# PRODUCT SPECIFICATION SHEET




| | | | |
|---|---|---|---|
| Customer | - | | |
| Customer P/N | TBA | | |
| Product Type | Temperature Compensated Crystal Oscillator | | |
| Part Number | 9T26000206 | Version | S0 |
| Part Description | SMD TCXO 2.0 x 1.6 | | |
| Nominal Frequency | 26.000000MHz | | |

| | |
|---|---|
| Prepared | Han Shuang |
| Reviewed | Kuro Peng |
| Approved | Jay Lee |
| Date | 2020-12-22 |

Customer's Approval & Date：

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RoHS COMPLIANT

Pb Lead-Free

Moisture Sensitivity Level 1

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## 1. History of Specification Revision

| Ver. | Contents | Date | Reviser | Remark |
|---|---|---|---|---|
| S0 | Initial release | 2020-12-22 | Han Shuang | |
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## 2. Electrical Specifications

### 2.1 Operation conditions

| # | Parameters | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|
| 1 | Nominal frequency | | 26.000000 | | MHz | |
| 2 | Supply voltage ($V_{CC}$) | 1.7 | - | 3.3 | V | |
| 3 | Current consumption | - | - | 1.5 | mA | |
| 4 | Operating temperature range | -40 | - | +85 | °C | |
| 5 | Storage temperature range | -40 | - | +85 | °C | |

### 2.2 Output characteristics

| # | Parameters | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|
| 1 | Output type | | Clipped sine wave | | - | Decoupling capacitor is required in external circuit |
| 2 | Standard output Load | | 10 KΩ//10 pF | | - | |
| 3 | Output level | 0.8 | - | - | $V_{pp}$ | |
| 4 | Duty cycle | 40 | 50 | 60 | % | Ground level |
| 5 | Harmonics | - | - | -7 | dBc | |
| 6 | Start-up time vs. frequency | - | - | 2.0 | ms | Within ±0.5 ppm of final frequency |
| 7 | Start-up time vs. output level | - | - | 2.0 | ms | Reach 90% of final Vpp output level |

### 2.3 Frequency characteristics

| # | Parameters | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|
| 1 | Nominal frequency | | 26.000000 | | MHz | |
| 2 | Frequency tolerance | -2.0 | - | +2.0 | ppm | At 25±2°C, after 2 times of reflow, refer to nominal frequency (See below NOTE 1) |
| 3 | Frequency stability vs. temperature 1 | -3.0 | - | +3.0 | ppm | Within -40 to -30°C, refer to frequency at 25°C |
| 4 | Frequency stability vs. temperature 2 | -0.5 | - | +0.5 | ppm | Within -30 to +85°C, refer to frequency at 25°C |
| 5 | Frequency stability vs. supply voltage | -0.1 | - | +0.1 | ppm | ±5% $V_{CC}$ variation |
| 6 | Frequency stability vs. load variation | -0.1 | - | +0.1 | ppm | ±5% load variation |
| 7 | Aging over 1st year | -1 | - | +1.0 | ppm/yr | At room temperature |
| 8 | Clock drift rate | - | - | 10 | ppb/s | See below NOTE 2 |

NOTE 1: After reflow, please leave DUT for more than 24 hours at room temperature.

NOTE 2: Ramping rate = +0.3°C/s.

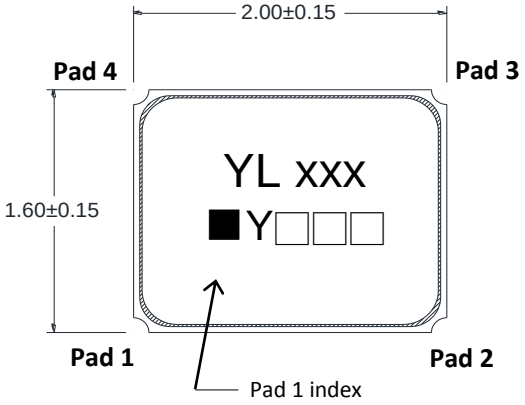
### 2.4 Phase noise characteristics

| # | Parameters | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|
| 1 | Phase noise at 1kHz offset | - | -130 | - | dBc/Hz | |
| 2 | Phase noise at 100kHz offset | - | -152 | - | dBc/Hz | |

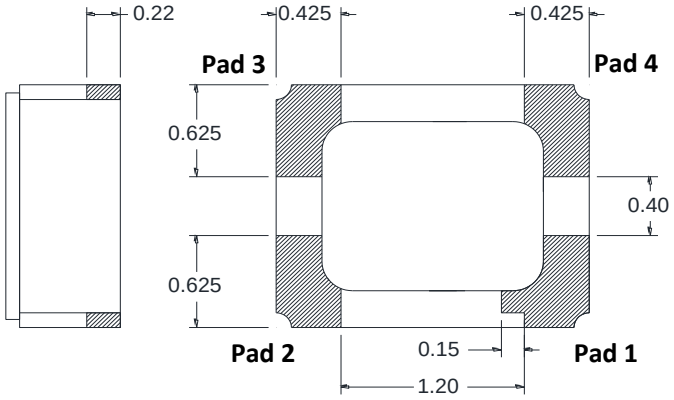
## 3. Product Design

### 3.1 Package dimensions and pad functions

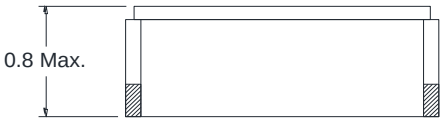
Top view




Unit : mm



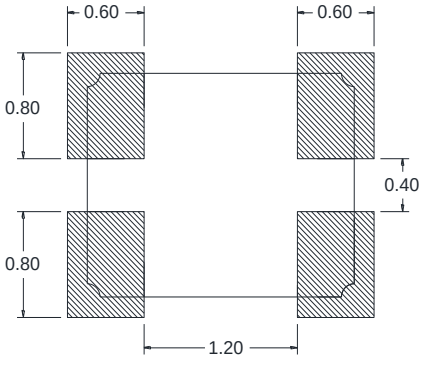

Bottom view




Lateral view

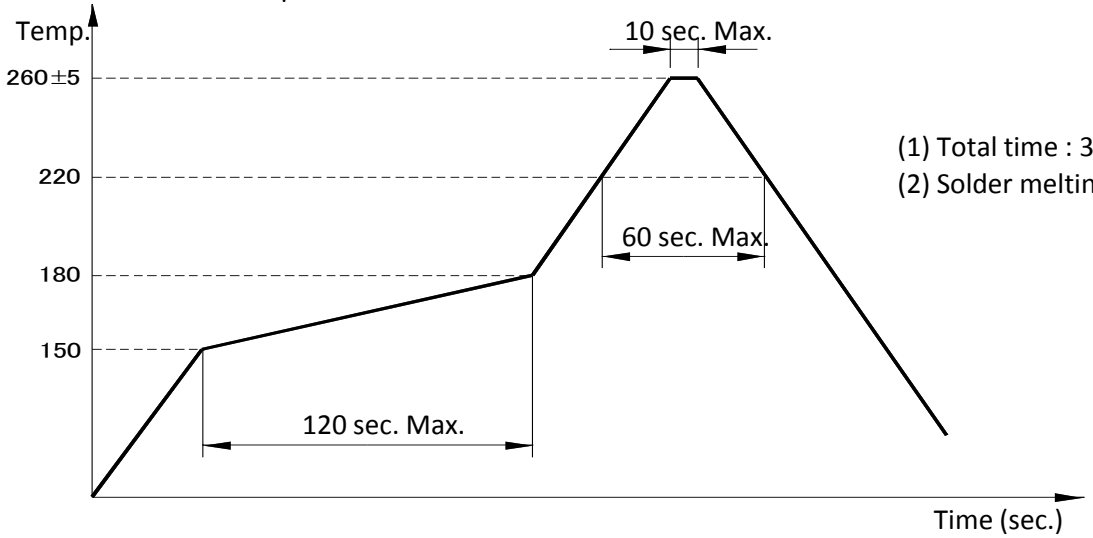
| Pad | Function | Symbol |
|---|---|---|
| 1 | NC or GND (Ground recommended) | NC |
| 2 | Ground | GND |
| 3 | Output | OUT |
| 4 | Supply voltage | $V_{DD}$ |

### 3.2 Recommended land pattern



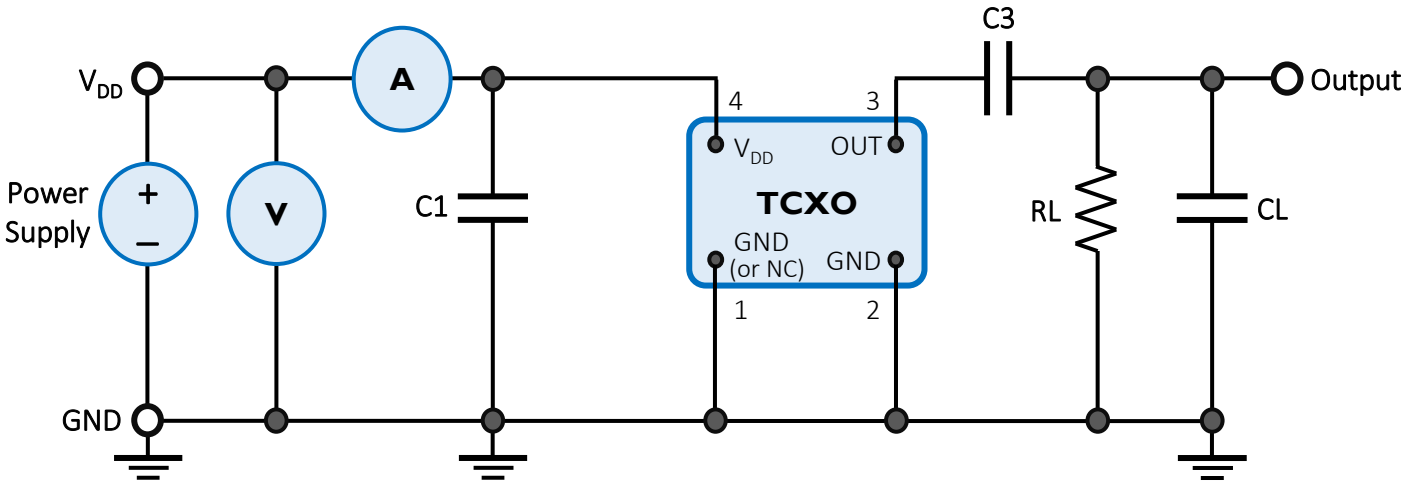

Unit : mm

### 3.3 Recommended reflow profile




(1) Total time : 360 sec. Max.
(2) Solder melting point : 225℃

## 4. Testing Circuit




External Components:

| Parts | Function | Recommended |
|---|---|---|
| C1 | AC noise bypass for $V_{DD}$ | 10nF |
| C3 | DC block for output | 10nF |
| RL | Load resistance | 10KΩ |
| CL | Load capacitance | 10pF |