

Helping Customers Innovate, Improve & Grow



### Features

- EFC Standard
- Hermetic
- Wide Frequency Range
- Frequency Range: 2 MHz to 200 MHz
- Previous Model: C2400, TQDILTC; 979; 979W, 959; 959W, TC-400

### Applications

- PCS Base Stations
- Land Mobile Radio
- Cellular Telephony
- Radio in the Local Loop

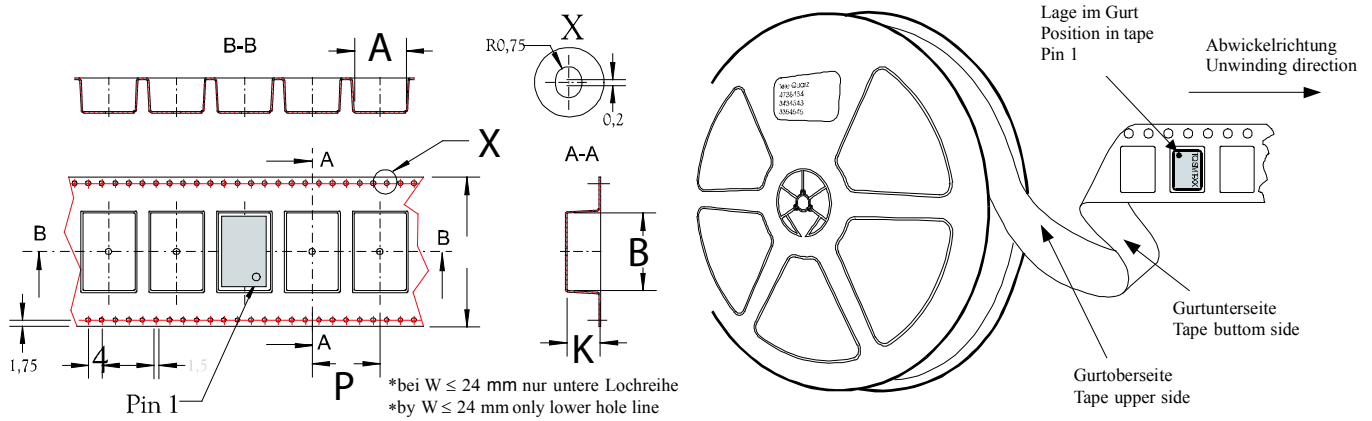
### Performance Specifications

| Parameter  | Min   | Typ | Max   | Units  | Condition   |
|--|-------|-----|-------|--------|---|
| Frequency Stabilities <sup>1</sup>                       |       |     |       |        |   |
| vs. operating temperature range<br>(referenced to +25°C) | -2.5  |     | +2.5  | ppm    | -40... +85°C  |
|  | -2    |     | +2.0  | ppm    | -40... +85°C  |
|  | -1.5  |     | +1.5  | ppm    | -40... +85°C  |
|  | -1.0  |     | +1.0  | ppm    | -40... +85°C  |
|  | -2.0  |     | +2.0  | ppm    | -20... +70°C  |
|  | -1.5  |     | +1.5  | ppm    | -20... +70°C  |
|  | -1.0  |     | +1.0  | ppm    | -20... +70°C  |
|  | -1.5  |     | +1.5  | ppm    | 0... +70°C  |
|  | -1.0  |     | +1.0  | ppm    | 0... +70°C  |
|  | -1.5  |     | +1.5  | ppm    | 0... +50°C  |
|  | -1.0  |     | +1.0  | ppm    | 0... +50°C  |
|  | -0.5  |     | +0.5  | ppm    | 0... +50°C  |
| Initial Tolerance  | -2.5  |     | +2.5  | ppm    | at time of shipment, nominal EFC<br>Vs ± 5%<br>Load ± 10% |
| vs. supply voltage change                                | -0.2  |     | +0.2  | ppm    |   |
| vs. load change  | -0.2  |     | +0.2  | ppm    |   |
| vs. aging  |       | 1.0 |       | ppm/yr |   |
| Supply Voltage (Vs)                                      |       |     |       |        |   |
| Supply voltage   | 3.135 | 3.3 | 3.465 | VDC    |   |
| Supply voltage   | 4.75  | 5.0 | 5.25  | VDC    |   |
| Current consumption                                      |       |     | 15    | mA     | @ +25°C & 3.3VDC & clipped sinewave                       |
|  |       |     | 50    | mA     | @ +25°C & 3.3VDC & CMOS                                   |
|  |       |     | 18    | mA     | @ +25°C & 5.0VDC & clipped sinewave                       |
|  |       |     | 50    | mA     | @ +25°C & 5.0VDC & CMOS                                   |

## Performance Specifications

| Parameter                                | Min              | Typ         | Max                         | Units                                | Condition  |
|--|------------------|-------------|-----------------------------|--------------------------------------|--|
| <b>RF Output</b>                         |                  |             |                             |                                      |  |
| Signal                                   | HCMOS            |             |                             |                                      |  |
| Load                                     | 13.5             | 15          | 16.5                        | pF                                   |  |
| Signal Level (Vol)                       |                  |             | +0.5<br>+0.3                | V                                    | with Vs=5.0V and 15pF load<br>with Vs=3.3V and 15pF load |
| Signal Level (Voh)                       | 4.5<br>3.0       |             |                             | V                                    | with Vs=5.0V and 15pF load<br>with Vs=3.3V and 15pF load |
| Duty cycle                               | 40               | 50          | 60                          | %                                    | @ (Voh-Vol)/2  |
| Signal                                   | Clipped Sinewave |             |                             |                                      |  |
| Load R                                   | 9                | 10          | 11                          | kohm                                 |  |
| C  | 9                | 10          | 11                          | pF                                   |  |
| Output Power                             | 0.7              |             |                             | Vpp                                  | @ 10Kohm  10pF   |
| Signal                                   | PECL             |             |                             |                                      |  |
| Load                                     |                  | 50          |                             | ohm                                  |  |
| Signal Level (Vol)                       |                  |             | -1.6                        | V                                    |  |
| Signal Level (Voh)                       | -1.04            |             |                             | V                                    |  |
| Duty cycle                               | 40               |             | 60                          | %                                    |  |
| Rise/Fall Time                           |                  |             | 3                           | ns                                   |  |
| Signal                                   | Sinewave         |             |                             |                                      |  |
| Load                                     |                  |             | 50                          | ohm                                  |  |
| Output Power                             | 0                |             | 6                           | dBm                                  |  |
| Harmonics                                |                  |             | -20                         | dBc                                  |  |
| Spurious                                 |                  |             | -60                         | dBc                                  |  |
| <b>Frequency Tuning (EFC)</b>            |                  |             |                             |                                      |  |
| Tuning Range                             | Fixed Frequency  |             |                             |                                      | Initial Accuracy $\pm 2.5$ ppm @ +25°C                   |
| Tuning Range                             | $\pm 8.0$        | $\pm 12.0$  | $\pm 20.0$                  | ppm                                  |  |
| Linearity                                |                  |             | 10                          | %                                    |  |
| Tuning Slope                             | Positive         |             |                             |                                      |  |
| Control Voltage Range                    | 0.3<br>0.5       | 1.65<br>2.5 | 3.0<br>4.5                  | VDC<br>VDC                           | with Vs=3.3VDC<br>with Vs=5.0VDC                         |
| Freq. control input impedance            | 10               |             |                             | kohm                                 |  |
| <b>Additional Parameters<sup>1</sup></b> |                  |             |                             |                                      |  |
| Phase Noise <sup>3</sup> (@ 40 MHz)      |                  |             | -90<br>-120<br>-140<br>-150 | dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz | 10 Hz<br>100 Hz<br>1 kHz<br>10 kHz                       |
| Weight                                   |                  |             | 6.0                         | g                                    |  |
| Processing & Packing                     |                  |             |                             |                                      | Handling & processing note                               |
| <b>Absolute Maximum Ratings</b>          |                  |             |                             |                                      |  |
| Supply voltage (Vs)                      |                  |             | 6.0                         | V                                    |  |
| Control Voltage                          | 0                |             | Vs                          | V                                    |  |
| Maximum output load @ CMOS               |                  |             | 50                          | pF                                   |  |
| Operable temperature range               | -40              |             | +85                         | °C                                   |  |
| Storage temperature range                | -55              |             | +125                        | °C                                   |  |

## Standard Shipping Method

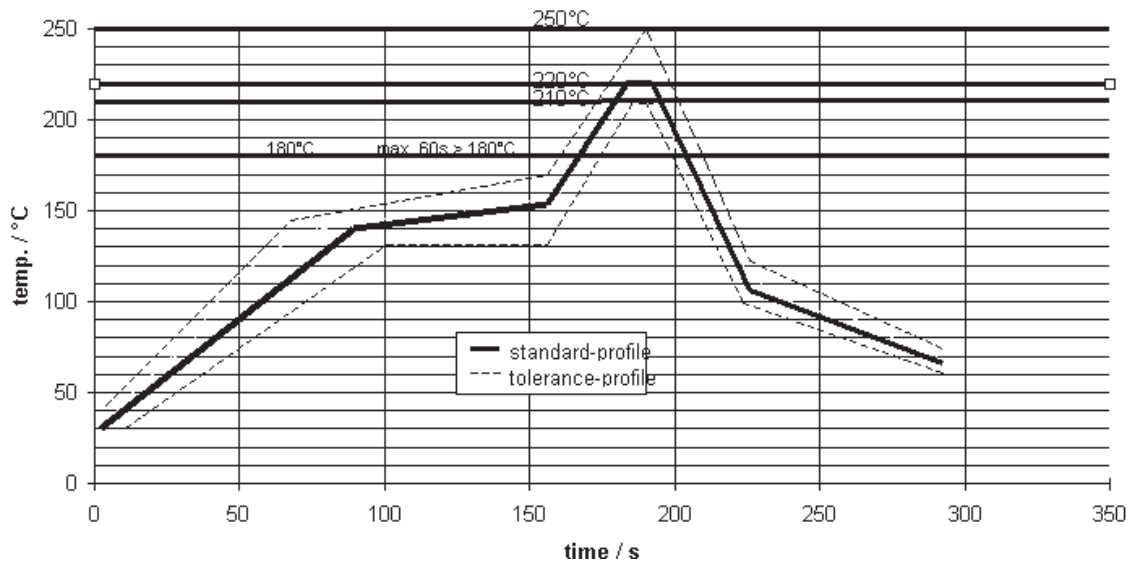


Production tolerance complying DIN IEC 286-3

| Enclosure Type | Tape width W [mm] | Quantity per meter | Quantity per reel | Dimension P |
|----------------|-------------------|--------------------|-------------------|-------------|
| Type B         | 44                | 50                 | 300               | 20          |
| Type C         | 44                | 50                 | 300               | 20          |

## Recommended Reflow Profile

standard-reflow-profile for SMD-oscillators



# Outline Drawing / Enclosure

Dimensions in mm

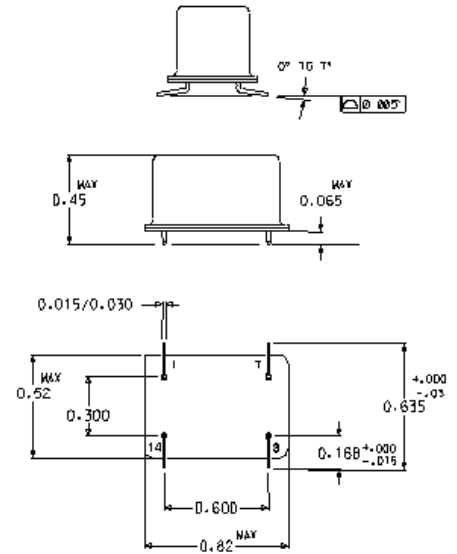
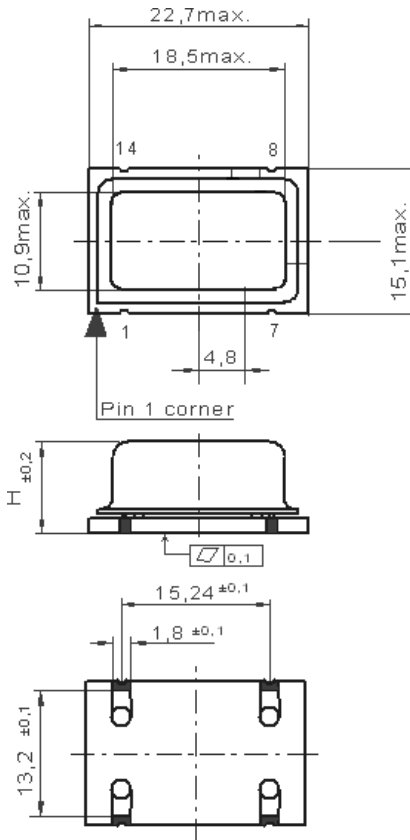
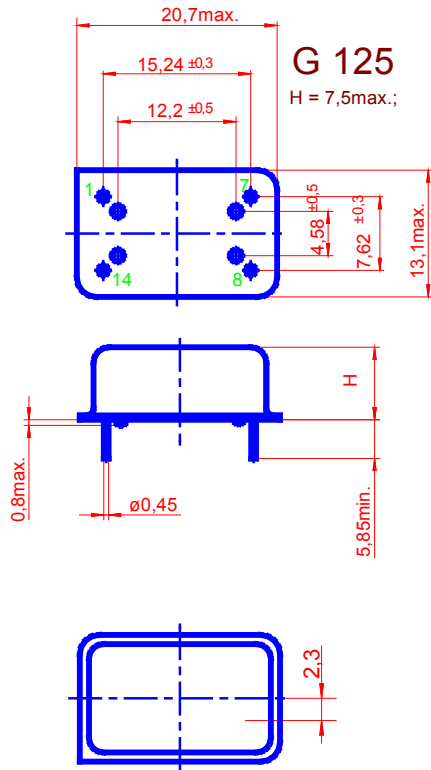
| Type A |            |                |
|--------|------------|----------------|
| Code   | Height "H" | Pin Length "L" |
| 0      | 7.5        | 5.85           |
| 1      | 8.0        | 5.85           |
| 2      | 10.1       | 5.85           |

Dimensions in mm

| Type B |            |                |
|--------|------------|----------------|
| Code   | Height "H" | Pin Length "L" |
| 3      | 9.4        | NA             |
|        |            |                |
|        |            |                |

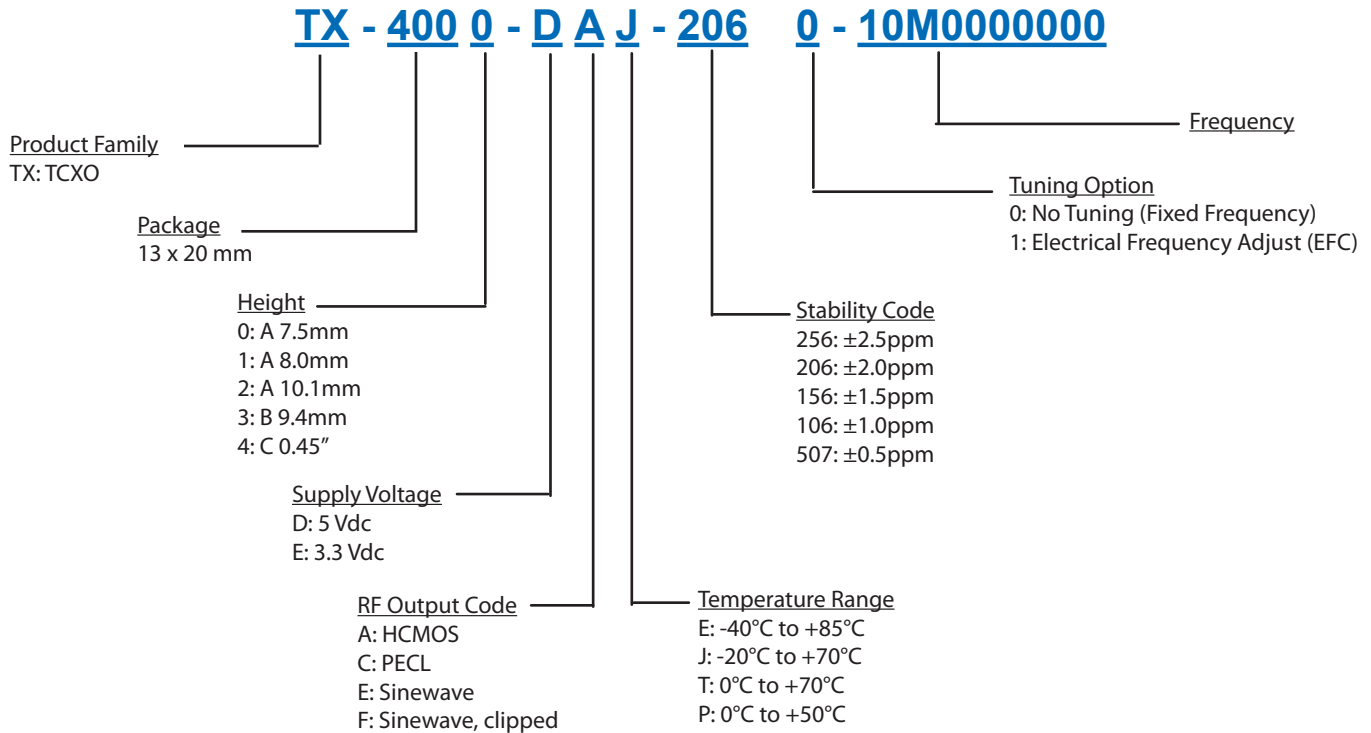
Dimensions in inches

| Type C |            |                |
|--------|------------|----------------|
| Code   | Height "H" | Pin Length "L" |
| 4      | 0.45       | NA             |
|        |            |                |
|        |            |                |



| Pin Connections |                                    |
|-----------------|------------------------------------|
| 1               | Electronic Frequency Control (EFC) |
| 7               | Ground (Case)                      |
| 8               | RF Output                          |
| 14              | Supply                             |

## Ordering Information



**Notes:**

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

## For Additional Information, Please Contact

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