

# TY Type

## 2.5 x 2.0 mm SMD Voltage Controlled Temperature Compensated Crystal Oscillator

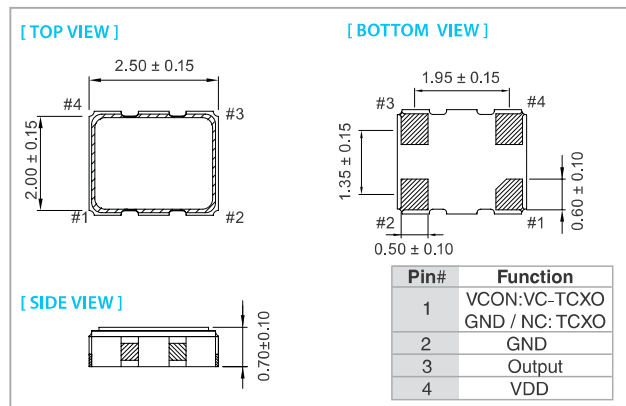
### FEATURE

- Typical 2.5 x 2.0 x 0.7 mm ceramic SMD package.
- For automatic assembly.
- Compactness and lightweight.
- VCTCXO available.
- Low thickness

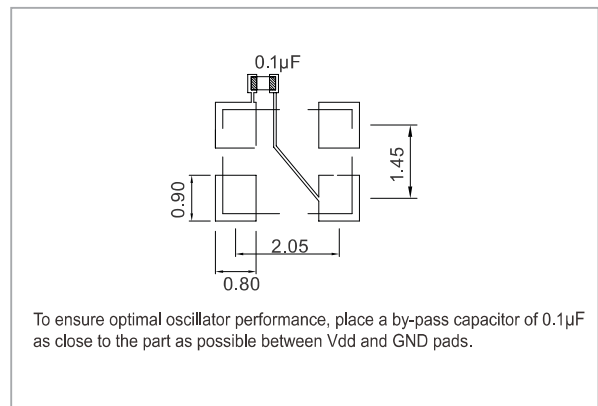
### TYPICAL APPLICATION

- GPS
- WiMAX, WLAN
- Mobile Phone

### DIMENSION (mm)



### SOLDER PAD LAYOUT (mm)



### ELECTRICAL SPECIFICATION

| Parameter                          | 2.8 V                                                      |      | 2.5 V         |       | 1.8 V         |      | Unit |        |
|------------------------------------|------------------------------------------------------------|------|---------------|-------|---------------|------|------|--------|
|                                    | Min.                                                       | Max. | Min.          | Max.  | Min.          | Max. |      |        |
| Supply Voltage Variation (VDD) ±5% | 2.66                                                       | 2.94 | 2.375         | 2.625 | 1.71          | 1.89 | V    |        |
| Frequency Range                    | 10                                                         | 52   | 10            | 52    | 10            | 52   | MHz  |        |
| Standard Frequency                 | 16.367667, 16.368, 16.369, 19.2, 19.68, 20, 26, 40, 50, 52 |      |               |       |               |      |      |        |
| Frequency Tolerance*               | —                                                          | ±2.0 | —             | ±2.0  | —             | ±2.0 | ppm  |        |
| Frequency stability                |                                                            |      |               |       |               |      |      |        |
| Vs Supply Voltage (±5%) change     | —                                                          | ±0.2 | —             | ±0.2  | —             | ±0.2 | ppm  |        |
| Vs Load (±10%) change              | —                                                          | ±0.2 | —             | ±0.2  | —             | ±0.2 |      |        |
| Vs Aging (@ 1st year)              | —                                                          | ±1.0 | —             | ±1.0  | —             | ±1.0 | ppm  |        |
| Supply Current                     | 10 MHz ≤ F <sub>o</sub> ≤ 26 MHz                           | —    | 2.0           | —     | 2.0           | —    | mA   |        |
|                                    | 26 MHz < F <sub>o</sub> ≤ 52 MHz                           | —    | 2.5           | —     | 2.5           | —    |      |        |
| Output Level (Clipped sine wave)   | 0.8                                                        | —    | 0.8           | —     | 0.8           | —    | Vp-p |        |
| Load                               | 10 KΩ // 10pF                                              |      | 10 KΩ // 10pF |       | 10 KΩ // 10pF |      |      |        |
| Control Voltage Range (VCTCXO)     | 0.4                                                        | 2.4  | 0.4           | 2.4   | 0.3           | 1.5  | V    |        |
| Pulling Range (VCTCXO)             | ±5.0                                                       | —    | ±5.0          | —     | ±5.0          | —    | ppm  |        |
| Vc Input Impedance (VCTCXO)        | 500                                                        | —    | 500           | —     | 500           | —    | kΩ   |        |
| Phase Noise @ 19.2 MHz             | 100 Hz                                                     | -115 |               | -115  |               | -115 |      | dBc/Hz |
|                                    | 1 kHz                                                      | -135 |               | -135  |               | -135 |      |        |
|                                    | 10 kHz                                                     | -148 |               | -148  |               | -148 |      |        |
| Start time                         | —                                                          | 2    | —             | 2     | —             | 2    | mSec |        |
| Storage Temp. Range                | -40                                                        | 85   | -40           | 85    | -40           | 85   | °C   |        |

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position.

\* Frequency at 25°C, 1 hour after reflow.

### FREQ. STABILITY vs. TEMP. RANGE

| Temp. (°C) | ppm | ±0.5 | ±1.0 | ±1.5 | ±2.0 | ±2.5 |
|------------|-----|------|------|------|------|------|
| 0 ~ +55    | ○   | ○    | ○    | ○    | ○    | ○    |
| -10 ~ +60  | ○   | ○    | ○    | ○    | ○    | ○    |
| -20 ~ +70  | ○   | ○    | ○    | ○    | ○    | ○    |
| -30 ~ +85  | △   | ○    | ○    | ○    | ○    | ○    |
| -40 ~ +85  | △   | △    | ○    | ○    | ○    | ○    |

\* ○: Available △: Conditional X: Not available

**Note: not all combination of options are available. Other specifications may be available upon request.**

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