

# 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
- RoHS compliant models available



Models Available

### 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-35 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  $\Omega$  typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10<sup>9</sup>  $\Omega$  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-36 for drawings and reel information.

### Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant, heat stabilized (UL 94V-0) or 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-35 for additional contact materials.

TERMINAL SEAL: Epoxy.

**NOTE:** Any models supplied with Q, B, G, P or R contact material are RoHS compliant and compatible.

**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-31 thru F-35. 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.

#### Switch Function

- ET01 SP, On-None-On
- ET02 SPST, Off-None-On
- ET03 SP, On-Off-On
- ET05 SP, Mom.-Off-Mom.
- ET07 SP, On-Off-Mom.
- ET08 SP, On-None-Mom.
- ET21 DP, On-None-On
- ET23 DP, On-Off-On
- ET24 DP, On-On-On
- ET25 DP, Mom.-Off-Mom.
- ET27 DP, On-Off-Mom.
- ET28 DP, On-None-Mom.

#### Actuator

- M .240" high
- M3 Plastic, anti-static, .240" high
- S .400" high
- L .320" high
- S1 .540" high

#### Bushing

- D1 .177" High, Unthreaded
- F1 .177" high, unthreaded, ESD conductive

#### Terminations

- A Right angle, PC thru-hole
- AV Vertical right angle, PC thru-hole
- C PC Thru-hole
- SA Right angle, surface mount
- SA1 Right angle, surface mount rear-facing
- V3 Vertical mount, V-bracket
- AV3 Vertical right angle, snap-in, PC thru-hole
- V31 Vertical mount, V-bracket, snap-in
- W Wire wrap

#### Contact Material

- B Gold
- P Gold, matte tin
- Q Silver
- S Silver/matte-tin
- G Gold over silver
- R Gold over silver, matte-tin

#### Seal

- E Epoxy

#### Plastic Actuator Color

- NONE No actuator color
- 2 Black
- 1 White



F







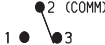
Toggle



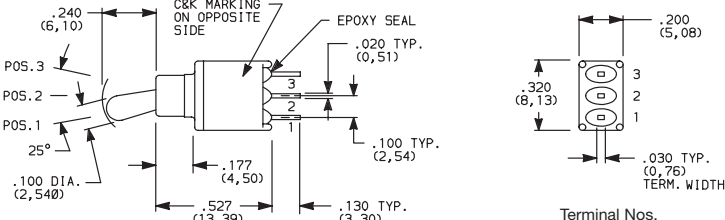
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

# ET Series Sealed Subminiature Toggle Switches

SWITCH FUNCTION

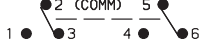
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
								
		C&K marking on opposite side			C&K marking on opposite side			
SP	ET01	ON	NONE	ON	2-3	N/A	2-1	
	ET03	ON	OFF	ON	2-3	OPEN	2-1	
	ET05	MOM.	OFF	MOM.				
	ET07	ON	OFF	MOM.				
	ET08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

SPDT

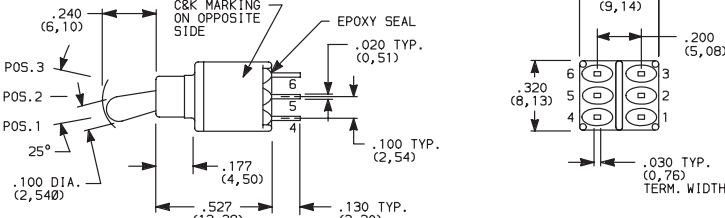


Part number shown: ET01MD1CBE

ET02 Models: Omit terminal 2

DP	ET21	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



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, R or Q contact material except with F1 conductive bushing.



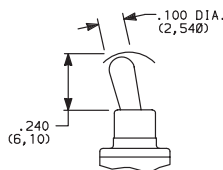
Toggle

# ET Series

## Sealed Subminiature Toggle Switches

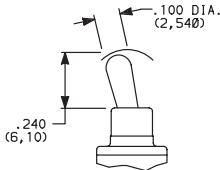
### ACTUATOR ACTUATOR COLOR

**M** .240" HIGH



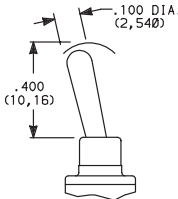
Standard with A, AV, V3 & V31 terminations.

**M3** PLASTIC, ANTISTATIC, .240" HIGH



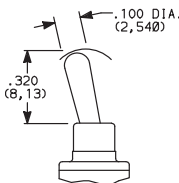
Material: Nylon 4/6 (UL 94V-0), black standard.  
Static resistance: 9,000 V DC min. @ sea level,  
actuator to terminals. Not available with F1  
conductive bushing option. Not UL approved.

**S** .400" HIGH

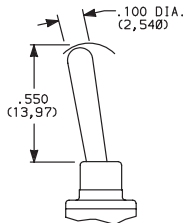


Standard with C or W terminations.

**L** .320" HIGH



**S1** .540" HIGH



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

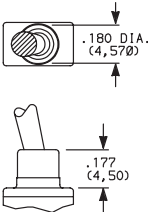
**NOTE:** All actuators have chrome finish (except M3 & S3).

### BUSHING

**D1** .177" HIGH, UNTHREADED

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

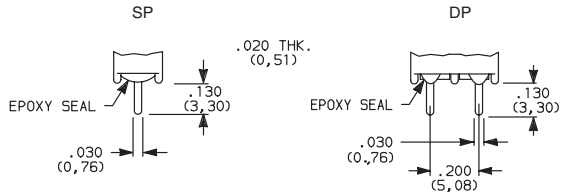
F1 bushing is not UL/CSA approved



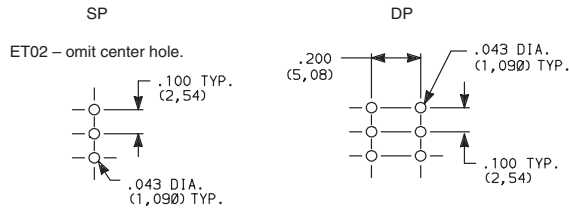
**NOTE:** ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground. Available with all metal actuator options and A, AV, AV3, V3 and V31 termination options only. Internal actuator o-ring seal standard.

### TERMINATIONS

**C** PC THRU-HOLE



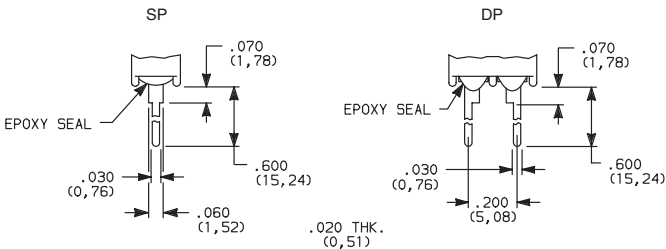
**PC MOUNTING**



**SP and DP**

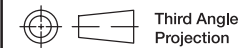
Not available with F1 conductive bushing.

**W** WIRE WRAP



**SP and DP**

Not available with F1 conductive bushing.



Third Angle Projection

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

**C&K**



**F**

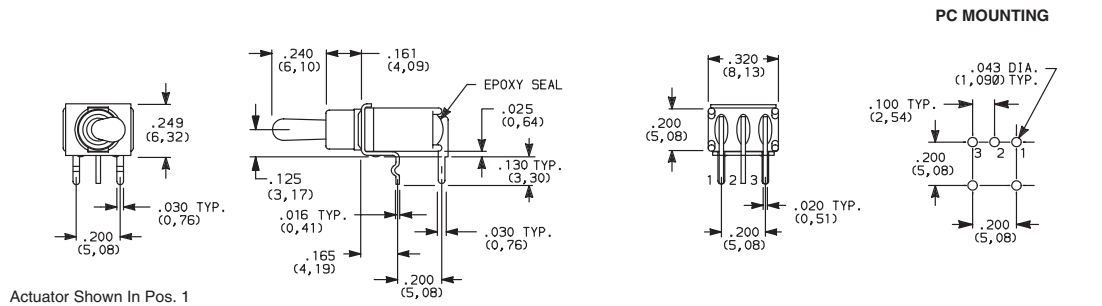
Toggle

# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

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

**ET01MD1ABE**  
Horizontal Actuation  
**SPDT**

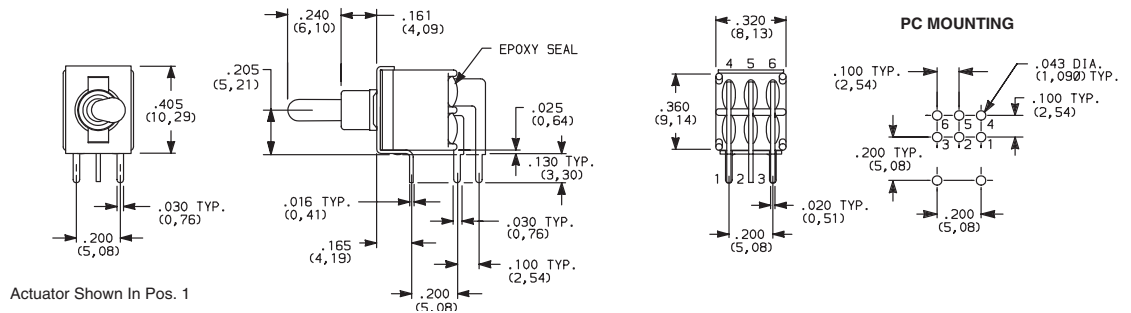


Not available with ET02 model.

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



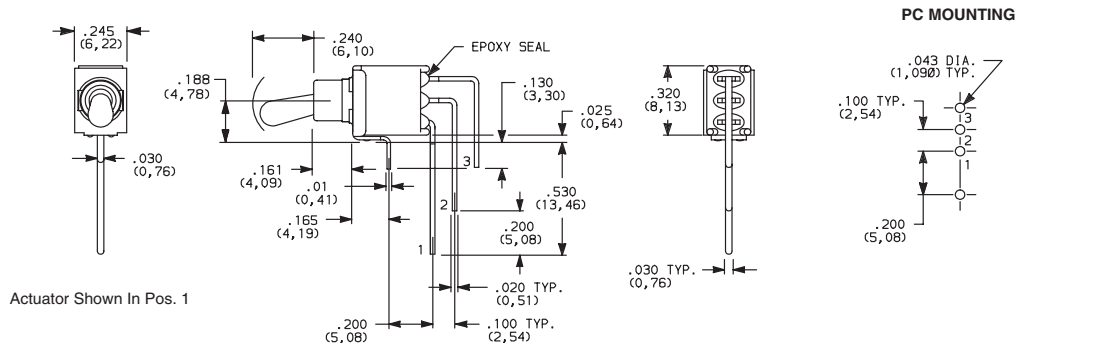
**ET21MD1ABE**  
Horizontal Actuation  
**DPDT**



**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



**ET01MD1AVBE**  
Vertical Actuation  
**SPDT**



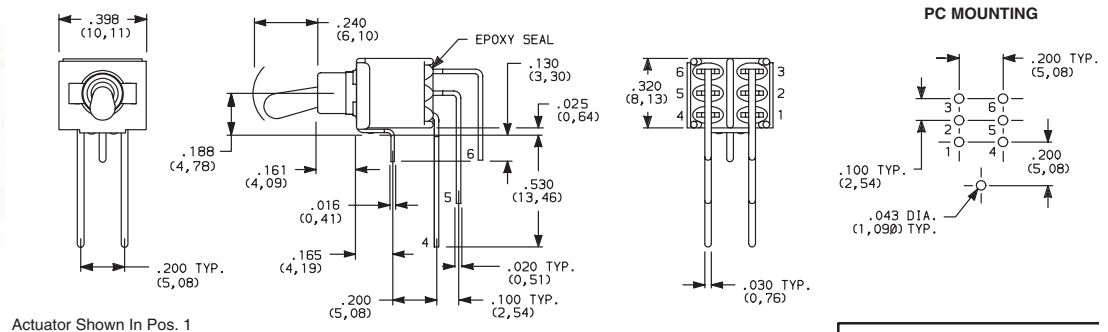
ET02 - omit terminal 2.

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

**AV** VERTICAL RIGHT ANGLE, PC THRU-HOLE



**ET21MD1AVBE**  
Vertical Actuation  
**DPDT**



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



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

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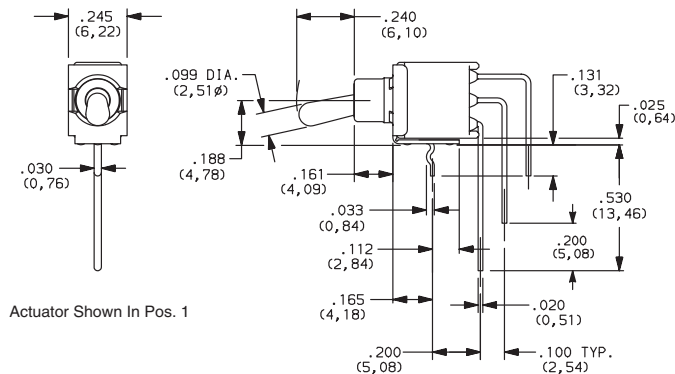


Toggle

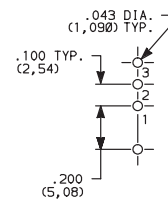
# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

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

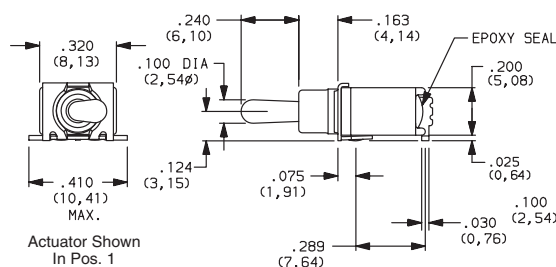


#### PC MOUNTING

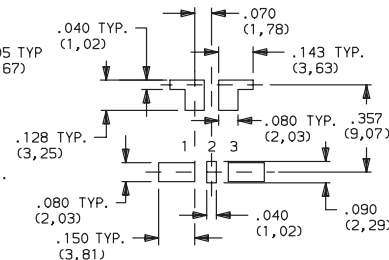


ET01SD1AV2BE  
Vertical Actuation  
**SPDT**

### SA RIGHT ANGLE, SURFACE MOUNT



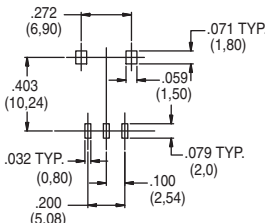
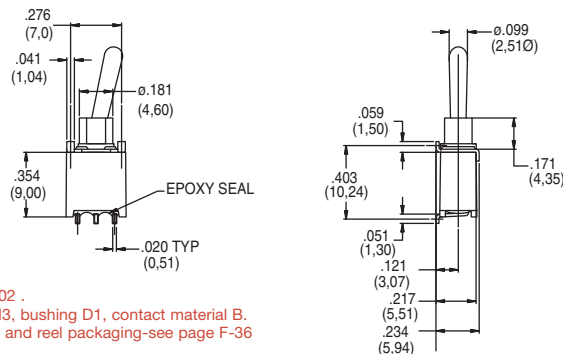
#### PC MOUNTING



ET01M3D1SAPE  
Horizontal Actuation  
**SPDT Only**

Not available with S and S1 actuators. Standard with tape & reel packaging. See page F-36.

### SA1 RIGHT ANGLE, SURFACE MOUNT

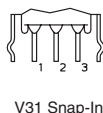
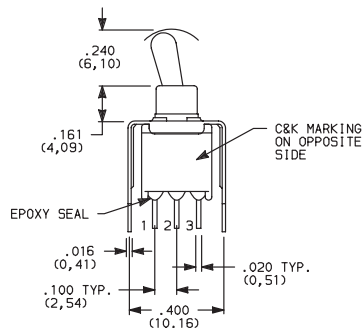


ET01M3D1SA1BE  
Horizontal Actuation  
**SPDT Only**

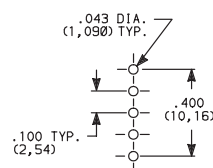
Not available in ET02.  
Actuators M and M3, bushing D1, contact material B.  
Standard with tape and reel packaging-see page F-36

### V3 VERTICAL MOUNT, V-BRACKET

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



#### PC MOUNTING



ET02 Models: Omit center hole.

ET01MD1V3BE  
**SPDT**



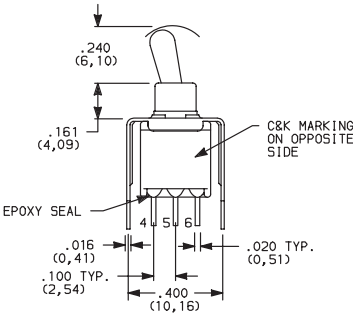
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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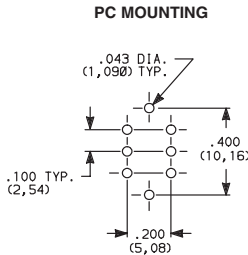
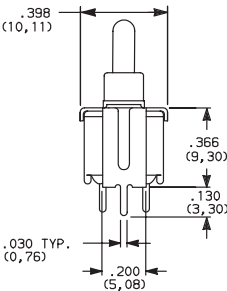
# ET Series Sealed Subminiature Toggle Switches

## TERMINATIONS

### V3 VERTICAL MOUNT, V-BRACKET



Actuator Shown In Pos. 1



ET21MD1V3BE  
DPDT

## CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD <sup>1</sup>	GOLD <sup>1</sup>	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN <sup>6</sup>		
Q	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
S		MATTE-TIN <sup>6</sup>		
G	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
R		MATTE-TIN <sup>6</sup>		

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

<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.

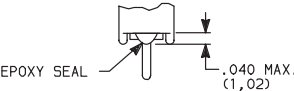
<sup>6</sup> TERMINALS: Copper alloy, with matte tin over nickel plate.

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

All models   with all options (except M3 actuator) when ordered with G, L, R or Q contact material except with F1 conductive bushing.

## SEAL

### E EPOXY SEAL

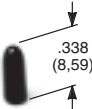


## AVAILABLE HARDWARE

### Cap

**PART NO.**  
**706201000** WHITE  
**706202000** BLACK  
**706203000** RED

Material: Vinyl  
Finish: Matte



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



Third Angle  
Projection

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

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



F

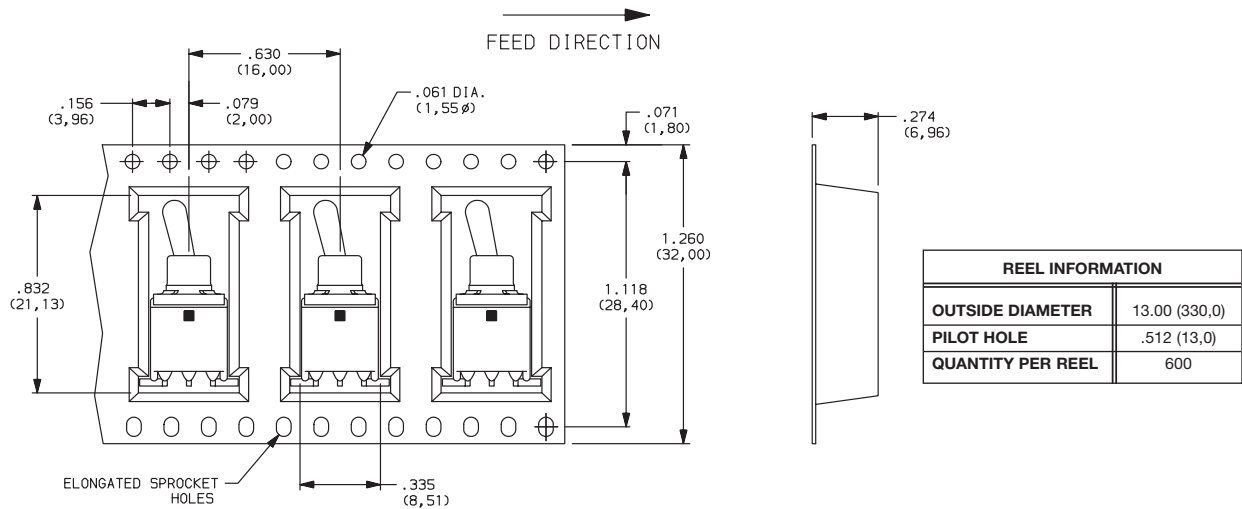
Toggle

# ET Series

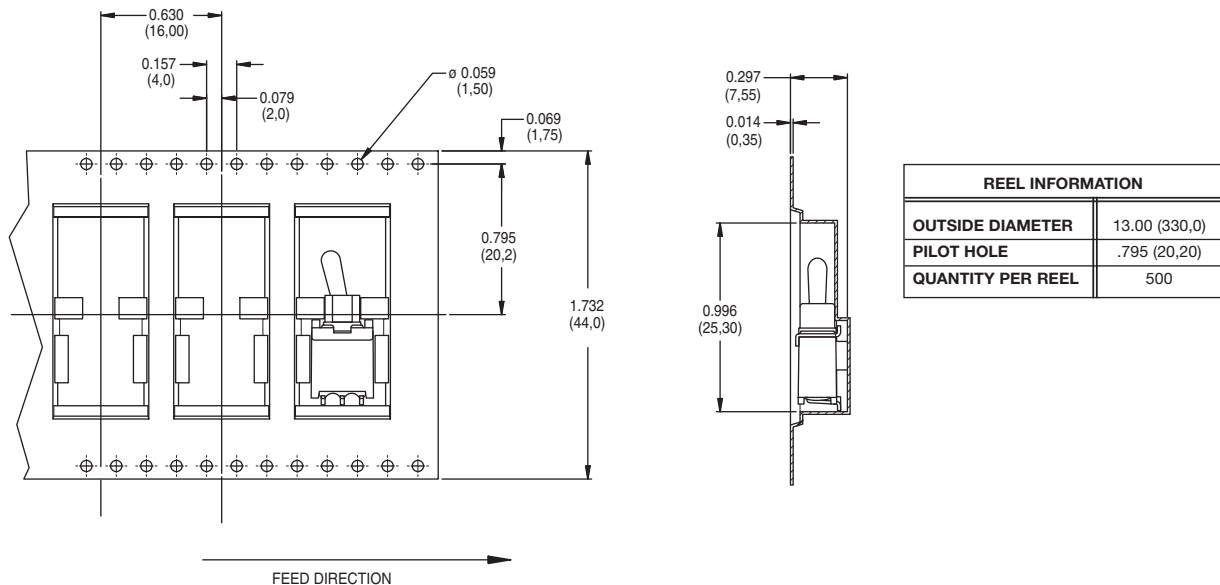
## Sealed Subminiature Toggle Switches

### TAPE & REEL

For part number ET01M3D1SAKE



For part number ET01M3D1SA1BE



Toggle



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