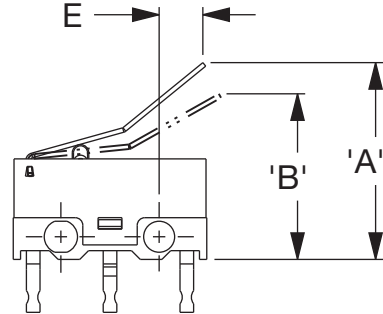
# ZMA Series Subminiature Snap-acting Switches

ACTUATOR 

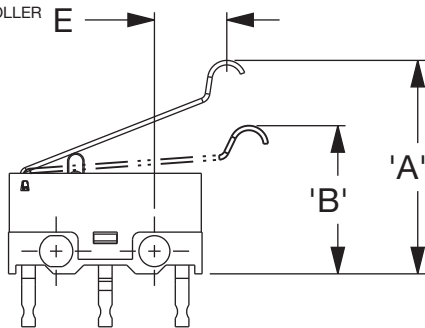
**P00** PIN PLUNGER



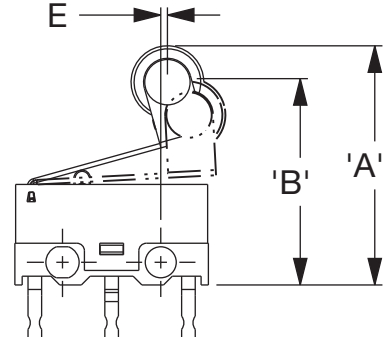
**L08** LEVER  
3.95MM



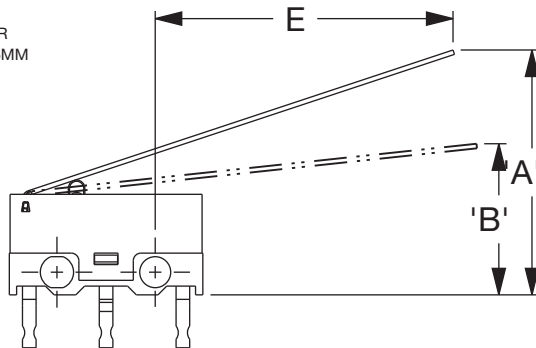
**S03** SIMULATED ROLLER  
6.03MM



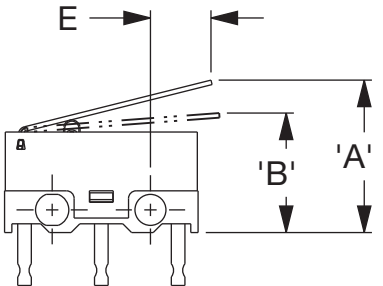
**A03** ROLLER  
1.87MM



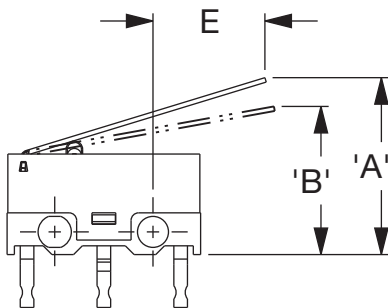
**L30** LEVER  
21.25MM



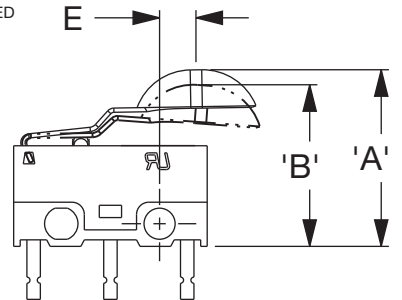
**L04** ROLLER  
4.55MM



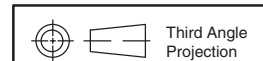
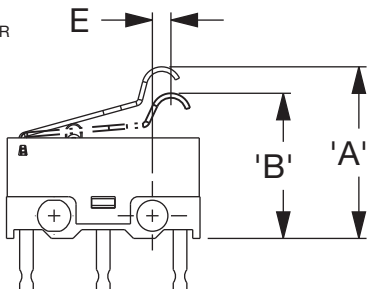
**L11** LEVER  
8.21MM



**S06** SIMULATED ROLLER  
2.03MM



**S07** SIMULATED ROLLER  
0.75MM



Third Angle  
Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



D

Detect

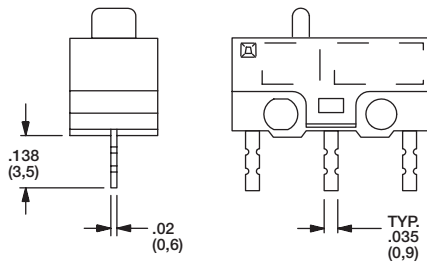
# ZMA Series Subminiature Snap-acting Switches

## SWITCH CHARACTERISTICS

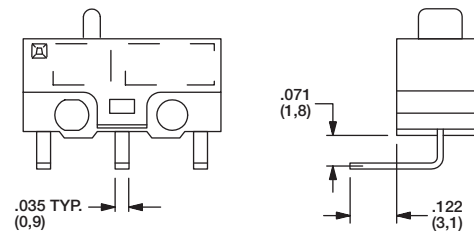
CODE	OPER. FORCE MAX. (GRAMS)		REL. FORCE MIN. (GRAMS)		'A' FP MAX. (MM)	'B' OP MAX. (MM)	'C' PT MAX. (MM)	'D' OT MIN. (MM)	'E' MIN. (MM)
P00	80	150	21	35	7.35	6.9 ±0.2	0.62	0.2	
S03	25	43	5	7	14.2	9.8 ±0.9	3.5	0.7	5.8
L30	13	21	2	3	16.8	9.75 ±1.9	6.9	1.4	21.25
L11	25	39	4	6	11.7	8.7 ±1	4.4	0.6	8.21
L08	32	48	5	7	13.5	10.75 ±0.8	3.5	0.3	3.95
A03	34	65	6	10	16.55	13.7 ±1	3.9	0.5	1.87
L04	30	50	5	8	10.1	7.9 ±0.8	3.0	0.6	3.9
S06	33	49	5	11	12.43	10.7 ±0.8	1.43	1.25	2.03
S07	40	65	2	5	13.0	9.7 ±1	4.3	0.5	0.75

## TERMINATIONS

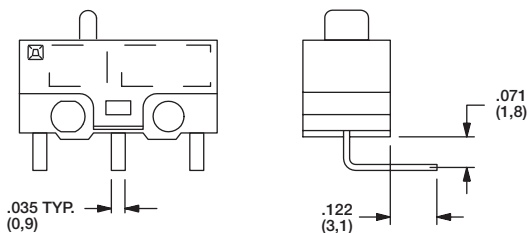
### P PC THRU-HOLE



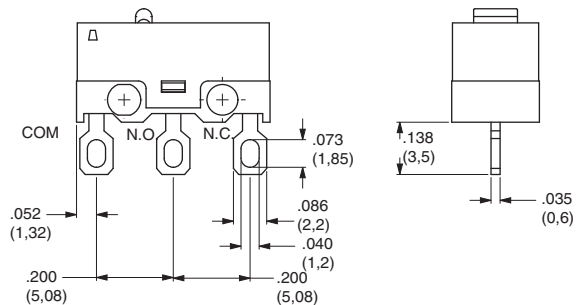
### L LEFT FOOTED, PC THRU-HOLE



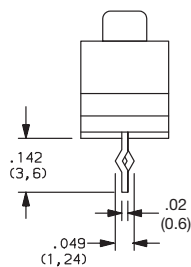
### R RIGHT FOOTED, PC THRU-HOLE



### E SOLDER



### K PC THRU-HOLE WITH RETENTION FEATURE



Detect



Dimensions are shown: 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.

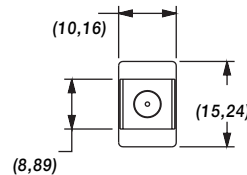
WIRE: UL 1061-24 AWG.

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

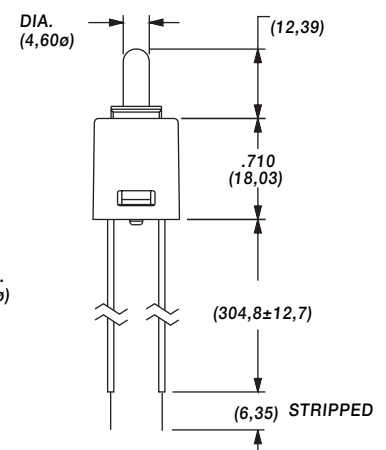
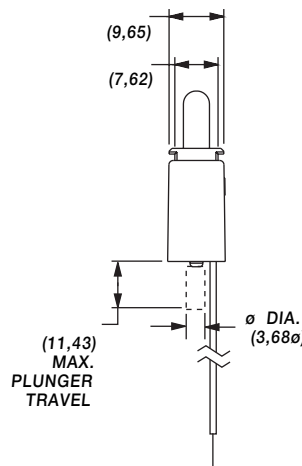
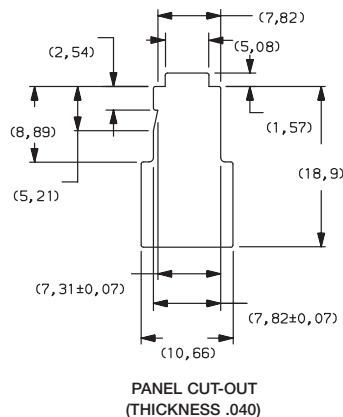
## How To Order

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	OFF	SPST N.C.



KDS33



Detect

# MPS Series Magnetic Proximity Sensors

## Features/Benefits

- Long life—4M 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: 4 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: MPS45WGW: NdFeB

MPS80WGW: Ceramic Ferrite 8

All other models: Alnico V

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.

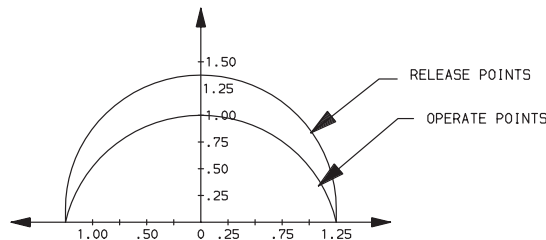
## How To Order

Complete part numbers for MPS Series Magnetic Proximity Sensors are shown on pages E-35 thru E-39.



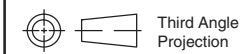
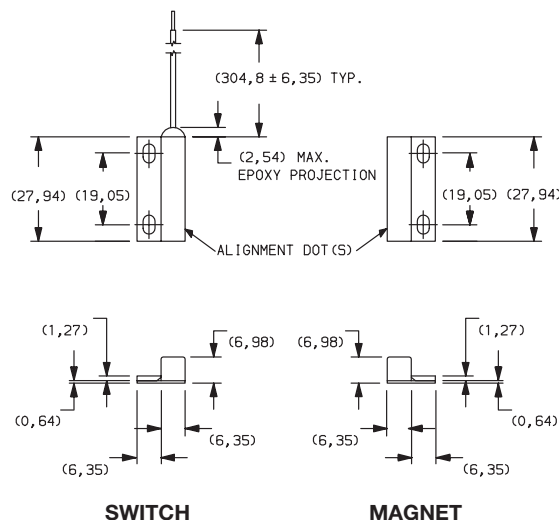
PART NUMBER	SWITCH TYPE
<b>MPS45WGW</b>	Subminiature surface mount (adhesive or flange), side exit leads, 1" make gap.

UL 61058-2



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

NOTE: UL 61058-2 Rating

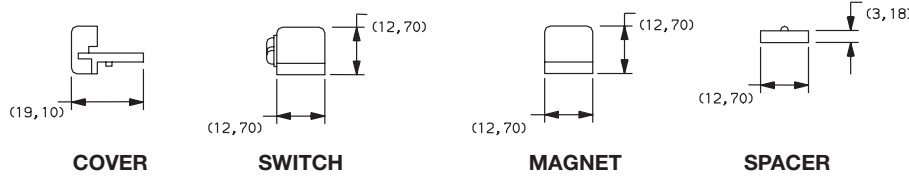
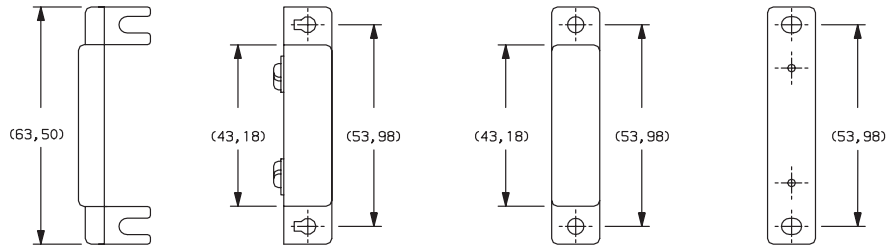


Dimensions are shown: mm  
Specifications and dimensions subject to change



Detect

# MPS Series Magnetic Proximity Sensors

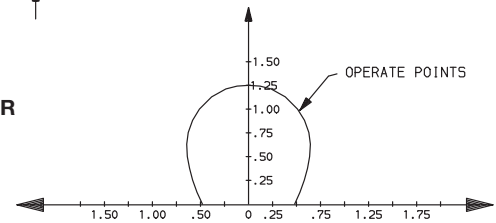


COVER

SWITCH

MAGNET

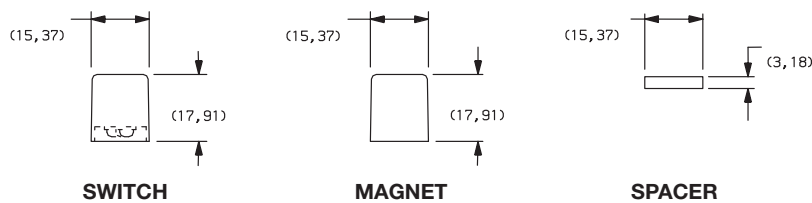
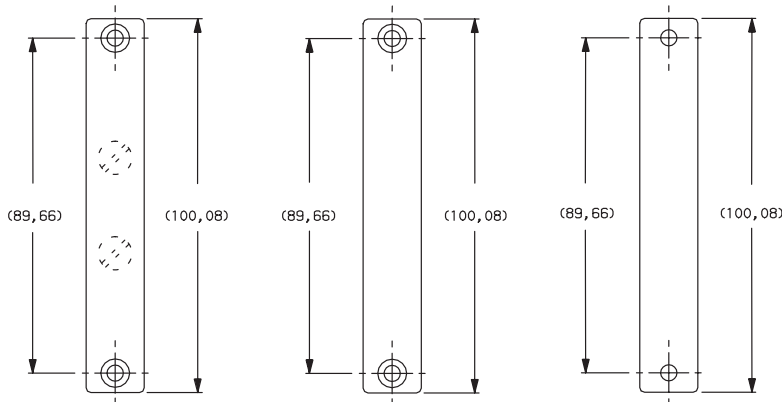
SPACER



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

ACTUATION CHART

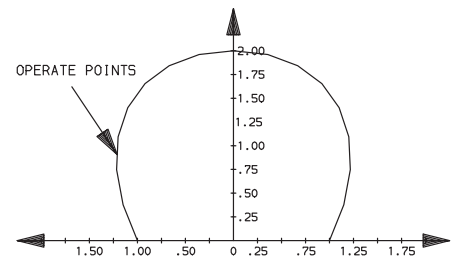
PART NUMBER	SWITCH TYPE
<b>MPS20GW</b>	Standard surface mount, screw terminals, 1 1/4" make gap.



SWITCH

MAGNET

SPACER

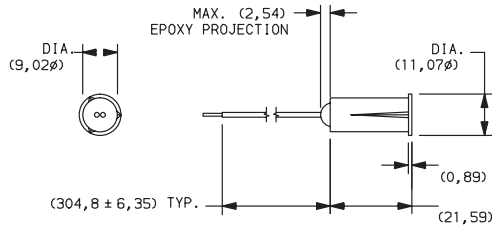


OFFSET OF CENTERLINES AND DISTANCE BETWEEN  
FACES OF SWITCH AND MAGNET (INCHES).

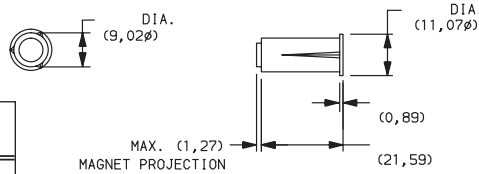
ACTUATION CHART

PART NUMBER	SWITCH TYPE
<b>MPS80GW</b>	Industrial surface mount, concealed screw terminals, 2" make gap.

# MPS Series Magnetic Proximity Sensors

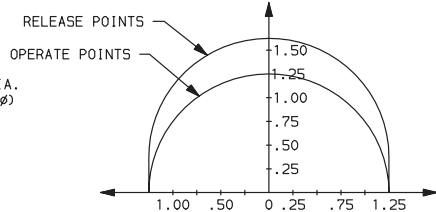
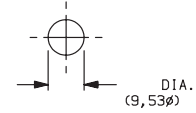


**SWITCH**



**MAGNET**

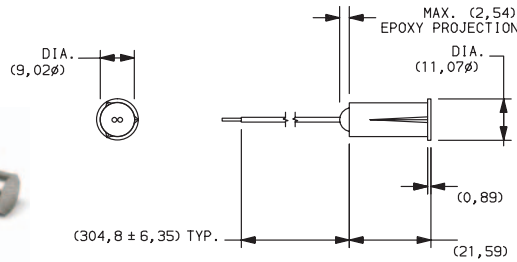
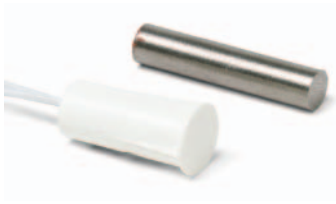
**SWITCH & MAGNET  
PANEL MOUNTING**



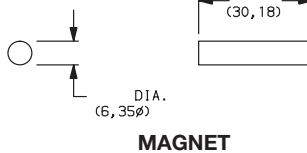
OFFSET OF CENTERLINES AND DISTANCE BETWEEN  
FACES OF SWITCH AND MAGNET (INCHES).

**ACTUATION CHART**

PART NUMBER	SWITCH TYPE
<b>MPS9WGW</b>	3/8" Diameter recessed magnetic contact, 1 1/4" make gap.

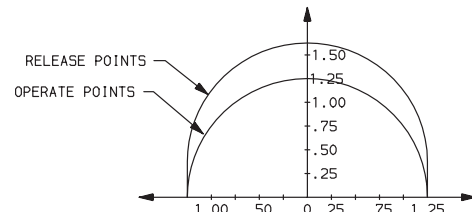
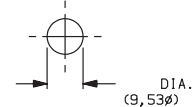


**SWITCH**



**MAGNET**

**SWITCH  
PANEL MOUNTING**



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

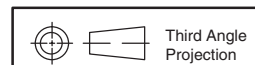
**ACTUATION CHART**

PART NUMBER	SWITCH TYPE
<b>MPS95WGW</b>	3/8" Diameter recessed magnetic contact, 1 1/4" make gap.



**E**

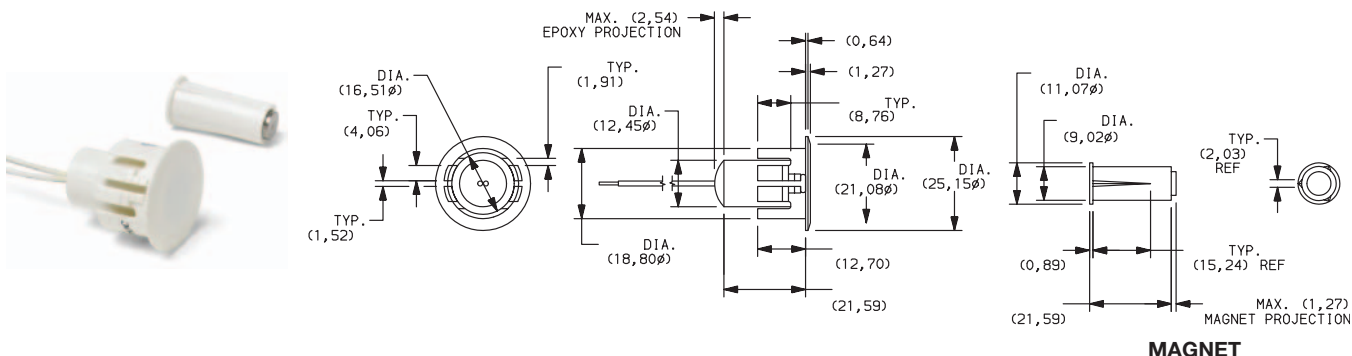
**Detect**



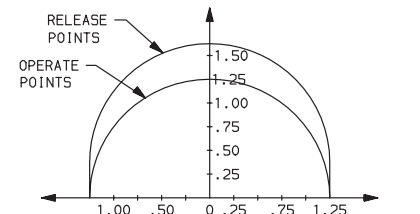
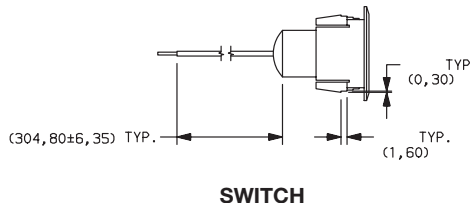
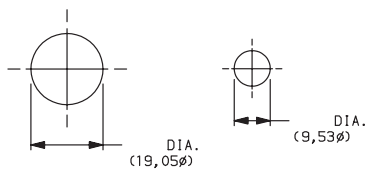
Dimensions are shown: mm  
Specifications and dimensions subject to change



# MPS Series Magnetic Proximity Sensors

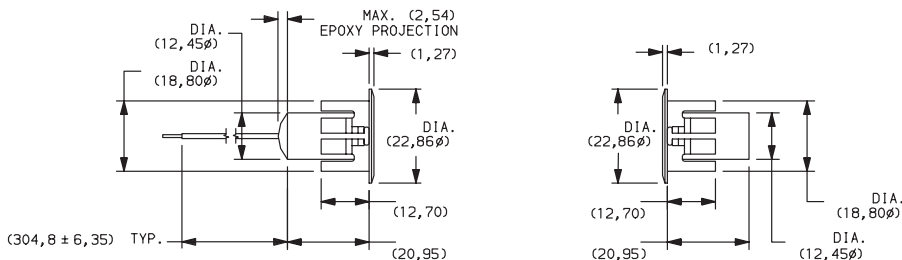


SWITCH PANEL MOUNTING      MAGNET PANEL MOUNTING



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

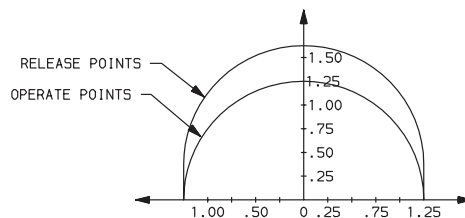
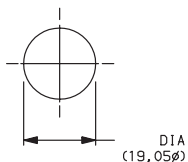
PART NUMBER	SWITCH TYPE
<b>MPS73WGW</b>	3/4" Diameter recessed magnetic contact, 1 1/4" make gap.



SWITCH

MAGNET

SWITCH & MAGNET PANEL MOUNTING



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

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

# MPS Series Magnetic Proximity Sensors

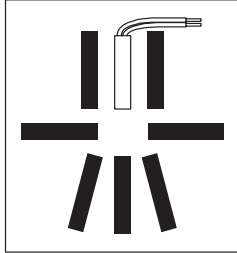
## Actuating Positions

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.

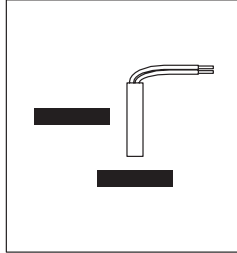
## Gap Distance

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"

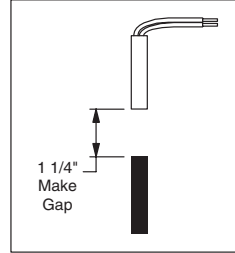
Correct Configuration



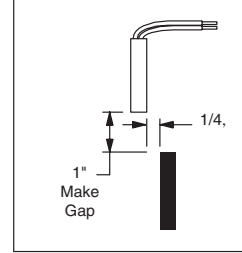
Incorrect Configuration



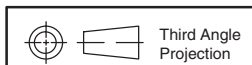
Center Alignment



Off Center Alignment



Detect



Dimensions are shown: mm  
Specifications and dimensions subject to change

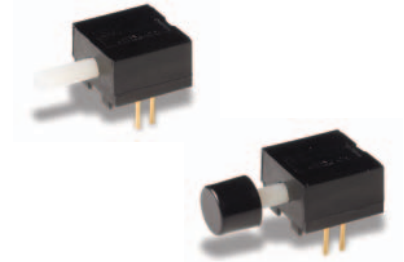
# KM Series Subminiature Detect Switches

## Features/Benefits

- **Reliable contact design**
- **Available with pretravel and overtravel**
- **RoHS compliant**

## Typical Applications

- **Alarm systems**
- **Computers**
- **Detector switch application**



Models Available

## Specifications

CONTACT RATING: Q contact material:  
0.25 AMPS @ 125 V AC or DC (UL). See page F-39 for additional ratings.

ELECTRICAL LIFE: 10,000 actuations min. at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

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

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

OPERATING TEMPERATURE: -30°C to 85°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

**NOTE:** Any models supplied with Q or B contact material are RoHS compliant.

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

## Materials

HOUSING & BUSHING: 6/6 nylon (UL94V-2), black.

ACTUATOR: 6/6 nylon (UL 94V-2), natural.

MOVABLE CONTACT: B contact material: Bronze or copper, with gold plate over nickel plate. See page F-39 for additional contact materials.

STATIONARY CONTACTS & TERMINALS: B contact material: Copper, with gold plate over nickel plate. See page F-39 for additional contact materials.

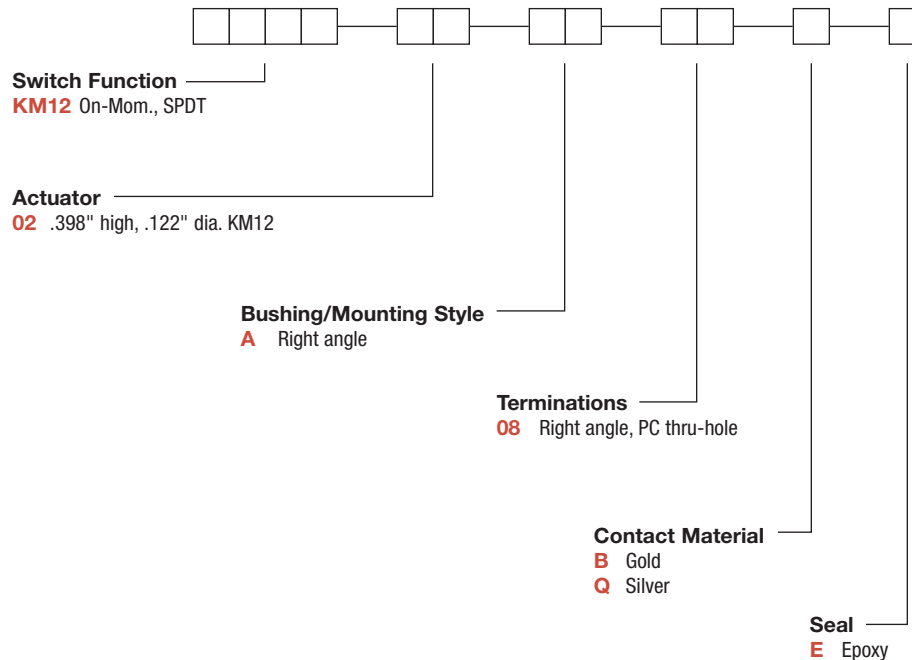
RETURN SPRING: Music wire, phosphor coated.

MOUNTING NUT: Brass, nickel plated.

TERMINAL SEAL: Epoxy.

## 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 E-41 and E-42. For additional options not shown in catalog, consult Customer Service Center.



Detect



Dimensions are shown: mm  
Specifications and dimensions subject to change

# KM Series Subminiature Detect Switches

## SWITCH FUNCTION

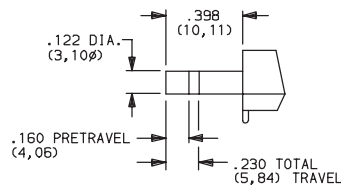


NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	<b>KM12</b>	ON	MOM.	2-1	4-3	
<p><b>SPDT</b></p> <p>Part number shown: KM1202A08BE</p>						

## ACTUATOR



**02** .398" HIGH, .122" DIA.

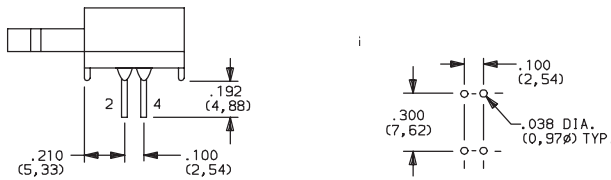


**NOTE:** Caps available for plunger options, see page E-43.

## BUSHING/ MOUNTING STYLE



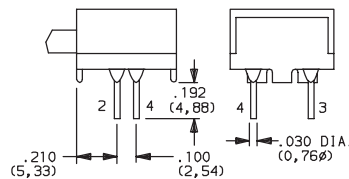
**A** RIGHT ANGLE



## TERMINATIONS



**08** RIGHT ANGLE, PC THRU-HOLE



Third Angle Projection

Dimensions are shown: mm  
Specifications and dimensions subject to change



Detect

