

C&K ET Series Sealed Subminiature Toggle Switches

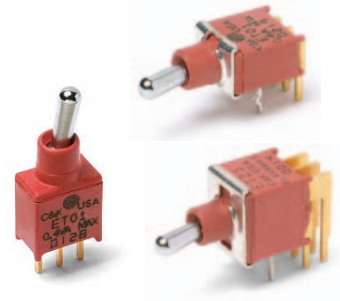
Features/Benefits

- 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: $10^9 \Omega$ 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-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.

Switch Function			
ET01 (STD.) SP, On-None-On	Actuator	Bushing	Terminations
ET02 SPST, Off-None-On	M (STD.) .240" high	D1 (STD.) .177" High, Unthreaded	A (STD.) Right angle, PC thru-hole
ET03 (STD.) SP, On-Off-On	M3 (STD.) Plastic, anti-static, .240" high	F1 .177" high, unthreaded, ESD conductive	AV (STD.) Vertical right angle, PC thru-hole
ET05 (STD.) SP, Mom.-Off-Mom.	S (STD.) .400" high		C (STD.) PC Thru-hole
ET07 SP, On-Off-Mom.	L .320" high		SA (STD.) Right angle, surface mount
ET08 SP, On-None-Mom.	S1 .540" high		V3 (STD.) Vertical mount, V-bracket
ET21 (STD.) DP, On-None-On	S3 Plastic, anti-static, .410" high		AV3 Vertical right angle, snap-in, PC thru-hole
ET23 DP, On-Off-On			V31 Vertical mount, V-bracket, snap-in
ET24 DP, On-On-On			W Wire wrap
ET25 DP, Mom.-Off-Mom.			
ET27 DP, On-Off-Mom.			
ET28 DP, On-None-Mom.			

Contact Material		Seal	
B (STD.) Gold		E (STD.) Epoxy	
K Gold, tin-lead			
Q Silver			
M Silver, tin-lead			
G Gold over silver			
L Gold over silver, tin-lead			

Plastic Actuator Color	
NONE (STD.) No actuator color	
2 (STD.) Black	
1 White	

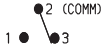
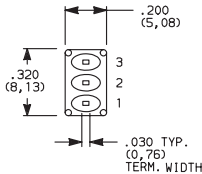
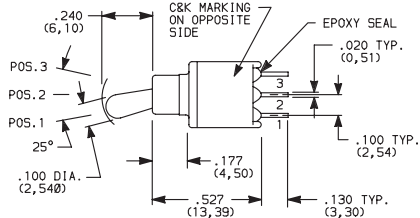
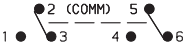
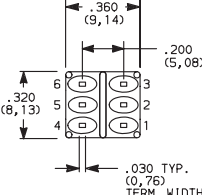
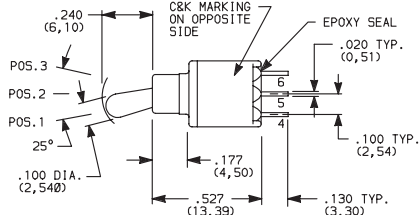


F

Toggle

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			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	SPST 
SPDT								
 Part number shown: ET01MD1CBE ET02 Models: Omit terminal 2 Terminal Nos. For Reference Only								
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								
 Part number shown: ET21MD1CBE Terminal Nos. For Reference Only								

MOM. = Momentary

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

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



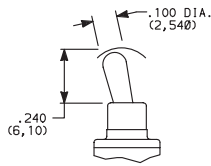
Toggle

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ACTUATOR

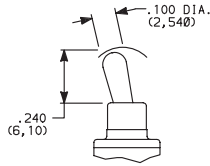
ACTUATOR COLOR

M (STD.) .240" HIGH



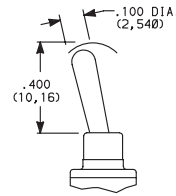
Standard with A, AV, V3 & V31 terminations.

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



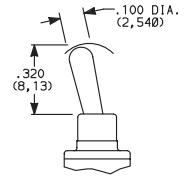
Material: Nylon 4/6 (UL 94V-0), black standard.
Static resistance: 9,000 V DC min. @ sea level,
actuator to terminals. Not available with F1
conductive bushing option. Not UL approved.

S (STD.) .400" HIGH

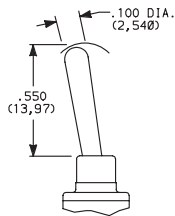


Standard with C or W terminations.

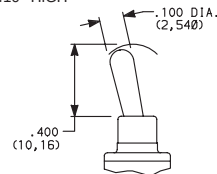
L .320" HIGH



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.

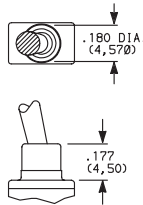
NOTE: All actuators have chrome finish (except M3 & S3).

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



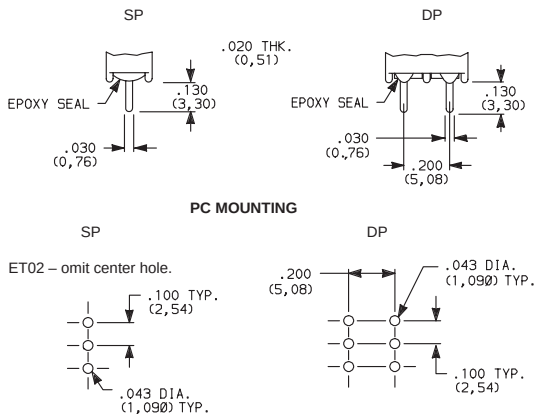
NOTE: ESD protection depends on proper grounding of switch support bracket. F1 conductive bushing option is impregnated with carbon fibers; dissipates electrostatic discharge (ESD) up to 20,000 V from actuator to ground.

Available with all metal actuator options and A, AV, AV3, V3 and V31 termination options only.

Internal actuator o-ring seal standard.

TERMINATIONS

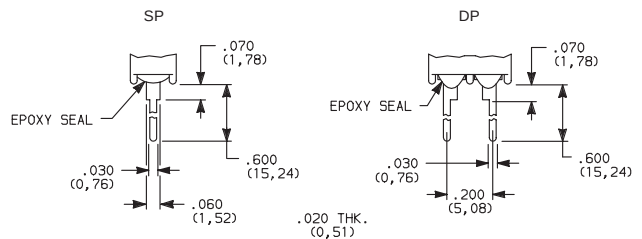
C (STD.) PC THRU-HOLE



SP and DP

Not available with F1 conductive bushing.

W WIRE WRAP



SP and DP

Not available with F1 conductive bushing.



Dimensions are shown: IN (mm)
Dimensions subject to change

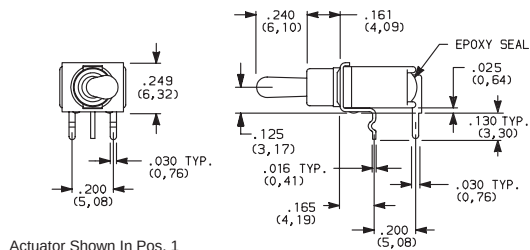
TERMINATIONS



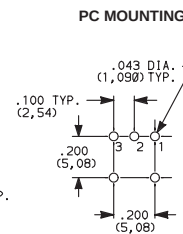
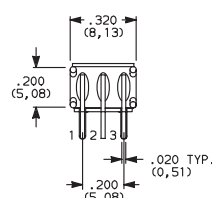
A (STD.) RIGHT ANGLE, PC THRU-HOLE



ET01MD1ABE
Horizontal Actuation
SPDT

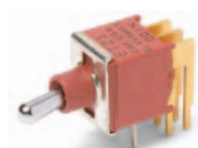


Actuator Shown In Pos. 1

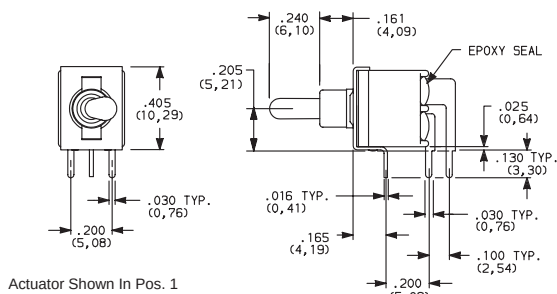


Not available with ET02 model.

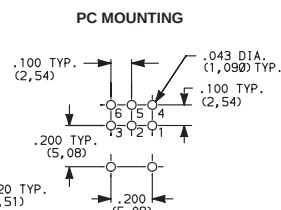
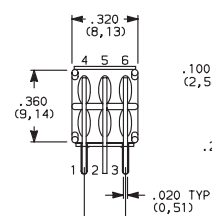
A (STD.) RIGHT ANGLE, PC THRU-HOLE



ET21MD1ABE
Horizontal Actuation
DPDT



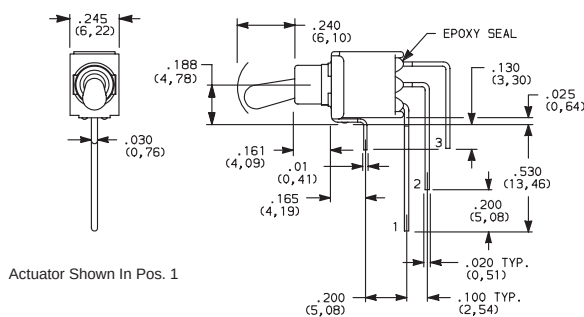
Actuator Shown In Pos. 1



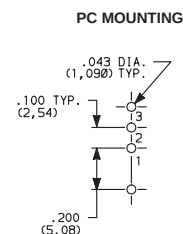
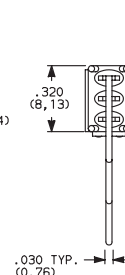
AV (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE



ET01MD1AVBE
Vertical Actuation
SPDT



Actuator Shown In Pos. 1



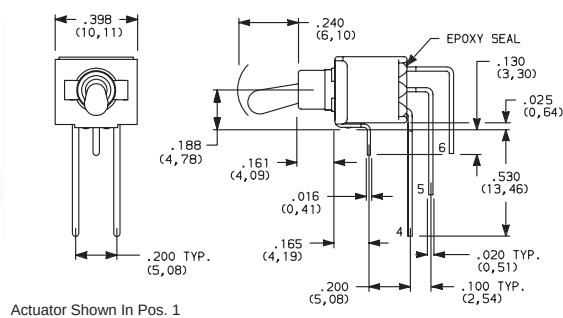
ET02 - omit terminal 2.

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

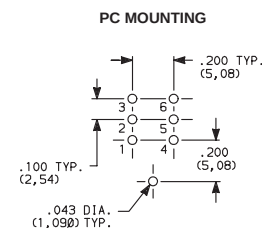
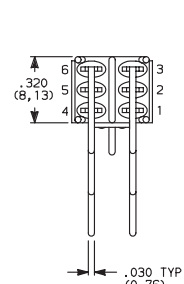
AV (STD.) VERTICAL RIGHT ANGLE, PC THRU-HOLE



ET21MD1AVBE
Vertical Actuation
DPDT



Actuator Shown In Pos. 1



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



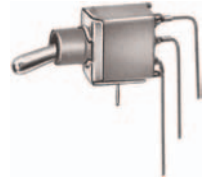
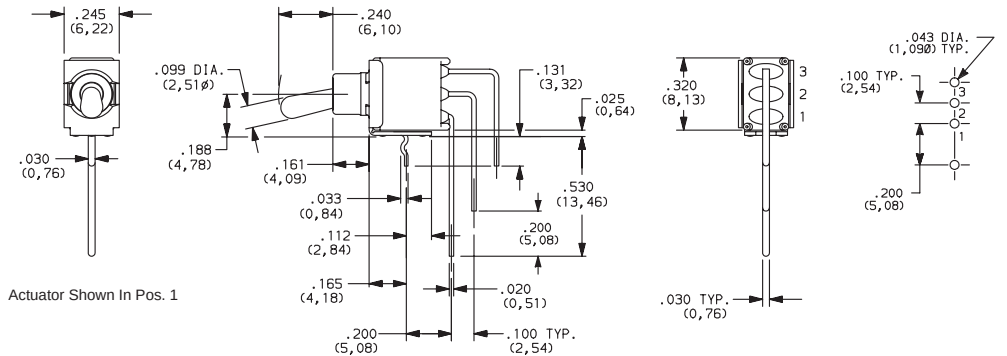
Dimensions are shown: IN (mm)
Dimensions subject to change

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C&K ET Series Sealed Subminiature Toggle Switches

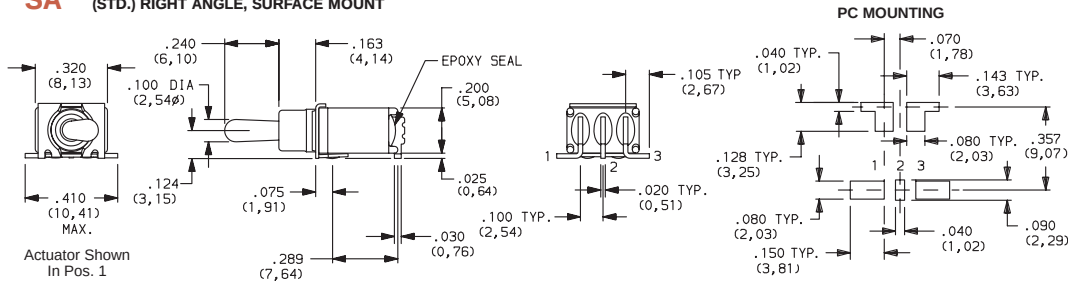
TERMINATIONS

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



ET01SD1AV2BE
Vertical Actuation
SPDT

SA (STD.) RIGHT ANGLE, SURFACE MOUNT

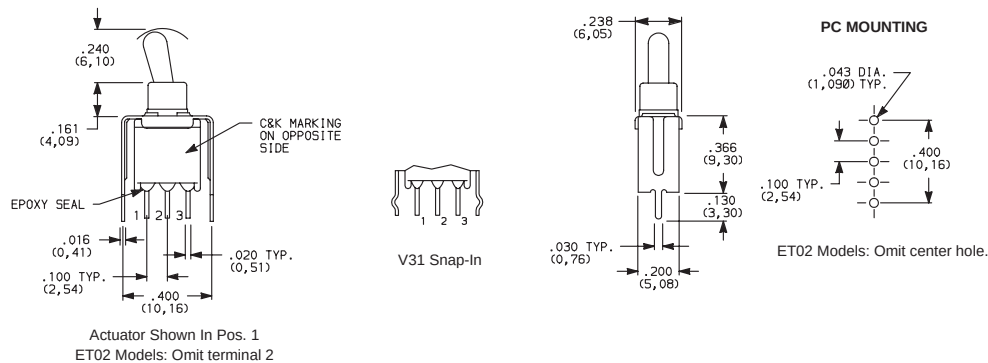


ET01M3D1SAKE
Horizontal Actuation
SPDT Only

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

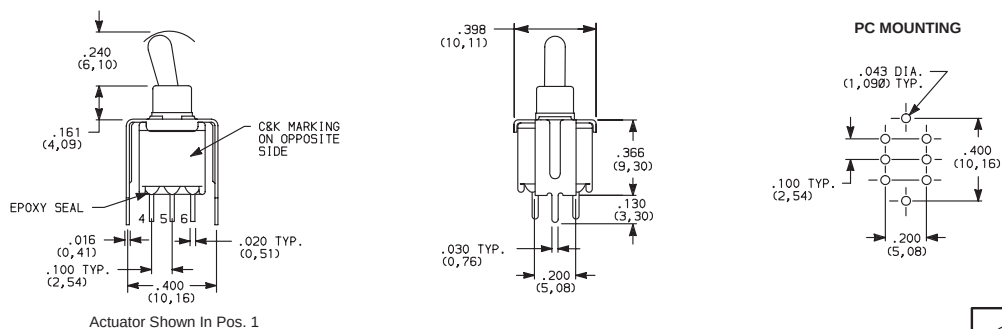
V3 (STD.) VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



ET01MD1V3BE
SPDT

V3 (STD.) VERTICAL MOUNT, V-BRACKET



ET21MD1V3BE
DPDT



Dimensions are shown: IN (mm)
Dimensions subject to change

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C&K ET Series

Sealed Subminiature Toggle Switches

CONTACT MATERIAL

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

CONTACT MATERIAL/APPLICATION RECOMMENDATIONS-SEE SECTION N.

¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

² END CONTACTS: Coin silver, with gold plate over nickel plate.

³ CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

⁴ END CONTACTS: Coin silver, silver plated.

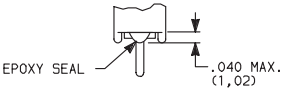
⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

⁶ 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



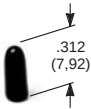
AVAILABLE HARDWARE

Cap

PART NO.

706201000 WHITE
706202000 BLACK
706203000 RED

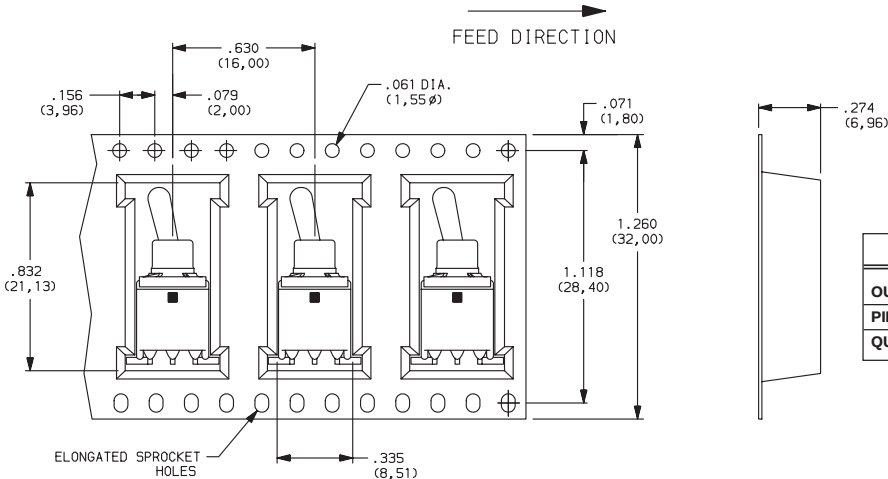
Material: Vinyl
Finish: Matte



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