

# C&K ET Series Sealed Subminiature Toggle Switches

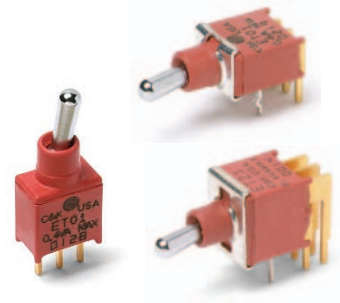
## Features/Benefits

- Sealed against solder and cleaning process contaminants
- ESD protection available
- Thru-hole and surface mount models
- Compact size and small footprint save PCB space



## Typical Applications

- Hand-held telecommunications
- Instrumentation
- Medical equipment



## Specifications

**CONTACT RATING:** B contact material: 0.4 VA max. @ 20 V AC or DC max. See page F-32 for additional ratings.

**ELECTRICAL LIFE:** ETX1 models: 60,000 make-and-break cycles at full load. All other models: 30,000 cycles.

**CONTACT RESISTANCE:** Below 20 m Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

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

**ELECTROSTATIC DISCHARGE (ESD) RESISTANT OPTION:** M3 & S3 insulating actuator only: 9,000 V DC min. @ sea level, actuator to terminals. F1 conductive bushing only: Dissipates up to 20,000 V DC from actuator to ground. M3 & S3 actuator and F1 bushing options are not recommended for use together.

**DIELECTRIC STRENGTH:** 1000 Vrms min. @ sea level.

**OPERATING TEMPERATURE:** -30°C to 85°C.

**SOLDERABILITY:** Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

**DEGREE OF PROTECTION:** IP57: Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

**PACKAGING:** Surface mount switches are shipped in tape and reel packaging, see page F-32 for drawings and reel information.

## Materials

**CASE & BUSHING:** Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0). SA surface mount: High temperature material, glass filled 4/6 nylon, flame retardant, heat stabilized (UL 94V-0). F1 conductive bushing option is impregnated with carbon fibers.

**ACTUATOR:** M3 & S3 anti-static actuator: Nylon 4/6, black standard (UL 94V-0). All other actuators: Brass, chrome plated. Internal o-ring seal standard with all actuators.

**SWITCH SUPPORT:** Brass, tin plated.

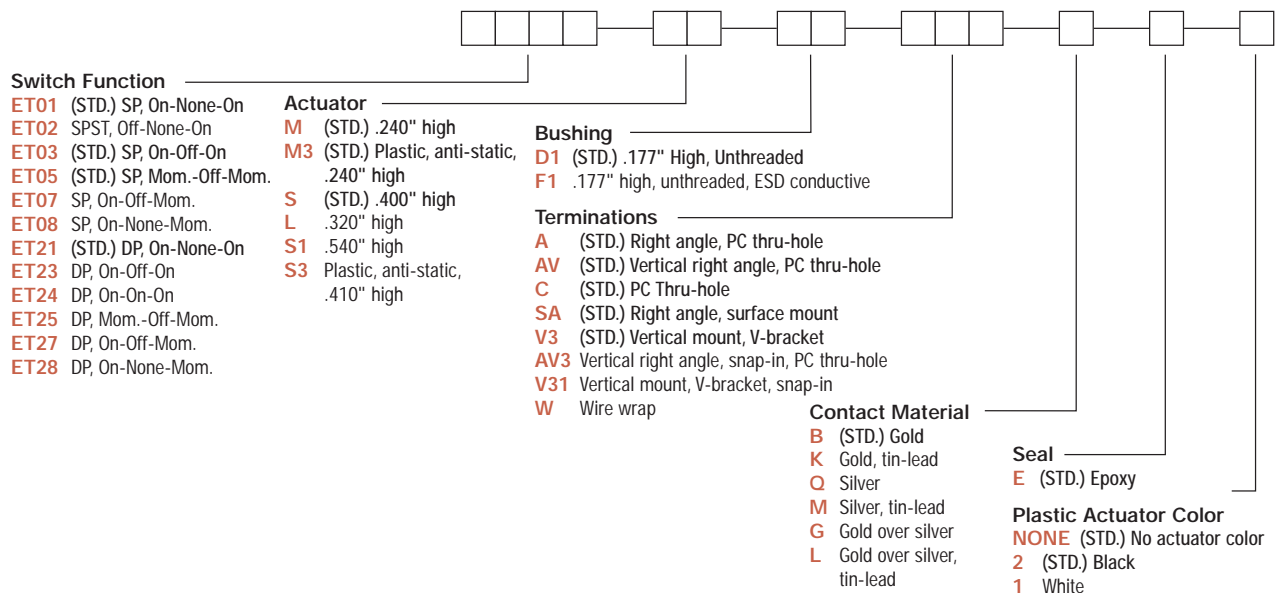
**CONTACTS & TERMINALS:** B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See F-32 for additional contact materials.

**TERMINAL SEAL:** Epoxy.

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

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages F-28 thru F-32. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

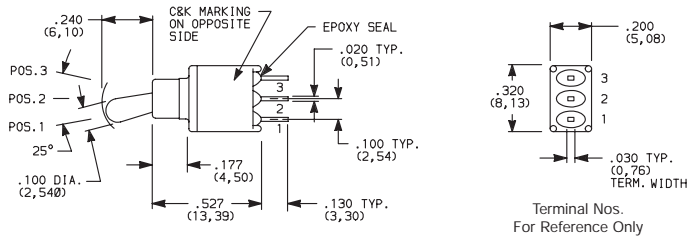


# C&K ET Series Sealed Subminiature Toggle Switches

## SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
		C&K marking on opposite side						
SP	ET01 (STD.)	ON	NONE	ON	2-3	N/A	2-1	
	ET03 (STD.)	ON	OFF	ON	2-3	OPEN	2-1	
	ET05 (STD.)	MOM.	OFF	MOM.				
	ET07	ON	OFF	MOM.				
	ET08	ON	NONE	MOM.	2-3	N/A	2-1	
	ET02	OFF	NONE	ON	OPEN	N/A	3-1	

### SPDT

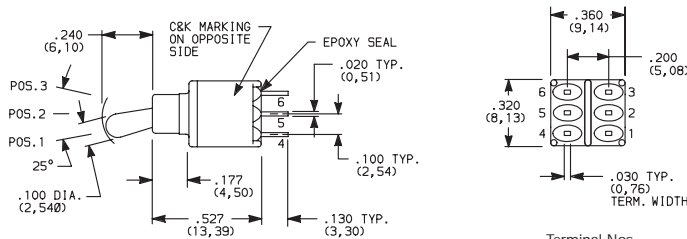


Part number shown: ET01MD1CBE

ET02 Models: Omit terminal 2

DP	ET21 (STD.)	ON	NONE	ON	2-3,5-6	N/A	2-1,5-4	
	ET23	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	
	ET25	MOM.	OFF	MOM.				
	ET27	ON	OFF	MOM.				
	ET28	ON	NONE	MOM.	2-3,5-6	N/A	2-1,5-4	
	ET24**	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4	DPDT

### DPDT



Part number shown: ET21MD1CBE

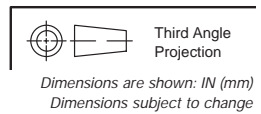
MOM. = Momentary

\*\* Wiring for 3-way switch, see Section N.

All models with all options (except M3 actuator) when ordered with G, L, M or Q contact material.



Toggle



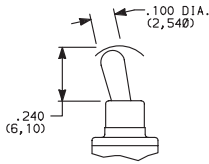
# C&K ET Series Sealed Subminiature Toggle Switches

## ACTUATOR

ACTUATOR COLOR

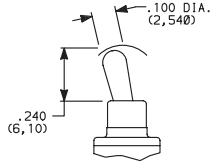


**M** (STD.) .240" HIGH



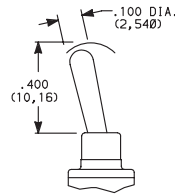
Standard with A, AV, V3 & V31 terminations.

**M3** (STD.) PLASTIC, ANTISTATIC, .240" HIGH



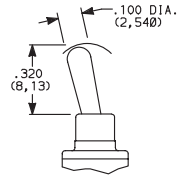
Material: Nylon 4/6 (UL 94V-0), black standard. Static resistance: 9,000 V DC min. @ sea level, actuator to terminals. Not available with F1 conductive bushing option. Not UL approved.

**S** (STD.) .400" HIGH

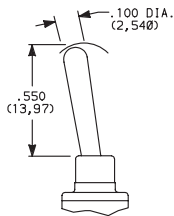


Standard with C or W terminations.

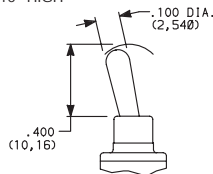
**L** .320" HIGH



**S1** .540" HIGH



**S3** PLASTIC, ANTISTATIC, .410" HIGH



Material: Nylon 4/6 (UL 94V-0), black standard. Static resistance: 9,000 V DC min. @ sea level, actuator to terminals. Not available with F1 conductive bushing option. Not UL approved.

**NOTE:** All actuators have chrome finish (except M3 & S3).

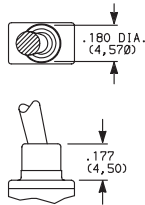
OPTION CODE	PLASTIC ACTUATOR COLOR
(NONE)	(STD.) BLACK (M3 & S3 only)
1	WHITE (M3 & S3 only)

## BUSHING



**D1** (STD.) .177" HIGH, UNTHREADED

**F1** ESD, CONDUCTIVE BUSHING UNTHREADED, .177" HIGH



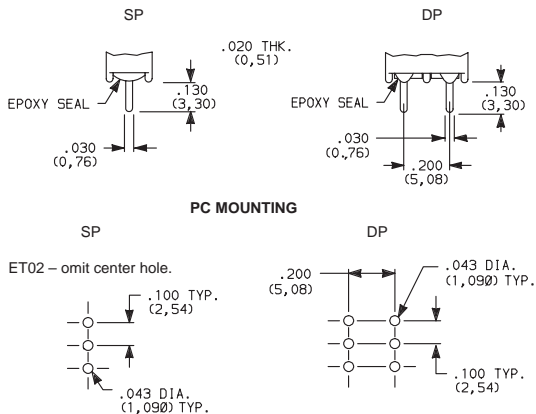
**NOTE:** ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

Available with all metal actuator options and A, AV, AV3, V3 and V31 termination options only. Internal actuator o-ring seal standard.

## TERMINATIONS



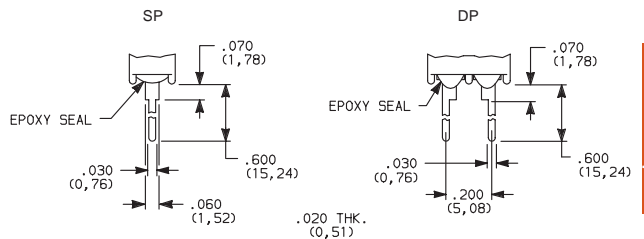
**C** (STD.) PC THRU-HOLE



SP and DP

Not available with F1 conductive bushing.

**W** WIRE WRAP



SP and DP

Not available with F1 conductive bushing.

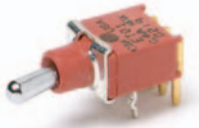


Third Angle Projection  
Dimensions are shown: IN (mm)  
Dimensions subject to change

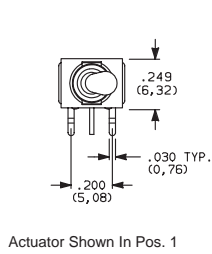
# C&K ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

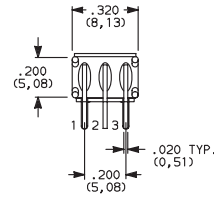
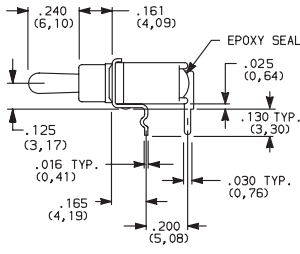
**A** (STD.) RIGHT ANGLE, PC THRU-HOLE



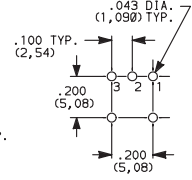
**ET01MD1ABE**  
Horizontal Actuation  
SPDT



Actuator Shown In Pos. 1

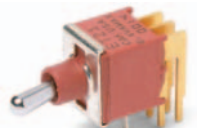


**PC MOUNTING**

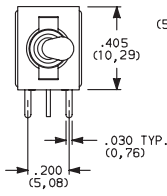


Not available with ET02 model.

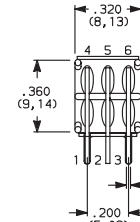
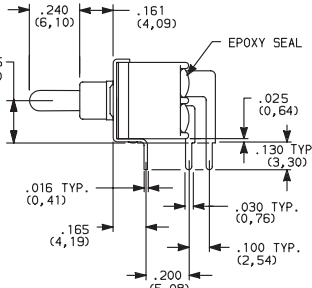
**A** (STD.) RIGHT ANGLE, PC THRU-HOLE



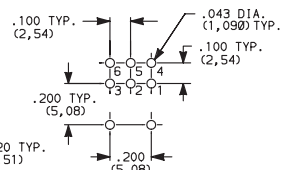
**ET21MD1ABE**  
Horizontal Actuation  
DPDT



Actuator Shown In Pos. 1



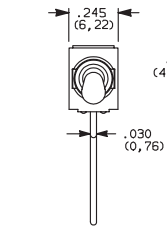
**PC MOUNTING**



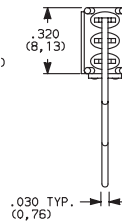
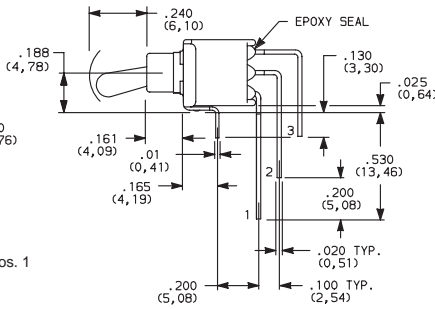
**AV** (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE



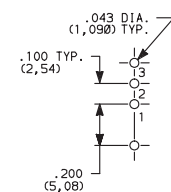
**ET01MD1AVBE**  
Vertical Actuation  
SPDT



Actuator Shown In Pos. 1



**PC MOUNTING**



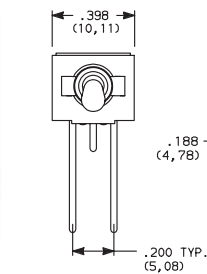
ET02 - omit terminal 2.

NOTE: Terminal bend radii and lead-in manufacturing option.

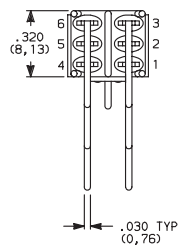
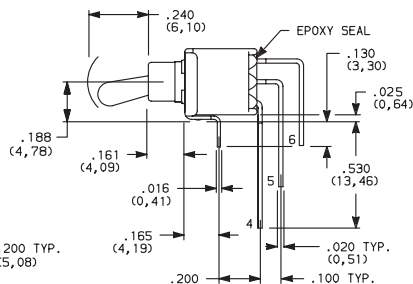
**AV** (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE



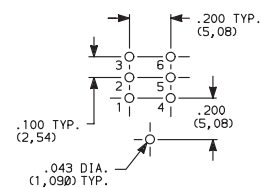
**ET21MD1AVBE**  
Vertical Actuation  
DPDT



Actuator Shown In Pos. 1



**PC MOUNTING**



NOTE: Terminal bend radii and lead-in manufacturing option.

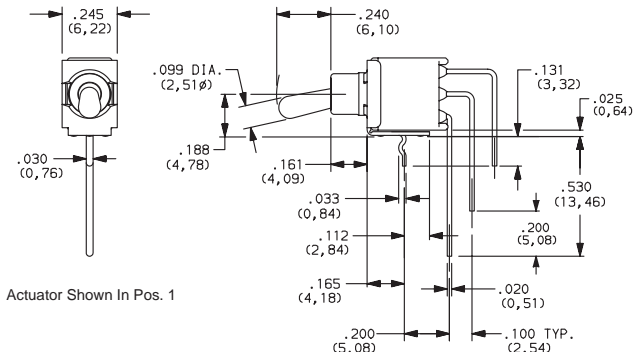


Third Angle  
Projection  
Dimensions are shown: IN (mm)  
Dimensions subject to change

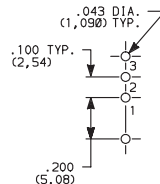
# C&K ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

### AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

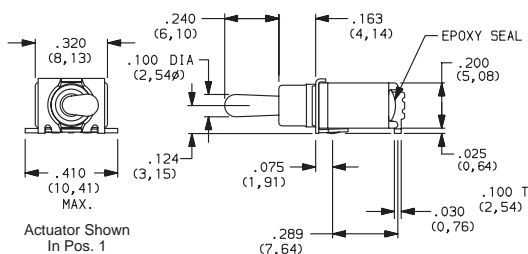


#### PC MOUNTING

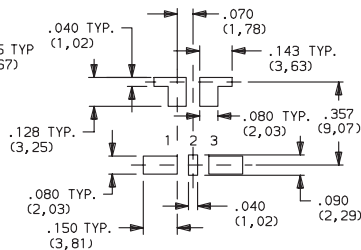


ET01SD1AV2BE  
Vertical Actuation  
SPDT

### SA (STD.) RIGHT ANGLE, SURFACE MOUNT



#### PC MOUNTING

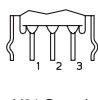
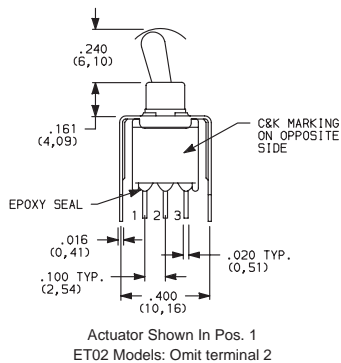


ET01M3D1SAKE  
Horizontal Actuation  
SPDT Only

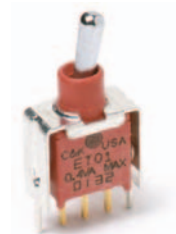
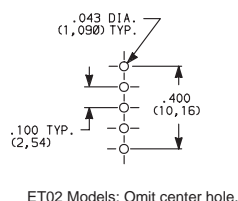
Not available with S and S1 actuators.  
Standard with tape & reel packaging, See page NO TAG.

### V3 (STD.) VERTICAL MOUNT, V-BRACKET

### V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN

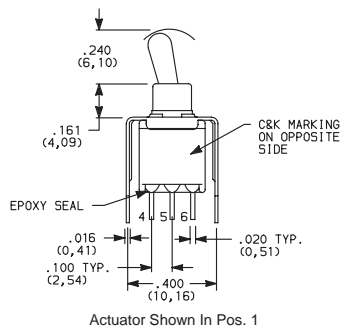


#### PC MOUNTING

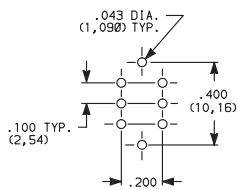


ET01MD1V3BE  
SPDT

### V3 (STD.) VERTICAL MOUNT, V-BRACKET



#### PC MOUNTING



ET21MD1V3BE  
DPDT




# C&K ET Series Sealed Subminiature Toggle Switches

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
<b>B (STD.)</b>	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
<b>K</b>		TIN-LEAD <sup>6</sup>		
<b>Q</b>	SILVER <sup>4,5</sup>	SILVER <sup>5</sup>	POWER	ETX1 MODELS: 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 2 AMPS @ 120 V AC OR 28 V DC.
<b>M</b>		TIN-LEAD <sup>6</sup>		
<b>G</b>	GOLD OVER SILVER <sup>2,3</sup>	GOLD <sup>3</sup>	LOW LEVEL/DRY CIRCUIT OR POWER	ETX1 MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 3 AMPS @ 120 V AC OR 28 V DC. ALL OTHER MODELS: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 2 AMPS @ 120 V AC OR 28 V DC.
<b>L</b>		TIN-LEAD <sup>6</sup>		

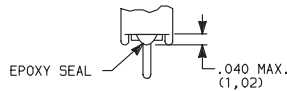
CONTACT MATERIAL/APPLICATION RECOMMENDATIONS-SEE SECTION N.

- <sup>1</sup> CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>2</sup> END CONTACTS: Coin silver, with gold plate over nickel plate.
- <sup>3</sup> CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- <sup>4</sup> END CONTACTS: Coin silver, silver plated.
- <sup>5</sup> CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.
- <sup>6</sup> TERMINALS: Copper alloy, with tin-lead alloy over nickel plate.

All models  with all options (except M3 actuator) when ordered with G, L, M or Q contact material.

## SEAL

**E (STD.) EPOXY SEAL**



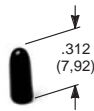
## AVAILABLE HARDWARE

Cap

PART NO.

- 706201000 WHITE
- 706202000 BLACK
- 706203000 RED

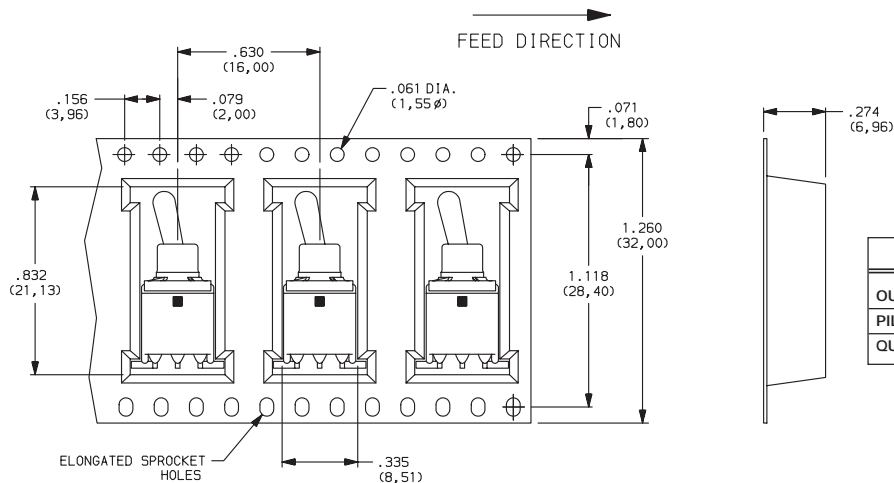
Material: Vinyl  
Finish: Matte



**NOTE:** Other colors available, consult Customer Service Center.

## TAPE & REEL

For part number ET01M3D1SAKE



REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600