





Detect Switches

Product Selection Guide

Detect						
Series	HDT	HDS	SDS	SDP	JCH	MDS
Travel to Make (mm)	0,3	0,17	0,35			2,5 max.
Overtravel (mm)	0,75	0,5	1,65			0,15 min.
Total Travel (mm)	1,05	1,07	2,0			2,9
Actuator Length (mm)	1,4	1,17	2,5			R 8,4
Life Expectancy	100,000 cycles	100,000 cycles	50,000 cycles			100,000 cycles
Contact Type	SPST N.O.	SPST N.O.	SPST N.O. SPST N.C.			SPDT
Max. Voltage (V)	5	5	12			30 VDC
Max. Switching Current (mA)	1 mA	1 mA	100 mA			300 mA
Sealing	No	No	No	No	Yes	No
Mounting	Surface mount	Surface mount	Surface mount	Surface Mount	Surface Mount	Thru-hole & Surface Mount
Page number	E-4	E-7	E-9	E-10	E-11	E-12

Detect						
Series	KSU	KSR2D	KSM	DDS	KSC4D	KSJ
Travel to Make (mm)	0,5	0,3	0,3	0,45	0,6	0,3
Overtravel (mm)	1,0	N/A	1,15	1,95	N/A	0,75
Total Travel (mm)	1,5	0,3	1,72	2,4	0,6	1,05
Actuator Length (mm)	1,5	0,8	1,8	2,6	2,6	1,4
Life Expectancy	100,000 cycles	100,000 cycles	50,000 cycles	50,000 cycles	100,000 cycles	100,000 cycles
Contact Type	SPST N.O.	SPST N.O.	SPST N.C.	SPST N.O.	SPST N.O.	SPST N.O.
Max. Voltage (V)	32	32	32	30	32	5
Max. Switching Current (mA)	50 mA	10 mA	50 mA	100 mA	50 mA	1 mA
Sealing	Dust and water drop proof	Dust and flux tight	Flux tight	No	IP67	Flux tight
Mounting	Surface mount	Surface mount	Surface mount	Thru-hole	Surface mount	Surface mount
Page Number	E-18	E-20	E-22	E-25	E-27	E-29



E

Detect



Dimensions are shown: mm
Specifications and dimensions subject to change

Detect Switches Product Selection Guide

Detect						
Series	ZMA	KDS	MPS	KM	DS	RB
Travel to Make (mm)	1,3 max.	1,25 max.	See actuation	4,06		
Overtravel (mm)	0,2 min.	8,9	charts on pages	1,78		
Total Travel (mm)	1,5	10,16	F-31 through F-33	5,84		
Actuator Length (mm)		10,16	N/A	10,11		
Life Expectancy	300,000 cycles	10,000 cycles	10,000,000 cycles	10,000 cycles		
Contact Type	SPDT	SPST N.O. SPST N.C.	SPST N.O.	SPDT		
Max. Voltage (V)	125 V	20	30 AC	125 V AC		
Max. Switching Current (mA)	3 Amps	.4 VA	300 mA	250 mA		
Sealing	No	No	Yes	Flux tight		
Mounting	Thru-hole	Snap-in panel	Wire lead	Thru-hole		
Page number	E-27	E-31	E-36	E-38	E-41	E-45



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

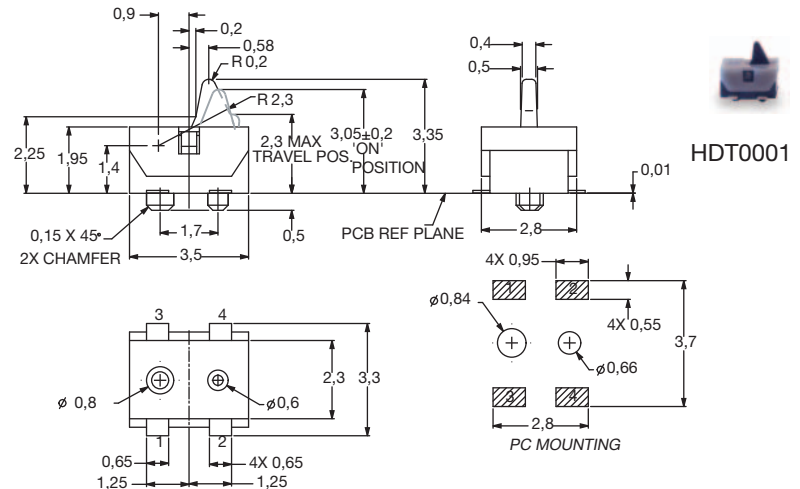
Complete part numbers for HDT Series are shown below.

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

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

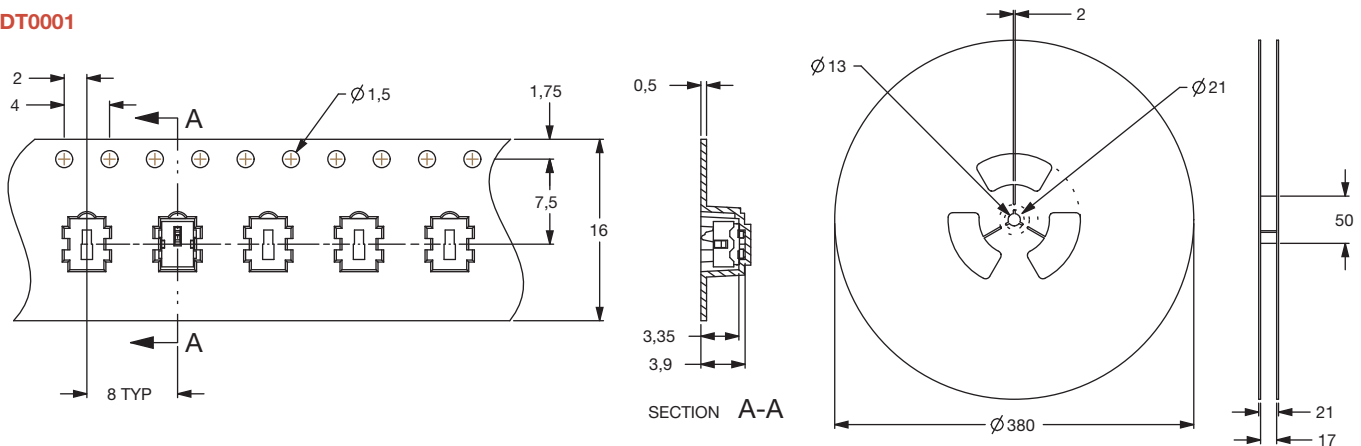
TRAVEL:

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



Detect

HDT Series Micro Mini Surface Mount Detect Switches

HDT0004

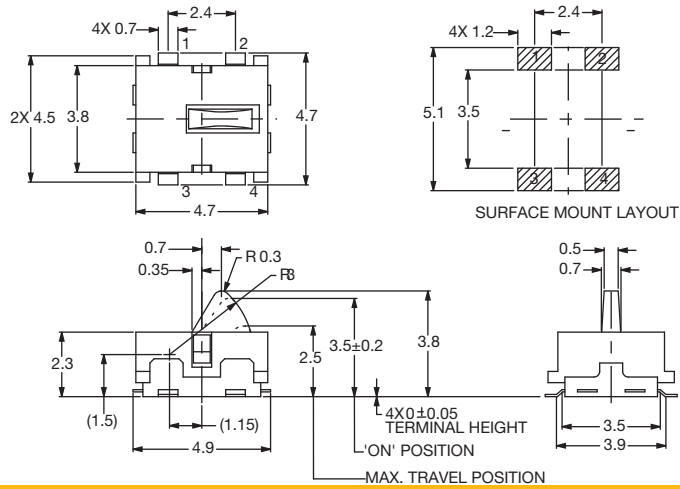


HDT0004

PART NUMBER	PACKAGING	SCHEMATIC
HDT0004	TAPE & REEL 2,800 per reel	

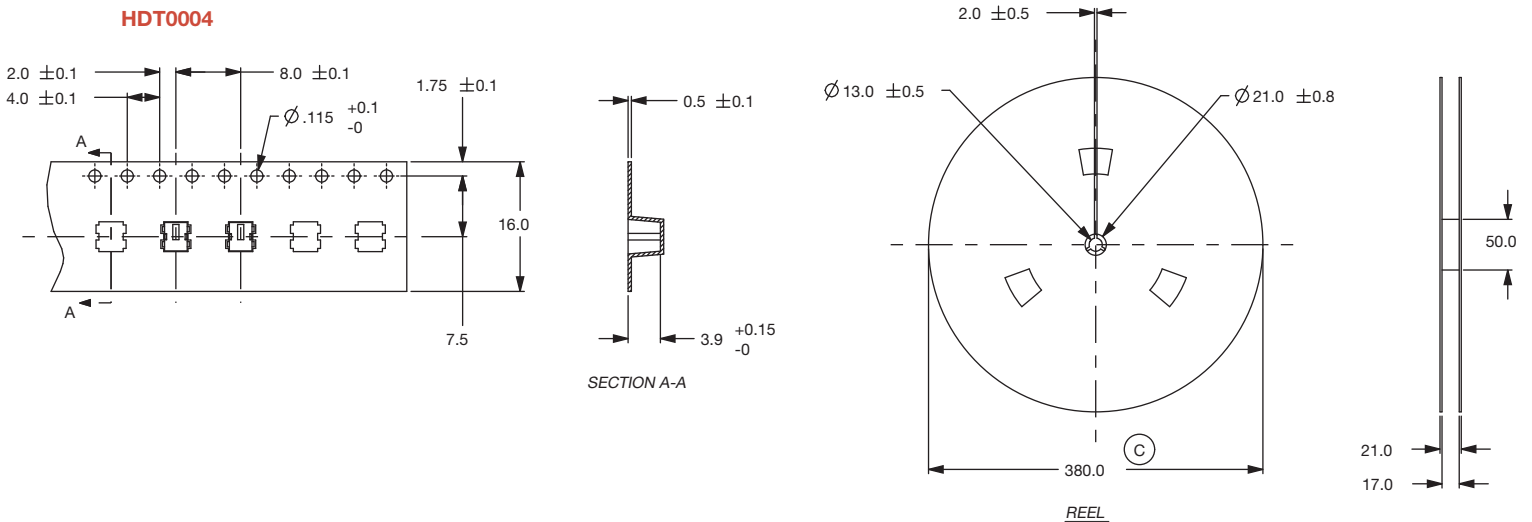
TRAVEL:

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



TAPE & REEL

HDT0004



HDT0104

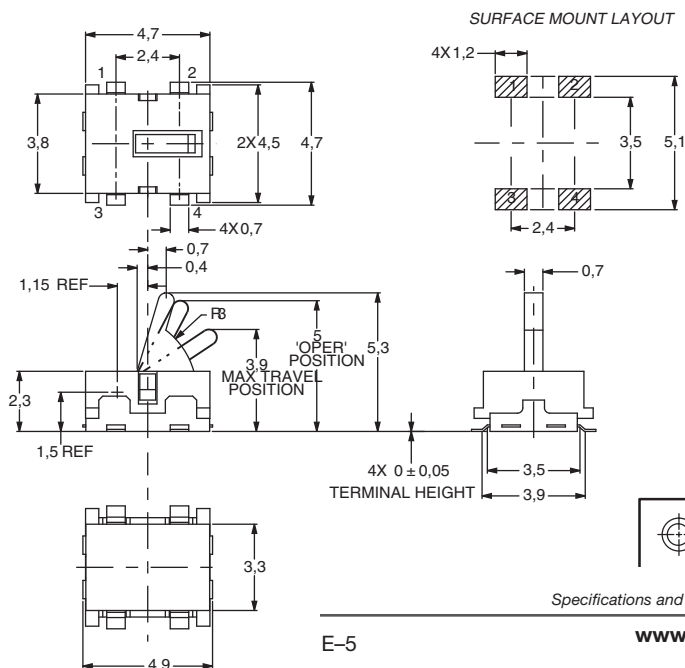


HDT0104

PART NUMBER	PACKAGING	SCHEMATIC
HDT0104	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



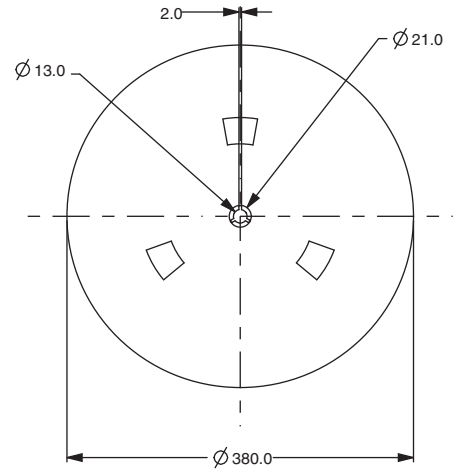
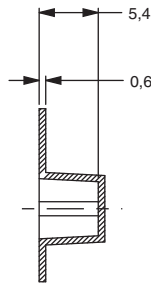
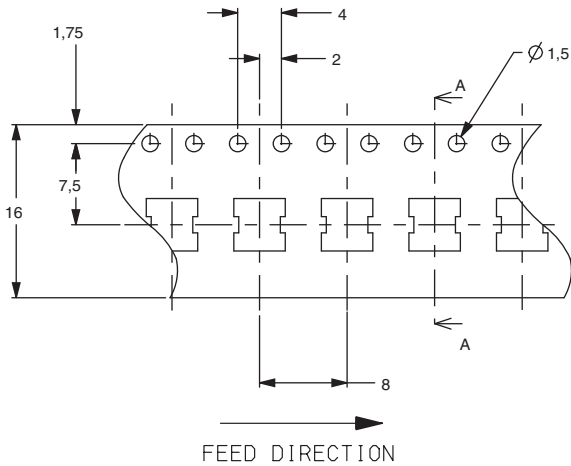
Detect

HDT Series

Micro Mini Surface Mount Detect Switches

TAPE & REEL

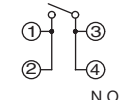
HDT0104



HDT0204



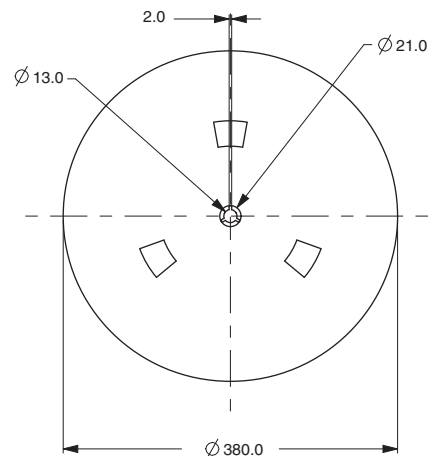
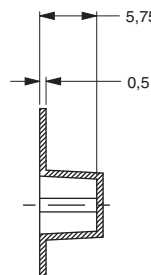
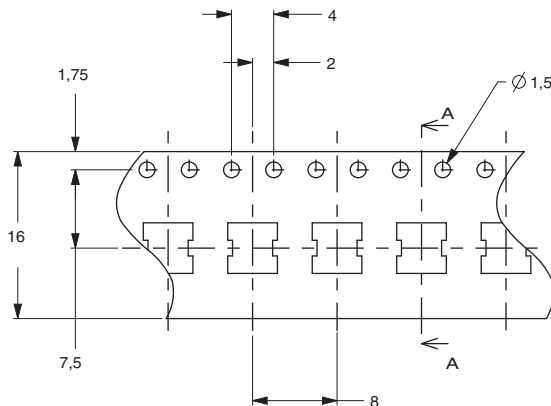
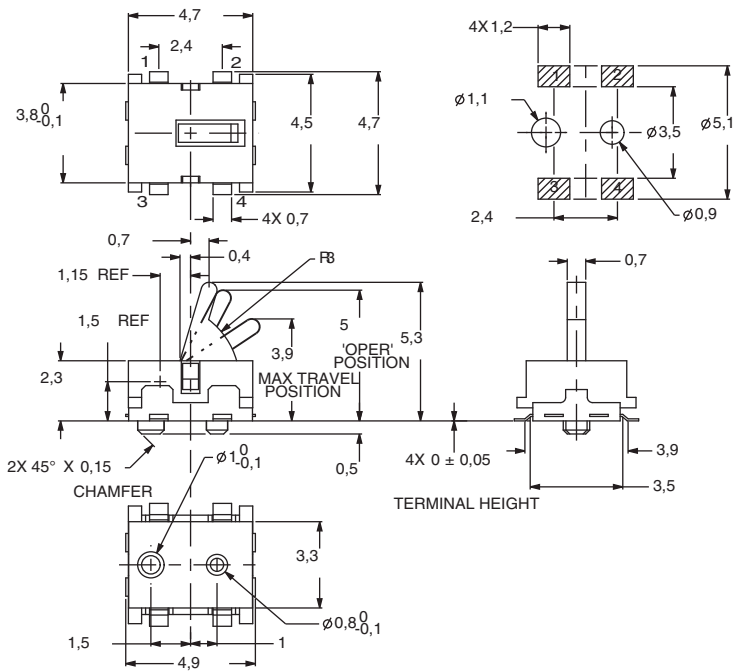
HDT0204

PART NUMBER	PACKAGING	SCHEMATIC
HDT0204	TAPE & REEL 2,000 per reel	

TRAVEL:

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

SURFACE MOUNT LAYOUT



Detect



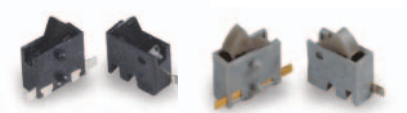
HDS Series Micro Mini Side Actuated Surface Mount Detect Switches

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

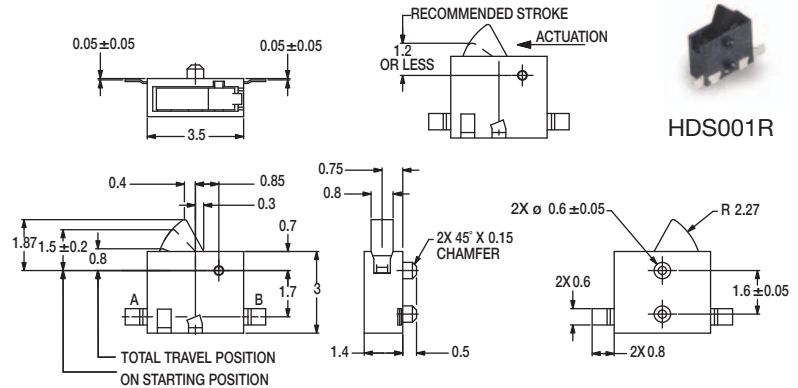
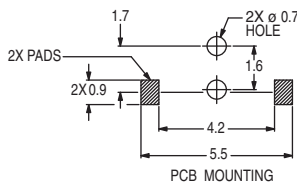
BASE: LCP HDS001L: Gray HDS001R: Black
 COVER: PA 46 (UL94V-0)
 ACTUATOR: PA 46 (UL94V-0) HDS001L: Gray HDS001R: Black
 MOVABLE BLADE: Stainless Steel, Ag over Ni plating.
 TERMINALS: Phosphor Bronze, Ag plating.

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

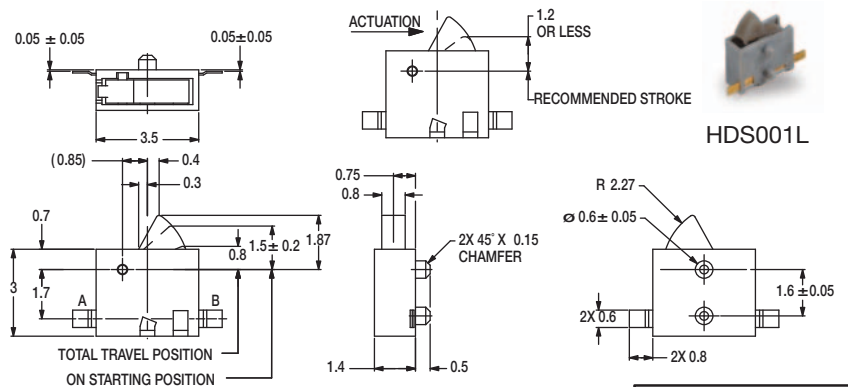
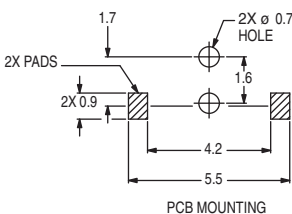
Complete part numbers for HDS Series are shown below.

PART NUMBER	PACKAGING	SCHEMATIC
HDS001R	TAPE & REEL	



HDS001R

PART NUMBER	PACKAGING	SCHEMATIC
HDS001L	TAPE & REEL	



HDS001L



Dimensions are shown: mm
 Specifications and dimensions subject to change

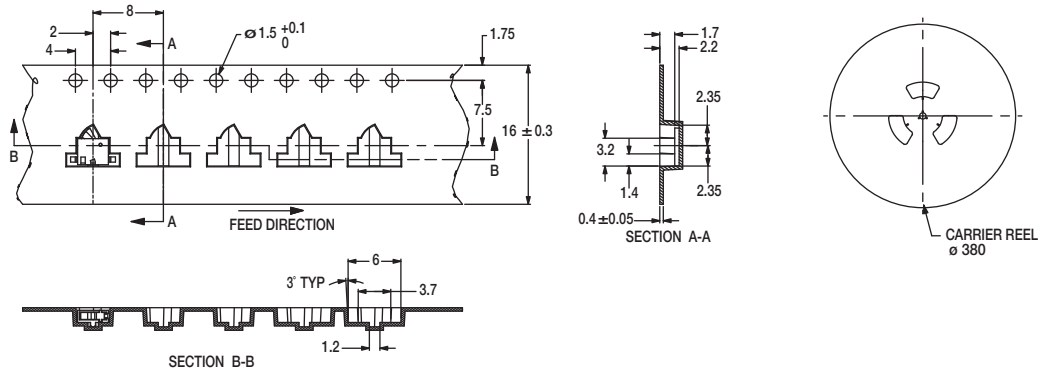


Detect

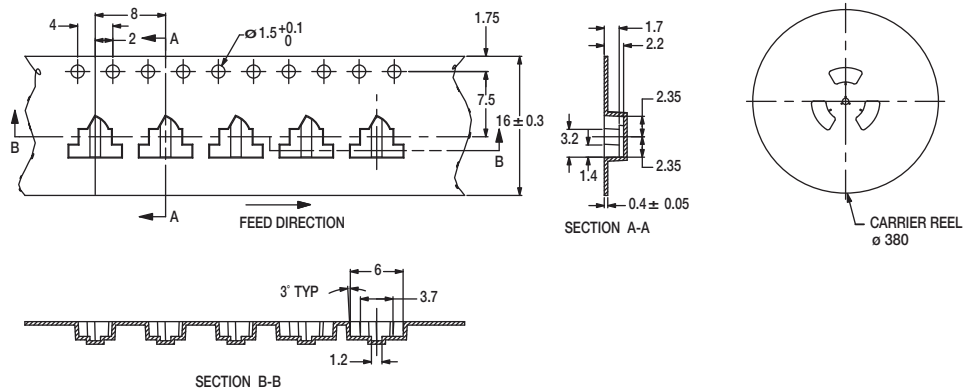
HDS Series Micro Mini Side Actuated Surface Mount Detect Switches

TAPE & REEL

HDS001R



HDS001L



NOTE: Quantity per reel: 5,000 pieces



E

Detect



Third Angle
Projection

Dimensions are shown: 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

- 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: 10 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).

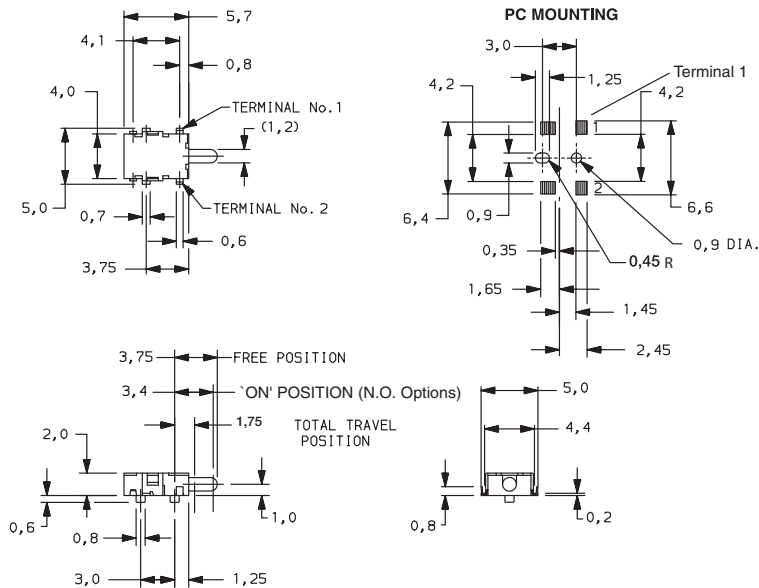
Materials

BASE: Glass filled LCP (UL 94V-0).
 ACTUATOR: Glass Filled LCP (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.

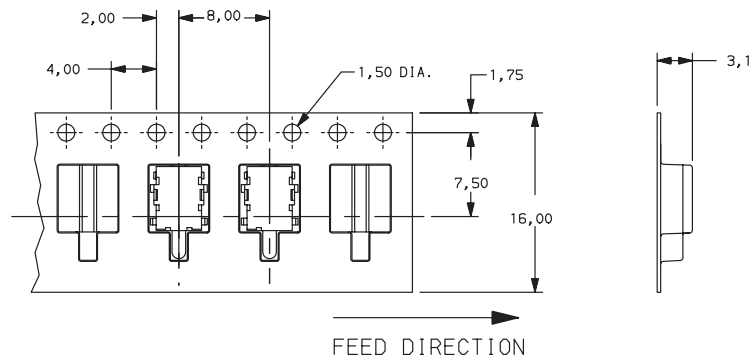


PART NUMBER	HOUSING COLOR	PACKAGING	SCHEMATIC	Contact Plating	Terminal Plating
SDS001	Black	Bulk	N.O. 2 1	Silver Clad	Silver Plate
SDS001R		Tape & Reel			
SDS002	White	Bulk	N.C. 2 1	Silver Clad	Silver Plate
SDS002R		Tape & Reel			
SDS004	Black	Bulk	N.O. 2 1	Gold Flash	Gold Flash
SDS004R		Tape & Reel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



SDS001
SPST

TAPE & REEL



Dimensions are shown: mm
 Specifications and dimensions subject to change



SDP Series Micro Mini Pendulum SMT Detect Switch



Features/Benefits

- SMT process compatible
- Low profile
- Right or left side actuated
- Low actuation force
- Low halogen / halogen free

Typical Applications

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

Specifications

CONTACT RATING: 5 VDC 1mA (0.1mA to 100mA max)
 MECHANICAL AND ELECTRICAL LIFE: 50,000 cycles
 CONTACT RESISTANCE: 500 m Ω max. initial.
 INSULATION RESISTANCE: 100 M Ω (500VDC for 1 min.)
 OPERATING TEMPERATURE: -20°C to + 70°C
 STORAGE TEMPERATURE: -30°C to + 80°C
 PACKAGING: Tape & reel 4,550 pieces

Materials

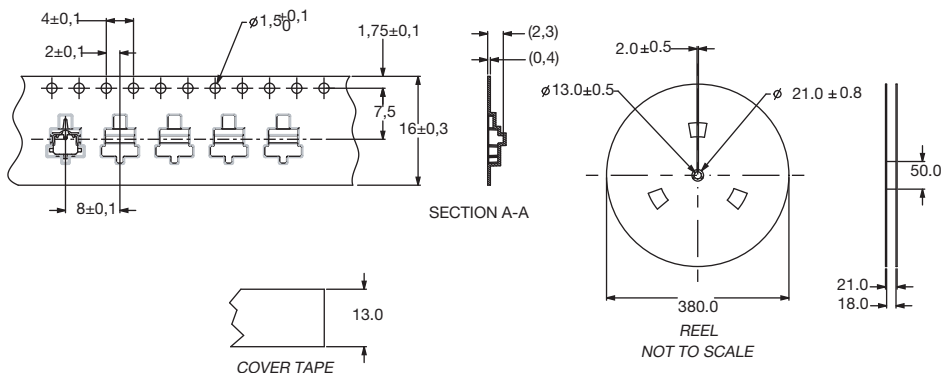
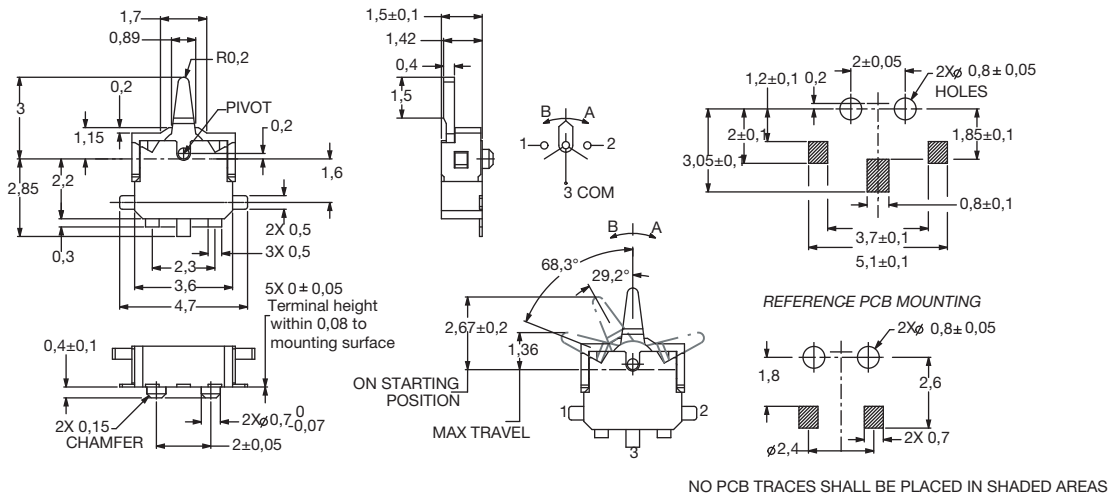
BASE: LCP (black)
 COVER: PA 46 (black)
 ACTUATOR: LCP (black)
 MOVABLE BLADE: Stainless Steel, Ag over Ni plating.
 TERMINALS: Phosphor Bronze, Ag over Ni plating.
 SOLDERABILITY: Lead free compatible - No clean.

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 SDP Series are shown below.

SDP002



Dimensions are shown: mm
 Specifications and dimensions subject to change

NEW!

JCH Series Microminiature IP64 Sealed SMT Detect Switch

Features/Benefits

- SMT process compatible
- Low profile
- Low actuation force
- Sealed IP 64
- Lead free and halogen free
- RoHS

Typical Applications

- Portable/Handheld electronics
- Health care
- Automotive
- A/V equipment
- Mobile phone and peripherals
- Security
- Detection of mechanical movements
- Battery placement detection
- Camera door detection



Specifications

CONTACT RATING: 1 mA @ 5 VDC.
 MECHANICAL & ELECTRICAL LIFE: 100,000 cycles.
 CONTACT RESISTANCE: < 1 Ω (initial).
 INSULATION RESISTANCE: > 100 M Ω .
 OPERATING TEMPERATURE: -20°C to +70°C.
 SOLDERABILITY: IR compatible, no wash. 260°C max.
 PACKAGING: Bulk or tape & reel (2,800 per reel).

Materials

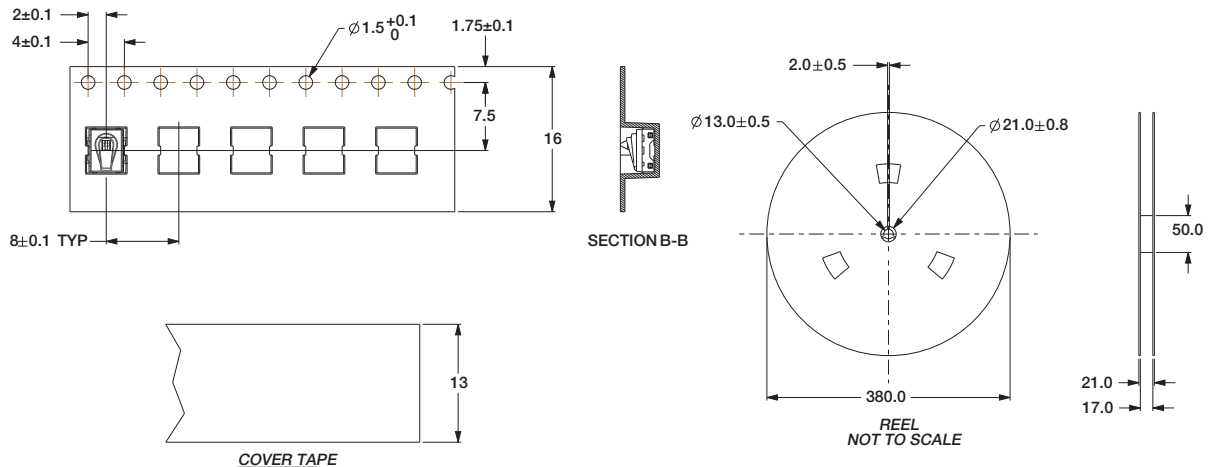
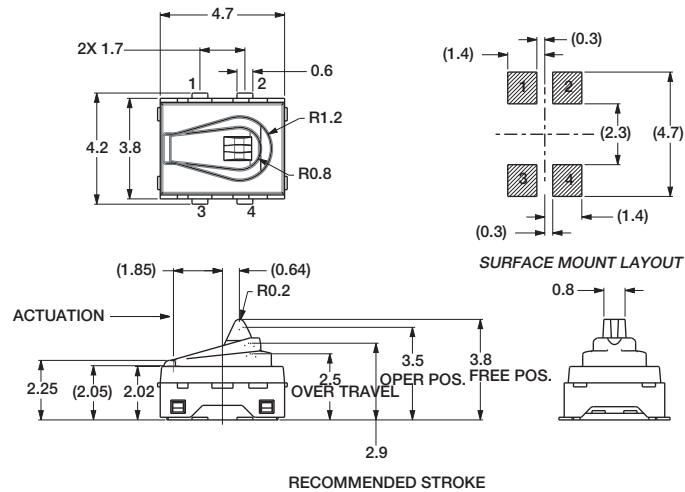
BASE: PA46 (UL 94V-0).
 ACTUATOR: PA46 (UL94V-0).
 COVER/DUST SEAL: PA 46 (UL94V-0) / Silicone.
 MOVABLE CONTACT: Stainless steel, silver over nickel plate.
 TERMINALS: Phosphor bronze, silver over nickel plate

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

How to Order

Complete part numbers for JCH Series Switches are shown below.

PART NUMBER	PACKAGING	SCHEMATIC
JCH1AQNP	BULK	
JCH1AQNPR	TAPE & REEL	

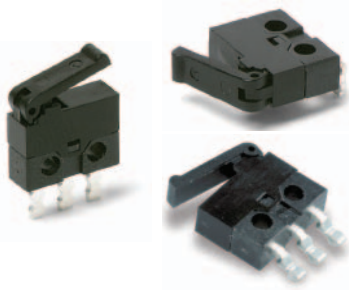


Dimensions are shown: mm
 Specifications and dimensions subject to change



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
- 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: 30,000 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

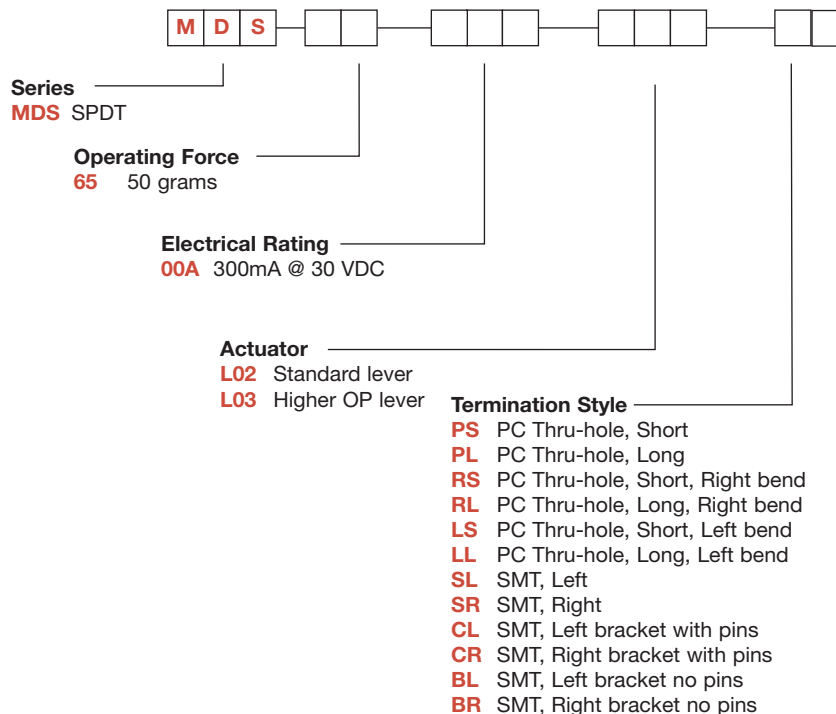
BASE: PA9T
 COVER & ACTUATOR: PA9T
 MOVABLE CONTACT: Copper alloy, silver plated.
 STATIONARY CONTACTS: Copper alloy, silver plated.
 TERMINALS: Copper alloy, silver plated.

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

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

Build-A-Switch

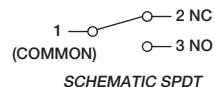
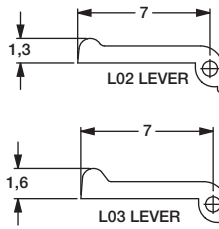
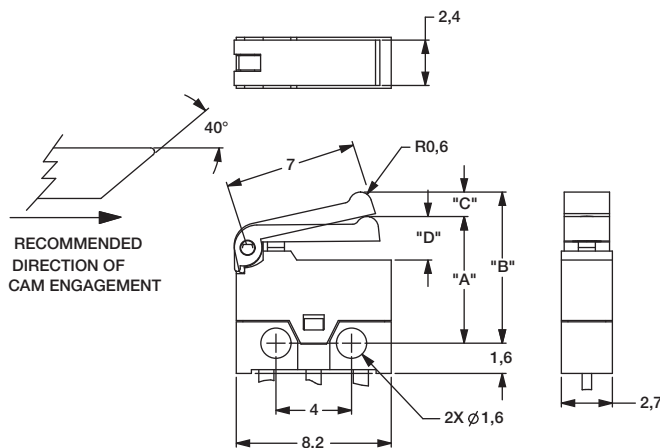
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages E-11 and E-15. For additional options not shown in catalog, consult Customer Service Center.



Detect

MDS Series Micro Snap-acting Detect Switches

SERIES **MDS**



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

OPERATING FORCE

OPTION CODE	OPERATING FORCE
65	50 grams max.

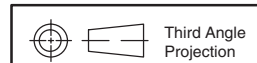
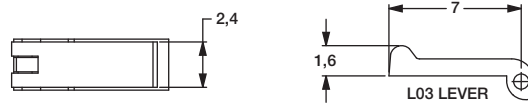
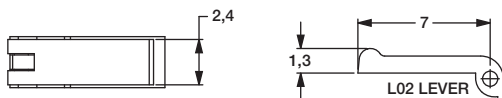
ELECTRICAL RATING

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

ACTUATOR

L02 STANDARD LEVER

L03 HIGHER OP LEVER

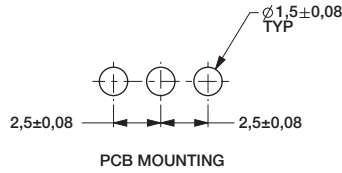


Detect

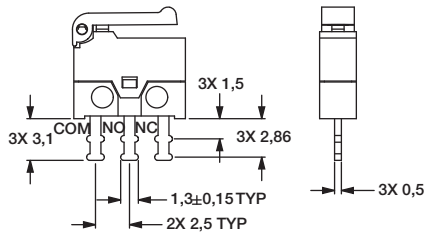
MDS Series Micro Snap-acting Detect Switches

TERMINATIONS

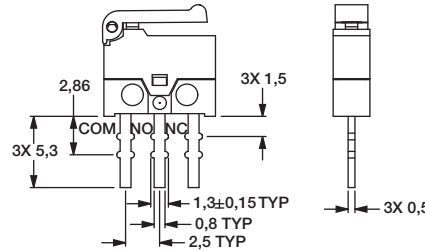
PCB Mounting Pattern



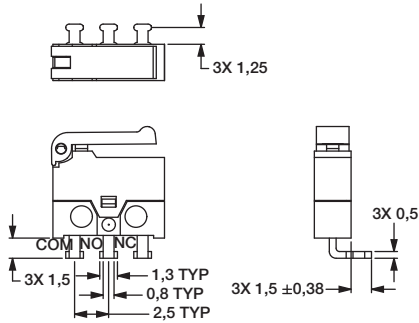
PS PC THRU-HOLE, SHORT STRAIGHT



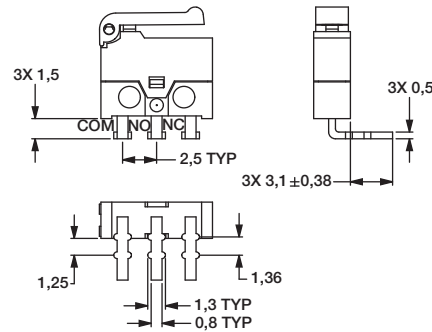
PL PC THRU-HOLE, LONG STRAIGHT



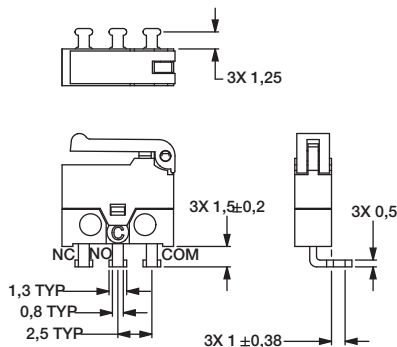
RS PC THRU-HOLE, SHORT RIGHT BEND



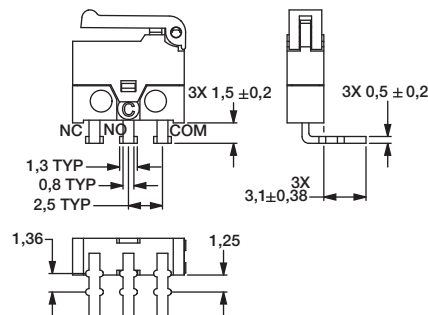
RL PC THRU-HOLE, LONG SHORT BEND



LS PC THRU-HOLE, SHORT LEFT BEND



LL PC THRU-HOLE, LONG LEFT BEND



E

Detect



Dimensions are shown: mm

Specifications and dimensions subject to change

MDS Series Micro Snap-acting Detect Switches

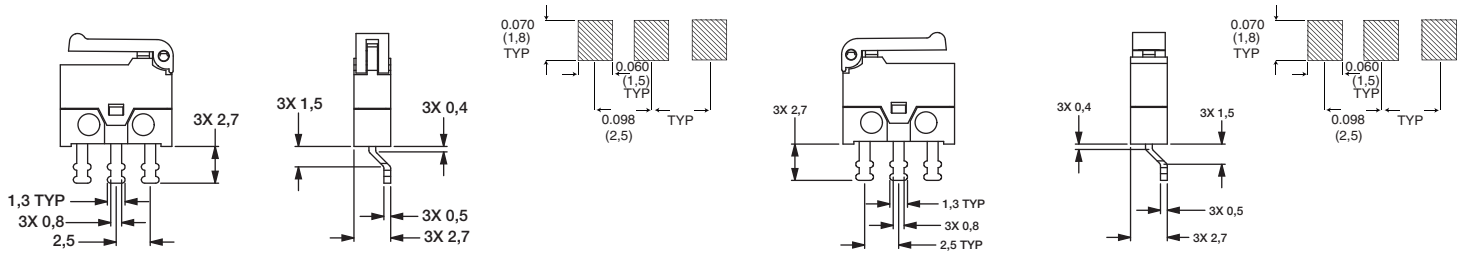
TERMINATIONS

SL SMT, LEFT MOUNT

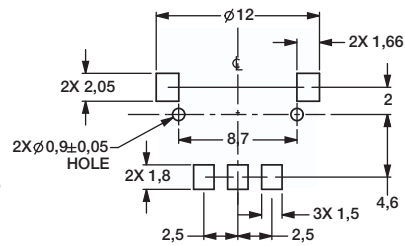
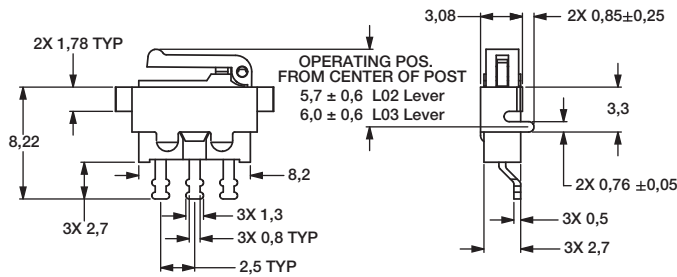
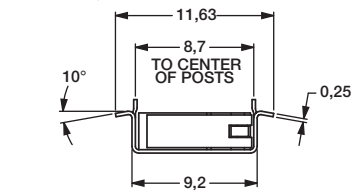
SMT Mounting Pattern

SR SMT, RIGHT MOUNT

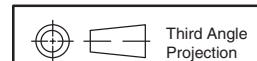
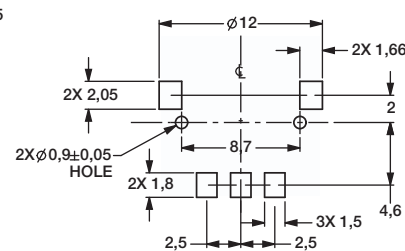
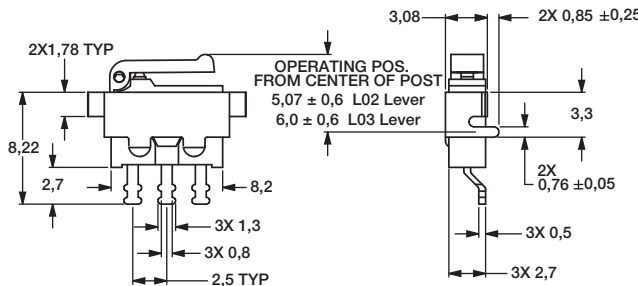
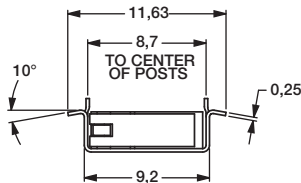
SMT Mounting Pattern



CL SMT, LEFT BRACKET WITH PINS



CR SMT, RIGHT BRACKET WITH PINS



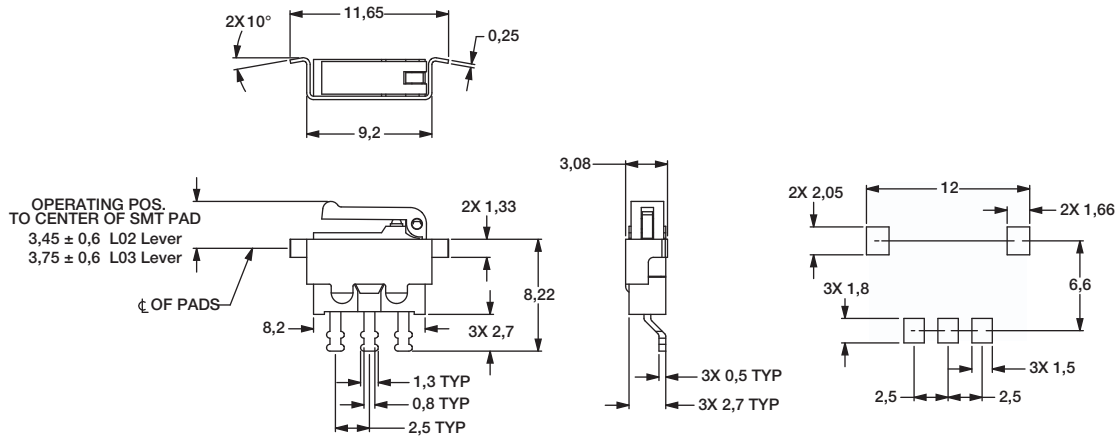
Dimensions are shown in mm
Specifications and dimensions subject to change



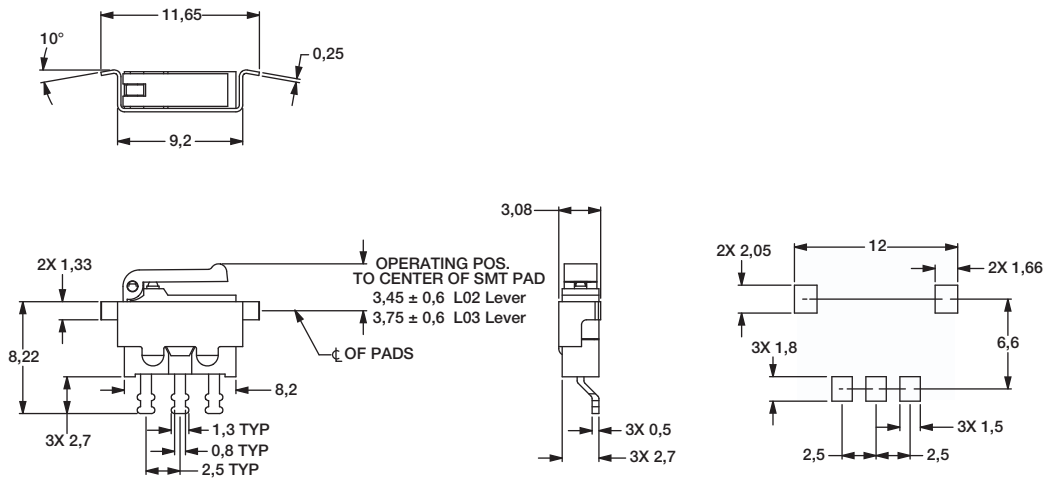
MDS Series Micro Snap-acting Detect Switches

TERMINATIONS

BL SMT, LEFT BRACKET NO PINS



BR SMT, RIGHT BRACKET NO PINS



E

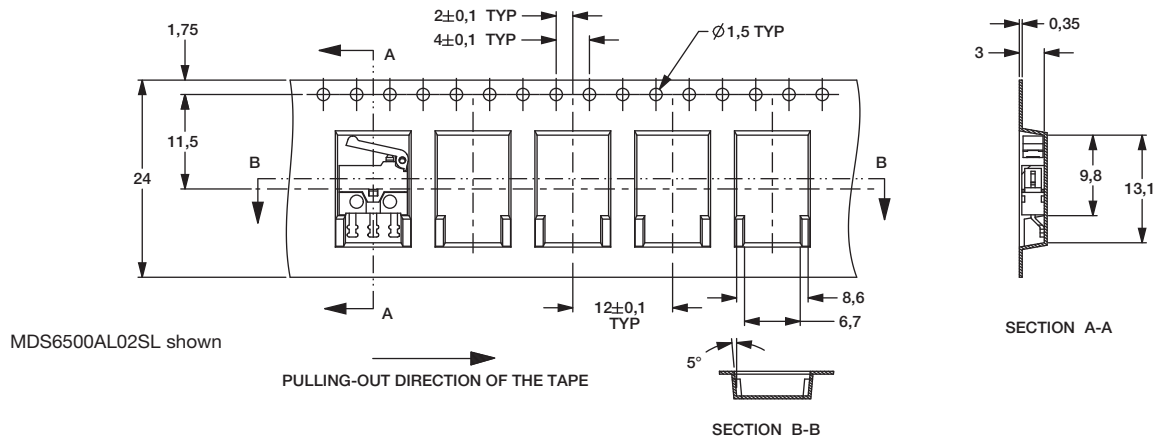
Detect

MDS Series Micro Snap-acting Detect Switches

TAPE & REEL

SL SMT, LEFT MOUNT

SR SMT, RIGHT MOUNT

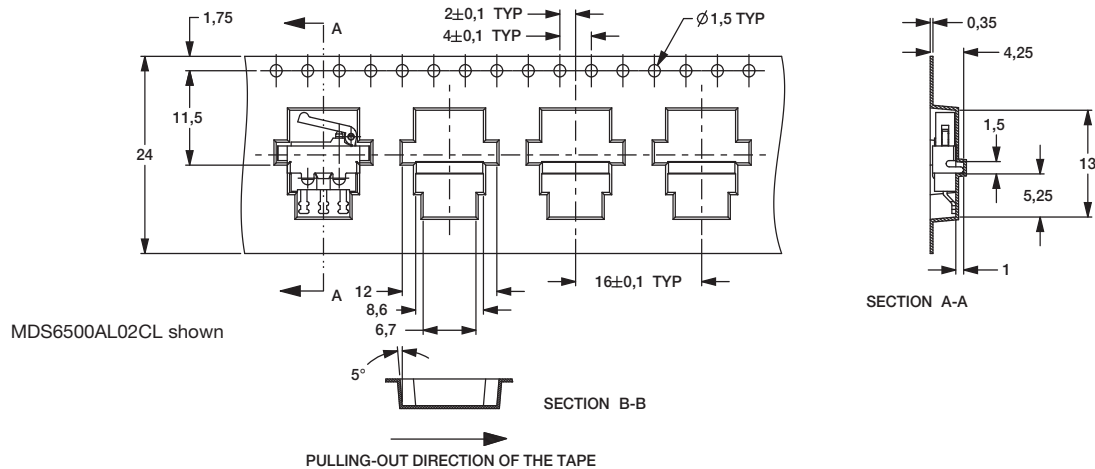


CL SMT, LEFT MOUNT

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
 TRAVEL TO MAKE:
 W version: 0,65 mm - 0,45/+0,25 mm
 MECHANICAL TRAVEL: 1,5 ± 0,2 mm
 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) 10⁹ Ω
 DIELECTRIC STRENGTH: ≥ ≥ 250 Vrms
 BOUNCE TIME: ≤ 3 ms

Environmental

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

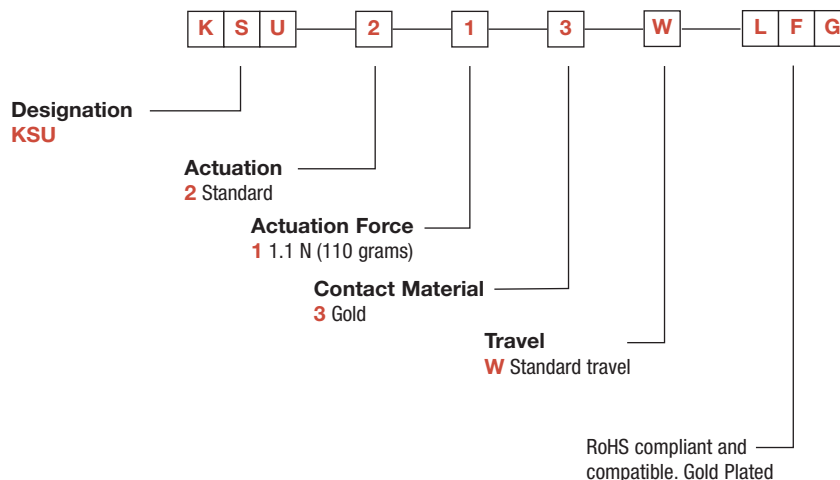
Process

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-17. For additional options not shown in catalog, consult our Customer Service Center.

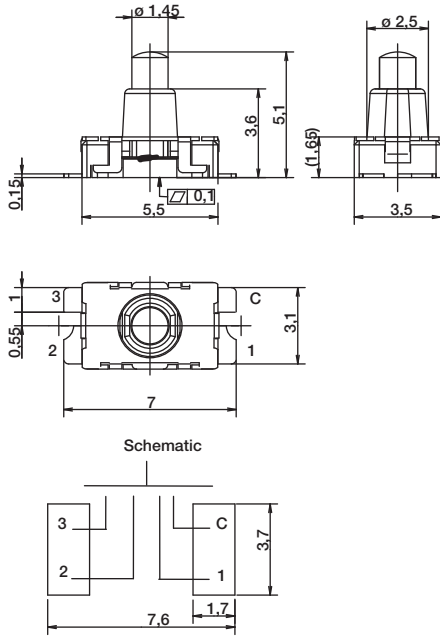


Detect

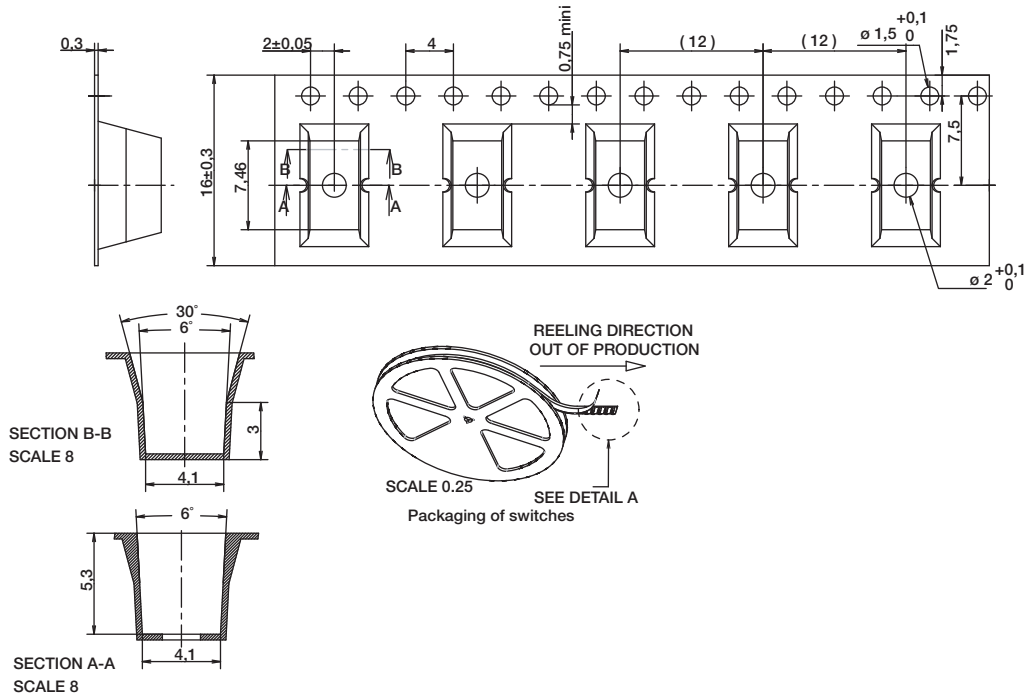


Dimensions are shown: mm
 Specifications and dimensions subject to change

KSU Series Micro Mini Surface Mount Detect Switches



TAPE & REEL



Detect



Dimensions are shown: mm
Specifications and dimensions subject to change

KSR2D/M Series

Subminiature Detect Switch for SMT

Features/Benefits

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

Typical Applications

- Automotive
- Industrial electronics
- Consumer electronics
- Detector switch applications



Specification

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

Type	Operating force Newtons (grams)	Operating life (operations)	Travel
KSR2D3MGLFG	1,5 ± 0,5N	100,000	0,3 ± 0,15
KSR2M3GLFG	0,8 ± 0,4N	100,000	0,19 ± 0,11

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): 10⁹ Ω
 BOUNCE TIME: 1 ms

Environmental

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

Packaging

Switches are delivered on continuous tape, in reels of 2,500 pieces.
 For information on specific and custom switches, consult Customer Service Center.

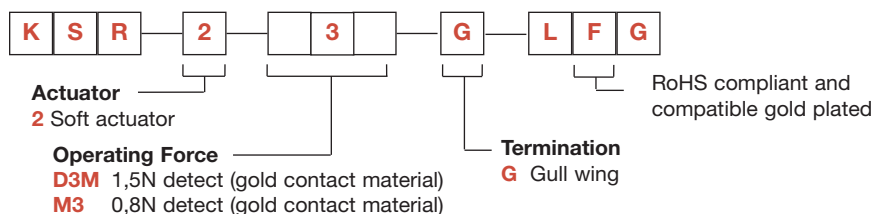
Process

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.



E

Detect



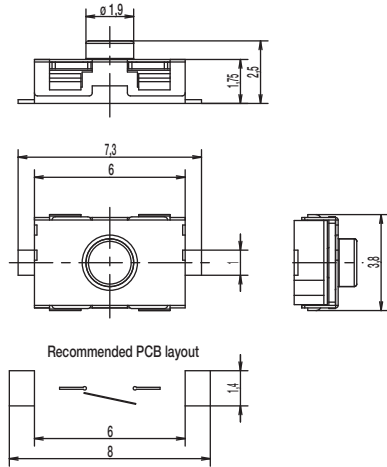
Dimensions are shown: mm

Specifications and dimensions subject to change

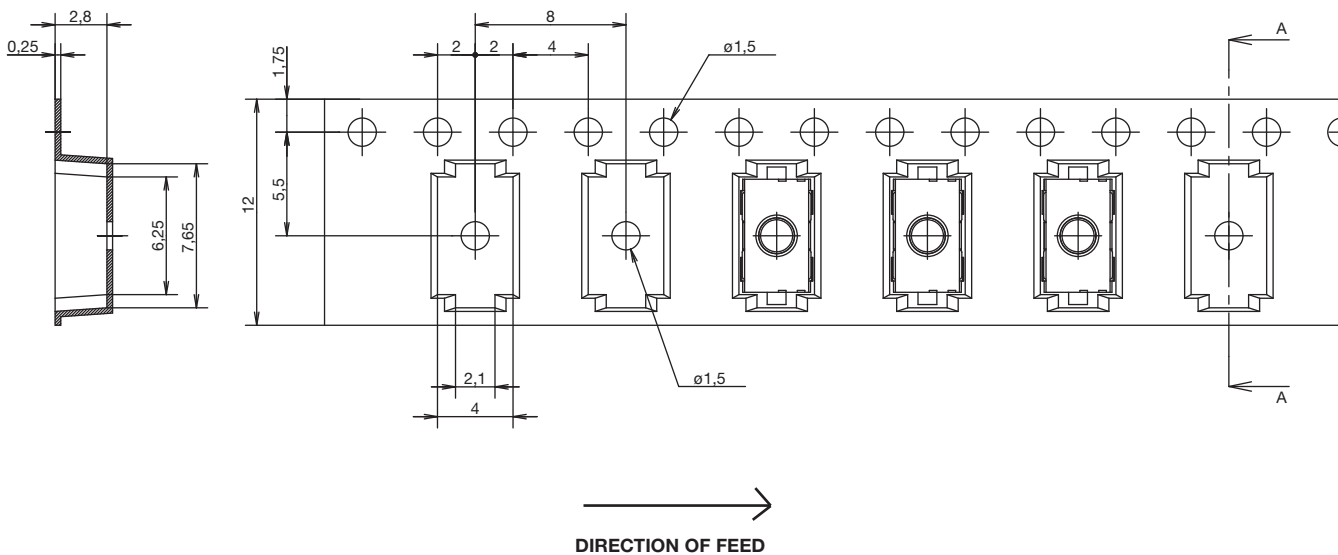


KSR2D/M Series Subminiature Detect Switch for SMT

KSR2D/M



TAPE & REEL



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: KSM1131D 0,35 ± 0,15 mm

KSM6161 0,5 ± 0,20 mm

TOTAL TRAVEL: KSM1131D 1,25 ± 0,2 mm

KSM6161 1,92 ± 0,2 mm

FORCE AT MAXIMUM TRAVEL:

KSM1131D 1.05N < Fa < 1,45N

KSM6161 0.99 < Fa < 1,34 N

OPERATING LIFE: KSM1131D 50,000 cycles

KSM6161 200,000 cycles

Packaging

Switches are delivered on continuous tape, in reels of 2,000 pieces (KSM1131D) and 1250 pieces (KSM6161)

Electrical

MAXIMUM POWER: 1.0 VA (KSM6161) / 0.2 VA (KSM1131D)

MAXIMUM VOLTAGE: 32 VDC

MINIMUM VOLTAGE: 20 mV

MAXIMUM CURRENT DC: 50 mA

MINIMUM CURRENT DC: 1 mA

CONTACT RESISTANCE: ≤ 900 mΩ (KSM6161) / 300 mΩ(KSM1131D)

INSULATION RESISTANCE: ≥ 10⁹ Ω

DIELECTRIC STRENGTH: ≤ 250 Vrms

BOUNCE TIME: ≤ 3 ms (KSM6161) / 1,25 ms (KSM1131D)

Environmental

OPERATING TEMPERATURE: -40°C to +85°C

STORAGE TEMPERATURE: -55°C to +85°C

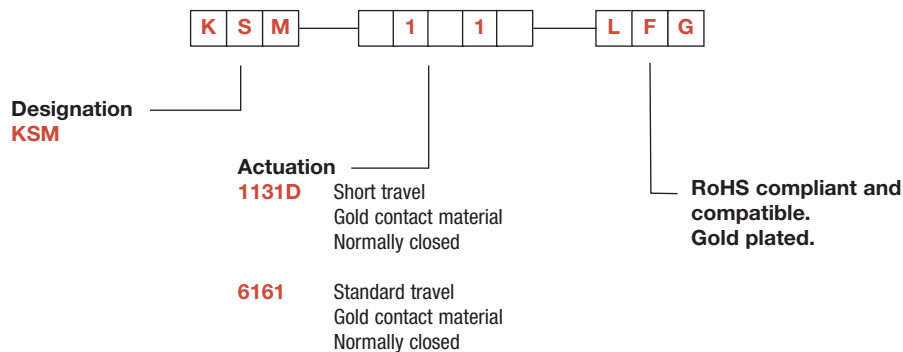
Process

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.



E

Detect

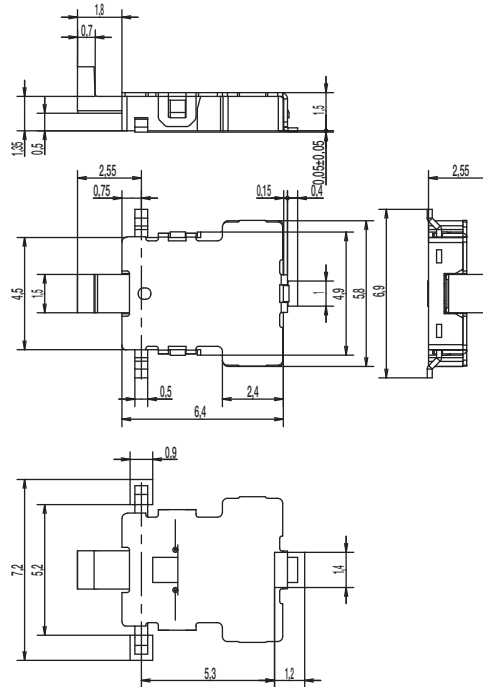


Dimensions are shown: mm

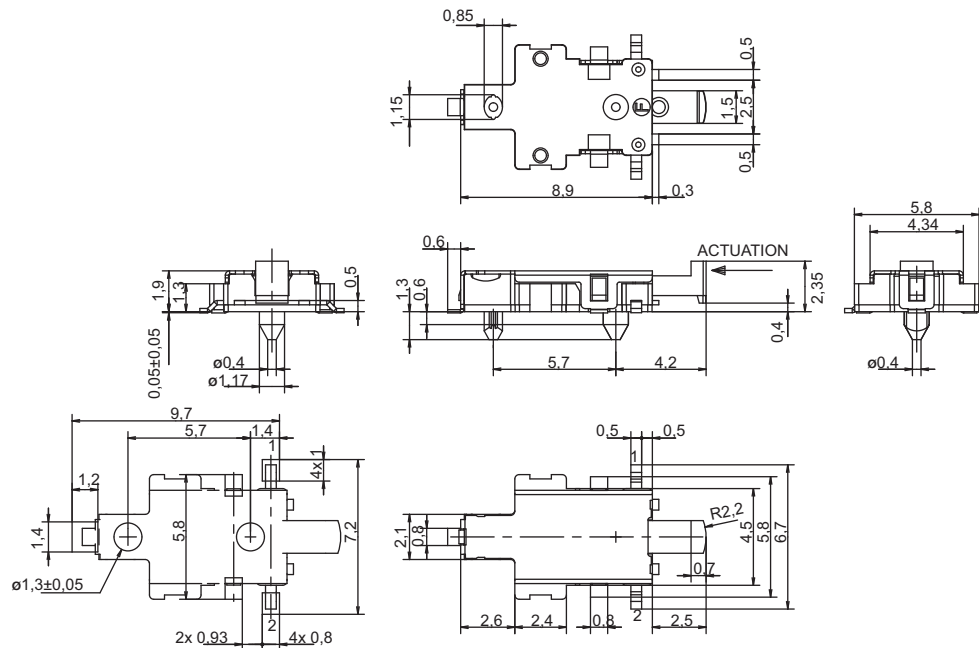
Specifications and dimensions subject to change

KSM Series Side Actuated Detect Switches

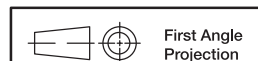
KSM1131D



KSM6161



Detect

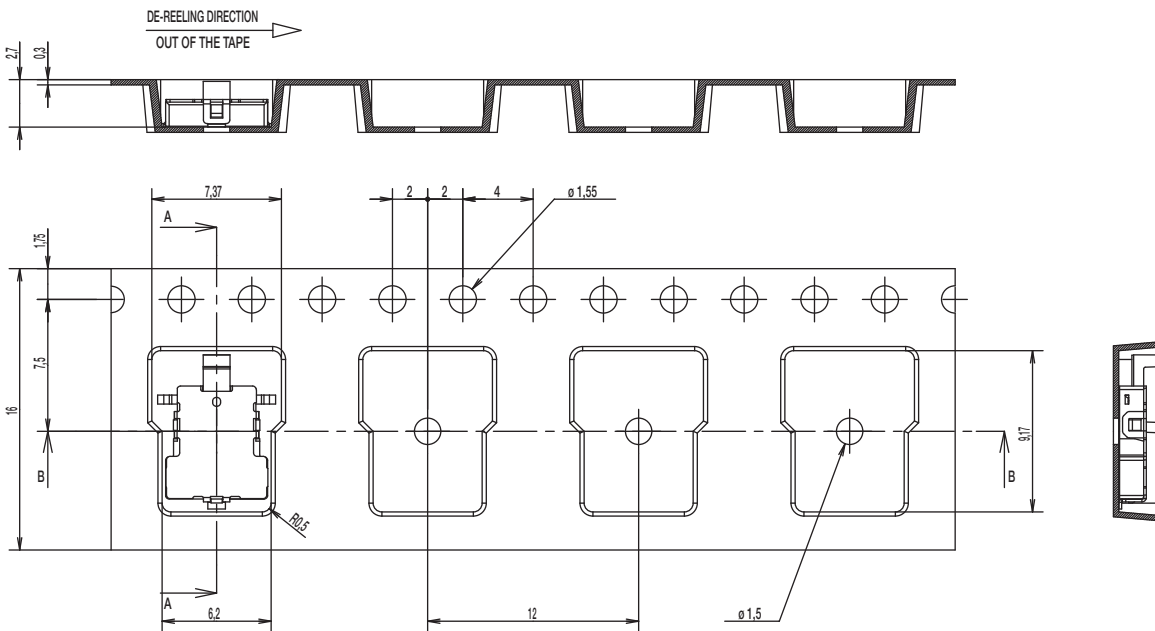


Dimensions are shown: mm
Specifications and dimensions subject to change

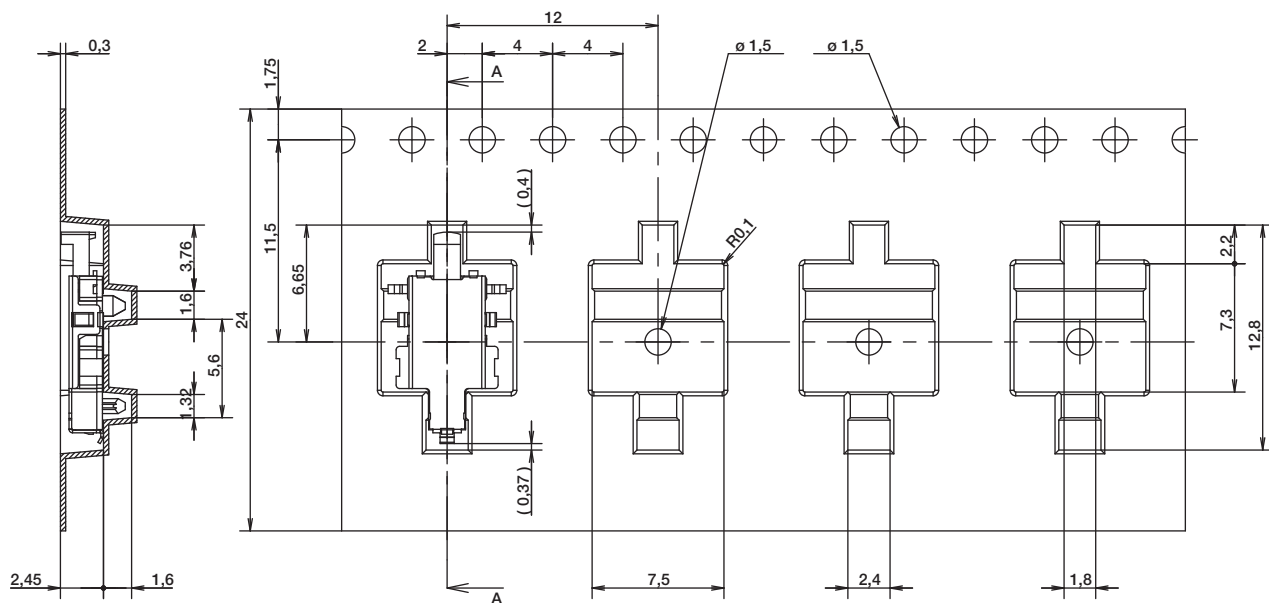
KSM Series Side Actuated Detect Switches

TAPE & REEL

KSM1131D



KSM6161



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.

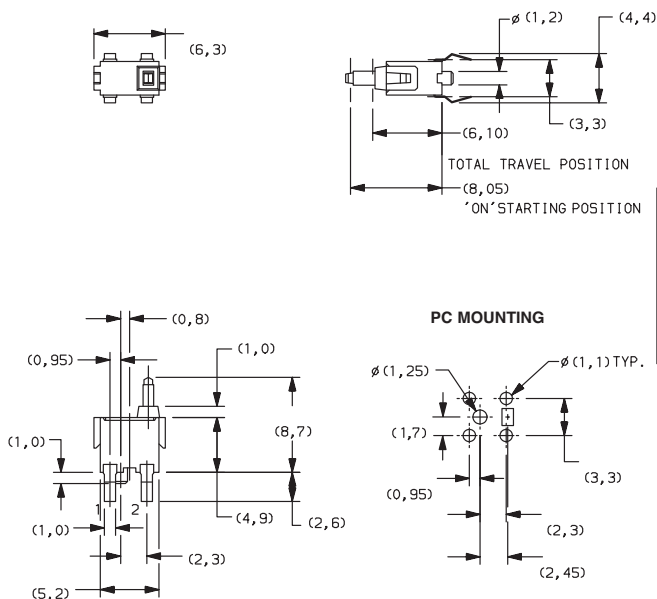
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

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.

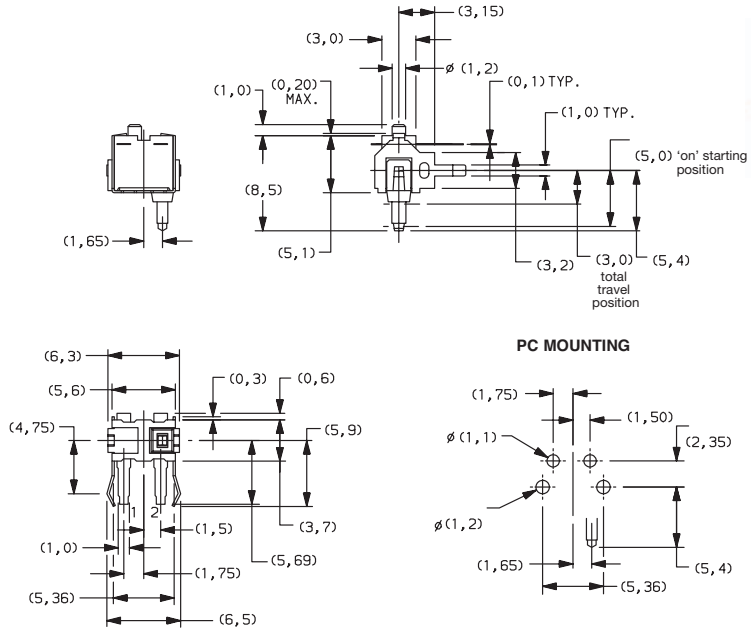



DDS Series

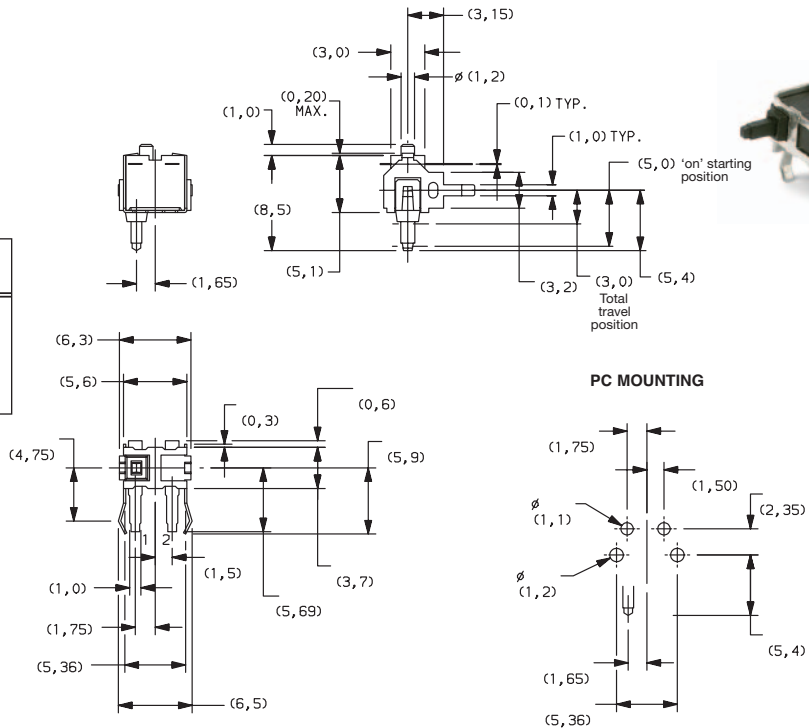
Micro Mini Thru-hole Detect Switches



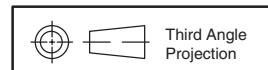
PART NUMBER	DESCRIPTION	SCHEMATIC
DDS002	Right angle, actuator right	 SPST N.O.



PART NUMBER	DESCRIPTION	SCHEMATIC
DDS003	Right angle, actuator left	 SPST N.O.



Detect



Dimensions are shown: mm
Specifications and dimensions subject to change



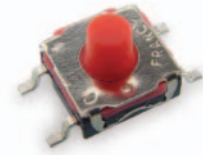
KSC4D Series Sealed Detect Switch for SMT

Features/Benefits

- **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 compatible with permanent actuation
CONTACT ARRANGEMENT: 1 make contact = SPST, N.O.
TERMINALS: J bend & Gullwing type for SMT

Electrical

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

Silver

Mechanical

Type	Operating force FA Newtons (grams)	Operating life (operations)	Travel (mm)
KSC4D2J50SH	1,0 - 3,0 ≈ (100 - 300)√	2,000,000	0,35 ± 0,85

Process

SOLDERING:
- Infrared Reflow according to free soldering process with IEC 61760-1.

Packaging

Reels of 1,000 pieces. Dimensions of reels according to EIA RS481 or IEC 60286-3. External diameter 330 mm ± 2 mm.

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): > 10⁹ Ω
BOUNCE TIME: < 1 ms

Silver

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

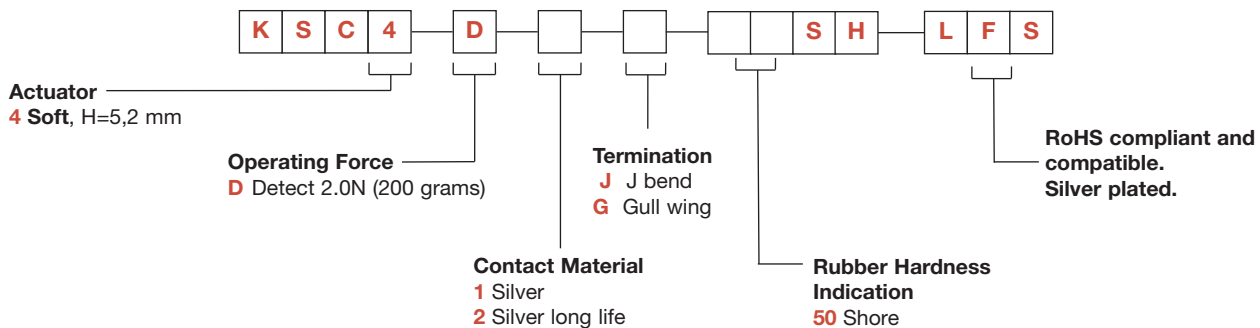
This data sheet does not provide enough information for applications which require a certain level of quality or safety such as automotive, medical systems, safety equipment. Please contact your sales representative to get contractual specification package.

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.

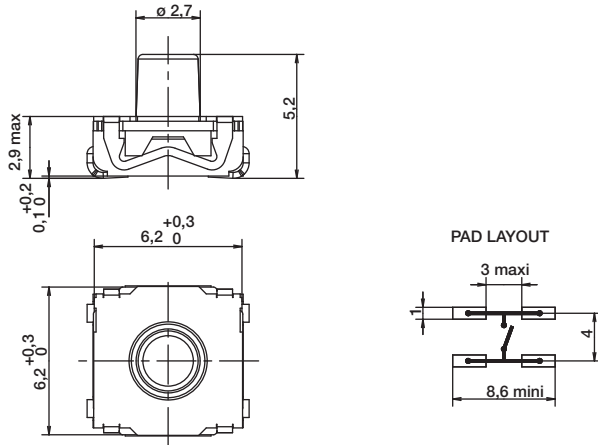
However, please note that all the combinations of these options are not feasible.

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

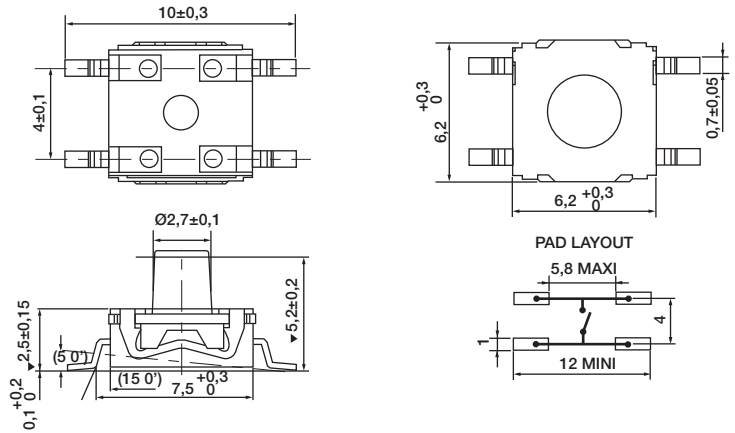


KSC4D Series Sealed Detect Switch for SMT

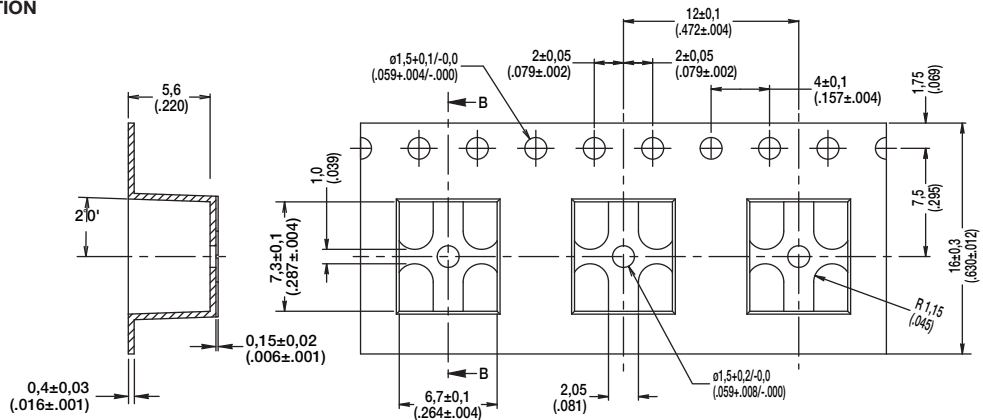
KSC4D1J SOFT, 5,2 mm high



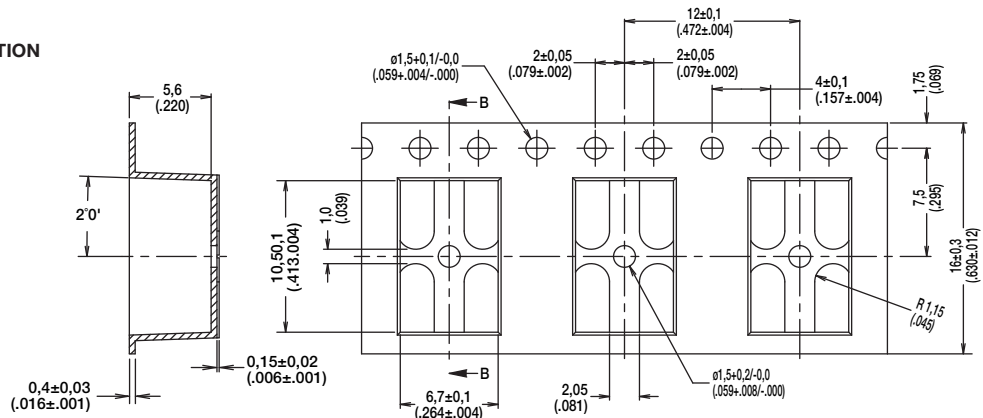
KSC4D1G SOFT, 5,2 mm high



FOR KSC4 FOR J TERMINATION



FOR KSC4 FOR G TERMINATION



Dimensions are shown: mm

Specifications and dimensions subject to change



Detect

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

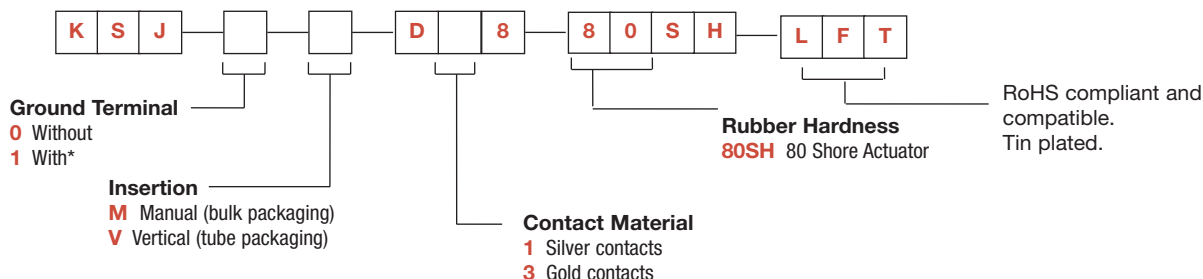
	Silver	Gold
MAXIMUM POWER:	1 VA	0.2 VA
MINIMUM VOLTAGE:	20 mV	20 mV
MAXIMUM VOLTAGE:	32 VDC	32 VDC
MINIMUM CURRENT:	1 mA	1 mA
MAXIMUM CURRENT:	50 mA	50 mA
DIELECTRIC STRENGTH (50 Hz, 1 min.): 250 V		
CONTACT RESISTANCE: < 100 m ohms		
INSULATION RESISTANCE (100 V): > 10 ⁹ ohms		
BOUNCE TIME: < 1 ms		

How To Order

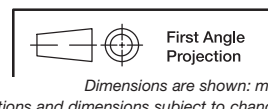
Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

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.

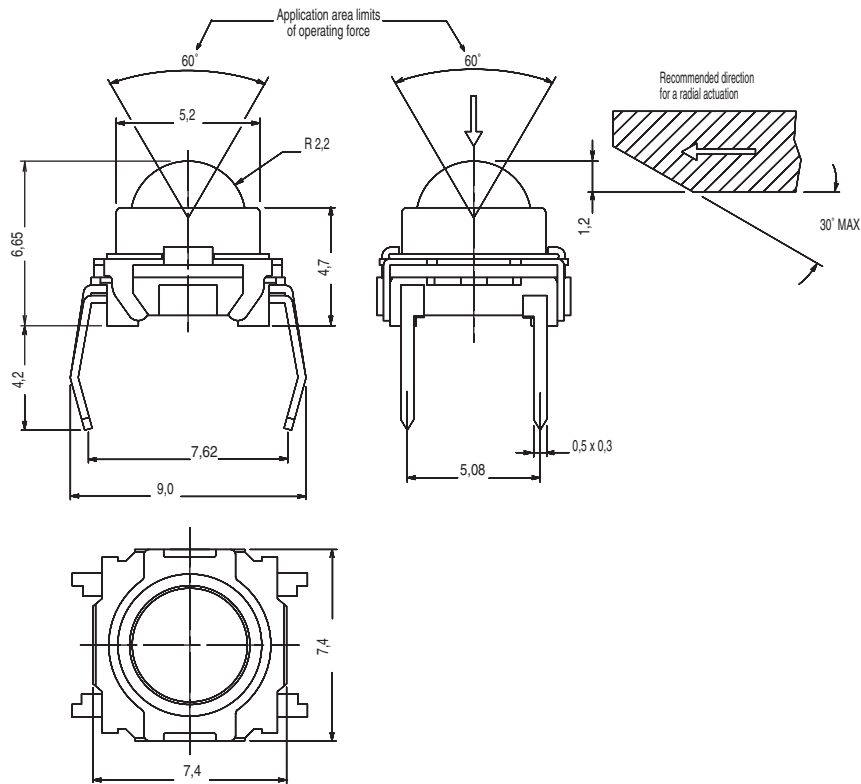


*Note: "1" ground terminal option not available with "V" version.
 The bracket for the "V" version plays this role.



KSJ Detect Series Spherical Actuator Detect Switches

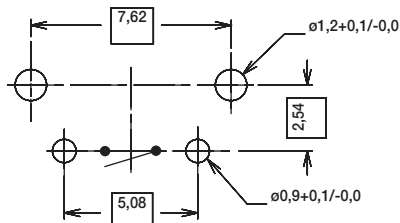
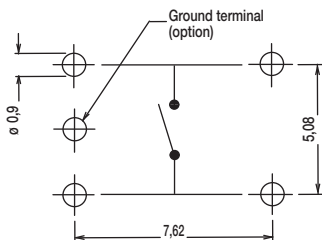
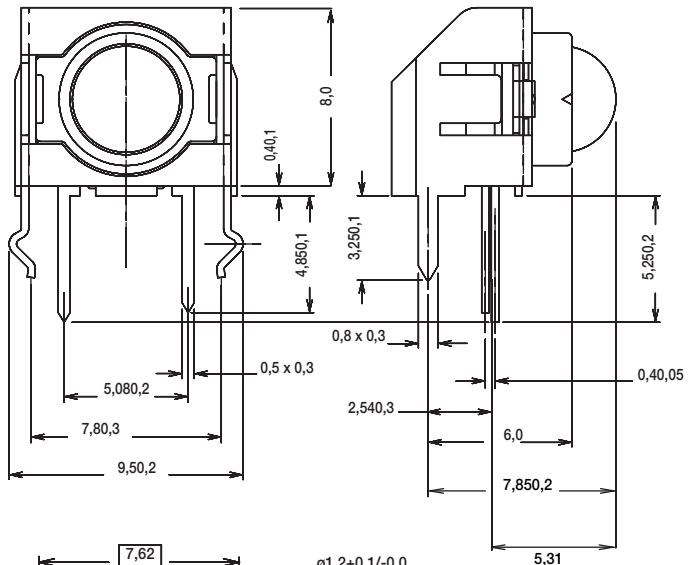
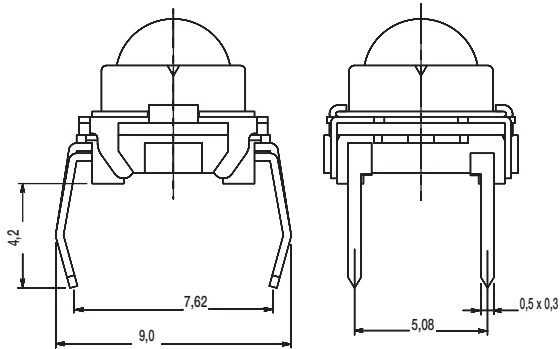
KSJ



INSERTION

M MANUAL

V VERTICAL



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**



Specifications

CONTACT RATING: 3A @ 125 V AC 24 V DC
 1A @ 125 V AC 30 V DC
 0.1A @ 125 VAC 60 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.

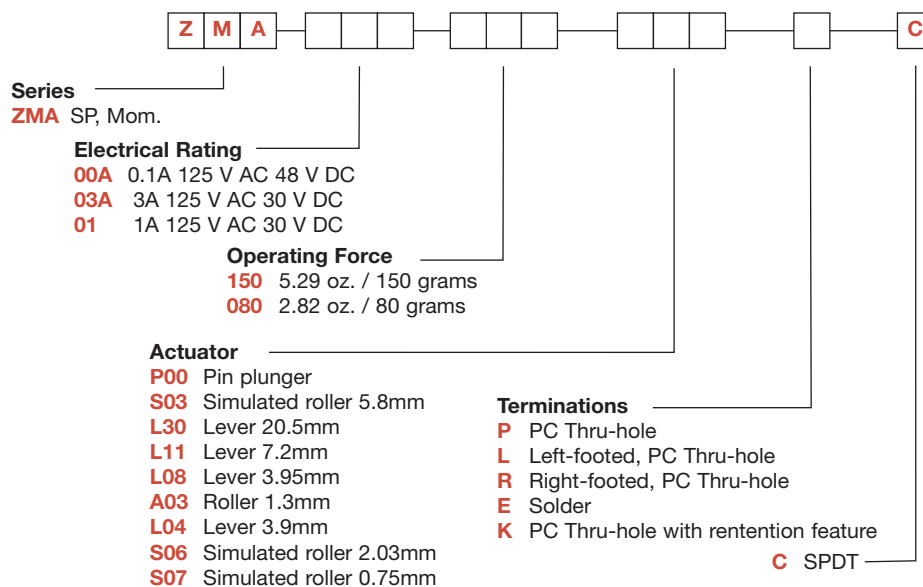
Materials

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-28 thru E-30. For additional options not shown in catalog, consult Customer Service Center.



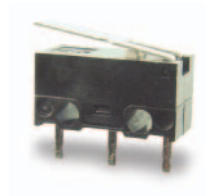
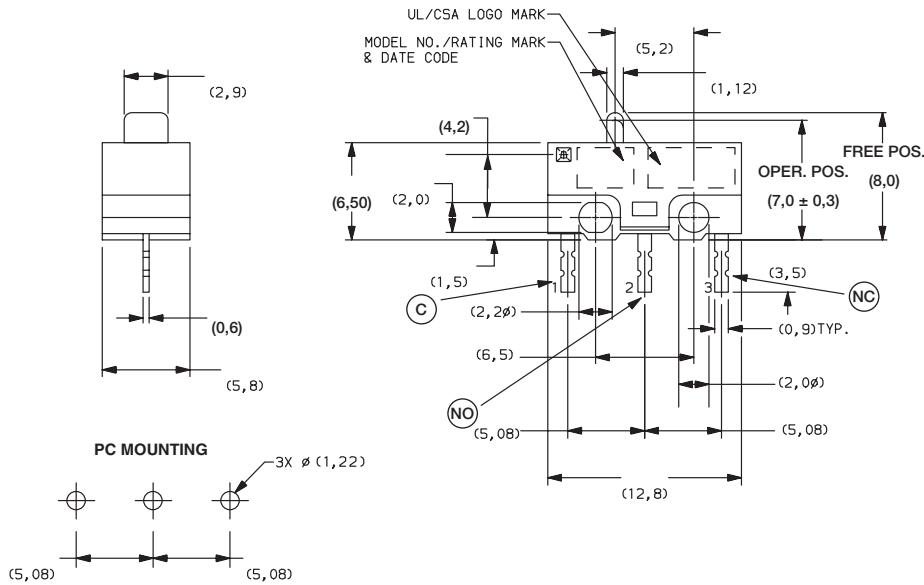
W

Detect

ZMA Series Subminiature Snap-acting Switches

SERIES **MDS**

ZMA SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMA03A150L04PC
SPDT

ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		ELECTRICAL RATING
	MOVABLE CONTACT	STATIONARY CONTACT	
00A	Silver plated	Silver plated	0.1 AMP @ 125 V AC 48 V DC
01	Fine silver	Fine silver	1 AMP @ 125 V AC 30 V DC
03A	Fine silver	Fine silver	3 AMPS @ 125 V AC 30 VDC

All models us with all options.

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

OPERATING FORCE

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



D

Detect



Third Angle Projection

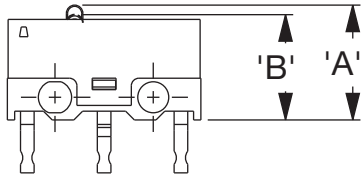
Dimensions are shown: mm
Specifications and dimensions subject to change



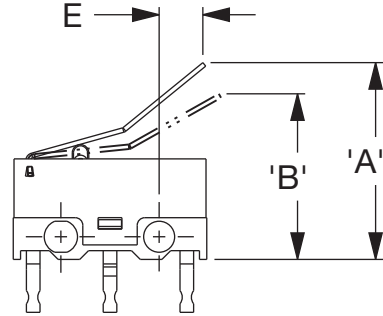
ZMA Series Subminiature Snap-acting Switches

ACTUATOR 

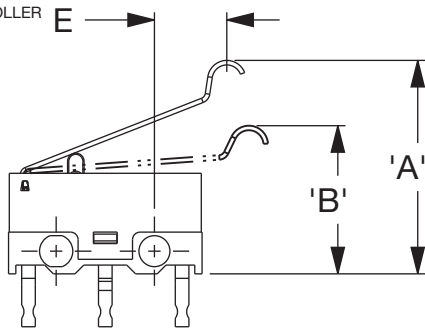
P00 PIN PLUNGER



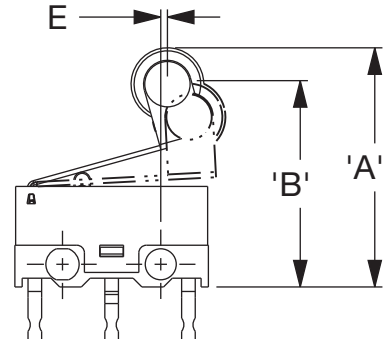
L08 LEVER
3.95MM



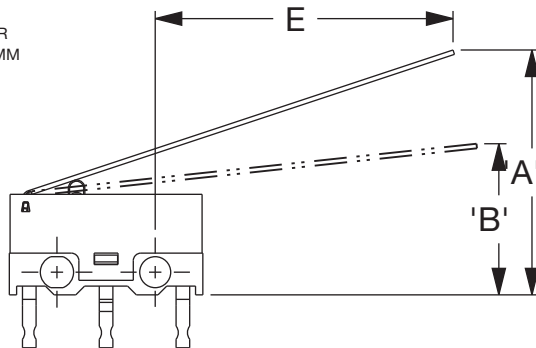
S03 SIMULATED ROLLER
5.8MM



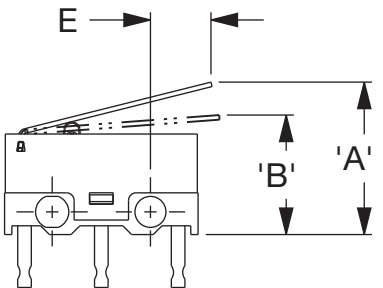
A03 ROLLER
1.3MM



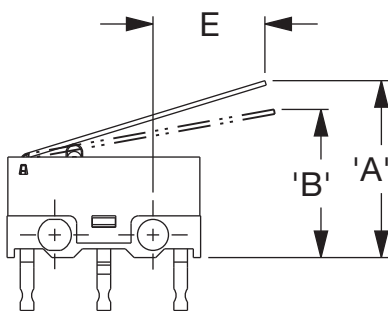
L30 LEVER
20.5MM



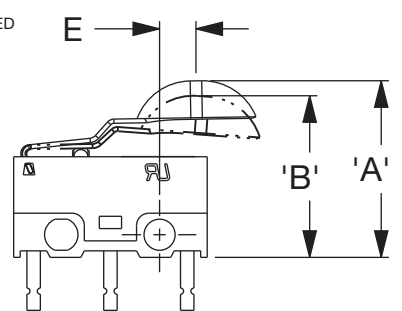
L04 LEVER
3.9MM



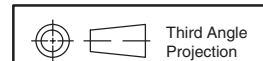
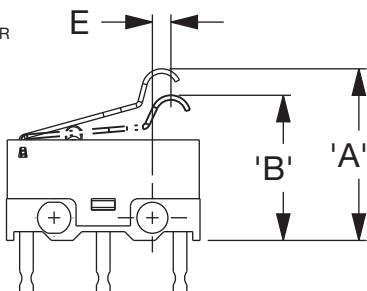
L11 LEVER
7.2MM



S06 SIMULATED ROLLER
2.03MM



S07 SIMULATED ROLLER
0.75MM



Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change



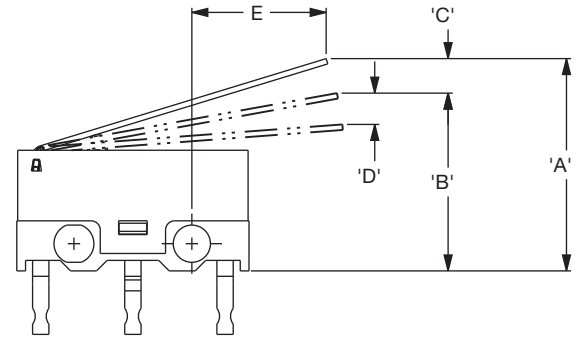
D

Detect

ZMA Series Subminiature Snap-acting Switches

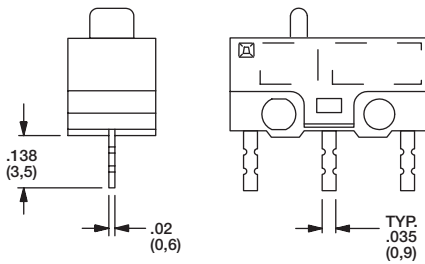
SWITCH CHARACTERISTICS

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 (80gf)	13	21	2	3	16.8	9.5 ±1.9	6.9	0.55	20.5
L30 (150 gf)	13	21	2	3	16.8	9.5 1.9	6.9	0.55	20.5
L11	25	39	4	6	11.7	8.68 ±1	4.4	0.6	7.2
L08	27	48	3	8	13.5	10.75 ±0.8	3.5	0.3	3.95
A03	34	65	6	10	16.55	13.65 ±1	3.9	0.5	1.3
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

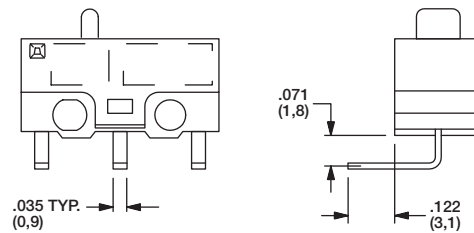


TERMINATIONS

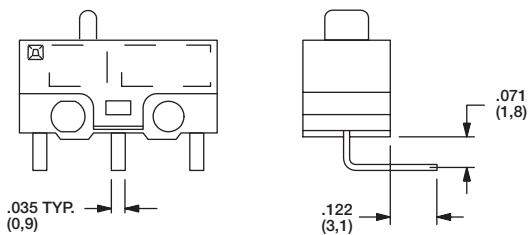
P PC THRU-HOLE



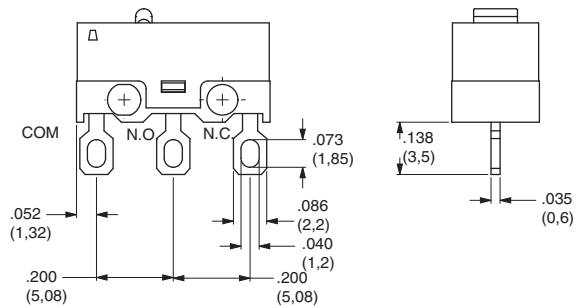
L LEFT FOOTED, PC THRU-HOLE



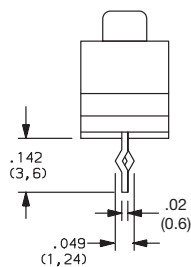
R RIGHT FOOTED, PC THRU-HOLE



E SOLDER



K PC THRU-HOLE WITH RETENTION FEATURE



E

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: 10⁹ Ω min.

OPERATING TEMPERATURE: -40°C to +85°C

TRAVEL: KDS11: Pre-travel 0.180" TYP; Overtravel 0.223"

KDS33: No pre-travel, full travel 0.403"

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.

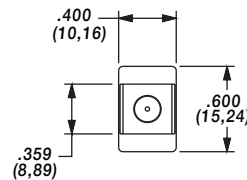
WIRE: UL 1061-24 AWG.

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

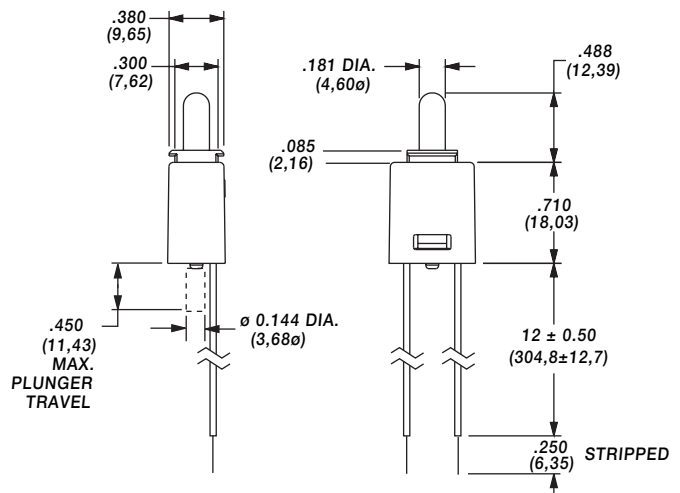
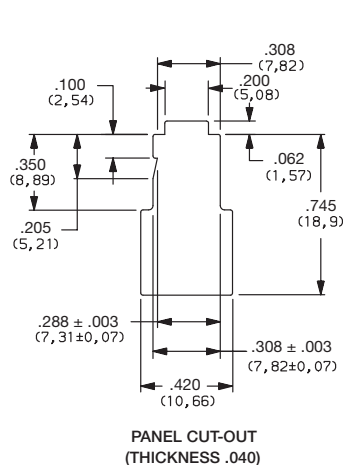
How To Order

Complete part numbers for KDS Series Switches are shown below.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
KDS11	OFF	MOM.	SPST N.O.
KDS33	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
- UL 61058 approved

Typical Applications

- Automotive sensors and indicators
- Industrial sensors
- Factory automation equipment
- Server / storage
- Security, alarms for windows



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/ UL1007 / UL2468

All are 22 AWG wire: stranded, made of copper or aluminum; Length: 12 in. with ends stripped; Color: white.

POTTING (around wires): Epoxy.

MAGNETS: NdFeB

ADHESIVE MOUNTING: Foam-backed, pressure-sensitive adhesive with release liner.

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

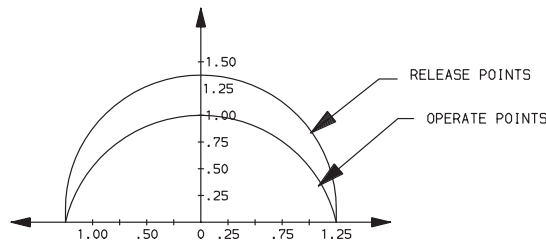
How To Order

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

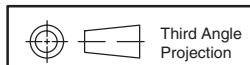
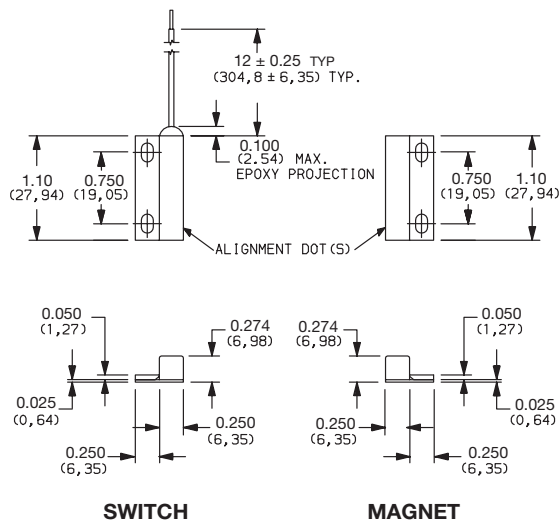
UL 61058



Detect



NOTE: UL 61058 Rating



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



MPS Series Magnetic Proximity Sensors

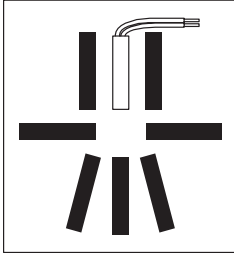
Actuating Positions

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.

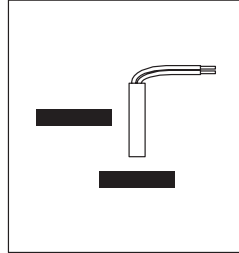
Gap Distance

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"

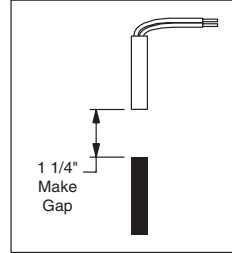
Correct Configuration



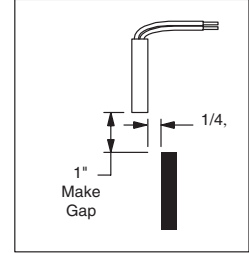
Incorrect Configuration



Center Alignment



Off Center Alignment



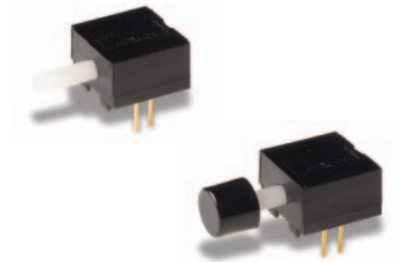
KM Series Subminiature Detect Switches

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: 10⁹Ω 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.

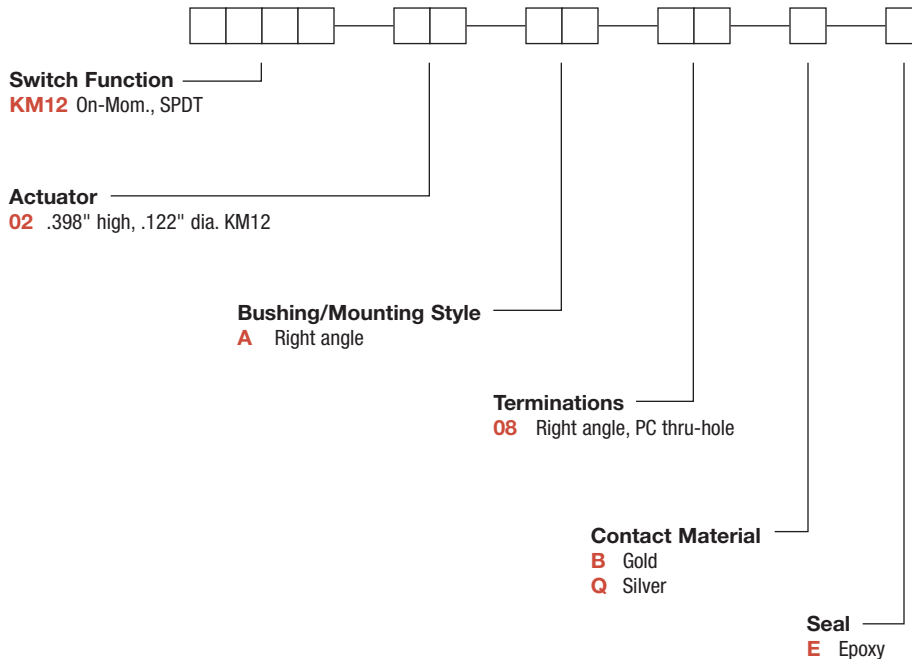
RETURN SPRING: Music wire, phosphor coated.

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-37 and E-39. 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	KM12	ON	MOM.	2-1	4-3	<p>SPDT</p>

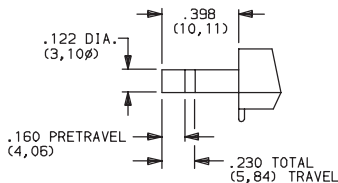
SPDT

Part number shown: KM1202A08BE

ACTUATOR



02 .398" HIGH, .122" DIA.

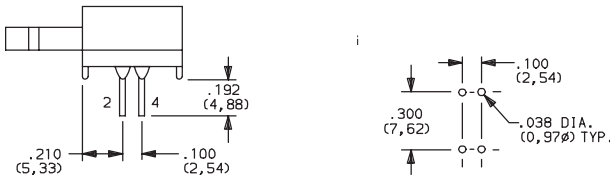


NOTE: Caps available for plunger options, see page E-43.

BUSHING/ MOUNTING STYLE



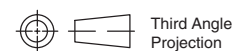
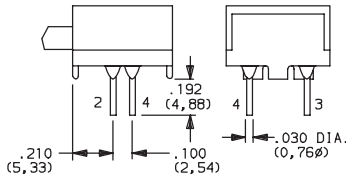
A RIGHT ANGLE



TERMINATIONS



08 RIGHT ANGLE, PC THRU-HOLE



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



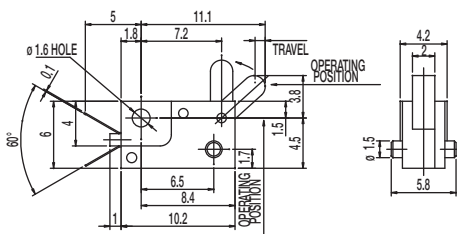
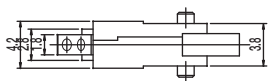
Detect

DS Series Detect Switch

NEW!



PART NUMBER	PACKAGING
DS-040-02	1,000 pieces



1P-1T



Specifications

CONTACT ARRANGEMENT: SPST, NO
 CONTACT RATING: 0.1A @ 16 VDC
 OPERATING LIFE: 20,000 cycles
 OPERATING FORCE: 30 ± 15 gf
 TRAVEL: 0.90 ± 0.20 mm
 INITIAL CONTACT RESISTANCE: 40 m Ω max.
 INSULATION RESISTANCE: 100 M Ω min. @ 250 VDC 60 sec.
 DIELECTRIC STRENGTH: 250 V AC (50-60Hz) 60 sec.
 OPERATING TEMPERATURE: -20°C to +70°C.

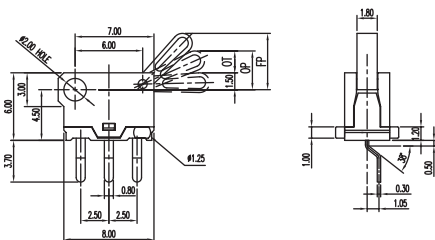
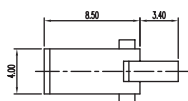
Materials

LEVER: POM
 CASE: PBT
 COVER: PC

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



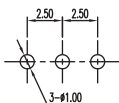
PART NUMBER	PACKAGING
DS-080	1,000 pieces



1P - 2T



SCHEMATIC



PIERCING PLAN

Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 100mA @ 30 VDC
 OPERATING LIFE: 20,000 cycles
 OPERATING FORCE: 30 ± 20 gf
 OVER TRAVEL: 2.0 ± 0.40 mm
 INITIAL CONTACT RESISTANCE: 200 m Ω max.
 INSULATION RESISTANCE: 10 M Ω min. @ 250 VDC 60 sec.
 DIELECTRIC STRENGTH: 250 V AC (50-60Hz) 60 sec.
 OPERATING TEMPERATURE: -20°C to +70°C.

Materials

KNOB: POM
 COVER: PA46
 SLIDER: PBT
 HOUSING: PA46
 TERMINAL: 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.



D

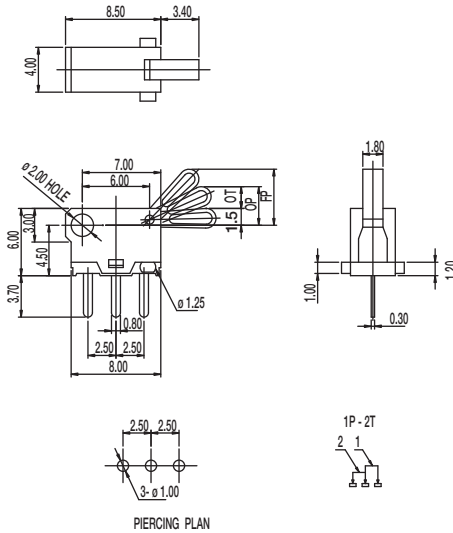
Detect

NEW!

DS Series Detect Switch



PART NUMBER	PACKAGING
DS-080-CPA	1,000 pieces



Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 100mA @ 30 VDC
 OPERATING LIFE: 20,000 cycles
 OPERATING FORCE: 30 ± 20 gf
 OVER TRAVEL: 2.0 ± 0.40 mm
 INITIAL CONTACT RESISTANCE: 200 m Ω max.
 INSULATION RESISTANCE: 10 M Ω min. @ 250 VDC 60 sec.
 DIELECTRIC STRENGTH: 250 V AC (50-60Hz) 60 sec.
 OPERATING TEMPERATURE: -20°C to $+70^{\circ}\text{C}$.

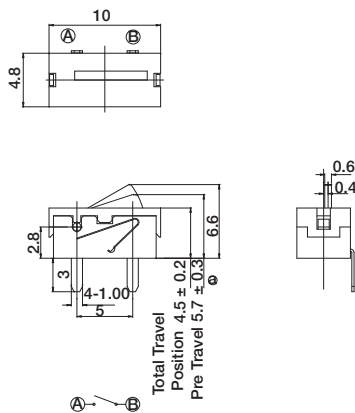
Materials

KNOB: POM
 COVER: PA46
 SLIDER: PBT
 HOUSING: PA46
 TERMINAL: Silver plated

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



PART NUMBER	PACKAGING
DS-09005-02 BK	500 pieces



Specifications

CONTACT ARRANGEMENT: SPST
 CONTACT RATING: 1mA @ 5 VDC
 OPERATING LIFE: 100,000 cycles
 OPERATING FORCE: 50 gf max.
 TOTAL TRAVEL: 4.5 ± 0.2 mm
 INITIAL CONTACT RESISTANCE: 500 m Ω max.
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC 60 sec.
 DIELECTRIC STRENGTH: 500 V AC (50-60Hz) 60 sec.
 OPERATING TEMPERATURE: -20°C to $+70^{\circ}\text{C}$.

Materials

LEVER: POM
 COVER: PA
 HOUSING: PA
 TERMINAL: Silver plated

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



Dimensions are shown: mm
 Specifications and dimensions subject to change



DS Series Detect Switch

NEW!



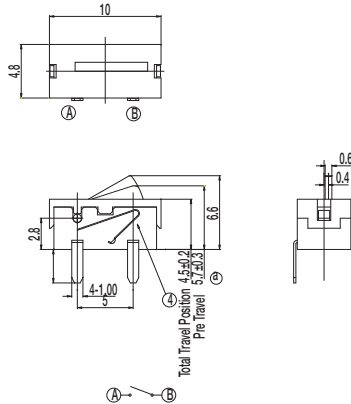
PART NUMBER	PACKAGING
DS-09005-02 RP	500 pieces

Specifications

CONTACT ARRANGEMENT: SPST
 CONTACT RATING: 1mA @ 5 VDC
 OPERATING LIFE: 100,000 cycles
 OPERATING FORCE: 50 gf max.
 TOTAL TRAVEL: 4.5±0.2 mm
 INITIAL CONTACT RESISTANCE: 500 m Ω max.
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC 60 sec.
 DIELECTRIC STRENGTH: 500 V AC (50-60Hz) 60 sec.
 OPERATING TEMPERATURE: -20°C to +70°C.

Materials

LEVER: POM
 COVER: PA
 HOUSING: PA
 TERMINAL: Silver plated



Detect

NEW!

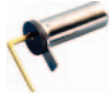
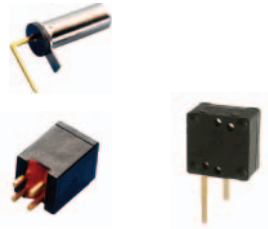
RB Series Rolling Ball Sensor Switch

Features/Benefits

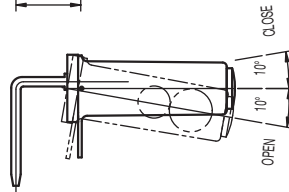
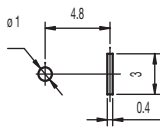
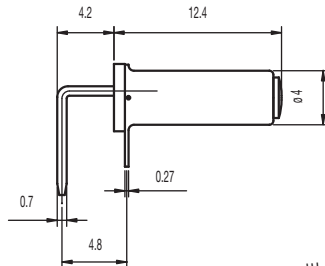
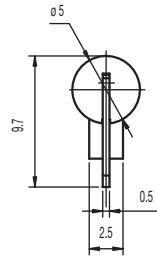
- Different angle options to trigger
- Ultra miniature design
- Patent awarded

Typical Applications

- Household goods
- Electronic toys
- Consumer electronics including irons, portable heaters, games, toys
- Safety and security controls



PART NUMBER	PACKAGING
RB-231X2	1,000 pieces



PCB LAYOUT



Specifications

CONTACT ARRANGEMENT: SPST
 SENSOR ANGLE: 0° to -10° scope inside, terminal to disconnection electric current
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)
 OPERATING LIFE: 100,000 cycles
 INSULATION RESISTANCE: 1000 M Ω min. @ 100 VDC
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to +70°C

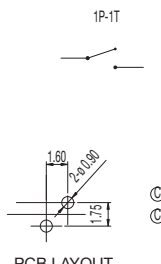
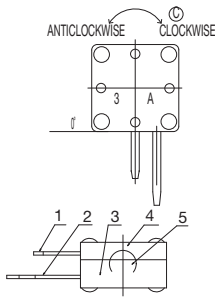
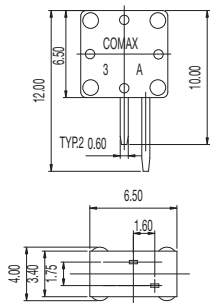
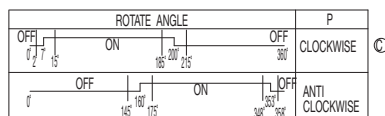
Materials

FRAME: Copper alloy, nickel plated
 COVER: PA 46 (UL94V-0).
 MOVABLE CONTACT: Copper alloy, nickel plated
 TERMINALS: Copper alloy, gold plated
 BRASS BALL: Brass, nickel plated

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



PART NUMBER	PACKAGING
RB-220-07 R	500 pieces



PCB LAYOUT

Specifications

CONTACT ARRANGEMENT: SPST
 SENSOR ANGLE: 15° to 90° scope inside, terminal to disconnection electric current
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)
 OPERATING LIFE: 20,000 cycles (without load); 100,000 cycles with load
 INSULATION RESISTANCE: 10 M Ω min. @ 100 VDC
 DIELECTRIC STRENGTH: 100 V AC (50-60Hz)
 OPERATING TEMPERATURE: -10°C to +50°C

Materials

HOUSING: PA
 COVER: PA
 BALL: Gold plated

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

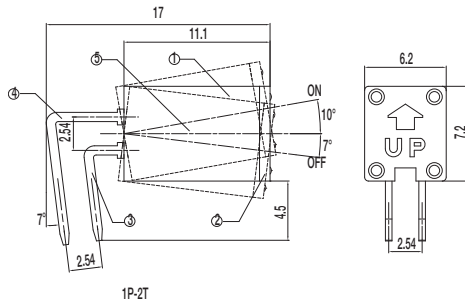


Detect

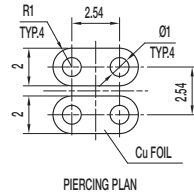
RB Series Rolling Ball Sensor Switch

NEW!

PART NUMBER	PACKAGING
RB-435B	500 pieces



1P-2T



PIERCING PLAN

Specifications

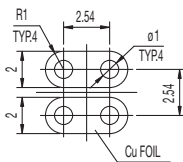
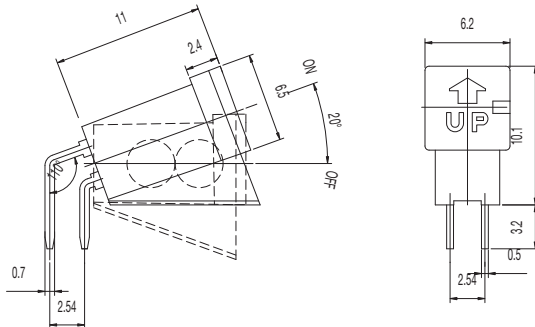
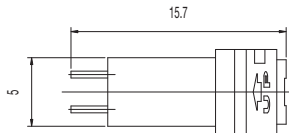
CONTACT ARRANGEMENT: SPDT
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)
 OPERATING LIFE: 100,000 cycles
 INITIAL CONTACT RESISTANCE: 5 Ω max.
 INSULATION RESISTANCE: 1000 M Ω min. @ 500 VDC
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to +70°C

Materials

HOUSING: PA (UL94V-0)
 COVER: PA (UL94V-0)
 MOVABLE CONTACT: Copper alloy, nickel plated
 TERMINALS: Gold plated
 BALL: Steel, gold plated

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

PART NUMBER	PACKAGING
RB-435X2-20	500 pieces



PCB LAYOUT

Specifications

CONTACT ARRANGEMENT: SPDT
 SENSOR ANGLE: -20° to -30° scope inside, terminal to disconnection electric current
 MINIMUM VOLTAGE: 1 VDC 10mA (resistive load)
 MAXIMUM VOLTAGE: 5 VDC 1mA (resistive load)
 OPERATING LIFE: 100,000 cycles
 INSULATION RESISTANCE: 1000 M Ω min. @ 100 VDC
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to +70°C

Materials

HOUSING: PBT (UL94V-0)
 COVER: PBT (UL94V-0)
 TERMINALS: Gold plated
 BALL: Steel, gold plated

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



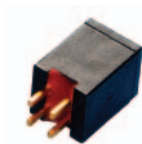
Detect



Dimensions are shown: mm
 Specifications and dimensions subject to change

NEW!

RB Series Rolling Ball Sensor Switch



PART NUMBER	PACKAGING
RB-441-45	500 pieces

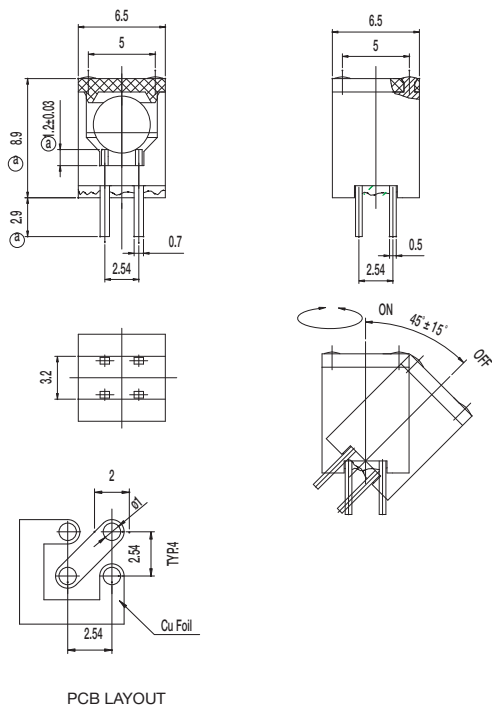
Specifications

CONTACT ARRANGEMENT: SPDT
MAXIMUM VOLTAGE: 24 VDC 25mA (resistive load)
OPERATING LIFE: 100,000 cycles
INSULATION RESISTANCE: 1000 M Ω min. @ 100 VDC
DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)
OPERATING TEMPERATURE: -20°C to +70°C

Materials

HOUSING: PBT (UL94V-0)
COVER: PBT (UL94V-0)
TERMINALS: Gold plated
BALL: Gold plated

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



PCB LAYOUT



Detect