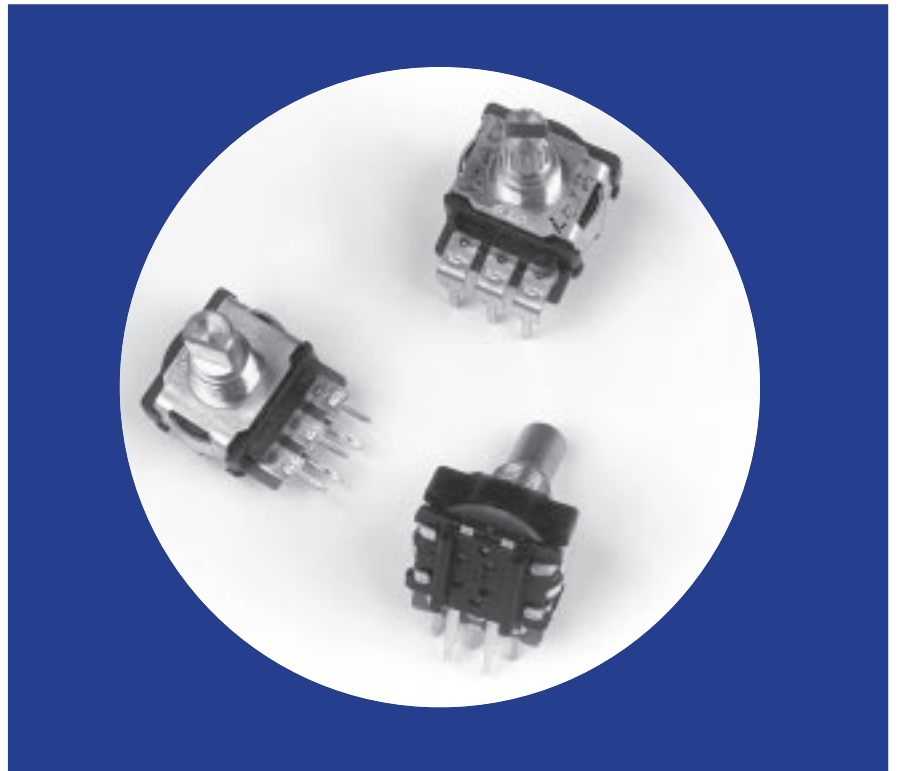


## 16 mm Rotary Encoders

### Features

- Low cost, robust design
- Miniature 16mm style
- Bushing mounted
- PC terminals, with shaft parallel or perpendicular to PC board
- 2 bit, 4 bit Gray and 4 bit Hexidecimal codes available
- 16 detents available
- Optional momentary switch
- RoHS compliant



## Electrical and Mechanical Specifications

### Voltage Rating

5VDC @ 0.5milliamp

### Current Rating

5mA max.

### Temperature Rating

Operation: -25°C to +100°C

### Contact Resistance

500 ohms static closed circuit maximum  
Contact CTS for special requirements

### Detent Points

16 detents available

### Resolution Switch Rating

4,6,8,10 or 12 pulses in 360° on 2 bits

### Total Rotational Angle

360°

### Rotational Torque

36~216 gfcM (0.5~3 in-oz)  
Contact CTS for special requirements

### Rotational Life

50,000 cycles min.

### Switch Life

15,000 operations for 0.5mm(.020") travel

### Switch Contact Resistance

100 milliohms maximum initial  
200 milliohms maximum after life

### Switch Operation Force

350 ±150 gf (12.3 oz ±5.3 oz)

### Switch Bounce

5 milliseconds max.

### Switch Travel Length

0.5mm (.020")

### Pull and Thrust on Shaft

Withstand a pushing force and pulling force of 8 kg static load applied to axial direction for 10 ±1 second without physical damage or electrical degradation

**TRUTH TABLE 2 BIT BINARY**

DENOTES CONTACT CLOSURE TO COMMON	B	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1			
	A	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0			
POS. NO.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
																		0	1	1
																		1	1	0
																		46	47	48

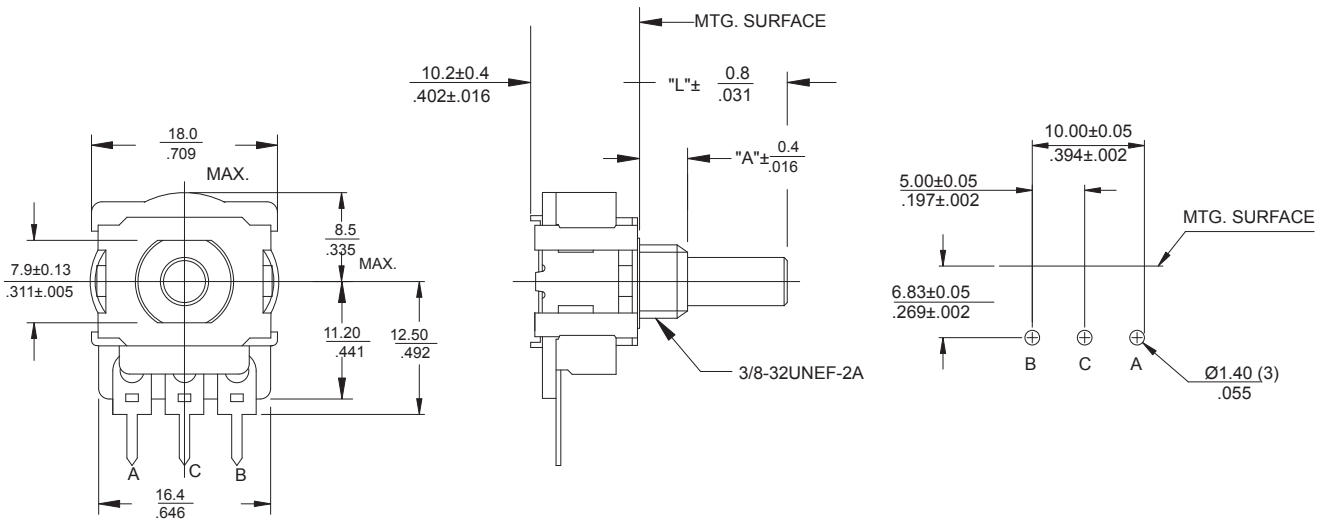
**4 BIT GRAY CODE**

POS. NO.	DENOTES CONTACT CLOSURE TO COMMON							
	A	B	E	F				
1	0	0	0	0				
2	0	0	1	0				
3	0	0	1	1				
4	0	0	0	1				
5	0	1	0	1				
6	0	1	1	1				
7	1	1	1	1				
8	1	1	0	1				
9	1	0	0	1				
10	1	0	1	1				
11	1	0	1	0				
12	1	0	0	0				
13	1	1	0	0				
14	1	1	1	0				
15	0	1	1	0				
16	0	1	0	0				

**4 BIT HEXIDECIMAL**

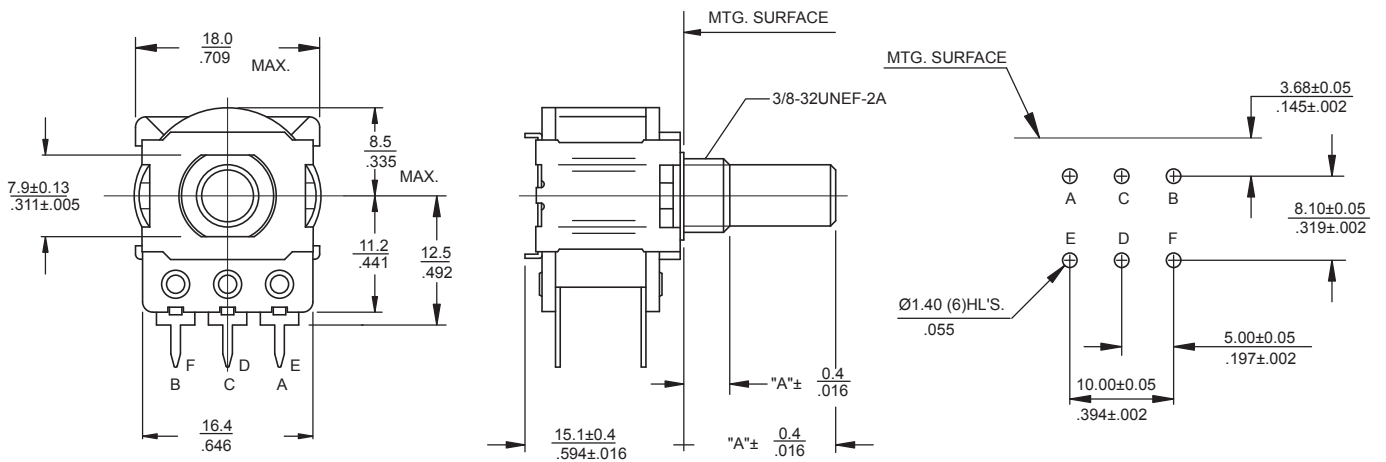
POS. NO.	DENOTES CONTACT CLOSURE TO COMMON							
	A	B	E	F				
1	0	0	0	0				
2	1	0	0	0				
3	0	1	0	0				
4	1	1	0	0				
5	0	0	1	0				
6	1	0	1	0				
7	0	1	1	0				
8	1	1	1	0				
9	0	0	0	1				
10	1	0	0	1				
11	0	1	0	1				
12	1	1	0	1				
13	0	0	1	1				
14	1	0	1	1				
15	0	1	1	1				
16	1	1	1	1				

**X288 Typical 2-bit Encoder parallel to P.C. Board**



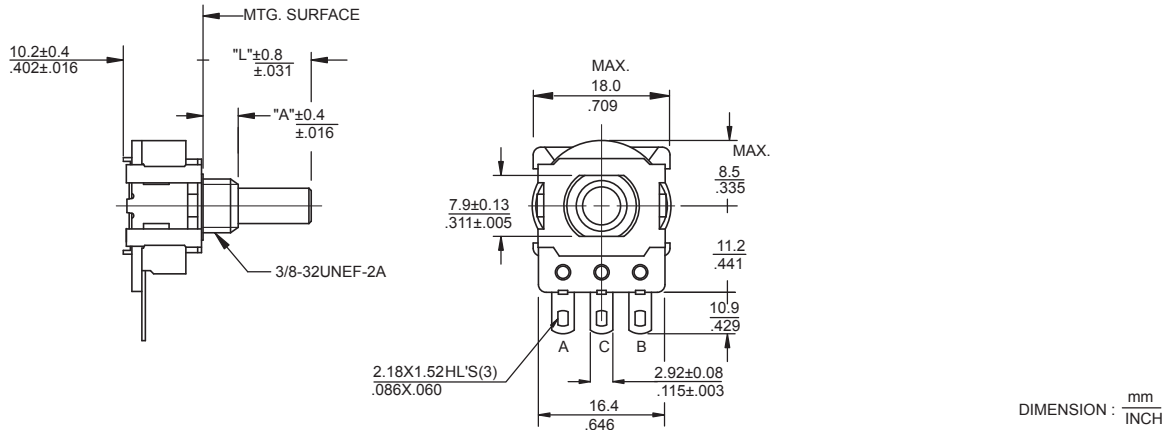
DIMENSION :  $\frac{\text{mm}}{\text{INCH}}$

**X2-288 Typical 4-bit Encoder parallel to P.C. Board**

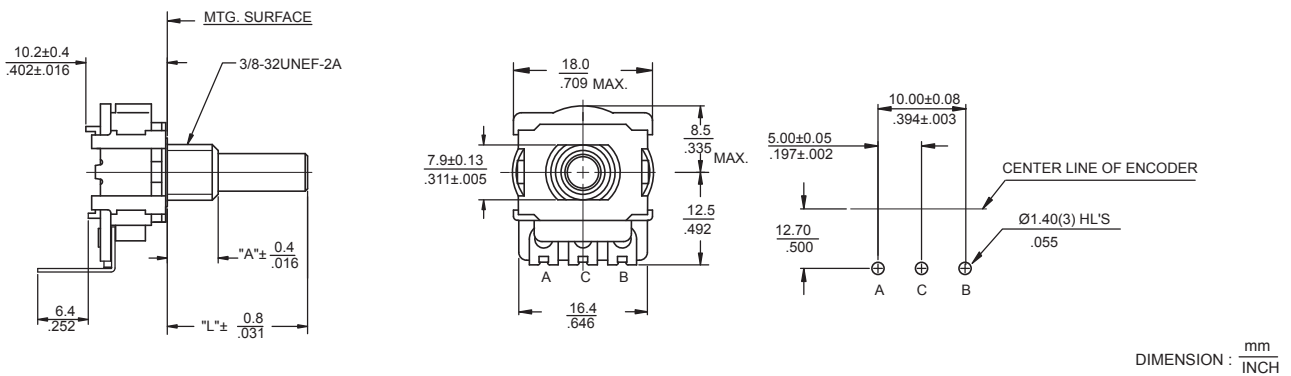


DIMENSION :  $\frac{\text{mm}}{\text{INCH}}$

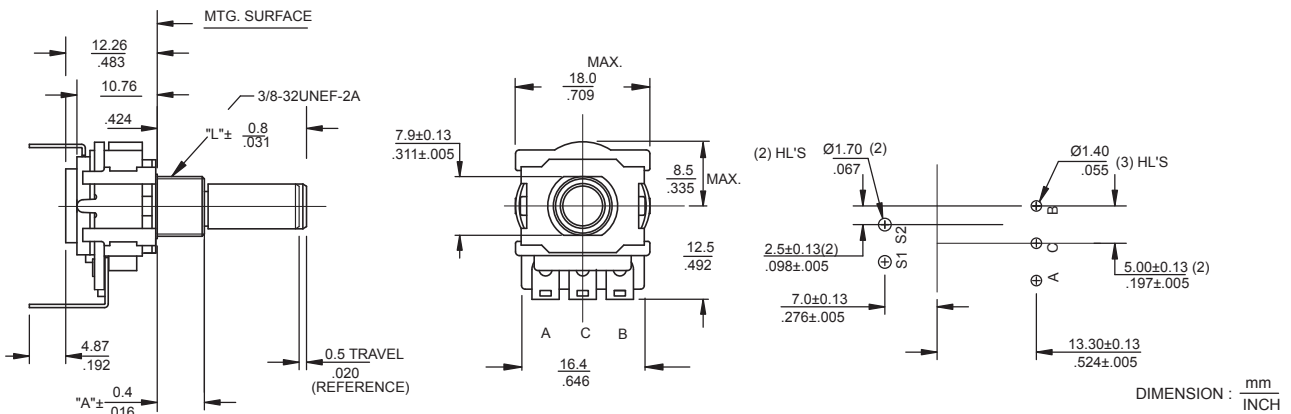
**T288** Typical 2-bit Encoder With Solder Lug Terminals



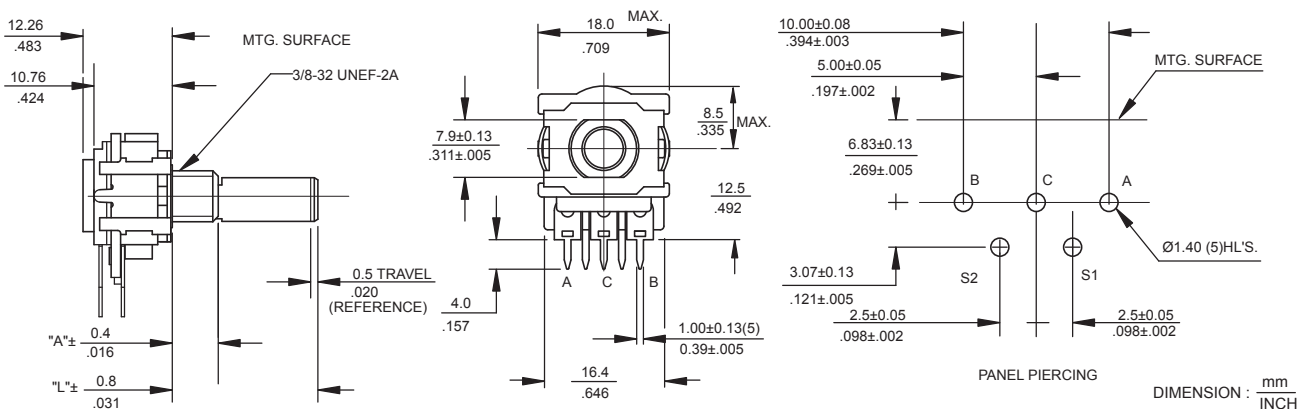
**V288** Typical 2-bit Perpendicular to P.C. Board



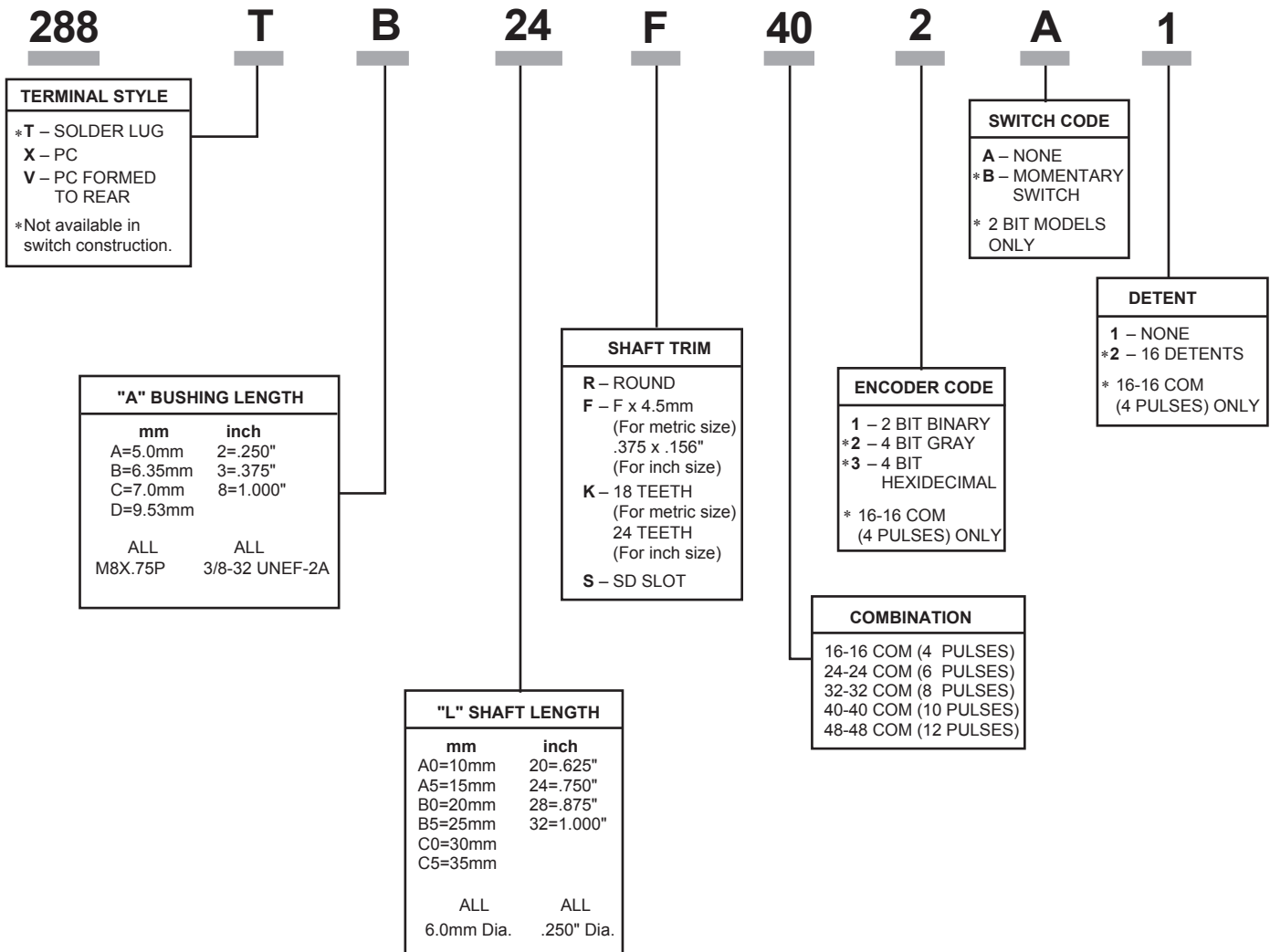
**MC-V288** Typical 2-bit Encoder With Momentary Switch Perpendicular to P.C. Board



**MC-X288** Typical 2-bit Encoder With Momentary Switch Parallel to P.C. Board



## Ordering Information



METRIC BUSHING EQUIPPED WITH METRIC SHAFT.