

# SMD Temperature Compensated Crystal Oscillators 3.2 x 2.5 x 1.0 mm 7Q Series

Oscillators  
Series

## Features

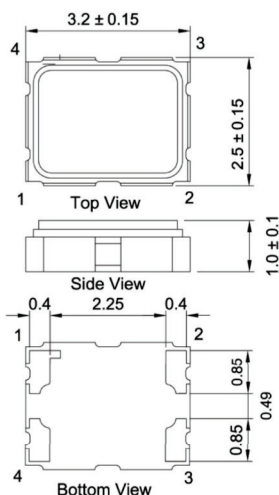
- Temperature Stability:  $\pm 0.5 \text{ ppm} \sim \pm 2.0 \text{ ppm}$
- Operating Temperature Range:  $-30^\circ\text{C} \sim 85^\circ\text{C}$
- Supply Voltage:  $1.8 \text{ V} \sim 3.3 \text{ V}$
- Voltage Control Function Available
- Frequencies: 16.367667 MHz, 16.368 MHz, 16.369 MHz, 16.8 MHz, 19.2 MHz, 20 MHz, 26 MHz, 33.6 MHz, 38.4 MHz, 40 MHz
- Applications: GPS, WiMAX, Cellular and Wireless Communications
- RoHS Compliant / Pb Free



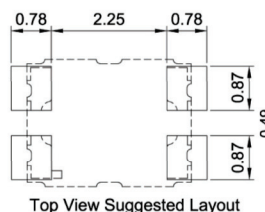
## Electrical Specifications

| Item / Type                                             |                                                                                          | 7Q                                                                                           |
|---------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Output Type                                             |                                                                                          | Clipped Sinewave                                                                             |
| Output Load                                             |                                                                                          | 10K $\Omega$ // 10 pF                                                                        |
| Oscillation Mode                                        |                                                                                          | Fundamental                                                                                  |
| Supply Voltage                                          |                                                                                          | 1.8 ~ 3.3 V                                                                                  |
| Frequency Range                                         |                                                                                          | 13 ~ 52 MHz                                                                                  |
| Clipped Sinewave Output Voltage                         |                                                                                          | 0.8 V <sub>p-p</sub> typical                                                                 |
| Frequency Stability                                     | Vs. Temperature ( $-30 \sim +85^\circ\text{C}$ )                                         | $\pm 0.5 / \pm 2.0 \text{ ppm}$                                                              |
|                                                         | Vs. Load ( Load varies $\pm 10\%$ )                                                      | $\pm 0.2 \text{ ppm Max.}$                                                                   |
|                                                         | Vs. Supply Voltage ( $V_{CC} = \text{Typical} \pm 0.1 \text{ V}$ )                       | $\pm 0.2 \text{ ppm Max.}$                                                                   |
| Frequency Tolerance                                     | at $25^\circ\text{C}$ after 2 Reflows with Typical Applied to Auto Frequency Control Pin | $\pm 2.5 \text{ ppm Max.}$                                                                   |
| Slope of Frequency Drift                                |                                                                                          | $\pm 0.1 \text{ ppm} / ^\circ\text{C}$ Typical ; $\pm 0.5 \text{ ppm} / ^\circ\text{C}$ Max. |
| Storage Temperature Range                               |                                                                                          | $-40 \sim +85^\circ\text{C}$                                                                 |
| Auto Frequency Control ( AFC ) Range ( Center @ 1.4 V ) |                                                                                          | $\pm 7 \sim \pm 16 \text{ ppm} / \text{V}$                                                   |
| Supply Current                                          |                                                                                          | 2.0 mA Max.                                                                                  |
| Start-up Time                                           |                                                                                          | 5 ms Max.                                                                                    |
| Harmonics                                               |                                                                                          | - 5 dBc Max.                                                                                 |
| Phase Noise at 1 KHz offset                             |                                                                                          | - 130 dBc / Hz                                                                               |
| Aging ( at $25^\circ\text{C}$ )                         |                                                                                          | $\pm 1 \text{ ppm} / \text{year Max.}$                                                       |

## Dimensions



PAD FUNCTION:  
1: AFC or GND  
2: GND  
3: OUT  
4: VDD



Units: mm

Remark : Specification subject to change without prior notice. Please confirm with our sales.