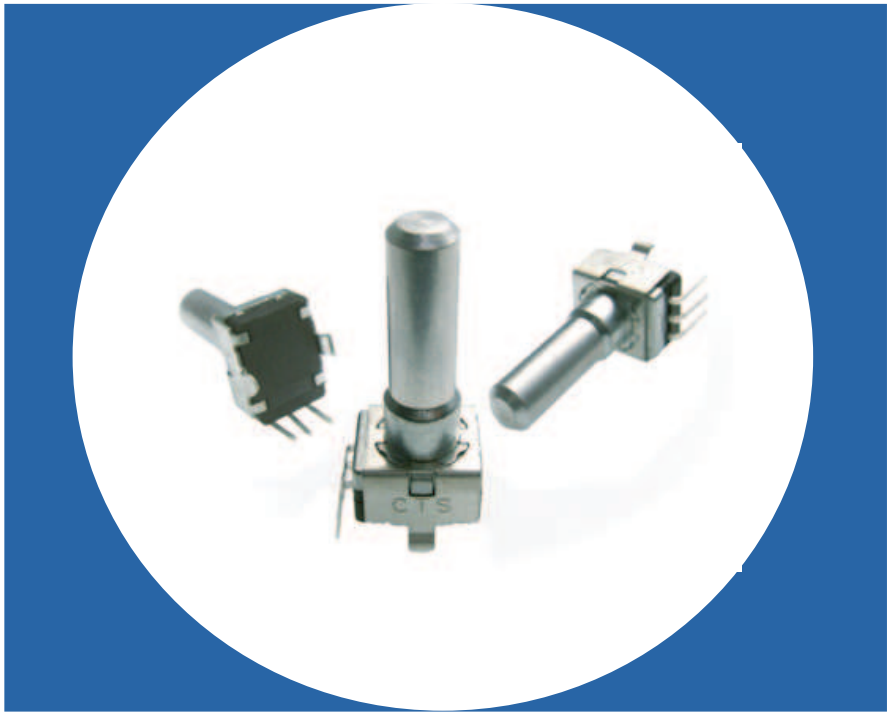
# Series 290 Encoder Technical Data Sheet

## Commercial Miniature 9mm Encoders



### Features

- Miniature 9mm style
- 2 bit quadrature (Graycode)
- Optional momentary switch
- Continuous rotation
- Durable metal shaft
- Available with 16 or 20 detents
- RoHS compliant

## Electrical and Mechanical Specifications

### Encoder Ratings :

**Contact Resistance**
1Ω maximum

**Voltage Rating (each channel)**
12 VDC @ 10 mA maximum.
5 VDC @ 1 mA minimum.

**Phase Difference (FIG.1)**
T1,T2,T3,T4 —2 milliseconds min for 20 pulse encoder.
- 8 milliseconds min for 8 pulse encoder.

**Contact Bounce / Chatter (FIG.3)**
t1, t2, t3 - 3 milliseconds max.

**Detent Points**
16 or 20 detents available

**Rotational Life**
50,000 cycles

**Resolution**
8 or 20 pulses in 360°

**Insulation Resistance**
100 megohms between all terminals & bushing at 250 VDC

**Temperature Ratings**
Operation: - 30°C to +70°C

**Solderability**
Flux for 5 - 10 sec., then dip into a solder bath at 260 ±5°C for 3 sec.

**Pull and Thrust on Shaft**
Withstand a pushing or pulling force of 10 kg-f static load applied in axial direction for 10 ±1 sec. without physical damage or electrical degradation.

### Momentary SPST Switch Ratings :

**Switch Contact Resistance**
100 mΩ maximum initial, 200mΩ after life cycles

**Switch Rating**
16 VDC @ 10mA min. to 0.5A max.

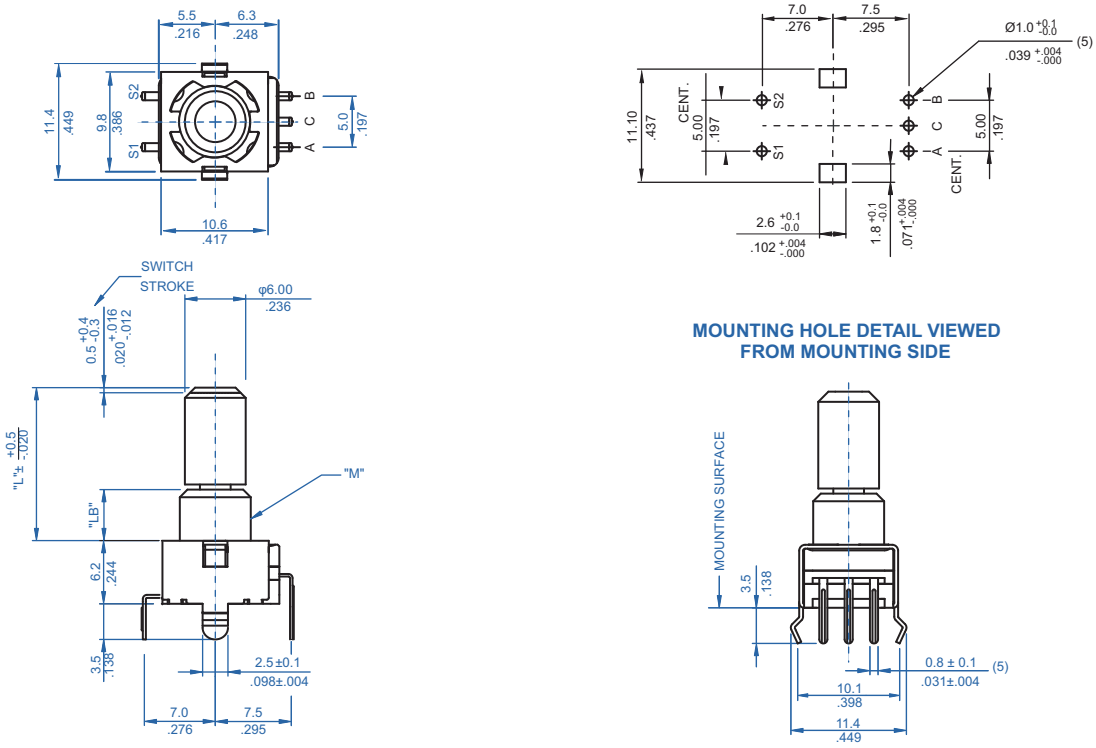
**Switch Bounce**
5 milliseconds maximum

**Switch Operating Force**
600 ±300 grams (21 ±11oz) for 0.5mm (.020") travel

**Switch Life**
100,000 operations for 0.5mm (.020") travel

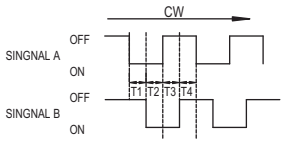
**Switch Travel**
0.5mm (.020")

## **TYPE MC-290V** Typical 2-Bit Encoder With Momentary Switch, Shaft Perpendicular to PC Board

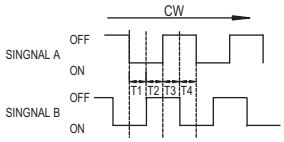



DIMENSION: mm / inch

### 20 PPR OUTPUT SIGNAL (FIG.1.1)

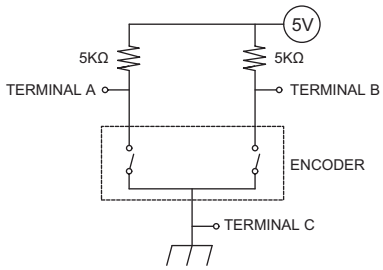



### 8 PPR OUTPUT SIGNAL (FIG.1.2)

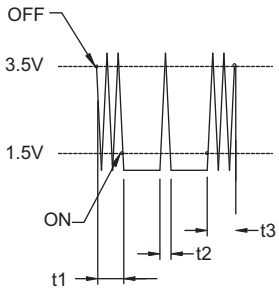



**PHASE DIFFERENCE**

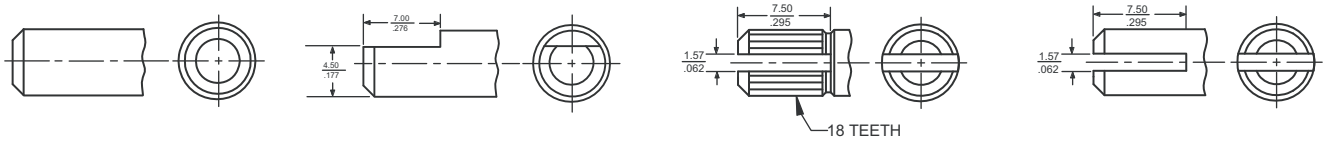
### TYPICAL CIRCUIT (FIG.2)




### BOUNCE / CHATTER (FIG.3)



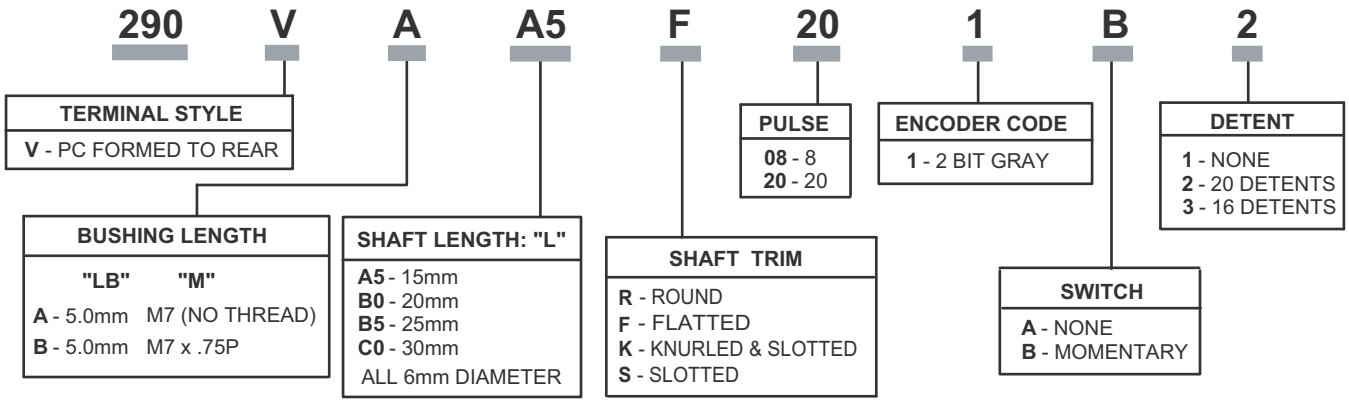

## Shaft Trim




R - ROUND | F - FLATTED | K - KNURLED & SLOTTED | S - SLOTTED

DIMENSION: mm / inch

## Ordering Information




**Output Combinations :**
**8 PPR with 0 or 16 Detents**
**20 PPR with 0 or 20 Detents**

Consult CTS for other available options not listed

# Mouser Electronics

Authorized Distributor

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CTS:
290VAA5F201A1 290VAA5F201A2 290VAA5F201B1 290VAA5F201B2 290VAB0R201A1 290VAB0R201A2 290VAB0R201B1 290VAB0R201B2 290VAB0F201A2 290VAB0F201B2