



Features and Benefits

High frequency stability (up to ± 0.25 ppm over -40°C to $+85^{\circ}\text{C}$)
(LV)CMOS and clipped sine wave Output
SMD Miniature package

Typical Applications

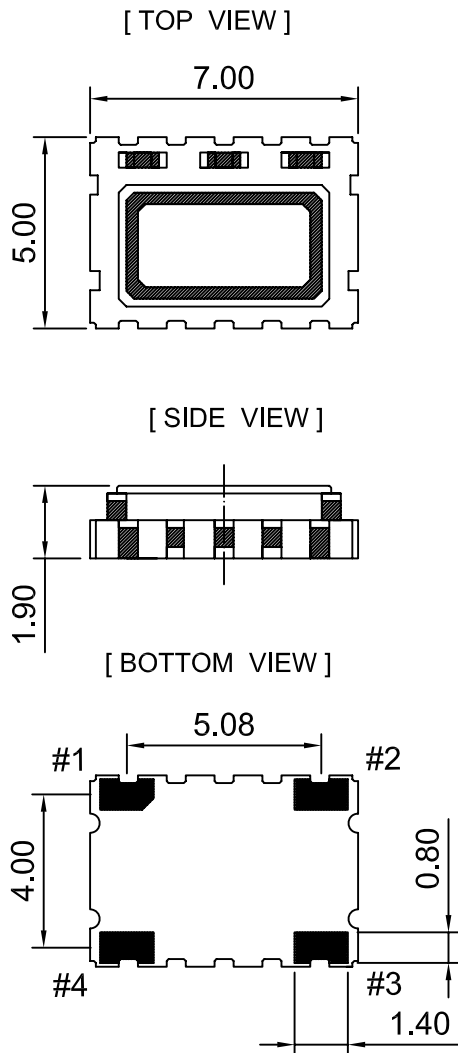
UHF Synthesizers
SATCOM System
Portable Microwave Applications

Description

TCXO7500BTLG offers wide temperature operation from -40°C to $+85^{\circ}\text{C}$ with outstanding frequency stability and low phase noise performance.

Mechanical Drawing & Pin Connections

Drawing No: MD% \$\$\$(!%



| PIN | FUNCTION |
|-----|-------------|
| #1 | Vc or N.C.* |
| #2 | GND |
| #3 | RF output |
| #4 | Vdc |

*Vc for VC-TCXO
GND or N.C. for TCXO

Unit in mm
1mm = 0.0394 inches



Specifications

| Oscillator Specification | Sym | Condition | Value | | | Unit | Note |
|-------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------|------------------------------------------------------|------|-------------------------------|--------|----------------|
| | | | Min. | Typ. | Max. | | |
| Operational Frequency | F _{nom} | | 5 | | 52 | MHz | |
| Standard frequencies (fundamental) | | | 10, 12, 13, 15.36, 16.368, 20, 25, 27, 30, 40 and 50 | | | MHz | |
| Output | | | Clipped sine wave | | (LV)CMOS | | |
| Output Level | | | >0.8Vp-p | | VOH > 0.9*Vcc / VOL < 0.1*Vcc | | |
| Output load | | | 10 kΩ // 10 pF | | 15 pF Max. | | |
| Current consumption, depending on frequency | | | 1.5 ~ 7 mA | | 2 ~ 10 mA | | |
| Power Supply | | | | | | | |
| Voltage | V _{cc} | ±5% | +2.8 V, +3.3 V or +5.0 V | | | V | |
| Frequency Control* | | | | | | | |
| Control voltage range | V _c | | +1.50 V ±1.0 V for 3.3 V +2.50 V ±2.0 V for 5.0 V | | | V | |
| Electronic Frequency Control (EFC) | | | ΔF = ±5 to ±10 ppm | | | | Slope Positive |
| Control voltage input impedance | | | 100 | | | kohm | |
| Frequency Stability | | | | | | | |
| Versus temperature | | -40°C to 85°C, ref to (fmax+fmin)/2 | | | ±0.5 | ppm | |
| Versus supply voltage changes referenced to frequency at nominal supply | | ±5% | | | ±0.1 | ppm | |
| Versus load changes referenced to frequency at nominal load | | ±5% | | | ±0.1 | ppm | |
| G-sensitivity | | per axis | 0.25 | | | ppb/g | |
| Tolerance at 25°C | | | 0 | | +1.0 | ppm | |
| First Year Aging | | @+40°C | | | ±1.0 | ppm | |
| Phase noise(typical value for 40 MHz) | | 10 Hz | | -90 | | dBc/Hz | |
| | | 100 Hz | | -118 | | | |
| | | 1000 Hz | | -140 | | | |
| | | 10 KHz | | -151 | | | |
| | | 100 KHz | | -156 | | | |
| Environmental Conditions | | | | | | | |
| Operating temperature range | -40°C to 85°C | | | | | | |
| Storage temperature range | -55°C to 105°C | | | | | | |
| Reflow Profiles | ≤ 260 °C over 10 sec. Max. as per IPC/JEDEC J-STD-020C | | | | | | |
| Moisture sensitivity | Level 1(unlimited) | | | | | | |

Frequency Stability vs. Temperature

| | ±0.25PPM | ±0.5PPM | ±1.0PPM | ±1.5PPM |
|-----------------|---------------|-------------|-------------|-------------|
| -20°C to +70°C | Conditional | Available | Available | Available |
| -40°C to +85°C | Conditional | Available | Available | Available |
| -40°C to +95°C | Conditional | Conditional | Conditional | Available |
| -40°C to +105°C | Conditional | Conditional | Conditional | Conditional |
| -55°C to +85°C | Not Available | Conditional | Conditional | Conditional |



;!GbgHj JmaMzfa UbW

Noise shape vibration from 20-2'000 Hz
with 0.1 g²/Hz (G_{RMS} = 14.11g) for the axis

Ordering Information

| | | | | | | | | | | |
|--------------|---|-------|---|----|----|----|----|----|----|----|
| TCXO7500BTLG | - | 10MHz | - | 01 | 02 | 03 | 04 | 05 | 06 | 07 |
| Group | | | | | | | | | | |

For example, TCXO7500BTLG -10MHz-1-1-2-3-1-3-5 denotes the TCXO has the following specifications:

TYPE: TCXO

Output: CMOS

Supply Voltage: 3V

Pulling Range: 2.5V±2.0V, ±5PPM

Temperature range: -20C to +70C

Frequency stability: ±1ppm

G-sensitivity: 1.5PPB/G

| 01 | Type |
|------|---------------|
| Code | Specification |
| 1 | TCXO |
| 2 | VC-TCXO |

| 02 | Output |
|------|-------------------|
| Code | Specification |
| 1 | (LV)CMOS |
| 2 | Clipped sine wave |

| 03 | Voltage |
|------|---------------|
| Code | Specification |
| 1 | 2.8V |
| 2 | 3.0V |
| 3 | 3.3V |
| 4 | 5.0V |

| 04 | Pulling range (VCTCXO only) |
|------|-----------------------------|
| Code | Specification |
| 1 | 1.5 ± 1.0 V ±5 ppm |
| 2 | 1.5 ± 1.0 V ±10 ppm |
| 3 | 2.5 ± 2.0 V ±5 ppm |
| 4 | 2.5 ± 2.0 V ±10 ppm |

| 05 | Temperature Range |
|------|-------------------|
| Code | Specification |
| 1 | -20°C to +70°C |
| 2 | -40°C to +85°C |
| 3 | -40°C to +95°C |
| 4 | -40°C to +105°C |
| 5 | -55°C to +85°C |

| 06 | Frequency Stability |
|------|---------------------|
| Code | Specification |
| 1 | ± 0.25 ppm |
| 2 | ± 0.50 ppm |
| 3 | ± 1.00 ppm |
| 4 | ± 1.50 ppm |

| 07 | G-sensitivity per axis |
|------|------------------------|
| Code | Specification |
| 1 | 0.10 ppb/g |
| 2 | 0.25 ppb/g |
| 3 | 0.50 ppb/g |
| 4 | 1.00 ppb/g |
| 5 | 1.50 ppb/g |
| 6 | special spec |