



Features and Benefits

- High frequency stability (up to ± 0.5 ppm over -40°C to $+85^{\circ}\text{C}$)
- Low power consumption (up to 2 mA)
- DIL8 package design
- 5V Clipped Sine output

Typical Applications

- Microwave Communication
- Mobile Devices

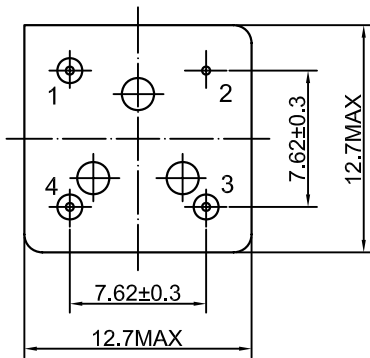
Description

TCXO1313LCS2 offers high frequency stability and low power consumption in DIL8 package with wide range of stability vs. operating temperature options to suit the different applications needs

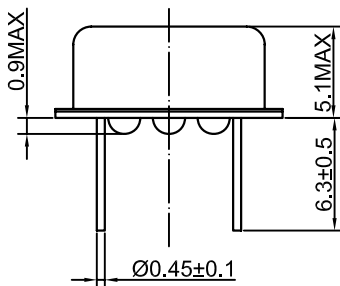
Mechanical Drawing & Pin Connections

Drawing No: MD140070-1

Bottom View



Side View



Pin Connection (With EFC)

| Pin# | Symbol | Function |
|------|--------|-----------------------|
| 1 | Vc | Control Voltage (EFC) |
| 2 | GND | Ground |
| 3 | RF OUT | RF Output |
| 4 | Vs | Supply Voltage |

Pin Connection (Without EFC)

| Pin# | Symbol | Function |
|------|------------------|--|
| 1 | N.C. or Comp OUT | No connection or Complementary RF Output (PECL and LVDS) |
| 2 | GND | Ground |
| 3 | RF OUT | RF Output |
| 4 | Vs | Supply Voltage |

Unit in mm
1mm = 0.0394 inches



Specifications

| Oscillator Specification | Sym | Condition | Value | | | Unit | Note |
|------------------------------------|----------------------|-----------|-------------------|------|------|-------|---------------------------|
| | | | Min. | Typ. | Max. | | |
| Frequency Range | | | 10 | | 50 | MHz | |
| Output Waveform | | | Clipped Sine Wave | | | | |
| Output Load | | | | 10 | | kΩ | |
| | | | | 10 | | pF | |
| Amplitude | | | 1 | | | V p-p | |
| Power Supply | | | | | | | |
| Supply Voltage | V _s | | 4.75 | 5.00 | 5.25 | V | |
| Current Consumption (Note 2) | | | 2 ~ 30 | | | mA | |
| Frequency Adjustment Range | | | | | | | |
| Mechanical (internal trimmer) | | | ±3 | | | ppm | Ordering Option = blank |
| Electronic Frequency Control (EFC) | | | ±5 | | | ppm | Ordering Option = "V" |
| EFC Voltage | V _c | | 0.5 | 2.5 | 4.5 | V | |
| EFC Slope | Δf / ΔV _c | | Positive | | | | |
| EFC Input Impedance | | | 100 | | | kΩ | |
| Frequency Stability | | | | | | | |
| Vs Operating Temperature | | | ±0.5 | | ±5.0 | ppm | Refer to ordering options |
| Vs Supply Voltage changes | V _s | ±5% | | ±0.1 | ±0.3 | ppm | |
| Vs Load changes | | ±10% | | | ±0.2 | ppm | |
| Long Term Aging Per Year | | @ +40°C | | | ±1.0 | ppm | |
| Environmental Conditions | | | | | | | |
| Operating Temperature Range | | | -40 | | +85 | °C | Refer to ordering options |
| Storage Temperature Range | | | -55 | | +105 | °C | |
| Enclosure (see drawing) L x W x H | | max | 12.7 x 12.7 x 5.1 | | | mm | IEC 60679-3 CO21 |
| Weight | | | | | 4 | g | |

Notes:

1. Terminology and test conditions are according to IEC60679-1 and MIL-PRF-55310, unless otherwise stated
2. Depending on frequency and supply voltage
3. All combinations of options might not be available. Please consult DEI for details

Absolute Maximum Ratings

| Parameter | Sym | Min | Max. | Unit | Condition |
|-----------------|----------------|------|---------------------|------|-----------------------|
| Supply Voltage | V _s | -0.5 | V _s +10% | V | V _s to GND |
| Control Voltage | V _c | -0.5 | 6 | V | V _c to GND |

Handling and Testing

| Parameter | Procedure | | Condition |
|-------------------------------|-------------|-----|-----------|
| Electrostatic Discharge (ESD) | | | |
| THD devices | IEC60749-26 | HBM | 2000V |
| SMD devices | IEC60749-27 | MM | 200V |
| Washable | Yes | | |
| RoHS Compliant | Yes | | |



Ordering Options

| Frequency Stability | | Temperature (Lower) | | Temperature (Upper) | |
|---------------------|-----------------|---------------------|--------|---------------------|--------|
| Code | Stability [ppm] | Code | T (°C) | Code | T (°C) |
| 1 | ±0.5 | 1 | 0 | 1 | +50 |
| 2 | ±1.0 | 2 | -10 | 2 | +60 |
| 3 | ±1.5 | 3 | -20 | 3 | +70 |
| 4 | ±2.0 | 4 | -30 | 4 | +75 |
| 5 | ±2.5 | 5 | -40 | 5 | +80 |
| 6 | ±3.0 | | | 6 | +85 |
| 7 | ±3.5 | | | | |
| 8 | ±5.0 | | | | |

Ordering Codes

| Model | EFC | Frequency in MHz (up to 4 digits) | Frequency Stability | Minimum Operating Temperature | Maximum Operating Temperature |
|--------------|----------|-----------------------------------|---------------------|-------------------------------|-------------------------------|
| TCXO1313LCS2 | _ or "V" | xxx.yyyy | t | W | Z |

Example: TCXO1313LCS2-20.0000-5-5-6 has the following specifications

EFC = no EFC control
 Frequency = 20.0000 MHz
 Stability = ±2.5 ppm
 Operating Temperature = -40°C to +85°C

Environmental Conditions

| Test | IEC 60068 Part... | IEC 60679-1 Clause | MIL-STD-202G Method | MIL-STD-810F Method | MIL-PRF-55310D Clause | Test Conditions (IEC) |
|--|-------------------|--------------------|---------------------|---------------------|-----------------------|--|
| Sealing tests (if applicable) | 2-17 | 5.6.2 | 112E | | 3.6.1.2 | Gross leak: Test Qc, Fine leak: Test Qk |
| Solderability Resistance to soldering heat | 2-20 2-58 | 5.6.3 | 208H 210F | | 3.6.52 3.6.48 | Test Ta Method 1 Test Td ₁ Method 2 Test Td ₂ Method 2 |
| Shock | 2-27 | 5.6.8 | 213B | 516.4 | 3.6.40 | Test Ea, 3 x per axes 100g, 6 ms half-sine pulse |
| Vibration sinusoidal | 2-6 | 5.6.7.1 | 201A 204D | 516.4-4 | 3.6.38.1 3.6.38.2 | Test Fc, 30 min per axes, 10 Hz – 55 Hz 0,75mm; 55 Hz – 2 kHz, 10g |
| Vibration, random | 2-64 | 5.6.7.3 | 214A | 514.5 | 3.6.38.3 3.6.38.4 | Test Fdb |
| Endurance tests - aging - extended aging | | 5.7.1 5.7.2 | 108A | | 4.8.35 | 30 days @+85°C 1000h, 2000h, 8000h @ +85°C |