

# Military/Aerospace/HI-REL MIL-S-83731 Toggle Switches

## Features/Benefits

- Qualified to MIL-S-83731
- 50  $\mu$  inch selective gold contact plating
- Epoxy sealed terminals for process compatibility

- Rated for logic level to 5 amp resistive loads and 2 amp inductive loads
- Flame retardant housing material
- RoHS compliant and compatible

Test Requirement	MIL-S-83731/9, 10, 13, 14, 15, 16
1. Strength of Terminal	1 lb. – solder lug
2. Strength of Actuating Lever Pivot and Stop	10 lbs. & 8 lbs. throughout range
3. Strength of Mounting Means	15 lbs. in. torque on bushing
4. Dielectric (Sea Level) Indication	1000 VAC Group B, 750 VAC after electrical endurance. 500 $\mu$ A max. leakage
5. Contact Voltage Drop	2.5 millivolt initial, 5.0 millivolt after mechanical endurance @ 2-6 VDC 0.1 amp
6. Temperature Rise	50° C rise max. @ rated resistive load after endurance test
7. Short Circuit	10 operations carry 100 amps resistive load @ lowest DC volts
8. Mechanical Life	20K operations at specified high and low temperatures
9. Electrical Endurance	10K operations at specified high and low temperatures
10. Overload	50 operations @ 150% of rated resistive load
11. Electrical Endurance at Sea Level	10K operations resistive load @ room temperature 10K operations inductive load @ room temperature 10K operations lamp load @ room temperature Performed on different test samples
12. Vibration	Method 204 of MIL-STD-202, test condition A .06 D. A. or 10 G's 10-500 Hz, 10 usec. max. chatter
13. Shock	Fuse-method 213 or MIL-STD-202, 10 usec. max. chatter
14. Salt Spray Test Upon Completion	48 hours – method 101 of MIL-STD-202, test condition B 10 operations resistive load (toggle sealed switches only)
15. Moisture Resistance Test Upon Completion	Method 106 of MIL-STD-202 100 VDC potential between current carrying parts and panel
16. Sand & Dust	Method 110 of MIL-STD-202, test condition B 6 hours @ 23°C 2.5K operations mechanical life (toggle sealed switches only)
17. Explosion	MIL-STD-202 method 109, maximum rated DC inductive load (toggle sealed switches only)
18. Sealing	Toggle seal – 5 operations under 0.5 inches of H <sub>2</sub> O above top of bushing
19. A.) Toggle Seal B.) Bushing Seal	(Toggle sealed switches only) (Panel sealed switches only)
20. Temperature Operation	Mechanical life, -25°C to +71°C
21. Life Low Cur. Level	No requirement
22. Fungus	No requirement
23. Intermediate Current	20K operations, 35/40 milliamps @ 5 VDC resistive load @ +71°C
24. Thermal Shock	Method 107 of MIL-STD-202 test condition A; 5 cycles @ -55°C/+85°C

## RATINGS

### CURRENT RATINGS – HIGH LEVEL

Current Capacity in Amperes – Per Pole		
28V dc	115V ac, 400 Hz	125V ac, 60
Lamp Load		Hz
Resistive Load		
1	1	1
Inductive Load		
5	5	5
2	2	2

### CURRENT RATINGS – LOGIC LEVEL

0.5 Volt – Amp (VA) Max. @ 28 V Max. (AC or DC)
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## MATERIALS

CASE: Dialyl phthalate (DAP) (UL 94 V-0).

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

ACTUATOR: Brass, chrome plated.

SWITCH SUPPORT: Brass, tin plated.

TERMINALS: Gold over nickel over copper alloy.

TERMINAL SEAL: Epoxy.

CONTACTS: Gold over nickel over silver over brass.

PANEL SEAL: Silicone rubber.

MOUNTING HARDWARE: Two hexagon nut, brass with nickel plating; one lockwasher, steel with nickel plating; one locking ring, brass with nickel plating.

**HOW TO ORDER:** Complete part numbers for MIL-S-83731 TOGGLE SWITCHES are shown on pages F-18 through F-21.



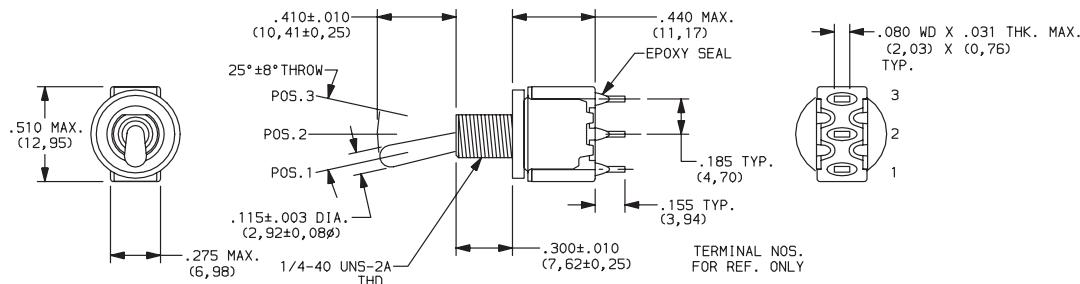
F

Toggle

# Military/Aerospace/HI-REL MIL-S-83731 Toggle Switches



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC	
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3		
SP	<b>M83731/9-211</b>	ON	OFF	ON	2-3	OPEN	2-1	 SPDT	
	<b>M83731/9-231</b>	ON	NONE	ON		N/A			
	<b>M83731/9-261</b>	ON	NONE	MOM.		OPEN			
	<b>M83731/9-271</b>	MOM.	OFF	MOM.	N/A	2-3	2-1		
	<b>M83731/9-311</b>	ON	OFF	MOM.		2-3			
	<b>M83731/9-341</b>	NONE	ON	MOM.	N/A	2-3	2-1		

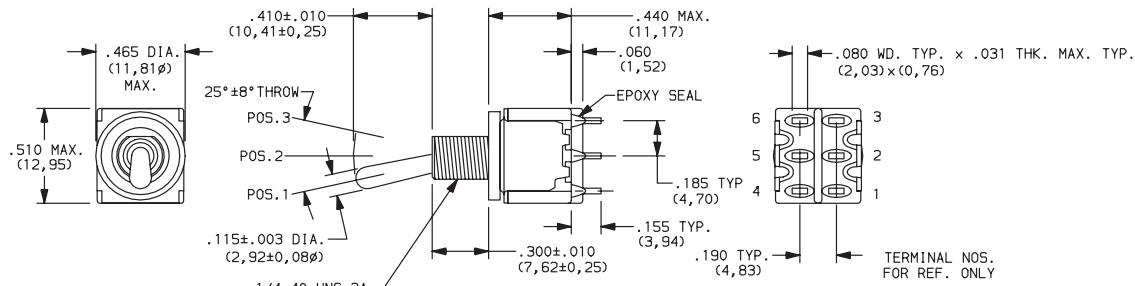


SPDT

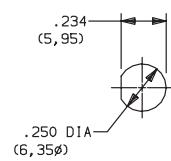


NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC	
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3		
DP	<b>M83731/10-211</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	 DPDT	
	<b>M83731/10-231</b>	ON	NONE	ON		N/A			
	<b>M83731/10-261</b>	ON	NONE	MOM.		OPEN			
	<b>M83731/10-271</b>	MOM.	OFF	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		
	<b>M83731/10-311</b>	ON	OFF	MOM.		2-3,5-4			
	<b>M83731/10-321</b>	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4		
	<b>M83731/10-331</b>	ON	ON	MOM.		2-3,5-4			
	<b>M83731/10-351</b>	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		

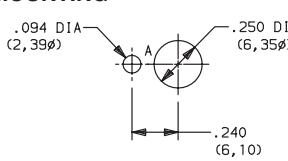
DPDT



## PANEL MOUNTING



Without locking ring.



With standard locking ring.

Toggle

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26 jan 17

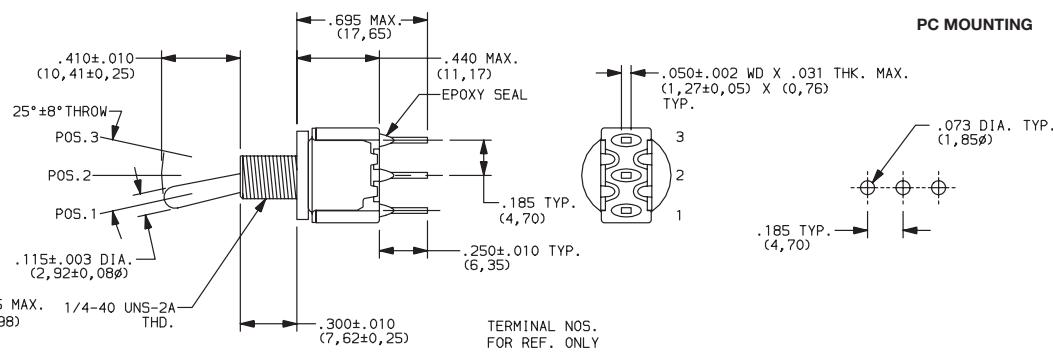
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

[www.ckswitches.com](http://www.ckswitches.com)

# Military/Aerospace/HI-REL MIL-S-83731 Toggle Switches



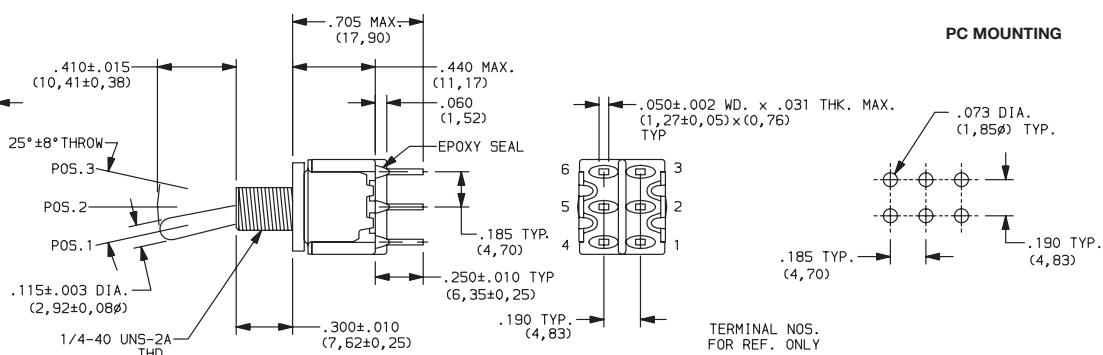
NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC	
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3		
SP	<b>M83731/9-212</b>	ON	OFF	ON	2-3	OPEN	2-1	SPDT	
	<b>M83731/9-232</b>	ON	NONE	ON		N/A			
	<b>M83731/9-262</b>	ON	NONE	MOM.		OPEN			
	<b>M83731/9-272</b>	MOM.	OFF	MOM.	N/A	2-3	2-1		
	<b>M83731/9-312</b>	ON	OFF	MOM.					
	<b>M83731/9-342</b>	NONE	ON	MOM.	N/A	2-3	2-1		



SPDT



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC	
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3		
DP	<b>M83731/10-212</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	DPDT	
	<b>M83731/10-232</b>	ON	NONE	ON		N/A			
	<b>M83731/10-262</b>	ON	NONE	MOM.		OPEN			
	<b>M83731/10-272</b>	MOM.	OFF	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		
	<b>M83731/10-312</b>	ON	OFF	MOM.					
	<b>M83731/10-322</b>	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4		
	<b>M83731/10-332</b>	ON	ON	MOM.					
	<b>M83731/10-352</b>	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		



DPDT

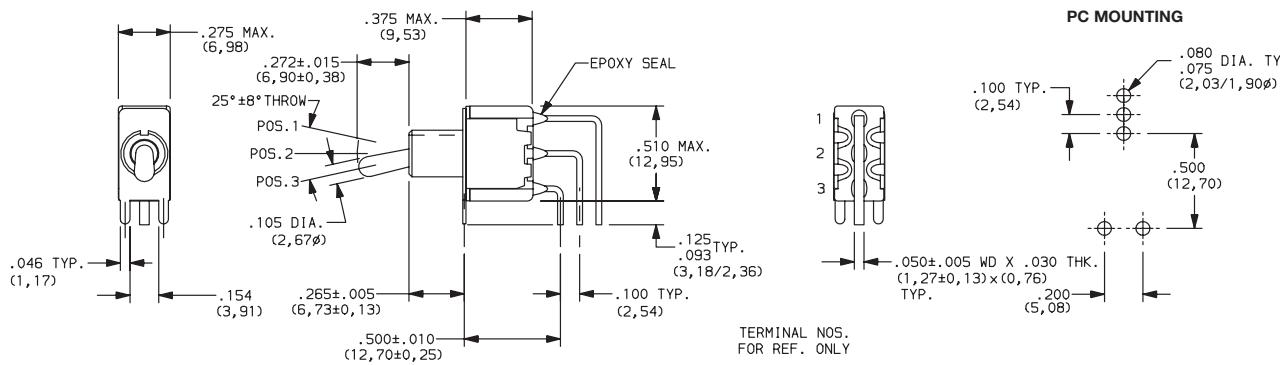


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Toggle

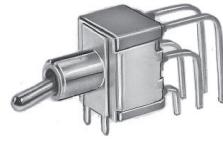
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NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>M83731/13-211</b>	ON	OFF	ON	2-3	OPEN	2-1	SPDT
	<b>M83731/13-231</b>	ON	NONE	ON		N/A		
	<b>M83731/13-261</b>	ON	NONE	MOM.		OPEN		
	<b>M83731/13-271</b>	MOM.	OFF	MOM.	N/A	2-3	2-1	
	<b>M83731/13-311</b>	ON	OFF	MOM.		2-3	2-1	
	<b>M83731/13-341</b>	NONE	ON	MOM.	N/A	2-3	2-1	

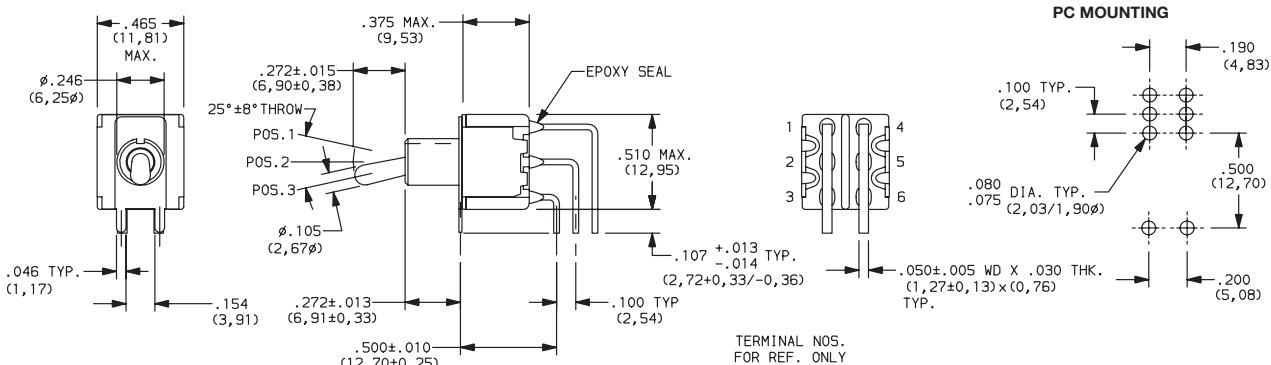


SPDT



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
DP	<b>M83731/14-211</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	DPDT
	<b>M83731/14-231</b>	ON	NONE	ON		N/A		
	<b>M83731/14-261</b>	ON	NONE	MOM.		OPEN		
	<b>M83731/14-271</b>	MOM.	OFF	MOM.	2-3,5-6	2-3,5-4	2-1,5-4	
	<b>M83731/14-311</b>	ON	OFF	MOM.		2-3,5-6	2-3,5-4	
	<b>M83731/14-321</b>	ON	ON	ON	2-3,5-6	2-3,5-4	2-1,5-4	
	<b>M83731/14-331</b>	ON	ON	MOM.		2-3,5-6	2-3,5-4	
	<b>M83731/14-351</b>	MOM.	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4	

DPDT



Toggle

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Dimensions are shown: Inches (mm)  
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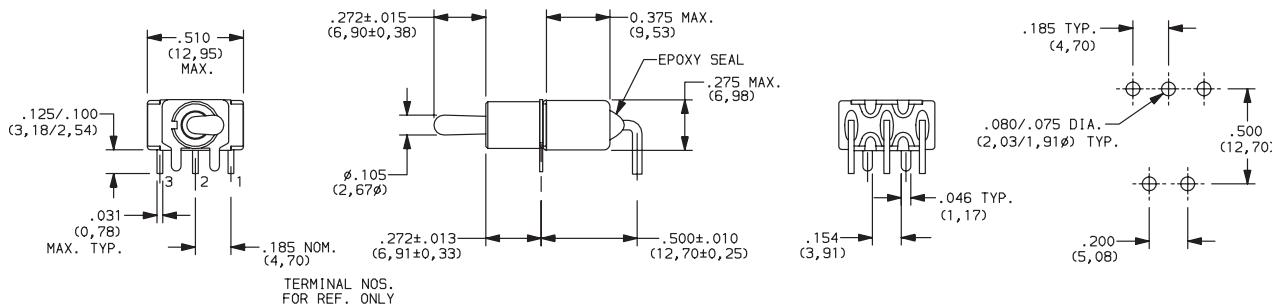
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NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3	
SP	<b>M83731/15-211</b>	ON	OFF	ON	2-3	OPEN	2-1	SPDT
	<b>M83731/15-231</b>	ON	NONE	ON		N/A		
	<b>M83731/15-261</b>	ON	NONE	MOM.		OPEN		
	<b>M83731/15-271</b>	MOM.	OFF	MOM.	N/A	2-3	2-1	
	<b>M83731/15-311</b>	ON	OFF	MOM.		2-3	2-1	
	<b>M83731/15-341</b>	NONE	ON	MOM.		N/A	2-1	

## PC MOUNTING

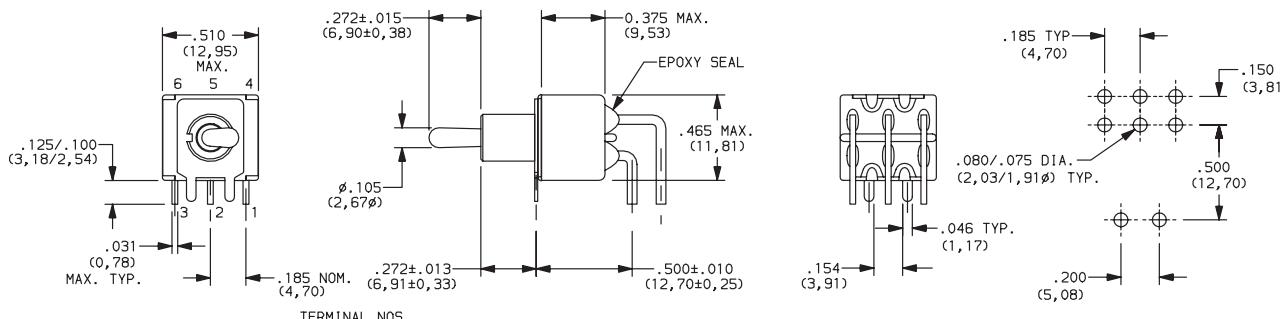


## SPDT



NO. POLES	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS			SCHEMATIC	
		POS. 1	POS. 2	POS. 3	POS. 1	POS. 2	POS. 3		
DP	<b>M83731/16-211</b>	ON	OFF	ON	2-3,5-6	OPEN	2-1,5-4	DPDT	
	<b>M83731/16-231</b>	ON	NONE	ON		N/A			
	<b>M83731/16-261</b>	ON	NONE	MOM.		OPEN			
	<b>M83731/16-271</b>	MOM.	OFF	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		
	<b>M83731/16-311</b>	ON	OFF	MOM.		2-3,5-4			
	<b>M83731/16-321</b>	ON	ON	ON		2-3,5-6	2-3,5-4		
	<b>M83731/16-331</b>	ON	ON	MOM.	2-3,5-6	2-3,5-4	2-1,5-4		
	<b>M83731/16-351</b>	MOM.	ON	MOM.		2-3,5-4	2-1,5-4		

## PC MOUNTING



## DPDT



**F**  
Toggle

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## C&K Switches:

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[M83731/15-261](#) [M83731/15-271](#) [M83731/16-311](#) [M83731/9-261](#) [M83731/9-272](#) [M83731/10-272](#) [M83731/10-311](#)  
[M83731/13-261](#) [M83731/13-271](#) [M83731/9-212](#) [M83731/10-212](#) [M83731/10-262](#) [M83731/10-341](#) [M83731/13-211](#)  
[M83731/15-211](#) [M83731/16-231](#) [M83731/16-261](#) [M83731/9-211](#) [M83731/9-232](#) [M83731/9-311](#)