

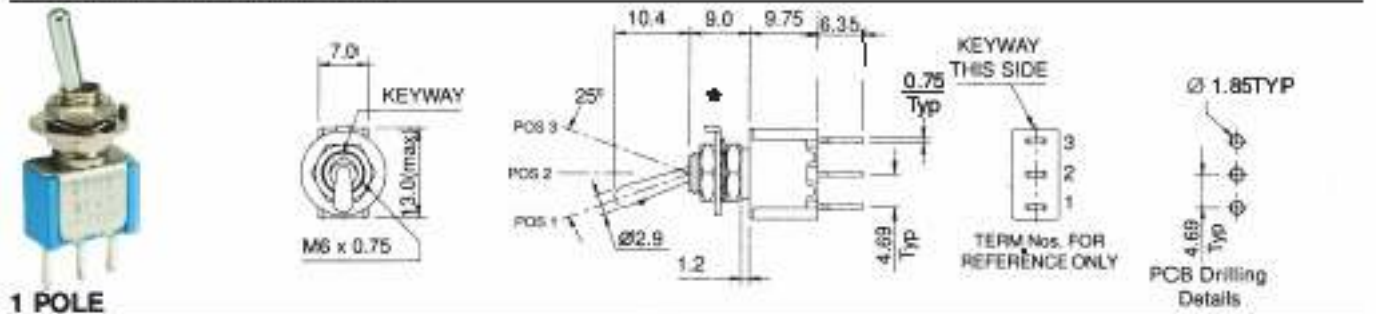
TOGGLE SWITCHES



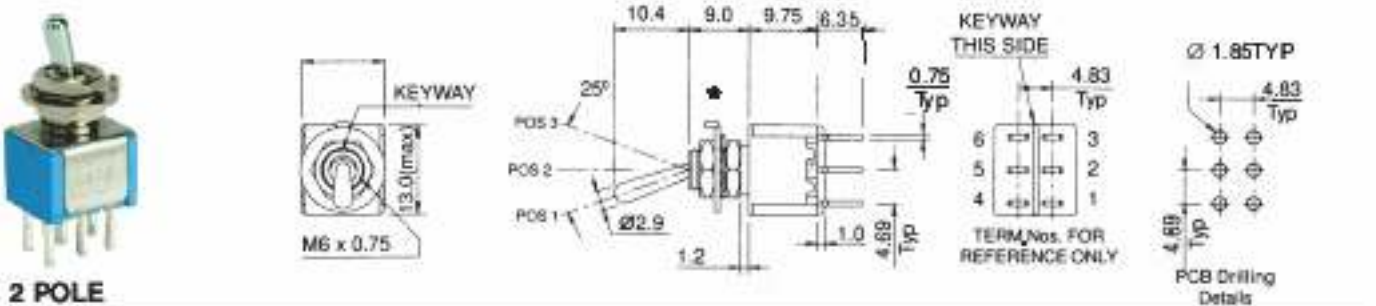
Series 20 - PCB Mounting Type - Straight (PC)

DESCRIPTION:

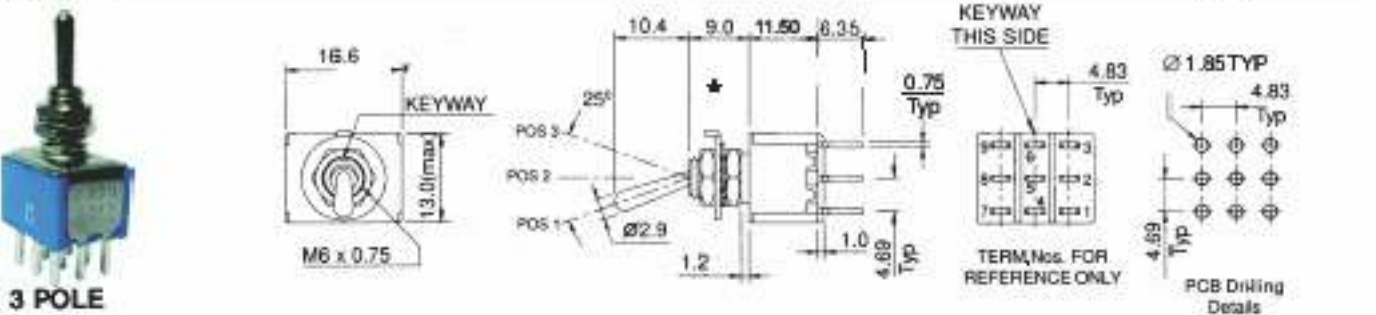
Integral (Series 20) Toggle Switches of the PCB mounting type with straight operation meet the needs of customers wanting a high quality, high current carrying switch in small volume. Standardisation of design in components used from single to four poles, careful choice of materials and attention to details result in reliable and consistent performance. They are available with popular actuator types and sizes. Design variations in the contacts result in all the required switching functions.



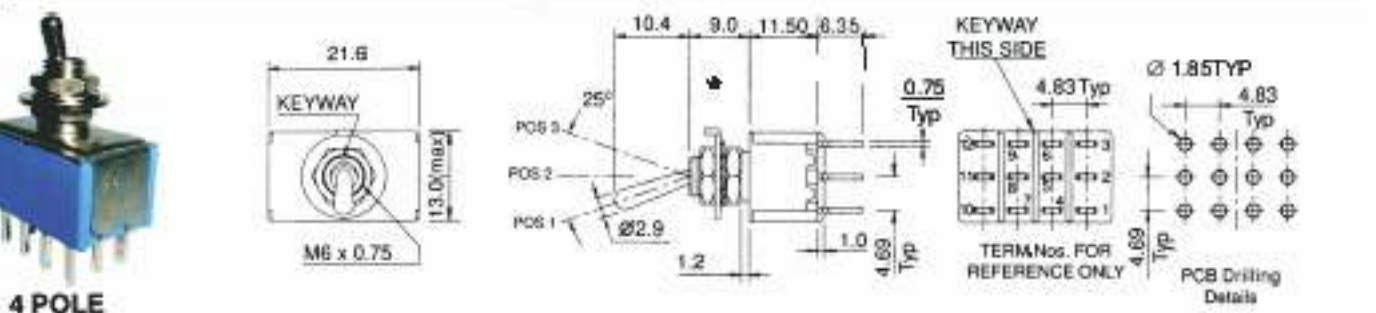
1 POLE



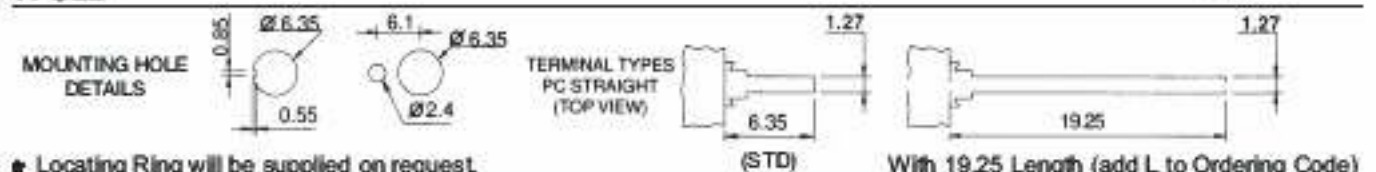
2 POLE



3 POLE



4 POLE



★ Locating Ring will be supplied on request.

With 19.25 Length (add L to Ordering Code)

All Dimensions in mm.

NOTE:

Actuator shown in Pos. 1 (I.e. Away from key way)
Refer to A9/A10 for alternate selection of ACTUATORS & MOUNTING



525 / 2A, Om Namah Shivay Apartment, 1st Floor, Office No. 9, Near Modi Ganpat Temple, Narayan Peth, Pune - 411 030.
(020) 2445 0609 | info@geniuselectronicsindia.com

SWITCHING FUNCTION

Order Code	Pos. 1	Pos. 2	Pos. 3
1	ON	NONE	ON
3	ON	OFF	ON
5	(ON)	OFF	(ON)
7	ON	OFF	(ON)
8	ON	NONE	(ON)

CONNECTED

TERMINALS	Pos. 1	Pos. 2	Pos. 3
1 POLE	2-3	OPEN	2-1
2 POLE	2-3	OPEN	2-1
			5-4
3 POLE	2-3		2-1
		OPEN	5-4
			8-7
4 POLE	2-3		2-1
			5-4
		OPEN	8-7
	11-12		11-10

(Refer to A12 for other special switching functions)

SPECIFICATIONS

CONTACT RATING	: 3 Amps @ 250 V AC ; 5A @ 28 V DC. See Contact selection for others.
ELECTRICAL LIFE	: 100,000 make-and-break cycles at full load on all models ending in-1 (ON-NONE-ON). All other models, 40,000 cycles.
CONTACT RESISTANCE	: Below 10 milliohms initial @ 2-6 V DC. 100 mA for both silver and gold plated contacts.
INSULATION RESISTANCE	: 1000 Megohms min.
DIELECTRIC STRENGTH	: 1000 V RMS min. @ sea level.
OPERATING TEMP.	: -30° C to 85° C.

MATERIALS & FINISHES

BODY	: Diallyl Phthalate (DAP)	HARDWARE	: Brass nickel plated
ACTUATOR	: Brass Nickel plated	TERMINAL SEAL	: Epoxy
HOUSING	: Stainless steel	CONTACTS	: See below under contact selection.
BUSHING	: Brass nickel plated		

MOUNTING SELECTION

Order Code	
0	M6x0.75 Threaded bush 6.1 long with key way.
1	M6x0.75 Threaded bush 7.7 long with key way.
2	∅6 Unthreaded bush 7.7 long with key way
3	∅6 Unthreaded bush 6.1 long with key way.
4	M6x0.75 Threaded bush 7.4 long with panel and Toggle splash proof seal.
5	M6x0.75 Threaded bush 7.7 long with milled flat.

(Refer to A10 for details)

CONTACT SELECTION

Order Code		For (Resistive Load)
0	CONTACTS & ALL TERMINALS.	Copper/Copper alloy silver plated
	RATING	: 2 Amps. @ 250 V AC
1	END CONTACTS	Coin silver, silver plated
	CENTRE CONTACTS & ALL TERMINALS.	Copper alloy silver plated.
	RATING	: 3 Amps. @ 250 V AC; 5A @ 28 V DC.
2	CONTACTS & TERMINALS	Copper alloy with gold plate over nickel plate.
	RATING	: 0.4 VA max. @ 20 V AC or DC max.
3	END CONTACTS	Coin silver with gold plate over nickel plate.
	CENTRE CONTACTS & ALL TERMINALS.	Copper alloy with gold plate over nickel plate.
	RATING	: 0.4 VA max. @ 20 V AC or DC or 3 Amps @ 250 V AC ; 5A @ 28 V DC.

(This contact can be used where either dry circuit or power conditions exist. However when dry circuit rating is exceeded the gold plating is removed from the contact and the switch cannot be used in dry circuits.)

ACTUATOR SELECTION

Order Code	
01	Toggle 10.4 long
02	Toggle 7.0 long
03	Toggle 21.4 long
04 to 11	Plastic moulded caps.
12	Toggle 10.4 long with Rubber boot.
13 to 15	Toggle 10.4 long with cap.
20 to 23	Actuator with lock

(Refer to A9 for details)

POLE SELECTION	One	Two	Three	Four
Order Code	1	2	3	4

ORDERING CODE

2

3

Terminal 19.25 Long

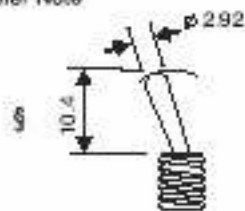
L

TOGGLE SWITCHES



Series 20 Actuator Selection (M6x0.75)

* Refer Note

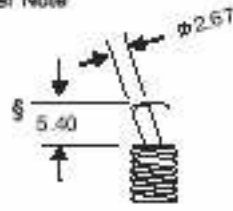


Order Code : 01

§

Add 1.60 mm for bushing under Order Code '0' & '3'

* Refer Note

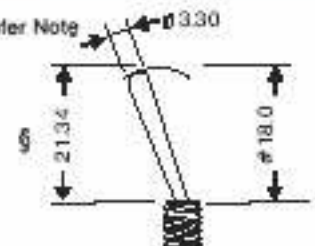


Order Code : 02

§

Add 1.60 mm for bushing under Order Code '0' & '3'

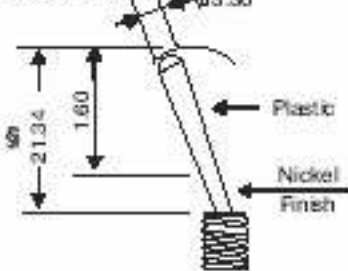
* Refer Note



Order Code : § 03
50

Add 1.60 mm for bushing under Order Code '0' & '3'

* Refer Note



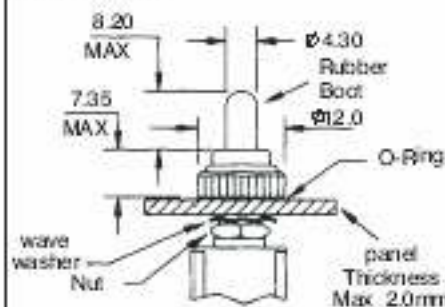
Order Code : 04 to 11
(See Table below)

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Add 1.60 mm for bushing under Order Code '0' & '3'

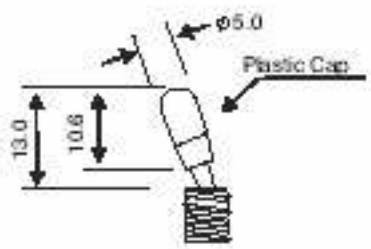
(Plastic moulded actuator)

Order Code	Moulding Colour
04	White
05	Black
06	Red
07	Yellow
08	Green
09	Blue (Std)
10	Brown
11	Grey



RUBBER BOOT (Black)
Order Code : 12
Available only with
Actuator or and Bush 1,4,5

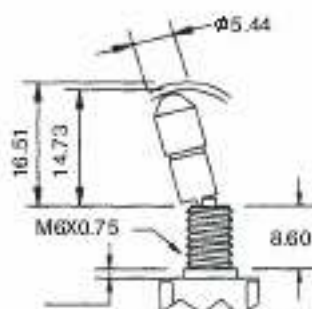
* Refer Note



Order Code : 13 to 16
(See Table below)

Actuator with cap

Order Code	Cap Colour
13	Black (Std.)
14	Red
15	Yellow
16	Green



Actuator with Lock

Order Code	Cap Colour
20	Black (Std.)
21	White
22	Red
23	Golden yellow
24	Nickel Plated

VARIOUS TYPES OF SWITCHING FUNCTION

(Key way on right side)



Type - 1
2 pos. lock



Type - 3 & 9
3 pos. lock



Type 5 & 6
1 pos. lock



Type - 7
2 pos. lock



Type - 8
1 pos. lock

* NOTE : Dimensions shown above are with respect to bushing types (2,3,4 & 5)

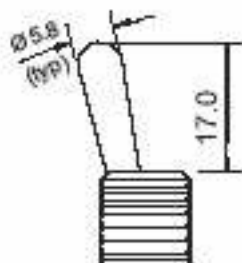


All Dimensions in mm.

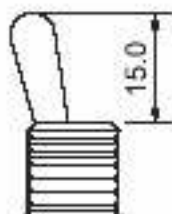
TOGGLE SWITCHES



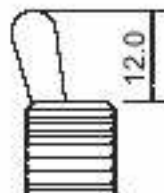
Series - 20 Actuator Selection (For M12 Bushes)



Order Code : 43



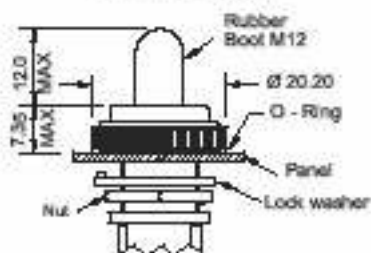
Order Code : 41



Order Code : 44

PANEL SEALING TYPE

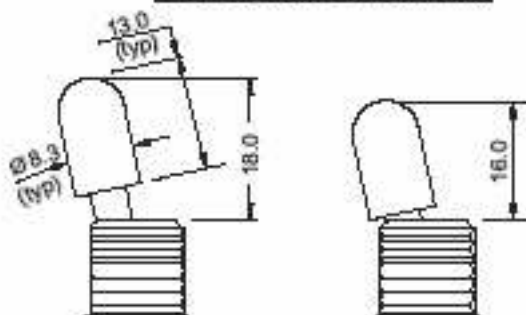
(Rubber Boot Type)



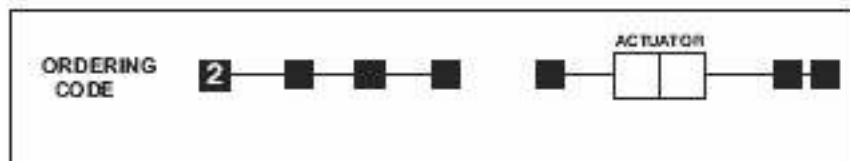
Order Code : 42

Note: Actuator Length will be - 15.0mm only.

PLASTIC CAP SELECTION



NOTE:- Cap's available in Red & Black Colour only. for 15.0 & 17.0 mm Actuator only.



Series 20 Mounting Selection (M6x0.75)

BUSH DETAILS FOR PC STRAIGHT AND SOLDER TYPES

<p>Code No. 0</p> <p>Code No. 3</p> <p>Order Code Description</p> <p>0 Short threaded bush</p> <p>3 Same as 0 without threading</p>	<p>Code No. 5</p> <p>Code No. 1</p> <p>Order Code Description</p> <p>1 Standard threaded bush</p> <p>2 Same as 1 without threading</p> <p>5 Same as 1 with milled flat</p>	<p>Code No. 4</p> <p>Order Code Description</p> <p>4 Threaded bush with panel seal and toggle splash proof seal.</p>
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BUSH DETAILS FOR PCR / PCRV TYPES

<p>Code No. 0</p> <p>Code No. 3</p> <p>Order Code Description</p> <p>0 Short threaded bush</p> <p>3 Same as 0 without threading</p>	<p>Code No. 1</p> <p>Code No. 5</p> <p>Order Code Description</p> <p>1 Standard threaded bush</p> <p>2 Same as 1 without threading</p> <p>5 Same as 1 with milled flat</p>	<p>Code No. 4</p> <p>Order Code Description</p> <p>4 Threaded bush with panel seal toggle and splash proof seal. (Available on request)</p>
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<p>BUSH DETAILS (FOR LOCKING TYPE)</p> <p>Code No. 1</p> <p>Order Code Description</p> <p>1 Threaded bush</p> <p>2 Same as 1 without threading</p>	<p>PANEL MOUNTING WITHOUT LOCKING RING</p> <p>WITH STANDARD LOCKING RING</p> <p>FOR 12.0 mm BUSH</p>	
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NOTE: Above shown various types of bushes with M6 x 0.75 threading are readily available. For any other special type bush please contact factory.

BUSHING FINISH will be nickelplated (Standard)



All Dimensions in mm.

Series - 20 Mounting Selection for M12 Bushes

<p>ROUND TYPE Standard Bush</p> <p>Order Code</p> <p>8 = $\varnothing 12$ Unthreaded Bush 9 = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8t = $\varnothing 12$ Unthreaded Bush 9t = M12x0.75 Threaded Bush</p>	<p>KEY WAY TYPE Standard Bush</p> <p>Order Code</p> <p>8K = $\varnothing 12$ Unthreaded Bush 9K = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8Kt = $\varnothing 12$ Unthreaded Bush 9Kt = M12x0.75 Threaded Bush</p>	<p>MILLED FLAT TYPE Standard Bush</p> <p>Order Code</p> <p>8F = $\varnothing 12$ Unthreaded Bush 9F = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8Ft = $\varnothing 12$ Unthreaded Bush 9Ft = M12x0.75 Threaded Bush</p>
<p>ROUND WITH COLLAR Standard Bush</p> <p>Order Code</p> <p>8C = $\varnothing 12$ Unthreaded Bush 9C = M12x0.75 Threaded Bush 9CS = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8Ct = $\varnothing 12$ Unthreaded Bush 9Ct = M12x0.75 Threaded Bush 9CSt = M12x0.75 Threaded Bush</p>	<p>KEY WAY WITH COLLAR Standard Bush</p> <p>Order Code</p> <p>8KC = $\varnothing 12$ Unthreaded Bush 9KC = M12x0.75 Threaded Bush 9KCS = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8KCt = $\varnothing 12$ Unthreaded Bush 9KCt = M12x0.75 Threaded Bush 9KCSt = M12x0.75 Threaded Bush</p>	<p>MILLED FLAT WITH COLLAR Standard Bush</p> <p>Order Code</p> <p>8FC = $\varnothing 12$ Unthreaded Bush 9FC = M12x0.75 Threaded Bush 9FCS = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>8FCt = $\varnothing 12$ Unthreaded Bush 9FCt = M12x0.75 Threaded Bush 9FCS = M12x0.75 Threaded Bush</p>
<p>NOTE :- PANEL SEALING CAN BE GIVEN FOR ABOVE BUSH SELECTION EXCEPT FOR UNTHREADED BUSH.</p>		
<p>SPLASH PROOF</p>		
<p>ROUND TYPE Standard Bush</p> <p>Order Code</p> <p>9S = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>9St = M12x0.75 Threaded Bush</p>	<p>KEY WAY TYPE Standard Bush</p> <p>Order Code</p> <p>9Sk = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>9SKt = M12x0.75 Threaded Bush</p>	<p>MILLED FLAT TYPE Standard Bush</p> <p>Order Code</p> <p>9SF = M12x0.75 Threaded Bush</p> <p>Short Bush</p> <p>9SR = M12x0.75 Threaded Bush</p>
<p>All Dimensions in mm.</p>		
<p>PANEL CUTOUT DETAILS</p>		<p>Above shown various type of Bushes with M12 x 0.75 Threading are readily available. For any other special type Bush please Contact Factory.</p> <p>BUSHING FINISH will be Nickel Plated (Standard)</p>
<p>t= Short Bush, R=Round, K=Key way, F= Milled Flat, C= Collar, S=Sealing.</p>		

TOGGLE SWITCHES



Series 20 - Special Custom Built Switches

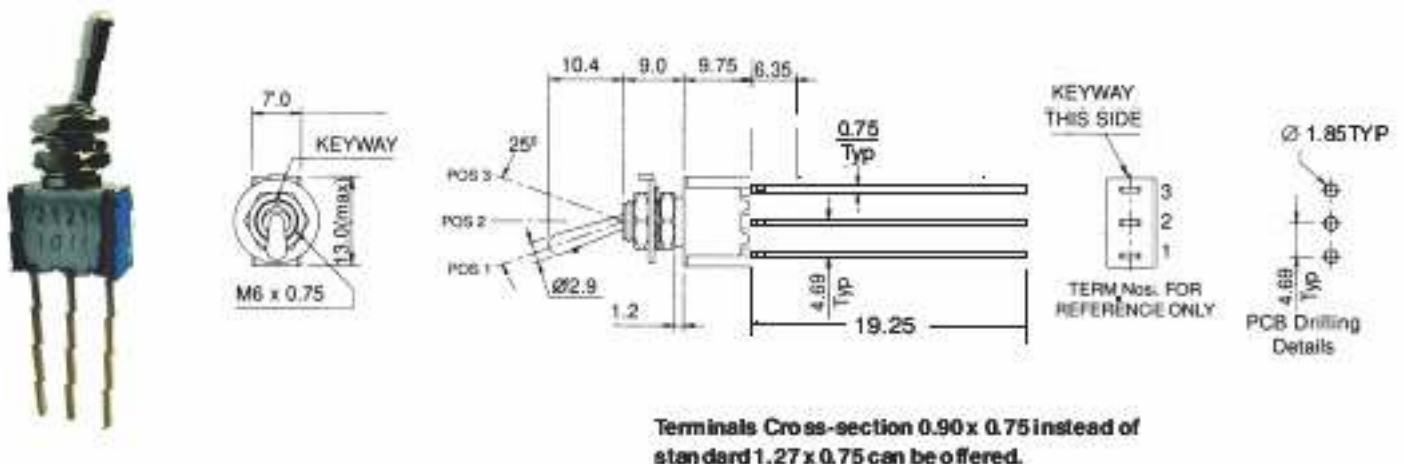
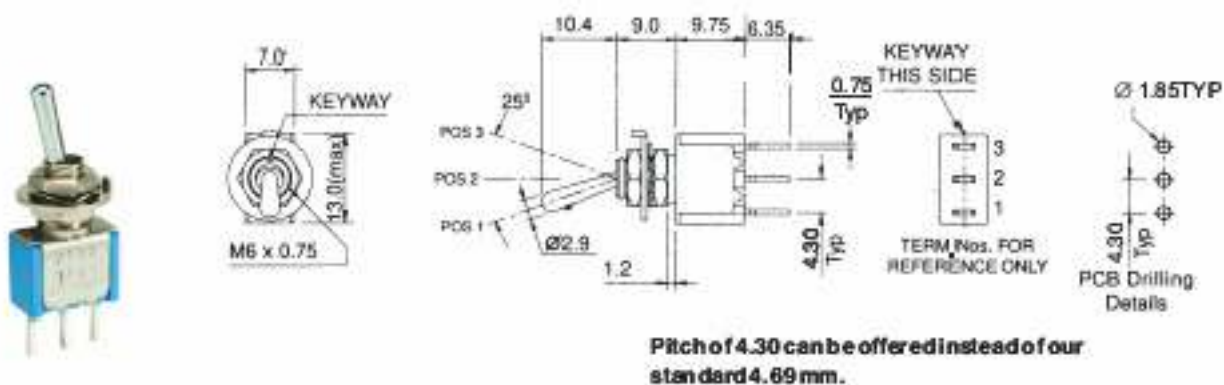
DESCRIPTION:

In Series 20 Toggle Switches, modifications are possible to meet customer's special requirements.

A very large number of variations are possible in our standard line of switches due to a wide selection possible in choosing the number of poles, switching function, contact selection, actuator and mounting selection.

However sometimes there may be a customer requirement which is not met by any one of the innumerable combination. In such cases Integral can develop samples as per the customer's drawings. Due to employment of modern production techniques even small number of samples can be made to exact dimension.

For Example:

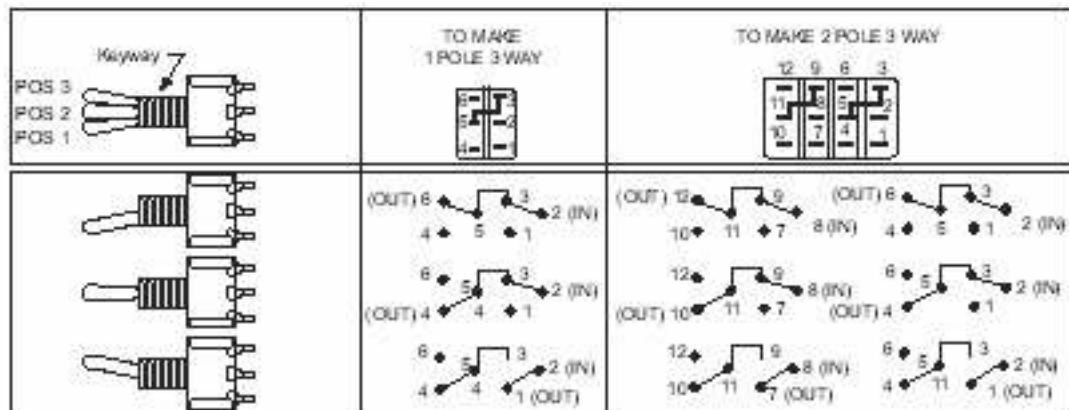


The factory can be contacted for special switches with specifications/drawings/samples, if available. Counter samples will be offered at the earliest.

Series 20 Special Switching Functions

On our Standard 20 Series Toggle Switches, 1P-3 Position and 2P-3 Position Toggle Switch with ON-ON-ON Switch Functions may be externally wired for 3 Way Function (See Wiring Design and Schematics given below)

Note : External Jumpers to be added by customer wiring for 3 Way Switches



ORDER CODE	POSITION 1	POSITION 2	POSITION 3
4	ON	ON	MOH
6	MOH	ON	MOH
9	ON	ON	ON

ORDER CODE	SWITCHING FUNCTION	CONNECTED TERMINALS					
		POSITION 1		POSITION 2		POSITION 3	
2	1P 3 WAY	2-3	5-6	2-3	5-4	2-1	5-4
4	2P 3 WAY	2-3	5-6	2-3	5-4	2-1	5-4
		8-9	11-12	8-9	11-10	8-7	11-10

