

## Features

- Ultra Stable
- Wide Temperature Range
- Fast Warming-up
- SMD Package (5.0×3.2mm)

## Applications

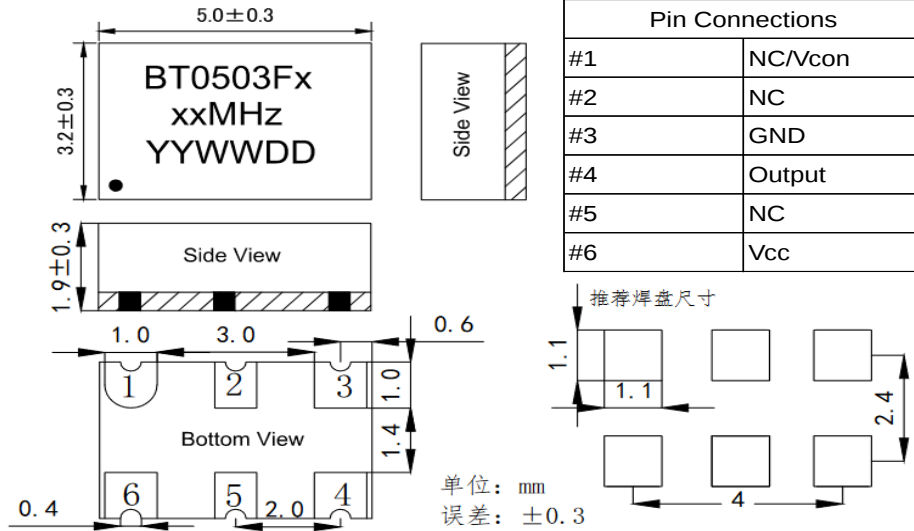
- Base Stations
- Instrumentations
- Synthesizer
- SDH/SONET
- GPS/GNSS



## BT0503F Specifications

| Parameter                    |                 | Value                                          |                                                         |          | Unit     | Conditions                             |         |
|------------------------------|-----------------|------------------------------------------------|---------------------------------------------------------|----------|----------|----------------------------------------|---------|
|                              |                 | Min.                                           | Typ.                                                    | Max.     |          |                                        |         |
| Supply Voltage               |                 | 2.5                                            | 3.0                                                     | 3.3      | V        |                                        |         |
| Supply current               |                 | 3.5                                            | —                                                       | 15       | mA       |                                        |         |
| Frequency Range              |                 | 10 ~ 52                                        |                                                         |          | MHz      |                                        |         |
| Nominal Frequency            |                 | 10, 16, 19.2, 20, 25, 26, 32, 38.4, 40, 48, 50 |                                                         |          | MHz      |                                        |         |
| Initial Frequency Tolerance  |                 | ±0.3                                           | ±0.5                                                    | ±1       | ppm      | At shipment, nominal EFC, +25℃         |         |
| Freq. Stability Vs. Temp.    |                 | ±0.1                                           | —                                                       | ±0.5     | ppm      | -40℃ ~ +85℃                            |         |
| Clipped Sine Wave            | Output Level    | 0.8                                            | —                                                       | —        | Vp-p     |                                        |         |
|                              | Load            | 10kΩ//10pF                                     |                                                         |          |          |                                        |         |
| HCMOS                        | V <sub>OH</sub> | 2.4                                            | —                                                       | —        | V        | HCMOS Output, Load=15pf                |         |
|                              | V <sub>OL</sub> | —                                              | —                                                       | 0.4      | V        | HCMOS Output, Load=15pf                |         |
|                              | Duty Cycle      | 45                                             | —                                                       | 55       | %        | (V <sub>OH</sub> - V <sub>OL</sub> )/2 |         |
|                              | Rise/Fall Edge  | —                                              | —                                                       | 6        | ns       | HCMOS Output, Load=15pf                |         |
|                              | Load            | —                                              | —                                                       | 15       | pf       |                                        |         |
| RMS Jitter(By E5052B) @10MHz |                 | 0.4                                            | —                                                       | 1.5      | ps       | 12KHz~5MHz                             |         |
| Supply Sensitivity           |                 | —                                              | —                                                       | ±0.1     | ppm      | Vcc±5%                                 |         |
| Load Sensitivity             |                 | —                                              | —                                                       | ±0.2     |          | Load±5%                                |         |
| Aging/ First Year            |                 | —                                              | —                                                       | ±1.0     |          | Standard                               |         |
| SSB Phase Noise @10MHz       |                 | —                                              | —                                                       | -100     | dBc/Hz   | Offset 10Hz                            | At +25℃ |
|                              |                 | —                                              | —                                                       | -130     |          | Offset 100Hz                           |         |
|                              |                 | —                                              | —                                                       | -150     |          | Offset 1kHz                            |         |
|                              |                 | —                                              | —                                                       | -155     |          | Offset 10kHz                           |         |
|                              |                 | —                                              | —                                                       | -157     |          | Offset 100kHz                          |         |
| Control Voltage Range        |                 | 1.5 ± 1.0                                      |                                                         |          | V        |                                        |         |
| Frequency Tuning Range       |                 | ±5                                             | —                                                       | ±15      | ppm      |                                        |         |
| Tuning Slope                 |                 | positive                                       |                                                         |          |          |                                        |         |
| Non-linearity                |                 | —                                              | —                                                       | 10       | %        |                                        |         |
| Phase Noise @1KHz            |                 |                                                |                                                         |          |          |                                        |         |
| Frequency Range              |                 | <-135dBc                                       | <-140dBc                                                | <-145dBc | <-150dBc | ○=Available<br>X= Not Available        |         |
| 10MHz                        |                 | ○                                              | ○                                                       | ○        | ○        |                                        |         |
| 12.8MHz~20MHz                |                 | ○                                              | ○                                                       | ○        | X        |                                        |         |
| 20.48MHz~38.4MHz             |                 | ○                                              | ○                                                       | X        | X        |                                        |         |
| Environmental Conditions     |                 |                                                |                                                         |          |          |                                        |         |
| Operating Temperature Range  |                 | -40℃ ~ +85℃                                    |                                                         |          |          |                                        |         |
| Storage Temperature Range    |                 | -55℃ ~ +125℃                                   |                                                         |          |          |                                        |         |
| Maximum Ratings              |                 |                                                |                                                         |          |          |                                        |         |
| Parameter                    |                 | Symbol                                         | Rating                                                  |          |          |                                        |         |
| Supply Voltage               |                 | Vdd                                            | -0.5V / 6V                                              |          |          |                                        |         |
| Control Voltage              |                 | Vcon                                           | 0V / 3V                                                 |          |          |                                        |         |
| ESD, HBM/CDM/MM              |                 |                                                | 4KV/ 2KV/ 200V                                          |          |          |                                        |         |
| Reliability                  |                 |                                                |                                                         |          |          |                                        |         |
| Parameter                    |                 |                                                | Condition                                               |          |          |                                        |         |
| Temperature Stress Test      |                 |                                                | IEC60068, GJB360B                                       |          |          |                                        |         |
| Mechanical Stress Test       |                 |                                                | IEC60068, GJB360B                                       |          |          |                                        |         |
| EMC Test (ESD)               |                 |                                                | IEC61000, JESD22                                        |          |          |                                        |         |
| Solderability                |                 |                                                | EIA/JESD22-B102-C                                       |          |          |                                        |         |
| Contact Pads                 |                 |                                                | Gold over Nickel                                        |          |          |                                        |         |
| RoHS                         |                 |                                                | RoHS Directive 2011/65/EU Annex II Recasting 2002/95/EC |          |          |                                        |         |

## Outline Dimension & Pin Connections



### Note:

1. Leave pin 1 unconnected If Vcon is not used.

## Ordering Guide

**BT 0503F X X X XXX X X XX.XX**

Product:  
TCXO

Outline:  
5.0mm x 3.2mm

Output:  
H:HCMOS  
C:Clipped Sine Wave

Supply Voltage:  
3: 3.3 Vdc

Temp. Range:  
C: -20°C ~ +70°C  
I: -40°C ~ +85°C  
M: -50°C ~ +90°C  
U: -55°C ~ +95°C  
F: Customized

Frequency:  
xx MHz

Tuning Range:  
N:No Tuning  
A: ±5ppm  
B: ±7ppm  
C: ±10ppm

Phase Noise:  
D: -135dBc/Hz@1kHz  
E: -140dBc/Hz@1kHz  
G: -145dBc/Hz@1kHz  
H: -150dBc/Hz@1kHz

Temp. Stability:  
507: ±0.5ppm  
287: ±0.28ppm  
207: ±0.2ppm  
107: ±0.1ppm

**Example:** BT0503CH3M287BN50

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