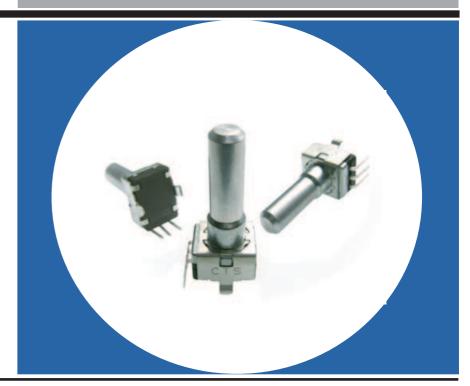


## Series 290 Encoder Technical Data Sheet

# 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 m $\Omega$  maximum initial, 200m $\Omega$  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

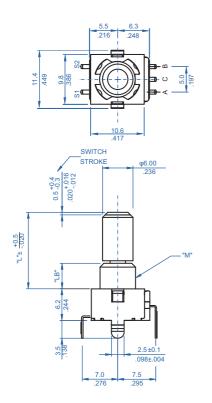
#### **Switch Life**

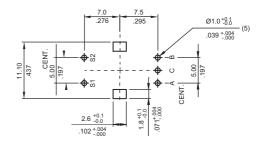
100,000 operations for 0.5mm (.020") travel

#### **Switch Travel**

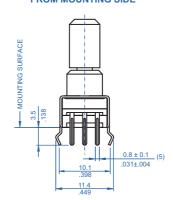
0.5mm (.020")

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



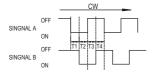


## MOUNTING HOLE DETAIL VIEWED FROM MOUNTING SIDE

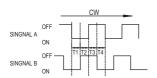


DIMENSION: mm inch



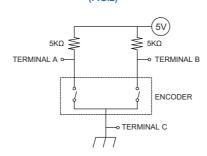


#### 8 PPR OUTPUT SIGNAL (FIG.1.2)

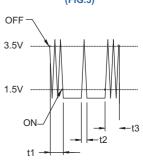


PHASE DIFFERENCE

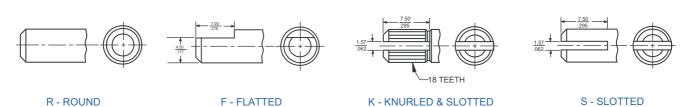
## TYPICAL CIRCUIT (FIG.2)



## BOUNCE / CHATTER (FIG.3)

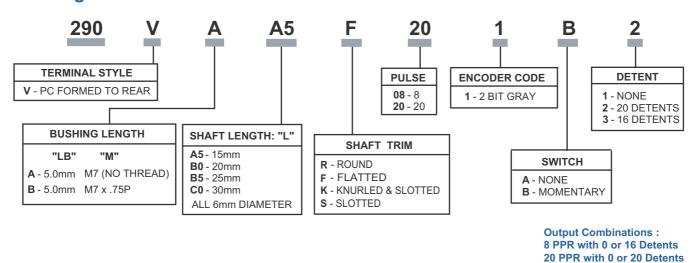


## **Shaft Trim**



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

## **Ordering Information**



Consult CTS for other available options not listed

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V23401H1409B101 V23401T8002B802 V23401U6019B609 E69-1 E69DF10 E69-FCA 62B11-LP-100S 62B11-LPP-040C 62N11-P
62S22-H9-120S 62S30-L0-200C 62V15-02-080S 63K64 63KS100-040 63R64-050 63RS64 700-16-16 V23401D3002B301
V23401D1001B102 3-1393048-1 63KS128 63KS256 1-1879391-5 GH65C11-N-SO 62S15-M0-P 1393047-1 E69-FCA02 E69-FCA04
E69-DF20 E69-DF2