

The sub miniature ECS-TXO-2016MV is a miniature SMD TCXO MultiVolt™ CMOS TCXO. The 2.0 x 1.6 x 0.8 mm ceramic package is ideal for LoRa WAN, and wireless IoT applications

# ECS-TXO-2016MV

MultiVolt™ CMOS TCXO

[Request a Sample](#)

## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS



- Low Profile
- 2.0 x 1.6 mm Footprint
- Extended Temp Range
- RoHS Compliant
- MultiVolt™ Compatible with 1.8V, 2.5V or 3.3V Power Supply

| PARAMETERS           | CONDITIONS                          | ECS-TXO-2016MV |      |        | UNITS  |
|----------------------|-------------------------------------|----------------|------|--------|--------|
|                      |                                     | MIN            | TYP  | MAX    |        |
| Frequency Range      |                                     | 10.000         |      | 60.000 | MHz    |
| Frequency Stability  | Tolerance at +25°C                  |                |      | ± 2.0  | ppm    |
|                      | Vs. Temp (-30 ~ +85°C)              |                |      | ±2.0   | ppm    |
|                      | Vs. Temp (-40 ~ +85°C)              |                |      | ± 2.5  | ppm    |
|                      | Voltage Change Vdd ±5%              |                |      | ±0.3   | ppm    |
|                      | Load Change (±10%)                  |                |      | ±0.2   | ppm    |
| Aging                | Per year @ +25°C                    |                |      | ±1.0   | ppm    |
| Supply Voltage       |                                     | +1.7           |      | +3.6   | V DC   |
| Standby Current      |                                     |                |      | 10     | µA     |
| Output               | CMOS                                |                | 15   |        | pF     |
| Output voltage Level | VOL:10%Vdd max./VOH:90%Vdd min.V DC |                |      |        |        |
| Rise & Fall time     | 10%Vdd – 90%Vdd                     |                |      | 5      | ns     |
| Duty Cycle           | @ ½ Vdd                             |                |      | 45/55  | %      |
| Phase Noise          | @ 10 KHz offset                     |                | -145 |        | dBc/Hz |

## CURRENT CONSUMPTION , mA Max.

| FREQ.         | 10 MHz | 10.1~ 20 MHz | 20.1~ 30 MHz | 30.1~ 40 MHz | 40.1 ~60 MHz |
|---------------|--------|--------------|--------------|--------------|--------------|
| +1.8V & +2.5V | 3.1    | 3.7          | 4.2          | 4.6          | 5.5          |
| +2.8V & +3.3V | 4.0    | 4.8          | 5.5          | 6.0          | 7.0          |

## DIMENSIONS (mm)

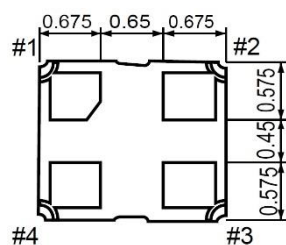
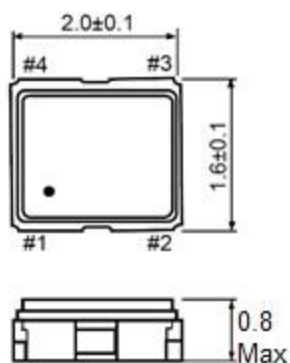


Figure 1) Top, Side, and Bottom views

### PAD CONNECTIONS

|   |           |
|---|-----------|
| 1 | Tri-state |
| 2 | Gnd       |
| 3 | Output    |
| 4 | Vdd       |

### Tri State Function

|            |              |
|------------|--------------|
| Pin 1      | Output       |
| High or NC | Active       |
| Low        | Disable Hi-Z |

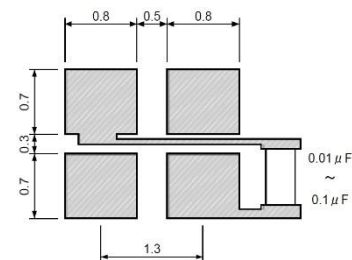


Figure 2) Suggested Land Pattern

## PART NUMBERING GUIDE: Example ECS-TXO-2016MV-400-TR

| ECS - | SERIES     | FREQUENCY ABBREVIATION                             | PACKAGING                   |
|-------|------------|--|-----------------------------|
|       | TXO-2016MV | 400 = 40.000 MHz<br>See Developed Frequencies Pg.2 | TR = Tape & Reel<br>1K/Reel |

**FREQUENCY ABBREVIATIONS**

| FREQUENCY MHz | CODE |
|---------------|------|
| 10.000        | 100  |
| 12.000        | 120  |
| 16.000        | 160  |
| 20.000        | 200  |
| 25.000        | 250  |
| 32.000        | 320  |
| 40.000        | 400  |
| 50.000        | 500  |

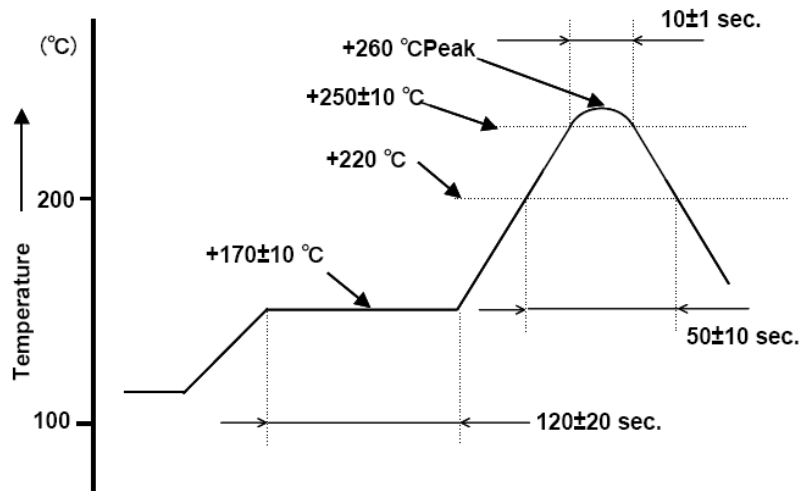
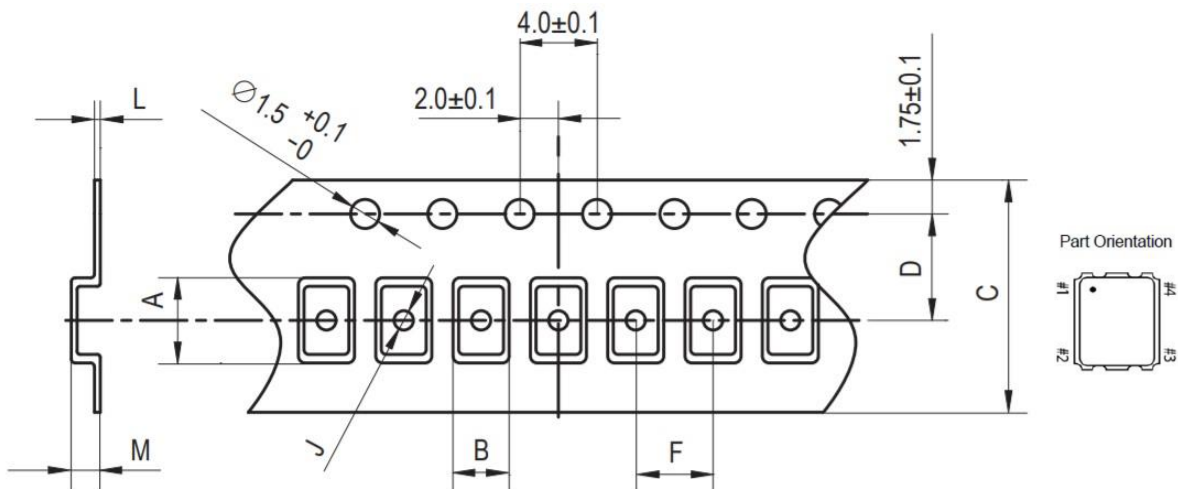


Figure 1) Suggested Reflow Profile

**SOLDER PROFILE**

Peak solder Temp +260°C Max 10 sec Max.  
2 Cycles Max.  
MSL 1, Lead Finish Au

**POCKET TAPE DIMENSIONS (mm)**



| A   | B   | C   | D   | F   | J   | L    | M   | Reel Dia. | Qty/Reel |
|-----|-----|-----|-----|-----|-----|------|-----|-----------|----------|
| 2.2 | 1.8 | 8.0 | 3.5 | 4.0 | 1.0 | 0.25 | 1.0 | 180       | 1000pcs  |