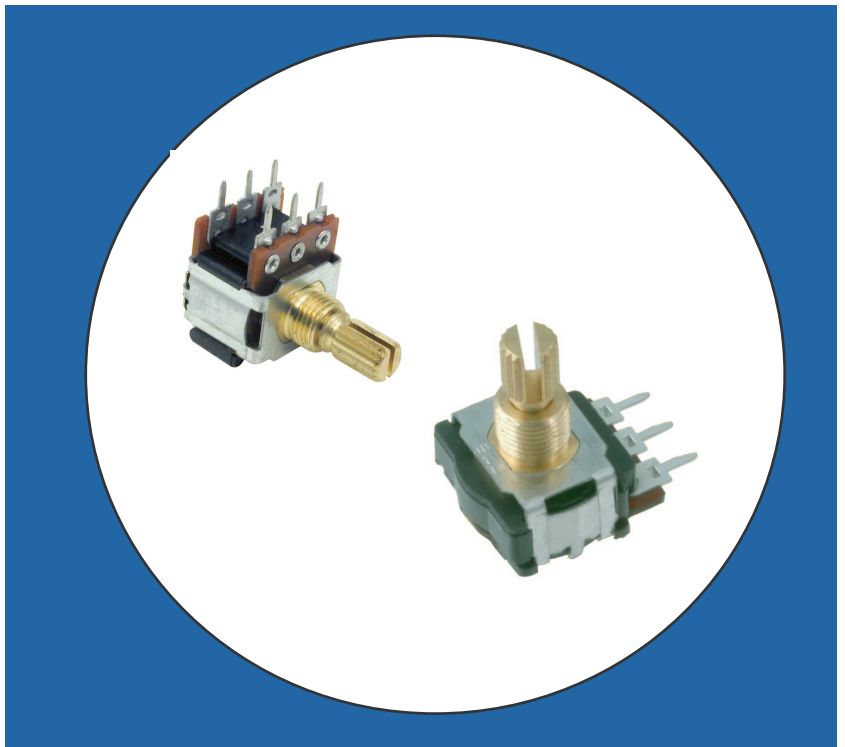


## Commercial Miniature 16mm Size Rotary Encoder

### Features

- Robust Construction
- 2-bit Incremental or 4-bit Absolute Encoder
- Optional Momentary Switch
- Available with 16 Detents
- Continuous Rotation
- Bushing Mount
- Solder Lug or PCB Terminals
- RoHS Compliant



## Electrical and Mechanical Specifications

### Encoder:

**Contact Resistance**  
500Ω maximum

**Voltage Rating**  
5 VDC @ 0.5mA maximum

**Detent Points**  
16 detents available

**Rotational Life**  
50,000 cycles

**Resolution**  
2-bit: 4, 6, 8, 10 or 12 pulses in 360°  
4-bit: 16 combinations in 360°

**Insulation Resistance**  
10MΩ minimum at 50 VDC

**Temperature Range**  
Operating: -25°C to +100°C  
Storage: -30°C to +100°C

**Rotational Torque**  
No Detent: 36 - 216 gf.cm  
With Detent: 100 - 500 gf.cm

**Solder Heat Resistance**  
260°C for 5 seconds

**Push-Pull Strength of Shaft**  
8 kg minimum for 10 seconds

### Special

Consult CTS for customized or features not listed, including other detent points, resolution, torque and mounting style.

# Electrical and Mechanical Specifications (continued)

## Optional Momentary Switch:

### Switch Contact Resistance

Initial: 100mΩ maximum  
After Life Cycles: 200mΩ maximum

### Switch Rating

16 VDC @ 20mA maximum

### Switch Bounce

5 milliseconds maximum

### Switch Operating Force

350 ± 150 g (12.3 ± 5.3 oz.)

### Switch Life

15,000 operations

### Switch Travel

0.5mm (.020")

## Truth Table

### 2 BIT BINARY CODE

DENOTES CONTACT CLOSURE TO COMMON	2 BIT BINARY CODE															
	B	0	0	1	1	0	0	1	1	0	0	1	1	0	0	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

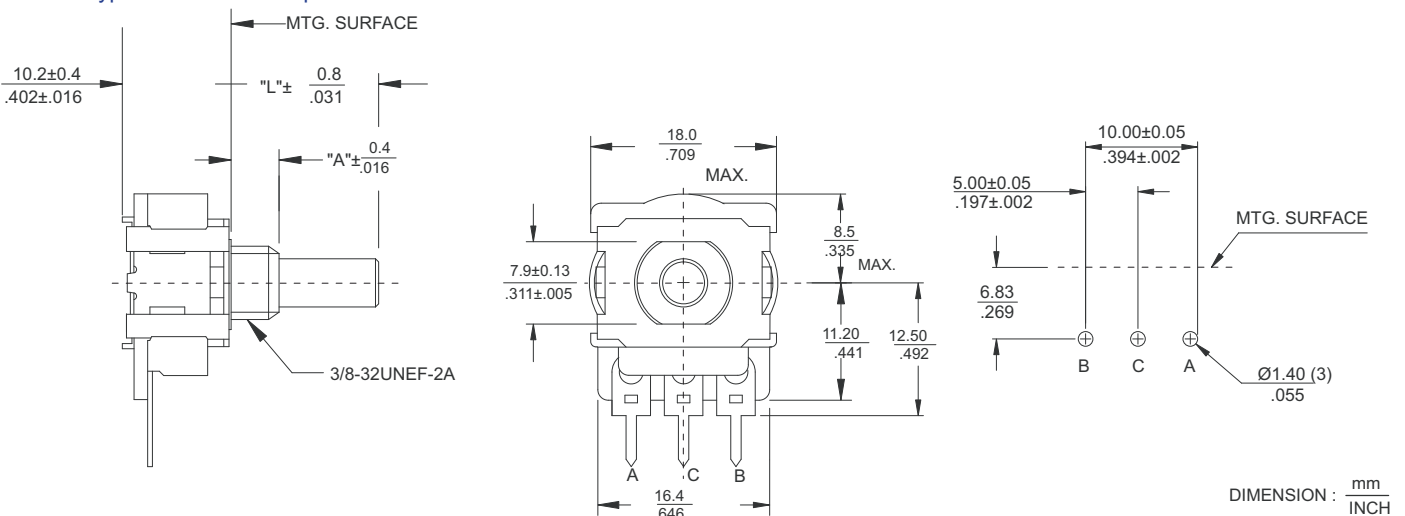
### 4 BIT GRAY CODE

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

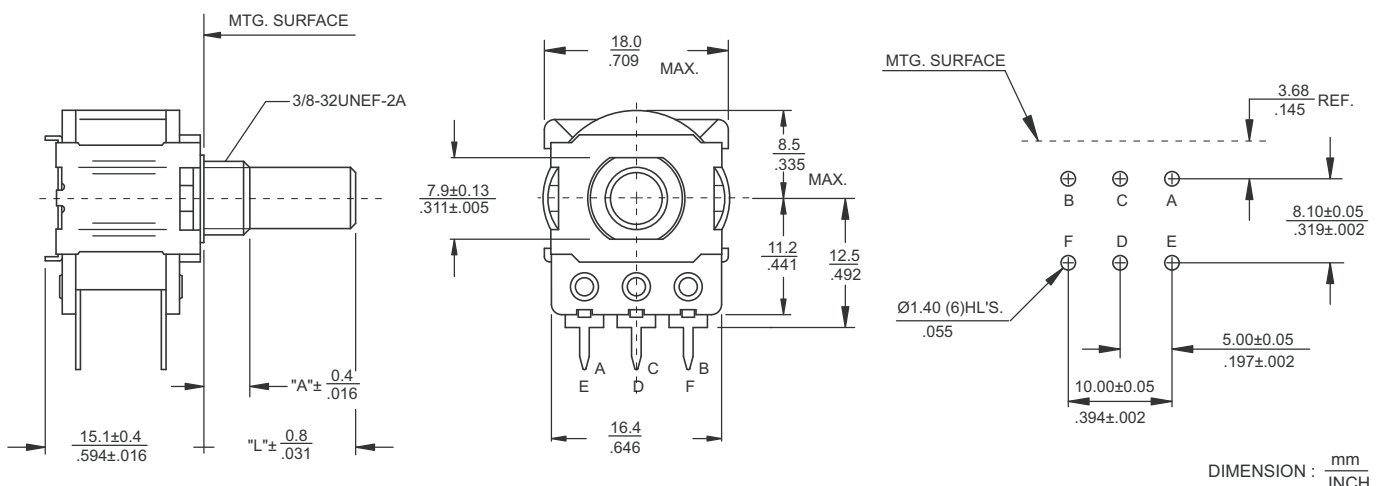
### 4 BIT HEXADECIMAL CODE

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

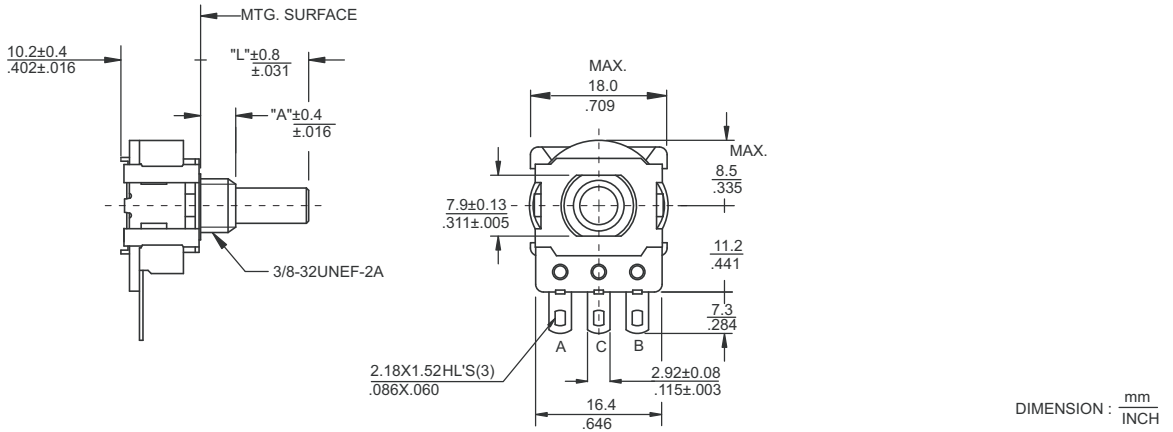
### 288X Typical 2-bit Encoder parallel to P.C. Board



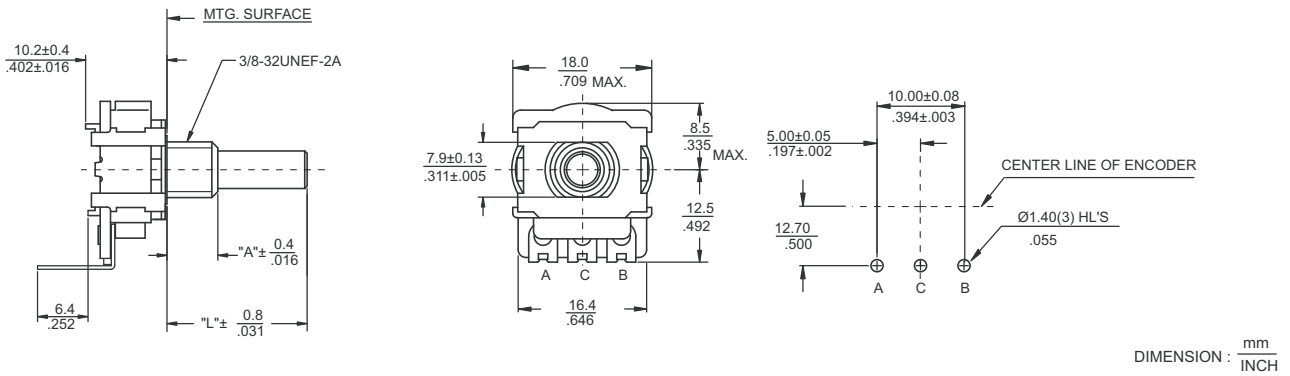
### 2-288X Typical 4-bit Encoder parallel to P.C. Board



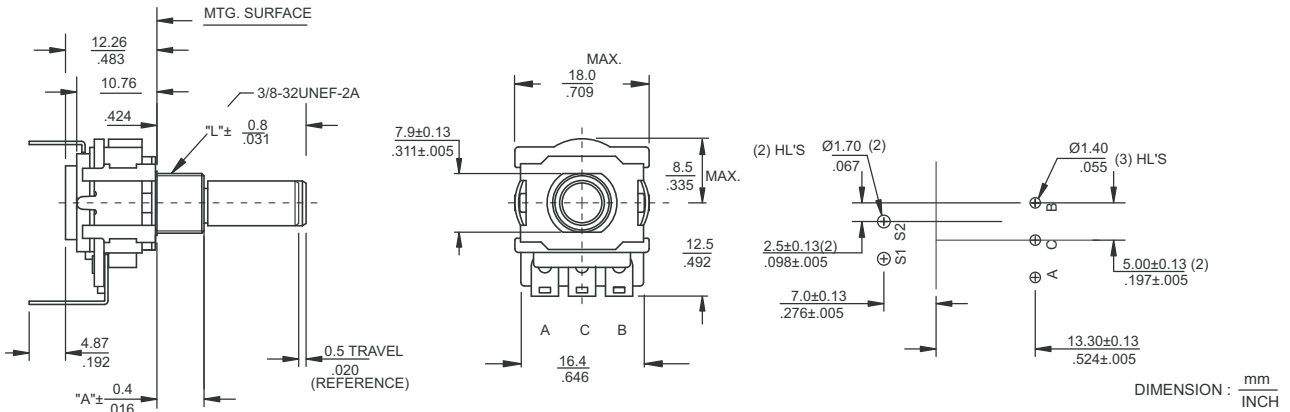
**288T** Typical 2-bit Encoder With Solder Lug Terminals



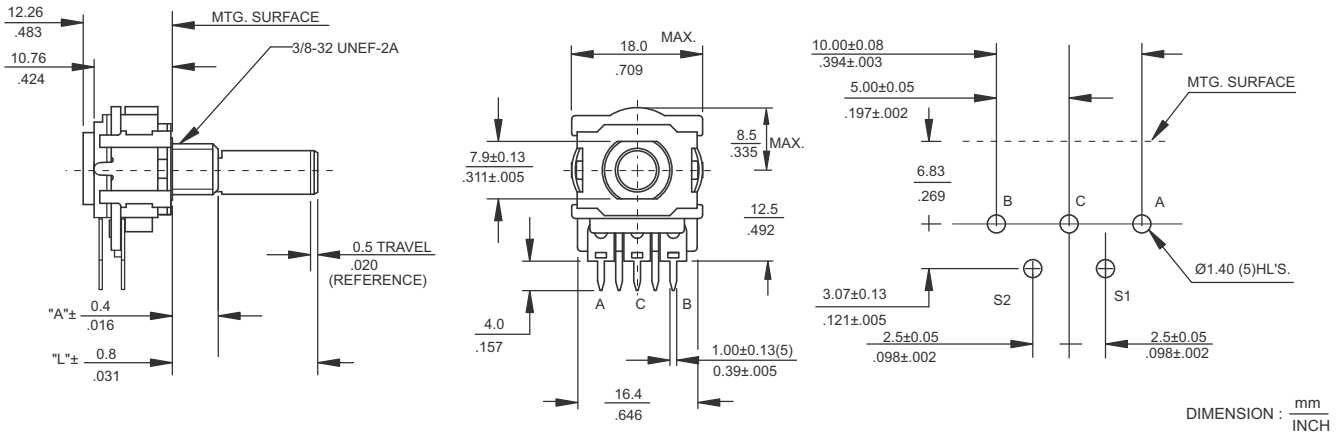
**288V** Typical 2-bit Perpendicular to P.C. Board



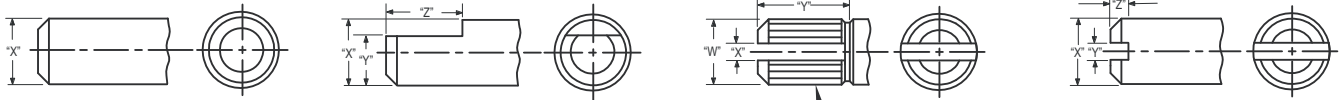
**MC-288V** Typical 2-bit Encoder With Momentary Switch Perpendicular to P.C. Board



**MC-288X** Typical 2-bit Encoder With Momentary Switch Parallel to P.C. Board



# Shaft Trim



**R - ROUND**

	X
Imperial Shaft	.250"
Metric Shaft	6.00

**F - FLATTED**

	X	Y	Z
Imperial Shaft	.250"	.156"	.375"
Metric Shaft	6.00	4.50	7.00

**K - KNURLED & SLOTTED**

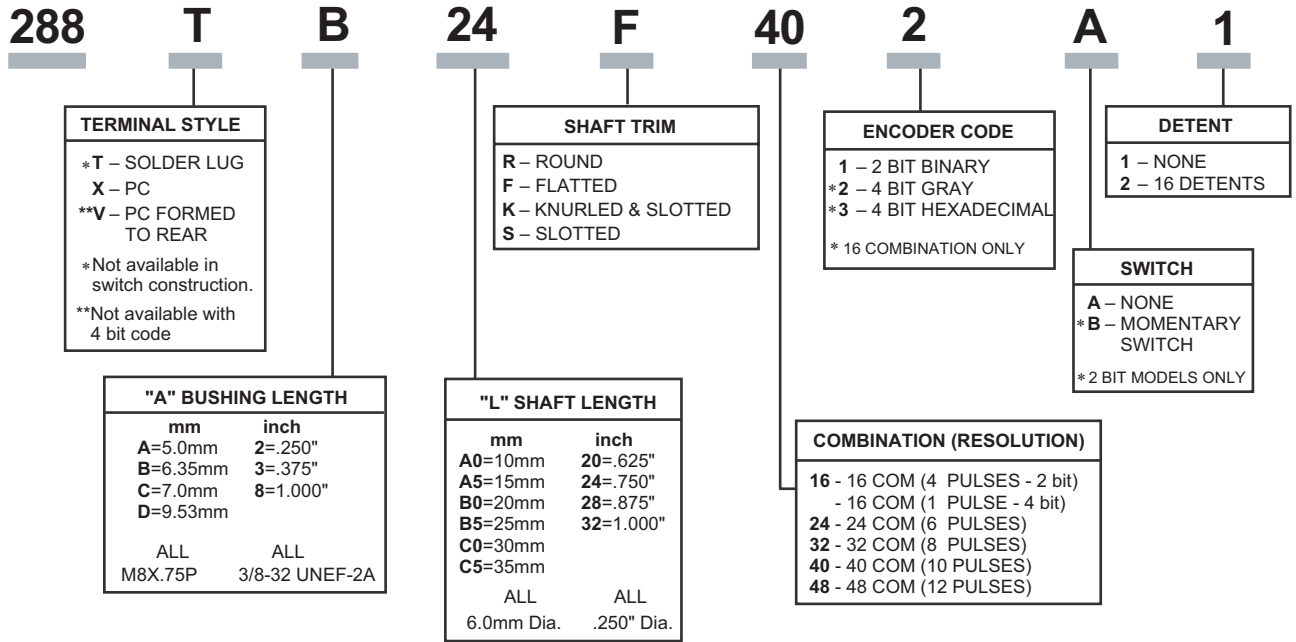
	W	X	Y	Z
Imperial Shaft	.236"	.062"	.344"	24 TEETH
Metric Shaft	6.00	1.57	7.0	18 TEETH

**S - SLOTTED**

	X	Y	Z
Imperial Shaft	.250"	.046"	.062"
Metric Shaft	6.00	1.17	1.57

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

## Ordering Information



Please consult CTS for customized or features not listed.