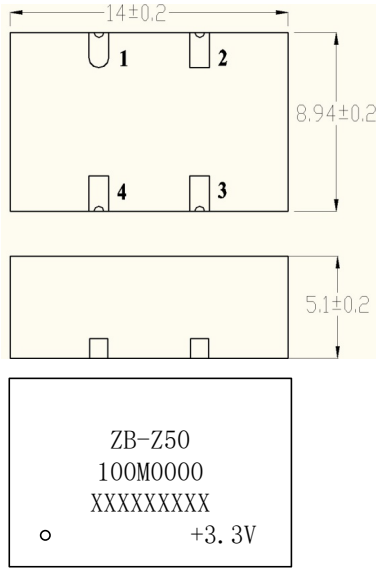
# Crystal Oscillator Products Manual

# ZB-Z50 SMD Low Noise Voltage Controlled Crystal Oscillator

## Product Features

- Wide voltage control range, low phase noise, anti-irradiation
- SMD1409, ceramic seal
- Product quality grade: GJB(B)

| | | |
|---|---|---|
| **Frequency:** | 10 MHz~120MHz | |
| **Supply voltage:** | +3.3V | |
| **Input current:** | ≤ 30mA | |
| **Output waveform:** | Square Wave (CMOS) Load: 15pF | |
| **Initial accuracy of reference temperature:** | ≤ ± 5ppm (voltage-controlled voltage 1.65V) | |
| **Pressure control range:** | ≥20ppm (0V~3.3V) | |
| **Phase noise: (100MHz, ± 30ppm)** | optimal value | Typical value |
| | -85dBc/Hz@10Hz | -80dBc/Hz@10Hz |
| | -115dBc/Hz@100Hz | -110dBc/Hz@100Hz |
| | -140dBc/Hz@1kHz | -135dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -170dBc/Hz@100kHz | -165dBc/Hz@100kHz |
| **Jitter (100MHz):** | ≤ 1ps (12kHz ~ 20MHz) | |
| **Frequency temperature stability:** | ≤ ± 15ppm (-40 ℃ ~ +85 ℃) | |
| **Operating temperature range:** | -40 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 14.2mm × 9.14mm × 5.3mm | |
| **Weight:** | ≤ 3g | |
| **Executive standard** | Q/Fx60002-2021 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Voltage control (Vc) |
| 2 | Ground (GND) |
| 3 | Output (OUT) |
| 4 | Power (V cc) |

**Note:**

1.Detailed technical indicators can be customized according to user requirements;

2. Manual welding is recommended.

# ZB551A Low Noise Voltage Controlled Crystal Oscillator for Aerospace

## Product Features

- Wide voltage control range, low phase noise, anti-irradiation
- Product quality grade: YC, CAST H1, QJB(S, B, C)

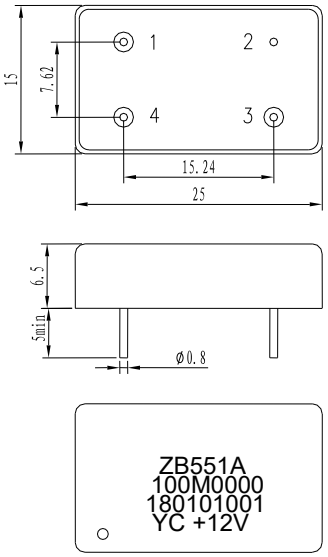
| | |
|---|---|
| **Frequency:** | 10 MHz~120MHz |
| **Supply voltage:** | +3.3V, +5V, +12V |
| **Input current:** | ≤ 30mA |
| **Output waveform:** | sine wave |
| **Output power:** | ≥5 dBm/50Ω |
| **Initial accuracy of reference temperature:** | $\pm 5 \times 10^{-6}$ ~ $\pm 1 \times 10^{-5}$ |
| **Pressure control range:** | ±30ppm to ±100ppm |

| **Phase noise: (100MHz, ± 30ppm)** | optimal value | Typical value |
|---|---|---|
| | -85dBc/Hz@10Hz | -80dBc/Hz@10Hz |
| | -115dBc/Hz@100Hz | -110dBc/Hz@100Hz |
| | -140dBc/Hz@1kHz | -140dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -160dBc/Hz@10kHz |
| | -167dBc/Hz@100kHz | -165dBc/Hz@100kHz |

| | |
|---|---|
| **Frequency temperature stability:** | ± 1 × $10^{-5}$ (-40 ℃ ~ +85 ℃) |
| **Suppression of harmonic/clutter:** | Better than 35dBc/80dBc |
| **Operating temperature range:** | -40 ℃ ~ +85 ℃ |
| **Overall dimensions:** | 25mm ×15mm ×15mm 6.5mm (excluding terminal) |
| **Weight:** | ≤ 10g |
| **Executive standard:** | Q/Fx2103-2024 |

Note: 1 detailed technical indicators can be customized according to user requirements;

2. Installation method




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| **1** | Output (OUT) |
| **2** | Ground (GND) |
| **3** | Power (Vcc) |
| **4** | Voltage control (Vc) |

ZB551A-×-× ×× ××× × -××M×××××

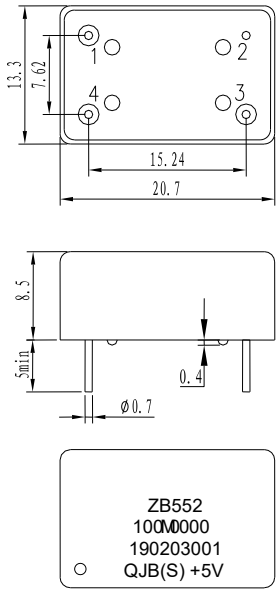
- Agreement code (sequence number)
- Supply voltage (2:+12V;5:+5V;3:+3.3V)
- Operating temperature range (CN: -40 ℃ ~ +85 ℃)
- Voltage control range (305 indicates ±10 $^{-5}$ 3.0×)
- Voltage-controlled polarity (P: positive; N: negative)
- Nominal frequency

# Model ZB552 Low Noise Voltage Controlled Crystal Oscillator for Aerospace

## Product Features

- Wide voltage control range, low phase noise, anti-irradiation
- Product quality grade: eq CAST C, CAST H1, QJB(S, B, C)

| | | |
|---|---|---|
| **Frequency:** | 10 MHz~120MHz | |
| **Supply voltage:** | +3.3V, +5V, +12V | |
| **Input current:** | ≤ 30mA | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥+5 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | $\pm 5 \times 10^{-6}$ ~ $\pm 1 \times 10^{-5}$ | |
| **Pressure control range:** | ±30ppm to ±100ppm | |
| **Phase noise: (100MHz, ±30ppm)** | optimal value | Typical value |
| | -85dBc/Hz@10Hz | -80dBc/Hz@10Hz |
| | -115dBc/Hz@100Hz | -110dBc/Hz@100Hz |
| | -140dBc/Hz@1kHz | -132dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -165dBc/Hz@100kHz | -160dBc/Hz@100kHz |
| **Frequency temperature stability:** | ± 1 × $10^{-5}$ (-40 ℃ ~ +85 ℃) | |
| **Clutter Suppression Harmonic/:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -40 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 20.7mm ×13.3mm ×9mm (without terminal) | |
| **Weight:** | ≤ 10g | |
| **Executive standard** | Q/Fx2074-2021 | |
| | WZ-FB(ZB)574-2022 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| **1** | Voltage control ($V_C$) |
| **2** | Ground (GND) |
| **3** | Output (OUT) |
| **4** | Power ($V_{CC}$) |

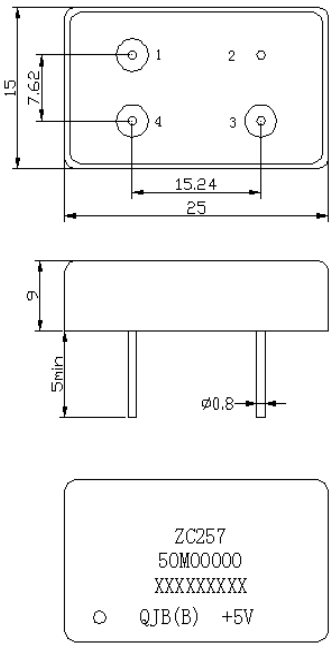
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZC257 Anti-vibration Temperature Compensated Crystal Oscillator

## Product Features

- Wide temperature range, low dynamic phase noise
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| **Model:** | ZC257 | |
| **Frequency:** | 10MHz to 120MHz | |
| **Supply voltage:** | +3.3V, +5V, +12V | |
| **Input current:** | ≤ 30mA | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥ +5 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ±10 $\times^{-6}$ (25 ℃ ± 2 ℃) | |
| | Static | Dynamic (GJB360B, method 214, I-B) |
| **Phase noise: (50MHz)** | -140dBc/Hz@1kHz | -125dBc/Hz@1kHz |
| | -158dBc/Hz@10kHz | -157dBc/Hz@10kHz |
| | -164dBc/Hz@100kHz | -164dBc/Hz@100kHz |
| **Frequency temperature stability:** | ± 2 × $10^{-6}$ (-55 ℃ ~ +105 ℃) | |
| **Aging frequency (50MHz):** | ± 2×$10^{-6}$ /y | |
| **Clutter Suppression Harmonic/:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -55 ℃ ~ +105 ℃ | |
| **Overall dimensions:** | 25mm ×15mm ×15mm 9mm (excluding terminal) | |
| **Weight:** | ≤ 15g | |
| **Executive standard:** | Q/Fx2099-2024 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Normal Close/Electronic frequency tuning(NC/Vt) |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power ($V_{CC}$) |

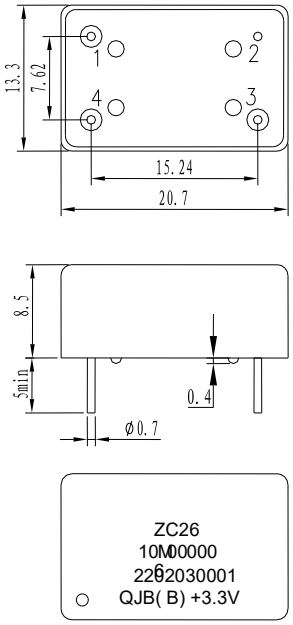
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZC266(G) Low Noise Temperature Compensated Crystal Oscillator

## Product Features

- Wide temperature range, low phase noise
- Product quality grade: QJB (B, C)

| Technical indicators | | |
|---|---|---|
| **Model:** | ZC266 | |
| **Frequency:** | 10MHz to 120MHz | |
| **Supply voltage:** | +3.3V, +5V | |
| **Input current:** | ≤ 1 5mA | |
| **Output waveform:** | Square Wave, 10k/10pF | |
| **Initial accuracy of reference temperature:** | ±10 ×$^{-6}$ (25 ℃ ± 2 ℃) | |
| **Phase noise: (10MHz)** | optimal value | Typical value |
| | -100dBc/Hz@10Hz | -90dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -125dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -160dBc/Hz@100kHz | -155dBc/Hz@100kHz |
| **Frequency temperature stability:** | ± 5 × 10 $^{-7}$ × (-20 ℃ ~ +60 ℃) | |
| | ± 1 × 10 $^{-6}$ × (-40 ℃ ~ +85 ℃) | |
| **Frequency Aging:** | ±1×10 $^{-6}$ /y | |
| **Operating temperature range:** | -55 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 13.3mm ×20.7mm ×9mm (without terminal) | |
| **Weight:** | ≤ 10g | |
| **Executive standard:** | Q/Fx2065-2018 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic frequency tuning(Vt) |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power ($V_{CC}$) |

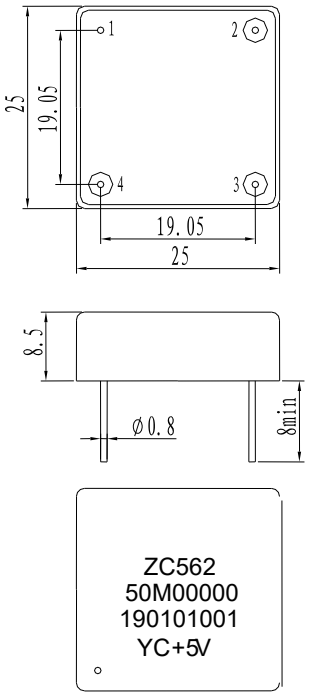
**Note:** the technical indicators can be customized according to user requirements.

# ZC562(G) Low Noise Temperature Compensated Crystal Oscillator for Aerospace

## Product Features

- Wide temperature range, low phase noise, anti-irradiation
- Product quality grade: YC, CAST H1, QJB(S, B, C)

| | | |
|---|---|---|
| **Frequency:** | 10MHz to 120MHz | |
| **Supply voltage:** | +5V, +12V | |
| **Input current:** | ≤ 25mA | |
| **Waveform/Waveform Output Power:** | Sine wave/dBm/50Ω ≥ +5 | |
| **Initial accuracy of reference temperature:** | ≤ ±2 ×10 $^{-6}$ (25 ℃ ± 2 ℃) | |
| | optimal value | Typical value |
| **Phase noise: (50MHz)** | -100dBc/Hz@10Hz | -95dBc/Hz@10Hz |
| | -125dBc/Hz@100Hz | -120dBc/Hz@100Hz |
| | -150dBc/Hz@1kHz | -145dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -160dBc/Hz@100kHz | -155dBc/Hz@100kHz |
| **Frequency temperature stability:** | ± 1 × 10 $^{-6}$ × (-40 ℃ ~ +85 ℃) | |
| **Frequency Aging:** | ±1×10 $^{-6}$ /y | |
| **Clutter Suppression Harmonic/:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -55 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 25mm ×25mm ×25mm 8.5mm (excluding terminal) | |
| **Weight:** | ≤ 15g | |
| **Executive standard:** | Q/Fx2094-2022 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Ground (GND) |
| 2 | Power (V $_{CC}$) |
| 3 | Output (OUT) |
| 4 | Electronic frequency tuning /Normal Close (Vt/NC) |

**Note:**

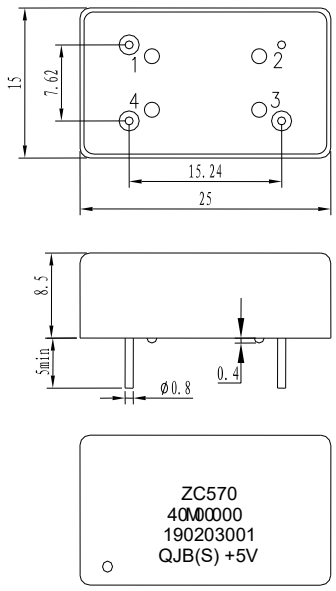
the technical indicators can be customized according to user requirements.

# ZC570 Low Noise Temperature Compensated Crystal Oscillator

## Product Features

- Wide temperature range, low phase noise, anti-irradiation
- Product quality grade: QJB (S, B, C)

| | | |
|---|---|---|
| **Frequency:** | 10MHz to 120MHz | |
| **Supply voltage:** | +5V, +12V | |
| **Input current:** | ≤ 25mA | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥ +5 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ±10 ×$^{-6}$ (25 ℃ ± 2 ℃) | |
| | optimal value | Typical value |
| **Phase noise: (40MHz)** | -95dBc/Hz@10Hz | -90dBc/Hz@10Hz |
| | -125dBc/Hz@100Hz | -120dBc/Hz@100Hz |
| | -150dBc/Hz@1kHz | -145dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -160dBc/Hz@100kHz | -160dBc/Hz@100kHz |
| **Frequency temperature stability:** | 1 × 10$^{-6}$ (-40 ℃ ~ +85 ℃) | |
| **Frequency Aging:** | ± 2×10 $^{-6}$ /y | |
| **Clutter Suppression Harmonic/:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | 55 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 25mm ×15mm ×15mm 9mm (excluding terminal) | |
| **Weight:** | ≤ 10g | |
| **Executive standard:** | Q/Fx2075-2020 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Normal Close/Electronic frequency tuning(NC/Vt) |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power (Vcc) |

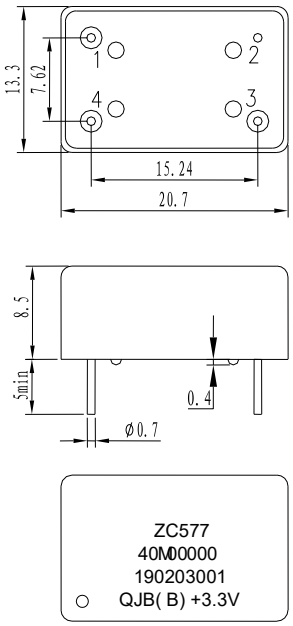
**Note:** the technical indicators can be customized according to user requirements.

# ZC577 High Precision Temperature Compensated Crystal Oscillator

## Product Features

- Wide temperature range, high accuracy (± 0.5ppm)
- Product quality grade: QJB(S, B, C)

| Technical indicators | | |
|---|---|---|
| **Model:** | ZC577 | |
| **Frequency:** | 1MHz to 50MHz | |
| **Supply voltage:** | +3.3V,+ 5V | |
| **Input current:** | 12mA ~ 50mA | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥3 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ±10 ×$^{-6}$ (25 ℃ ± 2 ℃) | |
| | optimal value | Typical value |
| **Phase noise: (40MHz)** | -110dBc/Hz@100Hz | -105dBc/Hz@100Hz |
| | -135dBc/Hz@1kHz | -130dBc/Hz@1kHz |
| | -150dBc/Hz@10kHz | -145dBc/Hz@10kHz |
| **Frequency temperature stability:** | ± 5 × 10 $^{-7}$ × (-20 ℃ ~ +60 ℃) | |
| | ± 1 × 10 $^{-6}$ × (-40 ℃ ~ +85 ℃) | |
| **Frequency Aging:** | ±1×10 $^{-6}$ /y | |
| **Clutter Suppression Harmonic/:** | Better than 30dBc/80dBc | |
| **Operating temperature range:** | -40 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 20.7mm ×13.3mm ×9mm (without terminal) | |
| **Weight:** | ≤ 10g | |
| **Executive standard:** | Q/Fx2076-2019 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Normal close (NC) |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power (V cc) |

**Note:** the technical indicators can be customized according to user requirements.

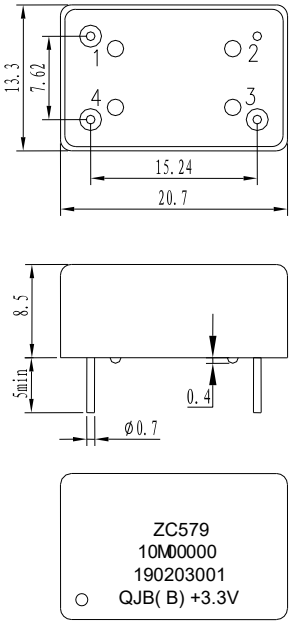
# ZC579 Low Noise Temperature Compensated Crystal Oscillator

## Product Features

- Wide Temperature Range, Low Phase Noise, Low Voltage, Radiation Resistant
- Product quality grade: QJB(S, B, C)

| Technical indicators | | |
|---|---|---|
| **Model:** | ZC579 | |
| **Frequency:** | 10MHz to 120MHz | |
| **Supply voltage:** | +3.3V,+ 5V | |
| **Input current:** | ≤ 12mA | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥ 2 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ±10 ×$^{-6}$ (25 ℃ ± 2 ℃) | |
| | optimal value | Typical value |
| **Phase noise: (10MHz)** | -100dBc/Hz@10Hz | -90dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -125dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -160dBc/Hz@100kHz | -155dBc/Hz@100kHz |
| **Frequency temperature stability:** | ± 1 × 10$^{-6}$ × (-20 ℃ ~ +60 ℃) | |
| | ± 2 × 10$^{-6}$ × (-40 ℃ ~ +85 ℃) | |
| **Frequency Aging:** | ±1×10$^{-6}$ /y | |
| **Clutter Suppression Harmonic/:** | Better than 30dBc/80dBc | |
| **Operating temperature range:** | 55 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 20.7mm ×13.3mm ×9mm (without terminal) | |
| **Weight:** | ≤ 10g | |
| **Executive standard:** | Q/Fx2077-2019 | |

**Note:** the technical indicators can be customized according to user requirements.




"。" Identifies Corresponding Pin 1

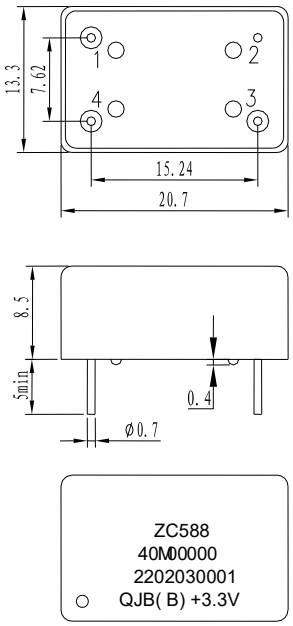
| Interface | Function |
|---|---|
| 1 | Electronic frequency tuning/NC |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power (Vcc) |

# ZC588 Low Noise Temperature Compensated Crystal Oscillator

## Product Features

- Wide temperature range, low phase noise, anti-irradiation
- Product quality grade: QJB(S, B, C)

| | | |
|---|---|---|
| **Frequency:** | 10MHz to 120MHz | |
| **Supply voltage:** | +5V, +12V | |
| **Input current:** | ≤ 20mA | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥2 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ±2 ×10 $^{-6}$ (25 ℃ ± 2 ℃) | |
| | optimal value | Typical value |
| **Phase noise: (40MHz)** | -95dBc/Hz@10Hz | -90dBc/Hz@10Hz |
| | -125dBc/Hz@100Hz | -120dBc/Hz@100Hz |
| | -150dBc/Hz@1kHz | -145dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -160dBc/Hz@100kHz | -160dBc/Hz@100kHz |
| **Frequency temperature stability:** | ± 1 × 10 $^{-6}$ × (-40 ℃ ~ +85 ℃) | |
| **Frequency Aging:** | ±1×10 $^{-6}$ /y | |
| **Harmonic/Clutter Suppression:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -55 ℃ ~ +85 ℃ | |
| **Overall dimensions:** | 20.7mm ×13.3mm ×9mm (without terminal) | |
| **Weight:** | ≤ 10g | |
| **Executive standard:** | Q/Fx2098-2022 | |




"。" Identifies Corresponding Pin1

| Interface | Function |
|---|---|
| 1 | Electronic frequency tuning/NC |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power (Vcc) |

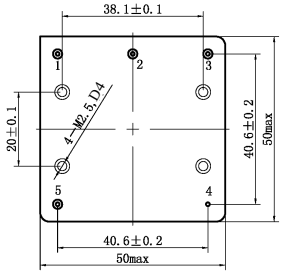
**Note:** the technical indicators can be customized according to user requirements.

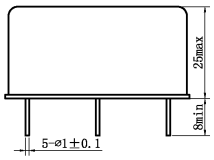
# ZD-Z51 Miniature Ultra-stable Crystal Oscillator

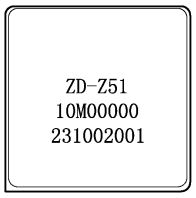
## Product Features

- Excellent medium and short-term frequency stability (2×10 /1~10s), low aging rate, anti-irradiation
- Product quality grade: GJB(B)

| | | |
|---|---|---|
| **Frequency:** | 5MHz, 10MHz, 10.23MHz | |
| **Supply voltage:** | +12V | |
| **Input power:** | 8W (startup);4W (stable) | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥+ 7 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ±10 × 5 $^{-8}$ | |
| | optimal value | Typical value |
| **Allan variance: (10MHz)** | 2 ×10 $^{-10}$ /1s ~ 10s | 10×10 /1s ~ 10s |
| | 10 ×$^{-13}$ /100s | 1 10 ×$^{-12}$ /100s |
| **Phase noise: (10MHz)** | -118dBc/Hz@1Hz | -115dBc/Hz@1Hz |
| | -140dBc/Hz@10Hz | -135dBc/Hz@100Hz |
| | -155dBc/Hz@100Hz | -150dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| **Frequency Aging:** | ±5×10 $^{-11}$ /d | ±1×10 $^{-10}$ /d |
| **Frequency temperature stability:** -40 ℃ ~ +70 ℃ | 5 × 10$^{-}$ | 1 × 10 $^{-9}$ |
| **Suppression of harmonic/clutter:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | 40 ℃ ~ +70 ℃ | |
| **Overall dimensions:** | 50mm ××50mm 25mm (excluding terminal) | |
| **Weight:** | ≤ 150g | |
| **Executive standard:** | Q/Fx30013-2023 | |




| Pin | Function |
|---|---|
| 1 | NC |
| 2 | Heating circuit power supply VCC1 |
| 3 | Signal output OUT |
| 4 | Ground GND |
| 5 | Oscillator circuit power supply VCC2 |

Note:

1.Detailed technical indicators can be customized according to user requirements;

2. Single power supply version available,

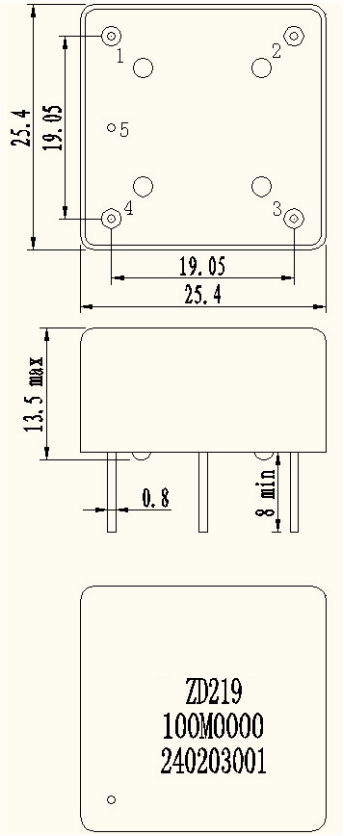
# ZD219 Ultra Low Phase Noise High Frequency Oven Controlled Crystal Oscillator

## Product Features

- Ultra-low phase noise
- Measurement test, instrumentation
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| **Frequency:** | 50 MHz~130MHz | |
| **Supply voltage:** | +5V ,+12V | |
| **Input power:** | 4W (startup);1.5W (steady) | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥10 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ≤ ± 1 × $10^{-7}$ (voltage control center voltage ± 0.2V) | |
| **Ec range:** | ≥ ± 5 × $10^{-7}$ | |
| | Preferred (UL) | General Purpose (L) |
| **Phase noise: (100MHz)** | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -162dBc/Hz@1kHz | -158dBc/Hz@1kHz |
| | -170dBc/Hz@10kHz | -170dBc/Hz@10kHz |
| | -180dBc/Hz@100kHz | -175dBc/Hz@100kHz |
| **Frequency Aging:** | ± 1×$10^{-9}$ /d | |
| **Frequency temperature stability:** | 2 × $10^{-7}$ (-40 ℃ ~ +60 ℃) | |
| **Suppression of harmonic/clutter:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -40 ℃ ~ +60 ℃ | |
| **Overall dimensions:** | 25.4mm ×25.4mm ×13.5mm (without terminal) | |
| **Weight:** | ≤ 20g | |
| **Executive standard:** | Q/Fx2110-2024 | |

**Note:** the detailed technical indicators can be customized according to user requirements.




"。" Identifies Corresponding Pin1

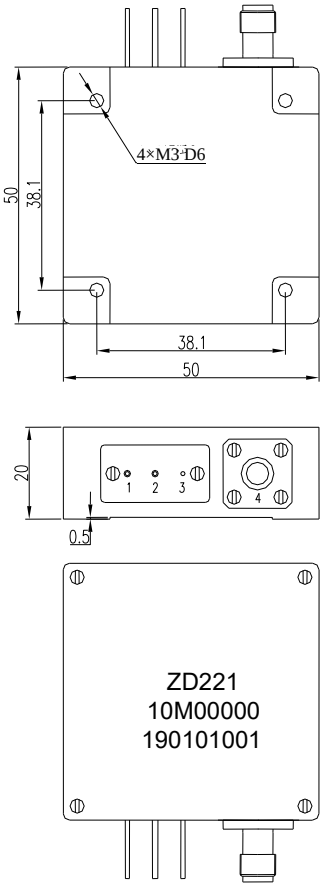
| Interface | Function |
|---|---|
| 1 | Electronic tuning($V_T$)/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Power ($V_{CC}$) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

# ZD221 Ultra Low Phase Noise Oven Controlled Crystal Oscillator

## Product Features

- Ultra-low phase noise
- Measurement test, instrumentation
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| **Frequency:** | 5 MHz~30MHz | |
| **Supply voltage:** | +12V | |
| **Input power:** | 5.0W (startup);2.5W (stable) | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥10 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ≤ 1 × $10^{-7}$ | |
| **Ec range:** | 3 × $10^{-7}$ | |
| | Preferred (UL) | General Purpose (L) |
| **Phase noise: (10MHz)** | -115dBc/Hz@1Hz | -105dBc/Hz@1Hz |
| | -140dBc/Hz@10Hz | -135dBc/Hz@10Hz |
| | -160dBc/Hz@100Hz | -155dBc/Hz@100Hz |
| | -170dBc/Hz@1kHz | -165dBc/Hz@1kHz |
| | -175dBc/Hz@10kHz | -175dBc/Hz@10kHz |
| | -180dBc/Hz@100kHz | -180dBc/Hz@100kHz |
| **Frequency Aging:** | ±1×$10^{-10}$ /d ~±5×$10^{-10}$ /d | |
| **Preheating time** | ≤ 10min (stable within ± 5 × $10^{-8}$). | |
| **Clutter Suppression Harmonic/:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -40 ℃ ~ +60 ℃ | |
| **Overall dimensions:** | 50mm ×50mm ×20mm (excluding terminal) | |
| **Weight:** | ≤ 80g | |
| **Executive standard:** | Q/Fx2082-2019 | |




| Interface | Function |
|---|---|
| 1 | Electronic tuning($V_T$)/NC |
| 2 | Power ($V_{CC}$) |
| 3 | Ground (GND) |
| 4 | Signal output (OUT) |

**Note:** the detailed technical indicators can be customized according to user requirements.

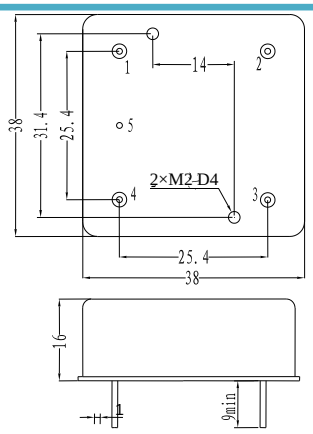
# ZD223 Aerospace Low Phase Noise Oven Controlled Crystal Oscillator

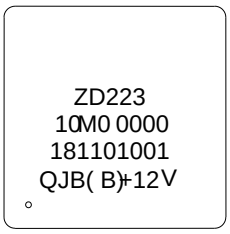
## Product Features

- Excellent phase noise, low aging rate, anti-irradiation
- Product quality grade: QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 8 MHz~30MHz | |
| Supply voltage: | +5V, +12V | |
| Input power: | 4.5W (startup);1.5W (stable) | |
| Output waveform: | sine wave | |
| Output power: | ≥ 7 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤±10 ×5 -8 | |
| Frequency adjustment range: | ≥3 ×10 ±-7 | |
| | optimal value | Typical value |
| Allan variance (10MHz): | 1 1×-10/1s | 2 ×-1210/1s |
| Phase noise: (10MHz) | -115dBc/Hz@1Hz | -105dBc/Hz@1Hz |
| | -135dBc/Hz@10Hz | -130dBc/Hz@10Hz |
| | -155dBc/Hz@100Hz | -150dBc/Hz@100Hz |
| | -165dBc/Hz@1kHz | -163dBc/Hz@1kHz |
| | -170dBc/Hz@10kHz | 165dBc/Hz@10kHz |
| Frequency Aging: | ±1×10 -10/d | ±2×10 -10/d |
| Frequency temperature stability:(-40 ℃ ~ +70 ℃) | ±2 ×10 -8 | ±3 ×10 -8 |
| Preheating time | ≤5min (stable within ± 5 ×10-8). | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Overall dimensions: | 38mm ××38mm 14mm (excluding terminal) | |
| Weight: | ≤40g | |
| Executive standard: | Q/Fx2085-2020 | |

Note:the detailed technical indicators can be customized according to user requirements.




"。" Identifies Corresponding Pin1

| Interface | Function |
|---|---|
| 1 | Reference voltage (V REF) |
| 2 | Electronic tuning(Vt) |
| 3 | Power (Vcc) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

# ZD225 Low Phase Noise Oven Controlled Crystal Oscillator

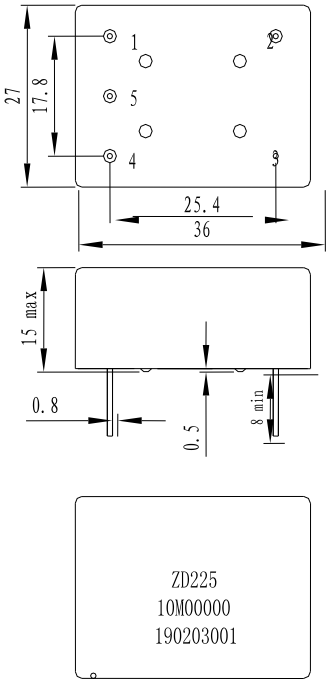
## Product Features

- Low phase noise, high stability
- Mobile communication, instrumentation
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| Frequency: | | 5 MHz~30MHz |
| Supply voltage: | | +5V,+12V |
| Input power: | | 4.0W (start);1.5W (steady) |
| Sine | Output power | ≥ 7dBm/50Ω |
| | Harmonic/Clutter Suppression: | 35dBc/80dBc |
| square wave | Output level: | High level ≥ 3V, low level ≤ 0.3V |
| | Rising and falling edges: | ≤ 10ns |
| | Duty cycle: | 45% to 55% |
| Initial accuracy of reference temperature: | | ≤±1×10-7 |

| | optimal value | Typical value |
|---|---|---|
| Allan variance (10MHz): | 1 1×10/1s | 2 ×$^{-12}$ 10/1s |
| Phase noise: (10MHz) | -110dBc/Hz@1Hz | -105dBc/Hz@1Hz |
| | -135dBc/Hz@10Hz | -130dBc/Hz@10Hz |
| | -155dBc/Hz@100Hz | -150dBc/Hz@100Hz |
| | -165dBc/Hz@1kHz | -160dBc/Hz@1kHz |
| | -167dBc/Hz@10kHz | -165dBc/Hz@10kHz |
| | -170dBc/Hz@100kHz | -168dBc/Hz@100kHz |
| Frequency Aging: | ±1×10 $^{-10}$ /d | ±2×10 $^{-10}$ /d |
| Frequency temperature stability: (-40 ℃ ~ +70 ℃) | ± 1 × 10 $^{-8}$ | ± 2 × 10 $^{-8}$ |

| | |
|---|---|
| Preheating time | ≤ 5min (stable within ± 2 × 10 $^{-8}$). |
| Operating temperature range: | -40 ℃ ~ +70 ℃ |
| Overall dimensions: | 36mm ×27mm ×15mm (excluding terminal) |
| Weight: | ≤ 30g |
| Executive standard: | Q/Fx2069-2018 |




"。" Identifies Corresponding Pin1

| Interface | Function |
|---|---|
| 1 | Power ($V_{CC}$) |
| 2 | Signal output (OUT) |
| 3 | Ground (GND) |
| 4 | Electronic tuning(Vt) |
| 5 | Reference voltage ($V_{REF}$) |

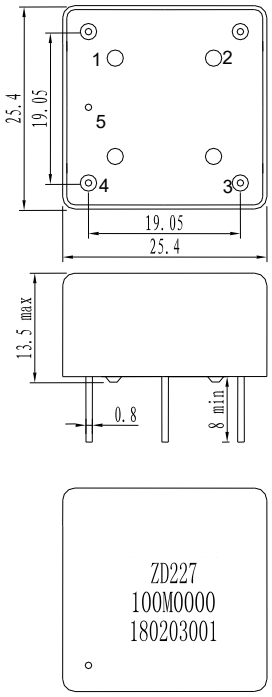
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD227 High Frequency Low Phase Noise Oven Controlled Crystal Oscillator

## Product Features

- Low phase noise, low aging
- Mobile communication, instrumentation
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| **Frequency:** | 40 MHz~150MHz | |
| **Supply voltage:** | +5V ,+12V | |
| **Input power:** | 3.5W (startup);1.2W (stable) | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥7 dBm/50Ω | |
| **Ec range:** | ≥ ± 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| **Allan variance (100MHz):** | 1 1 ×$^{-11}$ 10/1s | 2 1×$^{-}$10/1s |
| **Phase noise: (100MHz)** | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -158dBc/Hz@1kHz | -155dBc/Hz@1kHz |
| | -165dBc/Hz@10kHz | -163dBc/Hz@10kHz |
| | -170dBc/Hz@100kHz | -165dBc/Hz@100kHz |
| **Frequency Aging:** | ±8×$10^{-10}$ /d | ±2×$10^{-9}$ /d |
| **Frequency temperature stability:** | ± 1 × $10^{-7}$ (-40 ℃ ~ +70 ℃) | |
| **Preheating time** | ≤ 3min (stable within ± 2 × $10^{-7}$). | |
| **Frequency voltage tolerance:** | ≤ ± 5 × $10^{-9}$ | |
| **Harmonic/ Clutter**: | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -40 ℃ ~ +70 ℃ | |
| **Overall dimensions:** | 25.4mm ×25.4mm ×13.5mm (without terminal) | |
| **Weight:** | ≤ 20g | |
| **Executive standard:** | Q/Fx2063-2018 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning ($V_T$)/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Power ($V_{CC}$) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

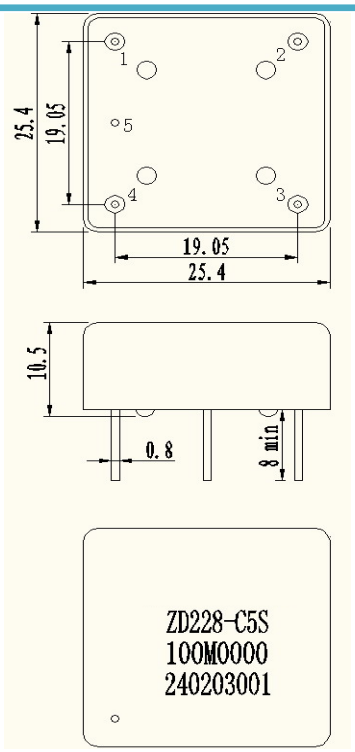
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD228 High Frequency Low Phase Noise Oven Controlled Crystal Oscillator

## Product Features

- Low phase noise, low aging
- Mobile communication, instrumentation
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| **Frequency:** | 40 MHz~150MHz | |
| **Supply voltage:** | +5V ,+12V | |
| **Input power:** | 3.5W (startup);1.2W (stable) | |
| **Output waveform:** | sine wave | |
| **Output power:** | ≥7 dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ≤ ± 1 × 10-7 (voltage control center voltage ± 0.2V) | |
| **Frequency adjustment range:** | ≥ ± 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| **Allan variance (100MHz):** | 1 1×-10/1s | 2 1×-10/1s |
| **Phase noise: (100MHz)** | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | -133dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -158dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -165dBc/Hz@10kHz | -165dBc/Hz@10kHz |
| | -170dBc/Hz@100kHz | -170dBc/Hz@100kHz |
| **Frequency Aging:** | ±8×$10^{-10}$ /d | ±2×$10^{-9}$ /d |
| **Frequency temperature stability:** | ± 1 × $10^{-7}$ (-40 ℃ ~ +70 ℃) | |
| **Preheating time** | ≤ 3min (stable within ± 2 × $10^{-7}$). | |
| **Clutter Suppression Harmonic/:** | Better than 35dBc/80dBc | |
| **Operating temperature range:** | -40 ℃ ~ +70 ℃ | |
| **Overall dimensions:** | 25.4mm ×25.4mm ×10.5mm (without terminal) | |
| **Weight:** | ≤ 20g | |
| **Executive standard:** | Q/Fx2111-2024 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning ($V_T$)/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Power ($V_{CC}$) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD231 Oven Controlled Crystal Oscillator

## Product Features

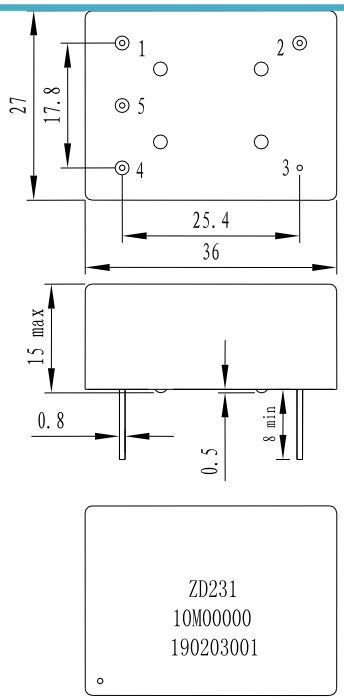
- High stability, low aging
- Commercial Space
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| **Frequency:** | | 8 MHz~25MHz |
| **Supply voltage:** | | +5V ,+12V |
| **Input power:** | | 3.5W (startup);1.2W (stable) |
| **Sine** | **Output power:** | ≥ 5dBm/50Ω |
| | **Harmonic/Clutter Suppression:** | -35dBc/-80dBc |
| **square wave** | **Output level:** | High level ≥ 3V, low level ≤ 0.3V |
| | **Rising and falling edges:** | ≤ 10ns |
| | **Duty cycle:** | 45% to 55% |
| **Initial accuracy of reference temperature:** | | ≤ ± 5 × $10^{-8}$ |
| **Frequency adjustment range:** | | ≥ ± 3 × $10^{-7}$ |

| | optimal value | Typical value |
|---|---|---|
| **Allan variance (10MHz):** | 1 1×$10^{-}$10/1s | 5 ×$10^{-12}$ 10/1s |
| **Phase noise: (10MHz)** | -105dBc/Hz@1Hz | -95dBc/Hz@1Hz |
| | -135dBc/Hz@10Hz | -130dBc/Hz@10Hz |
| | -145dBc/Hz@100Hz | -140dBc/Hz@100Hz |
| | -150dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | -155dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| **Frequency Aging:** | ±1×$10^{-10}$ /d | ±2×$10^{-10}$ /d |

| | |
|---|---|
| **Frequency temperature stability:** | ± 1 × $10^{-8}$ to ± 2 × $10^{-8}$ (-40 ℃ to +70 ℃) |
| **Preheating time** | ≤ 5min (stable within ± 2 × $10^{-8}$). |
| **Frequency voltage tolerance:** | ≤ 5 × $10^{-9}$ |
| **Operating temperature range:** | -40 ℃ ~ +70 ℃ |
| **Overall dimensions:** | 36mm ×27mm ×15mm (excluding terminal) |
| **Weight:** | ≤ 30g |
| **Executive standard:** | Q/Fx2060-2018 |

**Note:** the detailed technical indicators can be customized according to user requirements.




"。" Identifies Corresponding Pin 1

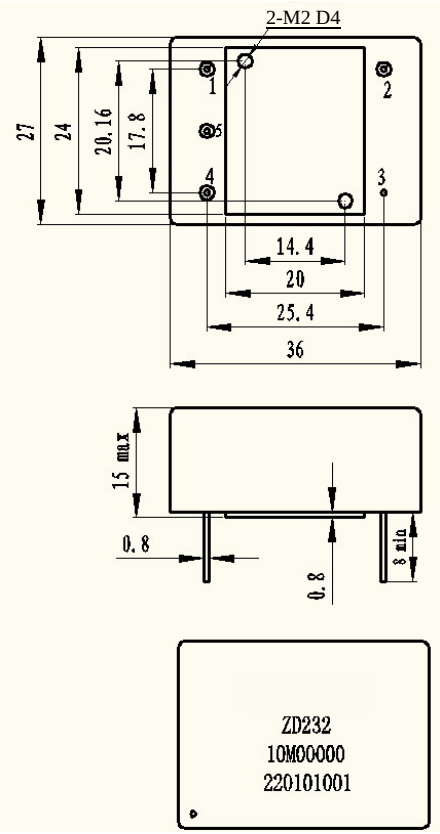
| Interface | Function |
|---|---|
| 1 | Power ($V_{CC}$) |
| 2 | Signal output (OUT) |
| 3 | Ground (GND) |
| 4 | Electronic tuning (Vt) |
| 5 | Reference voltage ($V_{REF}$) |

# ZD232 Oven Controlled Crystal Oscillator

## Product Features

- High stability, low aging, enhanced vibration resistance
- Commercial Space
- Product quality grade: QJB(B, C)

| | | | |
|---|---|---|---|
| Frequency: | | 5MHz to 150MHz | |
| Supply voltage: | | +5V ,+12V | |
| Input power: | | 3.5W (startup);1.5W (stable) | |
| Sine | Output power | ≥ 5dBm/50Ω | |
| | Harmonic/Clutter Suppression: | -35dBc/-80dBc | |
| square wave | Output level: | High level ≥ 3V, low level ≤ 0.3V | |
| | Rising and falling edges: | ≤ 10ns | |
| | Duty cycle: | 45% to 55% | |
| Initial accuracy of reference temperature: | | ≤ 5 × $10^{-8}$ | |
| Ec range: | | ≥ 3 × $10^{-7}$ | |
| | | optimal value | Typical value |
| Allan variance (10MHz): | | 1 1×10/1s | 10 ×$^{-12}$ /1s |
| Phase noise: (10MHz) | | -110dBc/Hz@1Hz | -100dBc/Hz@1Hz |
| | | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | | -155dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| Phase noise: (100MHz) | | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | | -157dBc/Hz@1kHz | -155dBc/Hz@1kHz |
| | | -165dBc/Hz@10kHz | -163dBc/Hz@10kHz |
| Aging frequency (10MHz): | | ±1×$10^{-10}$ /d | ±2×$10^{-10}$ /d |
| Frequency temperature stability: (-40 ℃ ~ +70 ℃) | | 10MHz:± 2 × $10^{-8}$ | |
| | | 100MHz:± 1 × $10^{-7}$ | |
| Overall dimensions: | | 36mm ×27mm ×15mm (excluding terminal) | |
| Weight: | | ≤ 30g | |
| Executive standard: | | Q/Fx2096-2022 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Power ($V_{CC}$) |
| 2 | Signal output (OUT) |
| 3 | Ground (GND) |
| 4 | Electronic tuning (Vt) |
| 5 | Reference voltage ($V_{REF}$) |

**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD235 Oven Controlled Crystal Oscillator

## Product Features

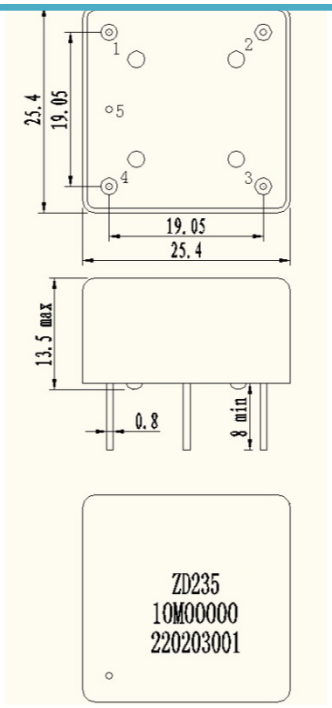
- Low phase noise, low aging
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| Frequency: | | 8MHz to 25MHz |
| Supply voltage: | | +5V, +12V |
| Input power: | | 3.5W (startup);1.5W (stable) |
| Sine | Output power | ≥ 5dBm/50Ω |
| | Harmonic/Clutter Suppression: | -35dBc/-80dBc |
| square wave | Output level: | High level ≥ 3V, low level ≤ 0.3V |
| | Rising and falling edges: | ≤ 10ns |
| | Duty cycle: | 45% to 55% |
| Initial accuracy of reference temperature: | | ≤ ± 5 × 10 × -8 |
| Ec range: | | ≥ ± 3 × 10 -7 |
| Allan variance (10MHz): | | ≤ 3 ×-12 10/1s |

| Phase Noise (10MHz): | optimal value | Typical value |
|---|---|---|
| | -120dBc/Hz@10Hz | -110dBc/Hz@10Hz |
| | -140dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -150dBc/Hz@1kHz | -145dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| | -160dBc/Hz@100kHz | -155dBc/Hz@100kHz |

| | | |
|---|---|---|
| Frequency Aging: | ±1×10 -10 /d | ±5×10 -10 /d |
| Frequency temperature stability: (-40 ℃ ~ +70 ℃) | ± 1 × 10 -8 | ± 3 × 10 -8 |
| Preheating time | ≤ 5min (stable within ± 2 × 10 -8) | |
| Overall dimensions: | 25.4mm ×25.4mm ×13.5mm (without terminal) | |
| Weight: | ≤ 20g | |
| Detail Specification No: | Q/Fx2089-2020 | |

**Note:** the detailed technical indicators can be customized according to user requirements.




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning ($V_T$)/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Power ($V_{CC}$) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

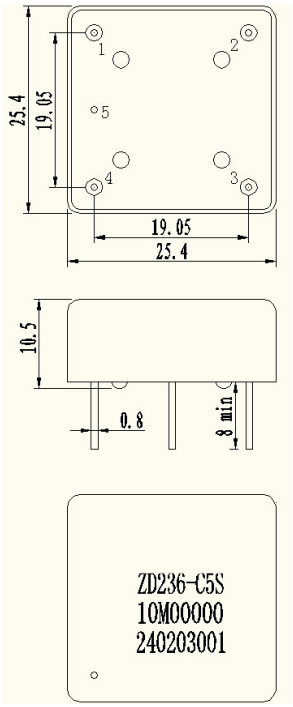
# ZD236 Low Phase Noise Oven Controlled Crystal Oscillator

## Product Features

- Low phase noise, low aging
- Product quality grade: QJB(B, C)

| | | | |
|---|---|---|---|
| **Frequency:** | | 8MHz to 25MHz | |
| **Supply voltage:** | | +5V, +12V | |
| **Input power:** | | 3.5W (startup);1.5W (stable) | |
| **Sine** | **Output power** | ≥ 5dBm/50Ω | |
| | **Harmonic/Clutter Suppression:** | -35dBc/-80dBc | |
| **square wave** | **Output level:** | High level ≥ 3V, low level ≤ 0.3V | |
| | **Rising and falling edges:** | ≤ 10ns | |
| | **Duty cycle:** | 45% to 55% | |
| **Ec range:** | | ≥ ± 3 × $10^{-7}$ | |
| **Allan variance (10MHz):** | | ≤ 3 ×$^{-12}$ 10/1s | |
| **Phase Noise (10MHz):** | | optimal value | Typical value |
| | | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | | -133dBc/Hz@10Hz | -125dBc/Hz@10Hz |
| | | -150dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | | -160dBc/Hz@1kHz | -155dBc/Hz@1kHz |
| | | -165dBc/Hz@10kHz | -160dBc/Hz@10kHz |
| **Frequency Aging:** | | ±1×$10^{-10}$ /d | ±5×$10^{-10}$ /d |
| **Temperature stability of frequency** (-40 ℃ ~ +70 ℃) | | ± 1 × $10^{-8}$ | ± 3 × $10^{-8}$ |
| **Preheating time** | | ≤ 3min (stable within ± 2 × $10^{-8}$) | |
| **Overall dimensions:** | | 25.4mm ×25.4mm ×10.5mm (without terminal) | |
| **Weight:** | | ≤ 20g | |
| **Detail Specification No:** | | Q/Fx2112-2024 | |

**Note:** the detailed technical indicators can be customized according to user requirements.




"。" Identifies Corresponding Pin 1

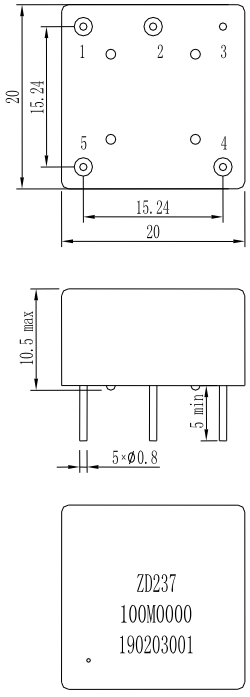
| Interface | Function |
|---|---|
| 1 | Electronic tuning(Vt)/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Power ($V_{CC}$) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

# ZD237 Low Power Oven Controlled Crystal Oscillator

## Product Features

- Small size, ultra-low power (0.4W), low phase noise, fast start (1min)
- Low Noise Reference Source, High Stable Clock
- Product quality grade: QJB(C)

| | | |
|---|---|---|
| Frequency: | | 40 MHz~120MHz |
| Supply voltage: | | +5V;+3.3V |
| Input power: | | 1.2W (startup);0.4W (stable) |
| Sine | Output power | ≥ 5dBm/50Ω |
| | Harmonic/Clutter Suppression: | -35dBc/-80dBc |
| square wave | Output level: | High level ≥ 3V, low level ≤ 0.3V |
| | Rising and falling edges: | ≤ 10ns |
| | Duty cycle: | 45% to 55% |
| Initial accuracy of reference temperature: | | ≤ ± 2 × $10^{-7}$ (voltage control center voltage ± 0.2V) |
| Ec range: | | ≥ ± 5 × $10^{-7}$ |
| Phase noise: (100MHz) | | -90dBc/Hz@10Hz |
| | | -120dBc/Hz@100Hz |
| | | -155dBc/Hz@1kHz |
| | | -160dBc/Hz@10kHz |
| | | -165dBc/Hz@100kHz |
| Frequency Aging: | | ±3×$10^{-9}$/d |
| Frequency temperature stability: | | ± 1 × $10^{-7}$ (-40 ℃ ~ +70 ℃) |
| Preheating time | | ≤ 1min (stable within ± 2 × $10^{-7}$). |
| Operating temperature range: | | -40 ℃ ~ +70 ℃ |
| Harmonic/ (S) Clutter Suppression: | | Better than 35dBc/80dBc |
| Overall dimensions: | | 20mm ×20mm ×10.5mm (excluding terminal) |
| Weight: | | ≤ 20g |
| Executive standard: | | Q/Fx2070-2018 |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning ($V_T$)/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Power ($V_{CC}$) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

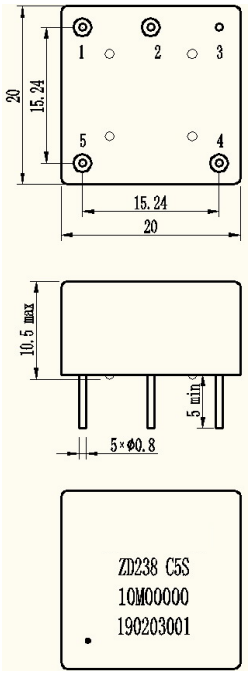
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD238 Small Low Phase Noise Oven Controlled Crystal Oscillator

## Product Features

- Small volume, low phase noise, low aging
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| Frequency: | | 8MHz to 25MHz |
| Supply voltage: | | +5V |
| Input power: | | 3W (startup);1W (stable) |
| Sine | Output power | ≥ 5dBm/50Ω |
| | Harmonic/Clutter Suppression: | -35dBc/-80dBc |
| square wave | Output level: | High level ≥ 3V, low level ≤ 0.3V |
| | Rising and falling edges: | ≤ 10ns |
| | Duty cycle: | 45% to 55% |
| Initial accuracy of reference temperature: | | ≤ ± 5 × $10^{-8}$ |
| Ec range: | | ≥ ± 5 × $10^{-7}$ |
| Allan variance (10MHz): | | 1 1 ×$^{-11}$ 10/1s |
| Phase noise: (10MHz) | | -120dBc/Hz@10Hz |
| | | -145dBc/Hz@100Hz |
| | | -160dBc/Hz@1kHz |
| | | -165dBc/Hz@10kHz |
| | | -165dBc/Hz@100kHz |
| Frequency Aging: | | ±1×$10^{-10}$ /d ~±5×$10^{-10}$ /d |
| Frequency temperature stability: | | ± 2 × $10^{-8}$ (-40 ℃ ~ +70 ℃) |
| Preheating time | | ≤ 3min (stable within ± 2 × $10^{-8}$). |
| Operating temperature range: | | -40 ℃ ~ +70 ℃ |
| Overall dimensions: | | 20mm ×20mm ×10.5mm (excluding terminal) |
| Weight: | | ≤ 20g |
| Executive standard: | | Q/Fx2061-2018 |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning($V_T$ )/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Ground (GND) |
| 4 | Signal output (OUT) |
| 5 | Power ($V_{CC}$) |

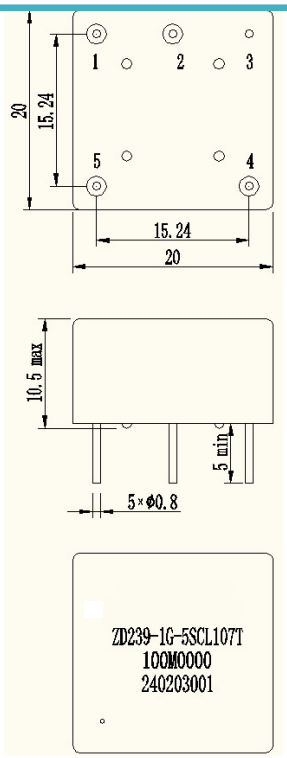
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD239 Small Oven Controlled Crystal Oscillator with High Frequency and Low Phase Noise

## Product Features

- Small volume, low phase noise, low aging
- Commercial Space
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| Frequency: | 40 MHz~150MHz | |
| Supply voltage: | +5V ,+12V | |
| Input power: | 3W (startup);1W (stable) | |
| Output waveform: | sine wave | |
| Output power: | ≥7 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤ ± 1 × $10^{-7}$ (voltage control center voltage ± 0.2V) | |
| Frequency adjustment range: | ≥ ± 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| Allan variance (100MHz): | 1 1 ×$^{-11}$ 10/1s | 2 1×$^{-}$10/1s |
| Phase noise: (100MHz) | -103dBc/Hz@10Hz | -98dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -162dBc/Hz@10kHz | -158dBc/Hz@10kHz |
| | -167dBc/Hz@100kHz | -165dBc/Hz@100kHz |
| Frequency Aging: | ±8×$10^{-10}$ /d | ±2×$10^{-9}$ /d |
| Frequency temperature stability: | ± 1 × $10^{-7}$ (-40 ℃ ~ +70 ℃) | |
| Preheating time | ≤ 3 min (stable ± 2 x$10^{-7}$ inside) | |
| Suppression of harmonic/clutter: | Better than 35dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Overall dimensions: | 20mm ×20mm ×10.5mm (excluding terminal) | |
| Weight: | ≤ 20g | |
| Executive standard: | Q/Fx2109-2024 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning(Vt)/NC |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Ground (GND) |
| 4 | Signal output (OUT) |
| 5 | Power ($V_{CC}$) |

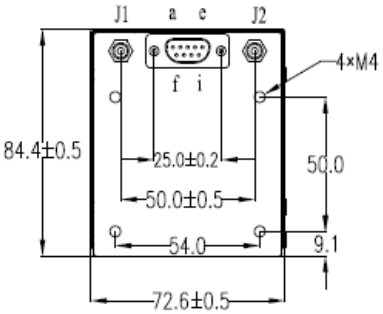
**Note:** the detailed technical indicators can be customized according to user requirements.

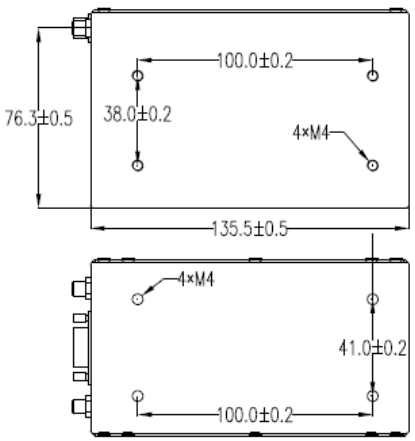
# ZD273 Ultra-stable Crystal Oscillator

## Product Features

- Excellent medium and short-term frequency stability (8E-14/1s ~ 10s), low aging rate
- Alternative OSA 8607, Rakon HSO14

| | | |
|---|---|---|
| **Frequency:** | 5MHz, 10MHz | |
| **Supply voltage:** | +24V | |
| **Input power:** | 15W (startup);10W (stable) | |
| **Waveform/Waveform Output Power:** | 8 ± 1dBm/50Ω | |
| **Initial accuracy of reference temperature:** | ⩽ ± 1 × $10^{-7}$ (Vc: suspended) | |
| **Ec range:** | ⩾ ±1×$10^{-7}$ (Vc:0~10V) | |
| | Preferred (US) | General Purpose (S) |
| **Allan variance: (5MHz/10MHz)** | 10 ×$^{-14}$/1s ~ 10s | 10 $^{-13}$ 1.5 ×/1s ~ 10s |
| | 10 ×$^{-13}$ /100s | 10 ×$^{-13}$ /100s |
| **Phase noise: (5MHz)** | -130dBc/Hz@1Hz | -125dBc/Hz@1Hz |
| | -150dBc/Hz@10Hz | -140dBc/Hz@10Hz |
| | -155dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | -160dBc/Hz@1kHz | -155dBc/Hz@1kHz |
| | -160dBc/Hz@100kHz | -155dBc/Hz@100kHz |
| **Frequency Aging:** | ±3×$10^{-11}$ /d | ±5×$10^{-11}$ /d |
| **Frequency temperature stability: (0 ℃ ~ +55 ℃)** | ± 5 × $10^{-11}$ | ± 1 × $10^{-10}$ |
| **Operating temperature range:** | 0 ℃ ~ +50 ℃ | |
| **Clutter Suppression Harmonic/:** | Better than 40dBc/90dBc | |
| **Overall dimensions:** | 135.5mm ×84.4mm ×72.6mm (without terminal) | |
| **Interface:** | DB9, SMA-K | |
| **Weight:** | ⩽ 1200g | |
| **Executive standard:** | Q/Fx2113-2024 | |




| Interface | Function |
|---|---|
| a | Normal close (NC) |
| b | Ground (GND) |
| c | Ground (GND) |
| d | Normal close (NC) |
| e | Electronic tuning (Vt) |
| f | Normal close (NC) |
| g | Power (Vcc) |
| h | Normal close (NC) |
| i | Normal close (NC) |
| J1 | Signal output (OUT-1) |
| J2 | Signal output (OUT-2) |

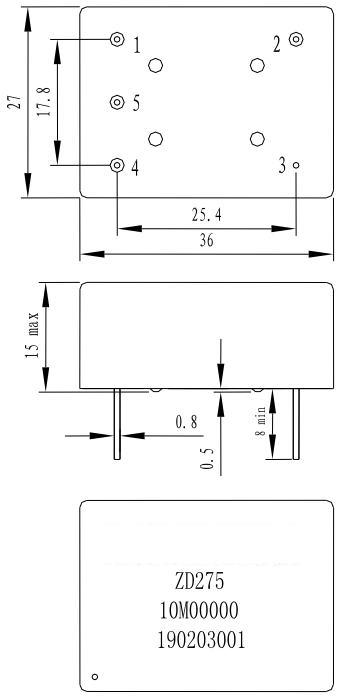
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD275 Ultra Low Phase Noise Oven Controlled Crystal Oscillator

## Product Features

- Ultra-low phase noise
- Measurement test, instrumentation
- Product quality grade: QJB(B, C)

| | | |
|---|---|---|
| Frequency: | 5 MHz~130MHz | |
| Supply voltage: | +5V, +12V | |
| Input power: | 4.0W (start);1.5W (steady) | |
| Output waveform: | sine wave | |
| Output power: | ⩾10 dBm/50Ω | |
| Initial accuracy of reference temperature: | ⩽ ± 1 × $10^{-7}$ | |
| Ec range: | ⩾ ± 3 × $10^{-7}$ | |
| Phase noise: (100MHz) | Preferred (UL) | General Purpose (L) |
| | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -160dBc/Hz@1kHz | -158dBc/Hz@1kHz |
| | -170dBc/Hz@10kHz | -168dBc/Hz@10kHz |
| | -180dBc/Hz@100kHz | -175dBc/Hz@100kHz |
| Frequency Aging (100MHz): | ±2×$10^{-9}$ /d | |
| Frequency temperature stability: | ± 2 × $10^{-7}$ (-40 ℃ ~ +60 ℃) | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +60 ℃ | |
| Overall dimensions: | 36mm ×27mm ×15mm (excluding terminal) | |
| Weight: | ⩽ 30g | |
| Executive standard: | Q/Fx2071-2018 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Power ($V_{CC}$) |
| 2 | Signal output (OUT) |
| 3 | Ground (GND) |
| 4 | Electronic tuning ($V_T$)/NC |
| 5 | Reference voltage ($V_{REF}$)/NC |

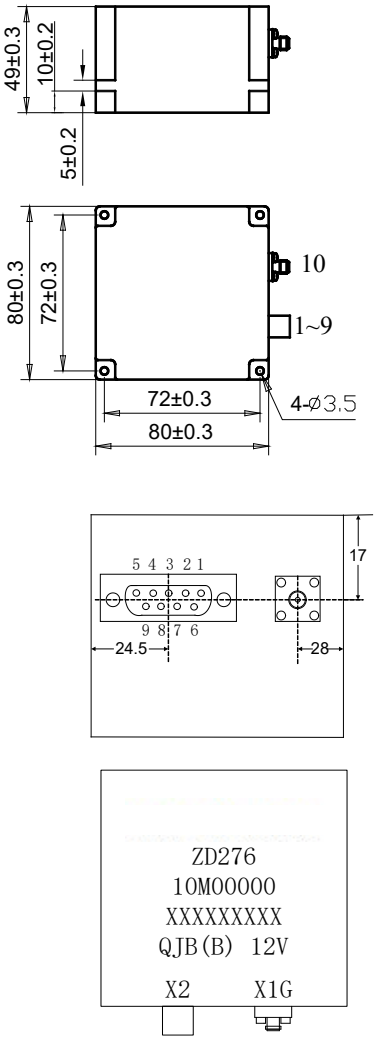
**Note:** the detailed technical indicators can be customized according to user requirements.

# Model ZD276 Ultra-stable Crystal Oscillator for Aerospace

## Product Features

- Excellent medium and short-term frequency stability (2×10 /1~10s), low aging rate, anti-irradiation
- Commercial Space Production
- Quality Level: QJB (S, B, C)

| | | |
|---|---|---|
| Frequency: | 10M | |
| Supply voltage: | +12V | |
| Input power: | 15W (startup);6W (stable) | |
| Output waveform: | sine wave | |
| Output power: | ≥+ 7 dBm/50Ω | |
| Initial accuracy of reference temperature: | ±10 × 5 $^{-8}$ | |
| | optimal value | Typical value |
| Allan variance: | 2 10×10 /1s ~ 10s | 10×10 /1s ~ 10s |
| | 10 ×$^{-13}$ /100s | 1 10 ×$^{-12}$ /100s |
| Phase noise: | -118dBc/Hz@1Hz | -115dBc/Hz@1Hz |
| | -140dBc/Hz@10Hz | -135dBc/Hz@100Hz |
| | -155dBc/Hz@100Hz | -150dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| Frequency Aging: | ±5×10 $^{-11}$ /d | ±1×10 $^{-10}$ /d |
| Frequency temperature stability (-25 ℃ ~ +65 ℃): | ± 3 × 10 $^{-10}$ | ± 5 × 10 $^{-10}$ |
| Preheating time | ≤ 30min (stable within ± 1 × 10 $^{-8}$). | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Operating temperature range: | -25 ℃ ~ +65 ℃ | |
| Overall dimensions: | 80mm ××80mm 49mm (excluding terminal) | |
| Weight: | ≤ 500g | |
| Interface: | J30J-9ZK, SMA-K | |
| Executive standard: | Q/Fx2086A-2020 | |




**Note:** the detailed technical indicators can be customized according to user requirements.

Pin Definition:

1: Ground (GND) 6:+12V

2: Ground (GND) 7:+12V

3: NC 8: Ground (GND)

4: NC 9: Ground (GND)

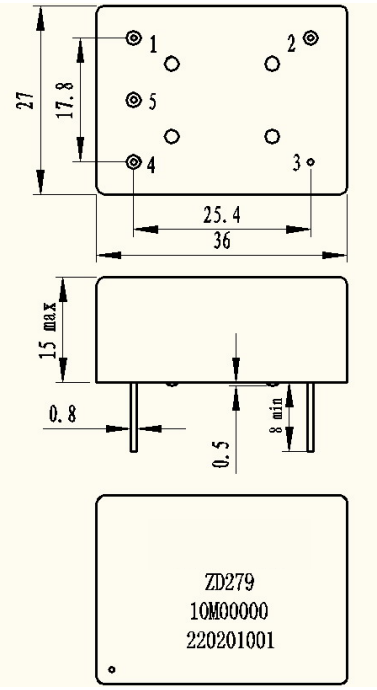
5. Voltage control/NC 10: output

# ZD279 Double Layer Oven Controlled Crystal Oscillator

## Product Features

- Low temperature drift (1E-10/-40 ℃ ~ +85 ℃), low aging rate, punctuality accuracy of 3μs/24h
- Punctuality, time service, navigation and positioning
- Product quality grade: QJB(C)

| | | | |
|---|---|---|---|
| Frequency: | | 5MHz ~13MHz | |
| Supply voltage: | | +5V | |
| Input power: | | 8W (startup);3W (stable) | |
| Sine | Output power | ≥ 5dBm/50Ω | |
| | Harmonic/Clutter Suppression: | 35dBc/80dBc | |
| square wave | Output level: | High level ≥ 3V, low level ≤ 0.3V | |
| | Rising and falling edges: | ≤ 10ns | |
| | Duty cycle: | 45% to 55% | |
| Initial accuracy of reference temperature: | | $\pm1\times10^{-8}$ (Vc:2V±0.2V) | |
| Frequency adjustment range: | | ≥ $\pm3\times10^{-7}$ (Vc:0~4V) | |
| | | Preferred (UH) | General Purpose (H) |
| Allan variance (10MHz): | | ≤ $2\times^{-12}$ 10/1s | ≤ $5\times^{-12}$ 10/1s |
| Phase noise: | | -105dBc/Hz@1Hz | -95dBc/Hz@1Hz |
| | | -135dBc/Hz@10Hz | -125dBc/Hz@10Hz |
| | | -150dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | | -155dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| Frequency Aging: | | $\pm1\times10^{-10}$ /d | $\pm2\times10^{-10}$ /d |
| Frequency temperature stability: | | $\pm2\times10^{-10}$ (-40 ℃ ~ +85 ℃) | $\pm5\times10^{-10}$ (-40 ℃ ~ +85 ℃) |
| | | $\pm1\times10^{-10}$ (0 ℃ ~ +60 ℃) | $\pm2\times10^{-10}$ (0 ℃ ~ +60 ℃) |
| Preheating time | | ≤ 10min (stable within $\pm2\times10^{-8}$) | |
| Overall dimensions: | | 36mm ×27mm ×16mm (excluding terminal) | |
| Weight: | | ≤ 35g | |
| Executive standard: | | Q/Fx2097-2022 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Power ($V_{CC}$) |
| 2 | Signal output (OUT) |
| 3 | Ground (GND) |
| 4 | Electronic tuning ($V_T$) |
| 5 | Reference voltage ($V_{REF}$) |

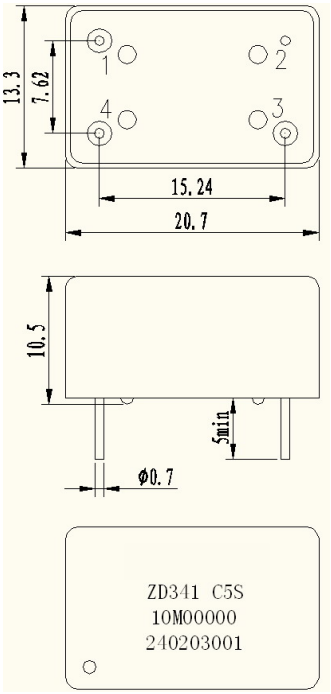
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD341 Small Oven Controlled Crystal Oscillator

## Product Features

- Small volume (DIP14), low phase noise, low aging
- Product quality grade: QJB(C), industrial grade

| | | |
|---|---|---|
| Frequency: | 8 MHz~40MHz | |
| Supply voltage: | +3.3V, +5V | |
| Input power: | 3W (startup);1W (stable) | |
| Output waveform: | sine wave | |
| Output power: | ≥5 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤ 1 × $10^{-7}$ | |
| Ec range: | 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| Phase noise: (10MHz) | -95dBc/Hz@1Hz | -90dBc/Hz@1Hz |
| | -125dBc/Hz@10Hz | -120dBc/Hz@10Hz |
| | -142dBc/Hz@100Hz | -135dBc/Hz@100Hz |
| | -152dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | -157dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| Frequency Aging: | ±5×$10^{-10}$ /d | |
| Frequency temperature stability: | 1 × $10^{-7}$ (-40 ℃ ~ +70 ℃) | |
| Preheating time | ≤3 min | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Overall dimensions: | 20.7mm ×13.3mm ×10.5mm (without terminal) | |
| Weight: | ≤ 15g | |
| Executive standard: | Q/Fx2059-2018 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning/NC |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power (Vcc) |

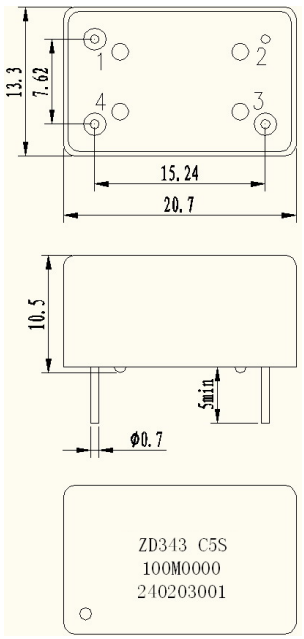
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD343 Small Oven Controlled Crystal Oscillator

## Product Features

- Small volume (DIP14), low phase noise, low aging
- Product quality grade: QJB(C), industrial grade

| | | |
|---|---|---|
| Frequency: | 40 MHz~150MHz | |
| Supply voltage: | +3.3V, +5V | |
| Input power: | 3W (startup);1W (stable) | |
| Output waveform: | sine wave | |
| Output power: | ≥5 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤ 1 × $10^{-7}$ | |
| Ec range: | 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| Phase noise: (100MHz) | -95dBc/Hz@10Hz | -90dBc/Hz@10Hz |
| | -128dBc/Hz@100Hz | -125dBc/Hz@100Hz |
| | -153dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -157dBc/Hz@10kHz |
| | -170dBc/Hz@10kHz | -165dBc/Hz@10kHz |
| Frequency Aging: | ±2×$10^{-9}$ /d | |
| Frequency temperature stability: | 3 × $10^{-7}$ (-40 ℃ ~ +70 ℃) | |
| Preheating time | ≤3 min | |
| Suppression of harmonic/clutter: | Better than 35dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Overall dimensions: | 20.7mm ×13.3mm ×10.5mm (without terminal) | |
| Weight: | ≤ 15g | |
| Executive standard: | Q/Fx2059-2018 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic tuning/NC |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Power (Vcc) |

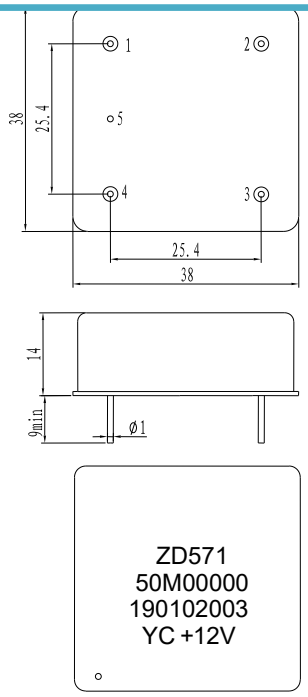
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD571(G) Aerospace High Frequency Oven Controlled Crystal Oscillator

## Product Features

- Low phase noise, low aging rate, anti-irradiation
- Product quality grade: YC, QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 40 MHz~80MHz | |
| Supply voltage: | +12V | |
| Input power: | 4.5W (startup);1.5W (stable) | |
| Waveform/Waveform Output Power: | Sine wave/ ≥ 7 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤ ±3 × $10^{-7}$ | |
| Frequency adjustment range: | ≥ ±5 ×$10^{-7}$ | |
| | optimal value | Typical value |
| Allan variance (50MHz): | 10 ×$^{-12}$ /1s | 8 ×$^{-12}$ 10/1s |
| Phase noise: (50MHz) | -110dBc/Hz@10Hz | -105dBc/Hz@10Hz |
| | -140dBc/Hz@100Hz | -135dBc/Hz@100Hz |
| | -160dBc/Hz@1kHz | -155dBc/Hz@1kHz |
| | -165dBc/Hz@10kHz | -162dBc/Hz@10kHz |
| | -167dBc/Hz@100kHz | -165dBc/Hz@100kHz |
| Frequency Aging: | ±5×$10^{-10}$ /d | |
| Frequency temperature stability: | ± 5 × $10^{-8}$ (-35 ℃ ~ +70 ℃) | |
| Preheating time | ≤ 5min (stable within ± 2 × $10^{-7}$). | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Overall dimensions: | 38mm ××38mm 14mm (excluding terminal) | |
| Weight: | ≤ 45g | |
| Executive standard: | Q/Fx2104-2024 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Reference voltage ($V_{REF}$) |
| 2 | Electronic frequency tuning ($V_T$) |
| 3 | Power ($V_{CC}$) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

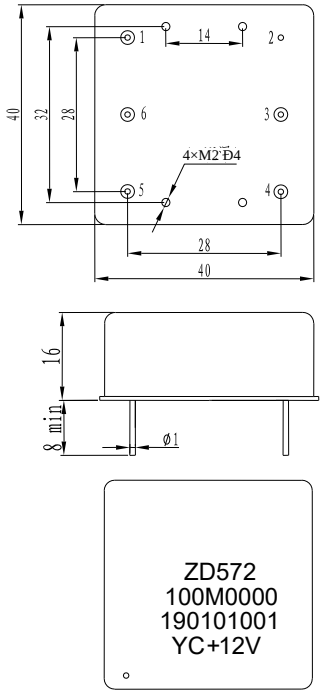
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD572(G) Aerospace High Frequency Oven Controlled Crystal Oscillator

## Product Features

- Low phase noise, low aging rate, anti-irradiation
- Product quality grade: YC, QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 80 MHz~135MHz | |
| Supply voltage: | +12V | |
| Input power: | 5W (startup);1.5W (steady) | |
| Waveform/Waveform Output Power: | Sine wave/ ≥ 7 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤ ±10 × $5^{-7}$ | |
| Ec range: | ≥ 5 × 10 ±$^{-7}$ | |
| | optimal value | Typical value |
| Allan variance (100MHz): | 8 ×$^{-12}$ 10/1s | 2 1×$^{-}$10/1s |
| Phase noise: (100MHz) | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -162dBc/Hz@10kHz | -160dBc/Hz@10kHz |
| | -165dBc/Hz@100kHz | -160dBc/Hz@100kHz |
| Frequency Aging: | ±1×$10^{-9}$ /d | |
| Frequency temperature stability: | ± 2 × $10^{-7}$ (-35 ℃ ~ +70 ℃) | |
| Preheating time | ≤ 5min (stable within ± 2 × $10^{-7}$). | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Weight: | ≤ 50g | |
| Executive standard: | Q/Fx2105-2024 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic frequency tuning(Vt) |
| 2 | Ground (GND) |
| 3 | Ground (GND)/NC |
| 4 | Signal output (OUT) |
| 5 | Power ($V_{CC}$) |
| 6 | Reference voltage ($V_{REF}$) |

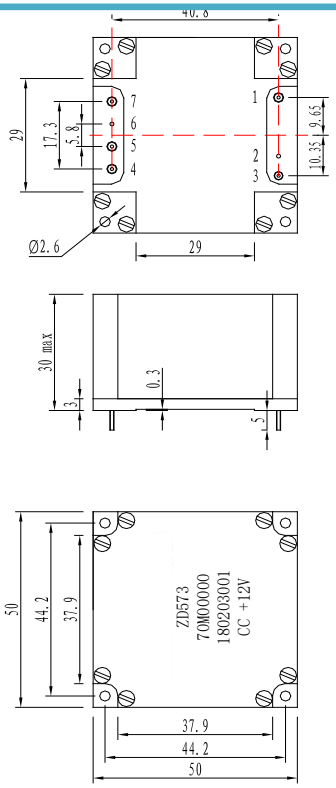
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD573(G) High-frequency and High-stability Crystal Oscillator for Aerospace

## Product Features

- Excellent short-term stability, low aging rate, anti-irradiation.
- Product quality grade: YC, QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 10 MHz~80MHz | |
| Supply voltage: | +12V | |
| Input power: | 7W (startup);2.5W (steady) | |
| Waveform/Waveform Output Power: | Sine wave/ ≥ 7 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤ ±5 × $10^{-8}$ | |
| Ec range: | ≥ 3 × 10 ±$^{-7}$ | |
| | optimal value | Typical value |
| Variance of Alendrum (70MHz): | 8×$^{-}$10/1s | 2 ×$^{-12}$ 10/1s |
| Phase noise: (70MHz) | -95dBc/Hz@1Hz | -90dBc/Hz@1Hz |
| | -115dBc/Hz@10Hz | -112dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -140dBc/Hz@1kHz | -140dBc/Hz@1kHz |
| | -140dBc/Hz@10kHz | -140dBc/Hz@10kHz |
| Frequency Aging: | ±1×$10^{-10}$ /d | ±2×$10^{-10}$ /d |
| Frequency temperature stability: (-40 ℃ ~ +70 ℃) | ± 1 × $10^{-8}$ | ± 2 × $10^{-8}$ |
| Preheating time | ≤ 20min (stable within ± 1 × $10^{-8}$). | |
| Harmonic/Subharmonic/ Clutter Suppression: | Better than 35dBc/55dBc/80dBc | |
| Overall dimensions: | 50mm ×50mm ×30mm (excluding terminal) | |
| Weight: | ≤ 100g | |
| Executive standard: | Q/Fx2106-2024 | |




| Interface | Function |
|---|---|
| 1 | NC |
| 2 | Ground (GND) |
| 3 | Signal output (OUT) |
| 4 | Electronic tuning (Vt) |
| 5 | Reference voltage ($V_{REF}$) |
| 6 | Power ($V_{CC}$) |

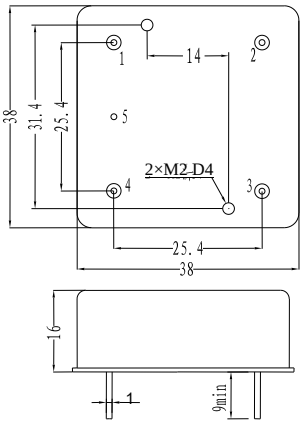
**Note:** the detailed technical indicators can be customized according to user requirements.

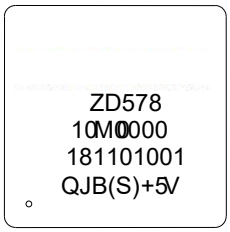
# ZD578 Oven Controlled Crystal Oscillator with High Stability and Low Phase Noise for Aerospace

## Product Features

- High stability, low phase noise, low aging rate, anti-irradiation
- Product quality grade: QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 8 MHz~30MHz | |
| Supply voltage: | +5V, +12V | |
| Input power: | 4.5W (startup);1.5W (stable) | |
| Output waveform: | sine wave | |
| Output power: | ≥ 5 dBm/50Ω | |
| Initial accuracy of reference temperature: | ≤ ±10 × 5 $^{-8}$ | |
| Frequency adjustment range: | ≥ 3 × 10 ±$^{-7}$ | |
| | optimal value | Typical value |
| Allan variance (10MHz): | 1 1×$^{-}$10/1s | 2 ×$^{-12}$ 10/1s |
| Phase noise:. (10MHz) | -115dBc/Hz@1Hz | -105dBc/Hz@1Hz |
| | -138dBc/Hz@10Hz | -130dBc/Hz@10Hz |
| | -155dBc/Hz@100Hz | -150dBc/Hz@100Hz |
| | -163dBc/Hz@1kHz | -160dBc/Hz@1kHz |
| | -165dBc/Hz@10kHz | -163dBc/Hz@10kHz |
| Frequency Aging: | ±1×10 $^{-10}$ /d | ±2×10 $^{-10}$ /d |
| Frequency temperature stability: (-40 ℃ ~ +70 ℃) | ± 1 × 10 $^{-8}$ | ± 2 × 10 $^{-8}$ |
| Preheating time | ≤ 5min (stable within ± 5 × 10 $^{-8}$). | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Overall dimensions: | 38mm ××38mm 14mm (excluding terminal) | |
| Weight: | ≤ 40g | |
| Executive standard: | Q/Fx2079-2019 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Reference voltage (V $_{REF}$) |
| 2 | Electronic frequency tuning (Vt) |
| 3 | Power (Vcc) |
| 4 | Signal output (OUT) |
| 5 | Ground (GND) |

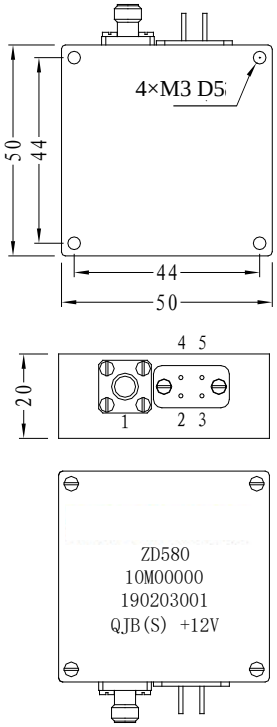
**Note:** the technical indicators can be customized according to user requirements.

# ZD580 Shock-resistant High-stability Crystal Oscillator for Aerospace

## Product Features

- High short-term stability, low aging rate, anti-irradiation
- Internal buffer damping structure, anti-vibration, impact resistance (1500g)
- Product quality grade: QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 5 MHz~120MHz | |
| Supply voltage: | +12V | |
| Input power: | 5W (startup);1.6W (steady) | |
| Output waveform: | sine wave | |
| Output power: | ≥7 dBm/50Ω | |
| Initial accuracy of reference temperature: | $\pm 10 \times 5^{-8}$ | |
| Frequency adjustment range: | $\geq 3 \times \pm 10^{-7}$ | |
| | optimal value | Typical value |
| Allan variance (10MHz): | $8\times^{-}10$/1s | $2 \times^{-12}$ 10/1s |
| Phase noise: (10MHz) | -110dBc/Hz@1Hz | -100dBc/Hz@1Hz |
| | -135dBc/Hz@10Hz | -135dBc/Hz@10Hz |
| | -150dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | -158dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| Frequency Aging (10MHz): | $\pm 1\times 10^{-10}$ /d | $\pm 2\times 10^{-10}$ /d |
| Frequency temperature stability: (10MHz, -40 ℃ ~ +70 ℃) | $\pm 1 \times 10^{-8}$ | $\pm 2 \times 10^{-8}$ |
| Preheating time | ≤ 10min (stable within $\pm 2 \times 10^{-8}$). | |
| Harmonic Clutter Suppression: | Better than 35dBc/80dBc | |
| Overall dimensions: | 50mm ×50mm ×20mm (excluding terminal) | |
| Weight: | ≤ 80g | |
| Executive standard: | Q/Fx2080-2020 | |




| Interface | Function |
|---|---|
| 1 | Signal output (OUT) |
| 2 | Electronic frequency tuning (Vt) |
| 3 | Ground (GND) |
| 4 | Reference voltage ($V_{REF}$) |
| 5 | Power (Vcc) |

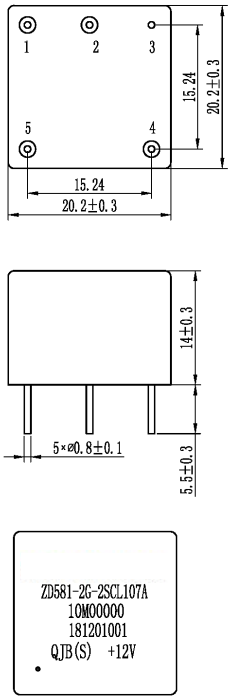
**Note:** the technical indicators can be customized according to user requirements.

# ZD581 Small Low-power Oven Controlled Crystal Oscillator for Aerospace

## Product Features

- Small size, low power consumption, low phase noise, low aging rate, anti-irradiation
- Product quality grade: QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 10 MHz~50MHz | |
| Supply voltage: | +5V, +12V | |
| Input power: | 3W (startup);0.8W (steady) | |
| Waveform/Waveform Output Power: | Sine wave/dBm ≥ 7 /50Ω | |
| Initial accuracy of reference temperature: | ≤ ± 1 × $10^{-7}$ | |
| Frequency adjustment range: | ≥ ± 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| Phase noise: (10MHz) | -100dBc/Hz@10Hz | -95dBc/Hz@10Hz |
| | -130dBc/Hz@100Hz | -125dBc/Hz@100Hz |
| | -160dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -165dBc/Hz@10kHz | -160dBc/Hz@10kHz |
| | -168dBc/Hz@100kHz | -165dBc/Hz@100kHz |
| Frequency Aging: | ±2×$10^{-10}$ /d | ±5×$10^{-10}$ /d |
| Frequency temperature stability: | 1 × $10^{-7}$ (-40 ℃ ~ +70 ℃) | |
| Preheating time | ≤ 3min (stable within ± 1 × $10^{-7}$). | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Overall dimensions: | 20mm ×20mm ×14mm (excluding terminal) | |
| Weight: | ≤ 15g | |
| Executive standard: | Q/Fx2081-2020 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic frequency tuning($V_T$) |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Ground (GND) |
| 4 | Signal output (OUT) |
| 5 | Power (Vcc) |

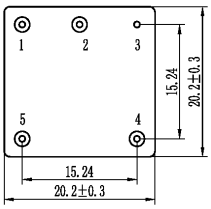
**Note:** the technical indicators can be customized according to user requirements.

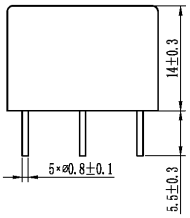
# ZD585(G) Small Low-power Oven Controlled Crystal Oscillator for Aerospace

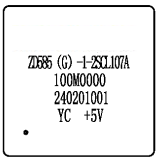
## Product Features

- Small size, low power consumption, low phase noise, low aging, anti-irradiation
- Product quality grade: YC, QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 40 MHz~120MHz | |
| Supply voltage: | +5V, +12V | |
| Input power: | 3W (startup);0.8W (steady) | |
| Waveform/Waveform Output Power: | Sine wave/dBm ≥ 7 /50Ω | |
| Initial accuracy of reference temperature: | ≤ 5 × $10^{-7}$ | |
| Ec range: | ≥ 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| Phase noise: (100MHz) | -100dBc/Hz@10Hz | -95dBc/Hz@10Hz |
| | -130dBc/Hz@100Hz | -125dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -163dBc/Hz@10kHz | -160dBc/Hz@10kHz |
| | -165dBc/Hz@100kHz | -163dBc/Hz@100kHz |
| Frequency Aging: | ± 1×$10^{-9}$ /d | |
| Frequency temperature stability: | 2 × $10^{-7}$ (-40 ℃ ~ +70 ℃) | |
| Preheating time | ≤ 3min (stable within ± 2 × $10^{-7}$). | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Overall dimensions: | 20mm ×20mm ×14mm (excluding terminal) | |
| Weight: | ≤ 15g | |
| Executive standard: | Q/Fx2087-2021 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Electronic frequency tuning ($V_T$) |
| 2 | Reference voltage ($V_{REF}$) |
| 3 | Ground (GND) |
| 4 | Signal output (OUT) |
| 5 | Power (Vcc) |

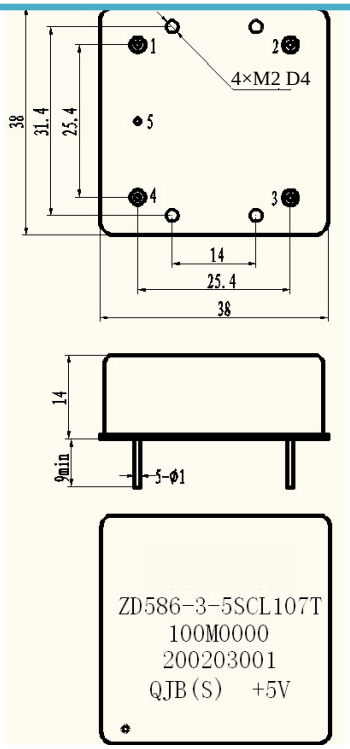
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZD586(G) Low-phase Noise Oven Controlled Crystal Oscillator for Aerospace

## Product Features

- Low phase noise, low aging rate, anti-irradiation
- Product quality grade: YC, QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 40 MHz~150MHz | |
| Supply voltage: | +12V,+5V | |
| Input power: | 4.5W (startup);1.5W (stable) | |
| Waveform/Waveform Output Power: | Sine wave/dBm ≥ 7 /50Ω | |
| Initial accuracy of reference temperature: | ≤ 5 × $10^{-7}$ | |
| Ec range: | 5 × $10^{-7}$ | |
| | optimal value | Typical value |
| Allan variance (100MHz): | ± 5 × 10/ $^{-12}$ s/1s | ± 1 × $10^{-11}$ s/1s |
| Phase noise: (100MHz) | -105dBc/Hz@10Hz | -100dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -165dBc/Hz@10kHz | -160dBc/Hz@10kHz |
| | -168dBc/Hz@100kHz | -165dBc/Hz@100kHz |
| Frequency Aging: | ±5×$10^{-10}$ /d | ±1×$10^{-9}$ /d |
| Frequency temperature stability: (-40 ℃ ~ +70 ℃) | ± 5 × $10^{-8}$ | ± 1 × $10^{-7}$ |
| Preheating time | ≤ 5min (stable within ± 2 × $10^{-7}$). | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Overall dimensions: | 38mm ××38mm 14mm (excluding terminal) | |
| Weight: | ≤ 40g | |
| Executive standard: | Q/Fx2090-2020 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| 1 | Reference voltage ($V_{REF}$) |
| 2 | Electronic frequency tuning ($V_T$) |
| 3 | Power (Vcc) ground |
| 4 | Signal output (OUT) |
| 5 | (GND) |

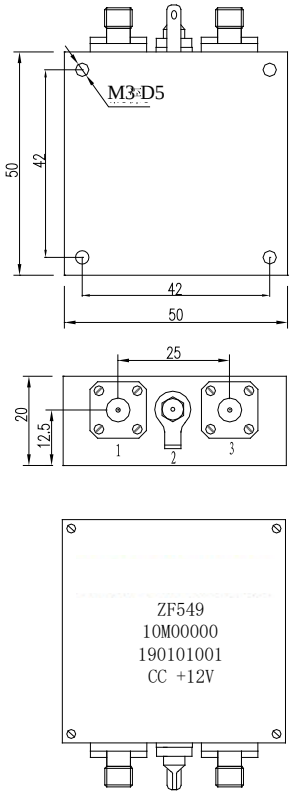
**Note:** the technical indicators can be customized according to user requirements.

# ZF549(G) High Regulated Voltage Controlled Crystal Oscillator for Aerospace

## Product Features

- Excellent short-term stability, low aging rate, anti-irradiation.
- Product quality grade: YC, QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 4 MHz~30MHz | |
| Supply voltage: | +12V | |
| Input power: | 6W (startup);2.0W (steady) | |
| Waveform/Waveform Output Power: | Sine wave (SMA)/ ≥ 7 dBm/50Ω | |
| Pressure control range: | ≥ 3 × 10 $\pm^{-7}$ | |
| | optimal value | Typical value |
| Allan variance: | 5×10/1s | 1 1×10/1s |
| Phase noise: | -118dBc/Hz@1Hz | -105dBc/Hz@1Hz |
| | -140dBc/Hz@10Hz | -135dBc/Hz@10Hz |
| | -150dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -158dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| Frequency Aging: | ±1×10 $^{-10}$ /d | ±2×10 $^{-10}$ /d |
| Frequency temperature stability: (-35 ℃ ~ +70 ℃) | ± 1 × 10 $^{-8}$ | ± 2 × 10 $^{-8}$ |
| Preheating time | ≤ 10min (stable within ± 2 × 10 $^{-8}$). | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Harmonic/Clutter Suppression: | Better than 35dBc/80dBc | |
| Overall dimensions: | 50mm ×50mm ×20mm (excluding terminal) | |
| Weight: | ≤ 80g | |
| Executive standard: | Q/Fx2107-2024 | |




| Interface | Function |
|---|---|
| 1 | Voltage control (V C) |
| 2 | Power (V CC ), ground |
| 3 | Signal output (OUT) |

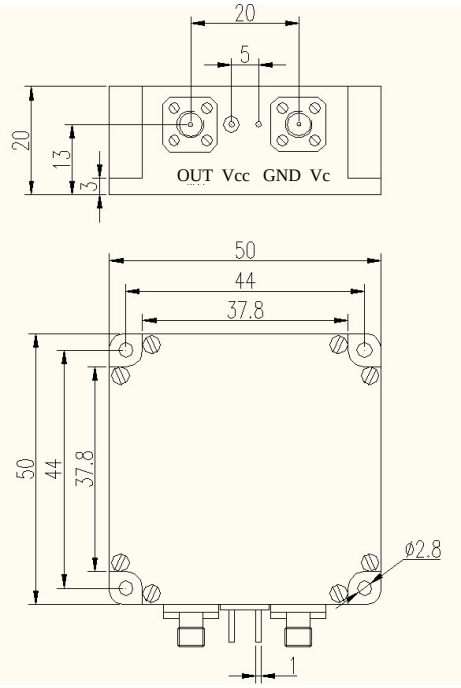
**Note:** the detailed technical indicators can be customized according to user requirements.

# ZF550(G) High-voltage Controlled Crystal Oscillator for Aerospace

## Product Features

- Excellent short-term stability, low aging rate, anti-irradiation.
- Product quality grade: YC, QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | 4 MHz~30MHz | |
| Supply voltage: | +12V | |
| Input power: | 5W (startup),2.0W (steady) | |
| Waveform/Waveform Output Power: | Sine wave (SSMA)/ ≥ 7 dBm/50Ω | |
| Pressure control range: | ≥ ± 3 × $10^{-7}$ | |
| | optimal value | Typical value |
| Allan variance: | 5×10/1s | 1 1×10/1s |
| Phase noise: | -118dBc/Hz@1Hz | -105dBc/Hz@1Hz |
| | -140dBc/Hz@10Hz | -135dBc/Hz@10Hz |
| | -150dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -158dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| Frequency Aging: | ±1×$10^{-10}$ /d | ±2×$10^{-10}$ /d |
| Frequency temperature stability: (-35 ℃ ~ +70 ℃) | ± 1 × $10^{-8}$ | ± 2 × $10^{-8}$ |
| Preheating time | ≤ 10min (stable within ± 2 × $10^{-8}$). | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Harmonic/Clutter Suppression: | Better than 35dBc/80dBc | |
| Overall dimensions: | 50mm ×50mm ×20mm | |
| Weight: | ≤ 80g | |
| Executive standard: | Q/Fx2108-2024 | |
| | Q/QJA 20131/87-2021 | |



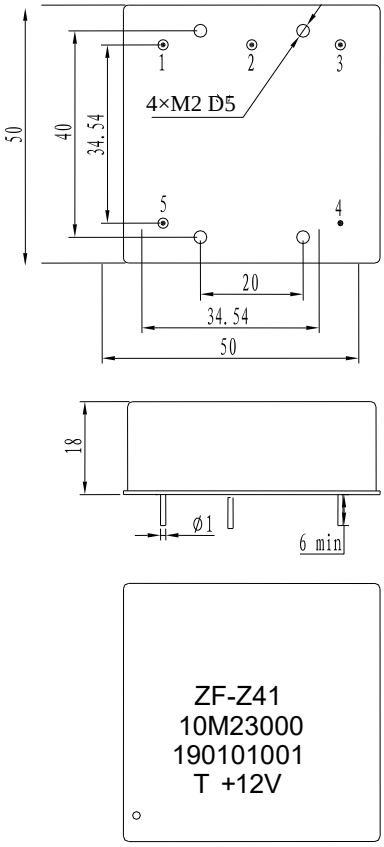

**Note:** the detailed technical indicators can be customized according to user requirements.

# ZF-Z41 High-voltage Regulated Crystal Oscillator for Aerospace

## Product Features

- Excellent short-term stability, low aging rate, anti-irradiation.
- Product quality grade: Aerospace grade, Pujun

| Technical indicators | | |
|---|---|---|
| Model: | ZF-Z41 | |
| Frequency: | 4 MHz~30MHz | |
| Supply voltage: | +12V | |
| Input power: | 5W (startup),2.0W (steady) | |
| Waveform/Output Power: | Sine wave/ ≥ 7 dBm(50Ω) | |
| Initial accuracy of reference temperature: | ±1 × $10^{-8}$ (25 ℃; voltage control voltage: 4.5V ~ 5.5V) | |
| Pressure control range: | ≥ ± 5* $10^{-7}$(Voltage control voltage 1V ~ 9V) | |
| | optimal value | Typical value |
| Allan variance (10.23MHz): | 10 ×$^{-13}$ /1s | 10 ×$^{-12}$ /1s |
| Phase noise: (10.23MHz) | -118dBc/Hz@1Hz | -105dBc/Hz@1Hz |
| | -140dBc/Hz@10Hz | -135dBc/Hz@10Hz |
| | -145dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -153dBc/Hz@1kHz |
| | -158dBc/Hz@10kHz | -155dBc/Hz@10kHz |
| Frequency Aging: | ±1×$10^{-10}$ /d | ±2×$10^{-10}$ /d |
| Frequency temperature stability: (-35 ℃ ~ +70 ℃) | ± 1 × $10^{-8}$ | ± 2 × $10^{-8}$ |
| Preheating time | ≤ 20min (stable within ± 1 × $10^{-8}$). | |
| Clutter Suppression Harmonic/: | Better than 35dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Overall dimensions: | 50mm ×50mm ×18mm (excluding terminal) | |
| Weight: | ≤ 80g | |
| Executive standard: | Q/Fx20063-2011 | |




"。" Identifies Corresponding Pin 1

| Interface | Function |
|---|---|
| **1** | Voltage control ($V_C$) |
| **2** | NC |
| **3** | Signal output (OUT) |
| **4** | Ground (GND) |
| **5** | Power ($V_{CC}$) |

**Note:** the technical indicators can be customized according to user requirements.

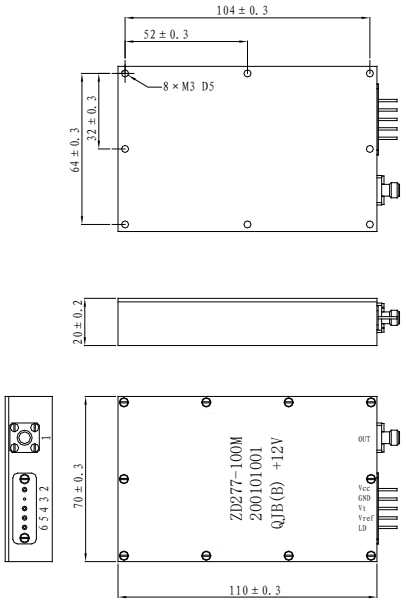
# Frequency Source Products

# ZD277 Phase-locked Oven Controlled Crystal Oscillator

## Product Features

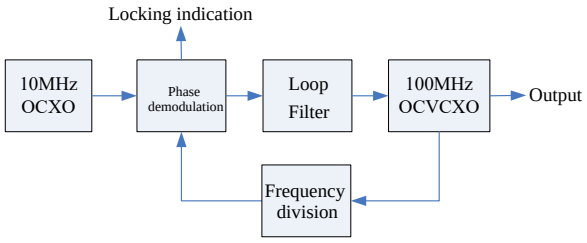
- Low phase noise, anti-irradiation
- Product quality grade: QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | Nominal frequency: 100MHz | |
| Supply voltage: | +12V | |
| Input power: | 8W (startup);3W (stable) | |
| Output waveform: | sine wave | |
| Output power: | ≥ 7 dBm/50Ω | |
| Initial accuracy of reference temperature: | ±10 × 5 $^{-8}$ | |
| | optimal value | Typical value |
| Phase noise: | -85dBc/Hz@1Hz | -90dBc/Hz@1Hz |
| | -100dBc/Hz@10Hz | -95dBc/Hz@10Hz |
| | -135dBc/Hz@100Hz | -130dBc/Hz@100Hz |
| | -155dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | -160dBc/Hz@10kHz | -160dBc/Hz@10kHz |
| | -165dBc/Hz@100kHz | -165dBc/Hz@100kHz |
| Frequency Aging: | ±2×10 $^{-10}$ /d,±3×10 $^{-8}$ /y | |
| Frequency temperature stability: | ± 1 × 10 $^{-7}$ (-25 ℃ ~ +60 ℃) | |
| Preheating time | ≤ 10min (stable within ± 2 × 10 $^{-8}$). | |
| Suppression of harmonic/clutter: | Better than 30dBc/80dBc | |
| Operating temperature range: | -40 ℃ ~ +70 ℃ | |
| Overall dimensions: | 110mm ××70mm 20mm (excluding terminal) | |
| Weight: | ≤ 200g | |
| Executive standard: | Q/Fx2088-2020 | |




| Interface | Function |
|---|---|
| 1 | Signal output (OUT); |
| 2 | Power ($V_{CC}$); |
| 3 | Ground (GND); |
| 4 | Electronic frequency tuning($V_T$) |
| 5 | Reference voltage ($V_{REF}$); |
| 6 | Locking indication (LD) |

**Note:** the detailed technical indicators can be customized according to user requirements.

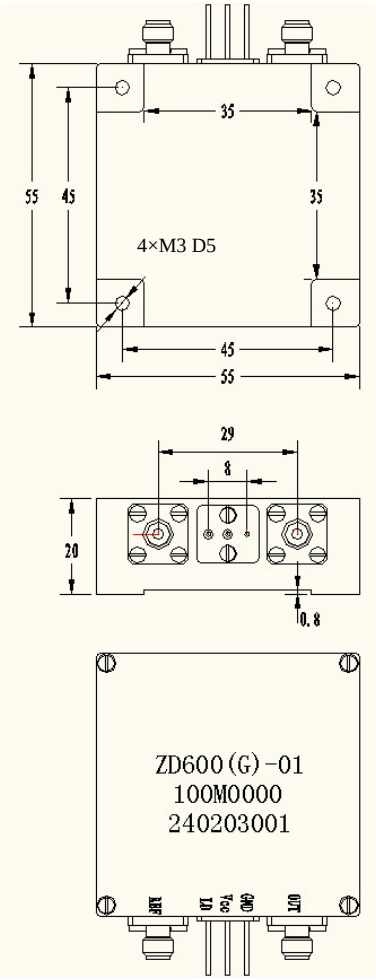


# ZD600 Phase-locked Oven Controlled Crystal Oscillator

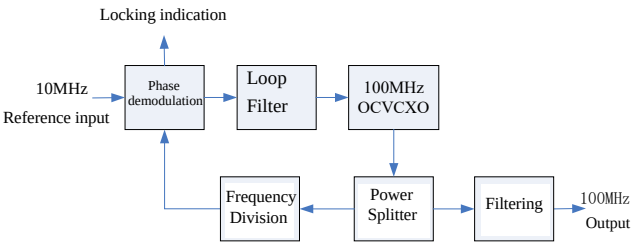
## Product Features

- Low phase noise, anti-irradiation
- Product quality grade: QJB(S, B, C)

| | | |
|---|---|---|
| Frequency: | | 100MHz |
| Supply voltage: | | +12V |
| Input power: | | 6W (startup);3W (stable) |
| Output waveform: | | sine wave |
| Output power: | | ≥ 10 dBm/50Ω |
| Phase noise: (after locking) | -100dBc/Hz@10Hz | |
| | -130dBc/Hz@100Hz | |
| | -150dBc/Hz@1kHz | |
| | -160dBc/Hz@10kHz | |
| | -160dBc/Hz@100kHz | |
| Suppression of harmonic/clutter: | | Better than 25dBc/65dBc |
| Locking indication: | | ≥ 2.7V (room temperature, locked) |
| Operating temperature range: | | -40 ℃ ~ +70 ℃ |
| Storage temperature range: | | -55 ℃ ~ +85 ℃ |
| Reference input requirements | Reference frequency: | 10MHz |
| | Output power | 0dBm ~ 4dBm |
| | Phase noise: | ≤-120dBc/Hz@10Hz |
| Overall dimensions: | | 55mm ××55mm 20mm (excluding terminal) |
| Weight: | | ≤ 100g |




**Note:** the detailed technical indicators can be customized according to user requirements.




ZD600(G)-XX-XXXMXXXX

Product model (domestic identification)

Agreement Sequence Number

Nominal frequency

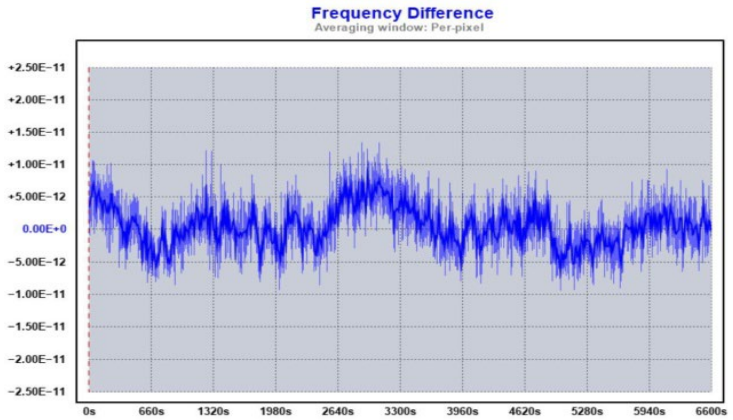
# ZD620 Tame Crystal Oscillator

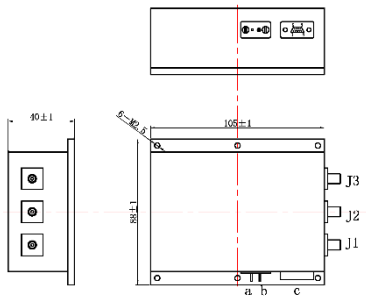
## Product Features

- Ultra-high frequency accuracy E-12, punctuality accuracy 4 μs/24h
- Product quality grade: QJB(B, C)

| | | | |
|---|---|---|---|
| Frequency: | | 10MHz | |
| crystal oscillator Power supply | Supply voltage: | +12V | |
| | Input current: | Starting current ≤ 700mA, stable current ≤ 200mA | |
| Taming Power supply | Supply voltage: | +5V | |
| | Input current: | ≤ 200mA | |
| Output waveform: | | sine wave | |
| Output power: | | ≥+7 dBm/50Ω | |
| Frequency accuracy (after taming): | | Better than 1 × $10^{-11}$ (24h average) | |
| Variance of Allan (after taming): | | × $10^{-12}$ /1s ~ 100s | |
| Phase noise: (after taming) | | optimal value | Typical value |
| | | -100dBc/Hz@1Hz | -95dBc/Hz@1Hz |
| | | -130dBc/Hz@10Hz | -125dBc/Hz@10Hz |
| | | -150dBc/Hz@100Hz | -145dBc/Hz@100Hz |
| | | -153dBc/Hz@1kHz | -150dBc/Hz@1kHz |
| | | -155dBc/Hz@10kHz | -152dBc/Hz@10kHz |
| Suppression of harmonic/clutter: | | Better than 35dBc/80dBc | |
| 1pps | Level | High level ≥ 2.4V, low level ≤ 0.4V | |
| | pulse width | 10us | |
| communication interface protocol | | RS232 | |
| Overall dimensions: | | 105mm ×88mm ×40mm (excluding terminal) | |
| Weight: | | ≤ 200g | |

**Note:** technical indicators in detail can be customized according to user requirements




| Interface Name | Interface form | Interface Definition |
|---|---|---|
| **a** | guide needle | ground |
| **B** | guide needle | +12V |
| **c** | J30J-9 joint | 1, 2:+5V<br>3, 4 and 5:<br>6:RX<br>7:TX<br>8:LO<br>9:ST |
| **J1** | SMA Connector | 1pps input |
| **J2** | SMA Connector | 1pps output |
| **J3** | SMA Connector | 10MHz output |

# BM1304-41 Crystal Oscillator with High Stability

## Main features

- Standard configuration 2E-13/s, can be upgraded to 8E-14/s according to user needs;
- Can integrate multiple crystal oscillator, respectively, as the standard and verification standards;

## Product Introduction

High stability crystal oscillator can be used as a national high performance short stability measurement standard, can also be used in the detection, communication and other fields as a high stability frequency source.

## Technical indicators

| ITEMS | Technical indicators |
|---|---|
| Output signal frequency | 5MHz, 10MHz |
| Output signal level | (8±1)dBm |
| short-term frequency stability | ≤ 2E-13/s (standard),≤ 8E-14/s (customized) |
| Interface | BNC |
| Operating voltage (AC) | 210V ~ 230V |
| Dimensions (height × width × depth) | 89mm × 482mm × 450mm |

# BM1304-42 Low-phase Noise Crystal Oscillator

## Main features

- The far carrier frequency phase noise can reach-175dBc/Hz(≥ 10kHz);
- Multiple crystal oscillators can be integrated as standard and verification standard respectively;

## Product Introduction

Low phase noise crystal oscillator can be used as a national high-performance phase noise measurement standard, can also be used in detection, communications and other fields as a low-noise frequency source.

## Technical indicators

| Project | | Technical indicators |
|---|---|---|
| Output signal level | | ≥ 7dBm |
| Output signal frequency | | 5MHz, 10MHz |
| $f_0$ =5MHz | 1Hz | ≤-115dBc/Hz |
| | 10Hz | ≤-140dBc/Hz |
| | 100Hz | ≤-155dBc/Hz |
| | 1kHz | ≤-165dBc/Hz |
| | 10kHz | ≤-175dBc/Hz |
| | 100kHz | ≤-178dBc/Hz |
| $f_0$ =10MHz | 1Hz | ≤-115dBc/Hz |
| | 10Hz | ≤-140dBc/Hz |
| | 100Hz | ≤-157dBc/Hz |
| | 1kHz | ≤-168dBc/Hz |
| | 10kHz | ≤-175dBc/Hz |
| | 100kHz | ≤-178dBc/Hz |
| Interface | | BNC |
| Operating voltage (AC) | | 210V ~ 230V |
| Dimensions (height × width × depth) | | 89mm × 482mm × 450mm |

# BM2201-41(M) Short-term Stable Phase Noise Measurement Device

## Key features:

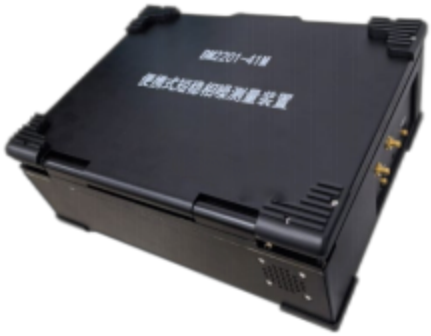
- Can measure 1MHz ~ 30MHz any frequency short-term frequency stability and phase noise;
- The 1s additional frequency stability of the measurement module is better than 5e-14; the additional phase noise is better than-130dBc/Hz @ 1Hz;
- Built-in high stability and low phase noise crystal oscillator reference, 1s stability is better than 2E-13 (standard) or 8E-14 (customized), phase noise is better than-115dBc/Hz @ 1Hz,-175dBc/Hz @ 10kHz;
- Portable and desktop two product forms;

## Product introduction:

BM2201-41(M) is the high-performance short-term frequency stability and phase noise measurement device. Using digital technology, it has the advantages of measuring additional phase noise and additional frequency instability. Built-in ultra-stable and low phase noise crystal. The measurement results are directly displayed, the operation is simple, the measurement accuracy is high, and the use is convenient. It can be widely used in high index short stability, phase noise measurement and field test.

## Technical indicators

| ITEMS | | Technical indicators |
|---|---|---|
| Measured signal frequency | | 1MHz to 30MHz |
| Measuring equipment additional frequency stability ($f_0$ =10MHz) | 1s | ≤ 5E-14 |
| | 10s | ≤ 1E-14 |
| | 100s | ≤ 2E-15 |
| | 1000s | ≤ 1E-15 |
| | ≥ 10000s | ≤ 3E-16 |
| Measuring equipment additional phase noise ($f_0$ =10MHz) | 1Hz | ≤-135dBc/Hz |
| | 10Hz | ≤-145dBc/Hz |
| | 100Hz | ≤-160dBc/Hz |
| | 1kHz | ≤-170dBc/Hz |
| | ≥ 10kHz | ≤-175dBc/Hz |
| Built-in low phase noise crystal reference Phase Noise (10MHz) | 1Hz | ≤-115dBc/Hz |
| | 10Hz | ≤-140dBc/Hz |
| | 100Hz | ≤-157dBc/Hz |
| | 1kHz | ≤-168dBc/Hz |
| | ≥ 10kHz | ≤-175dBc/Hz |
| Built-in ultra-stable crystal oscillator Frequency stability (10MHz) | 1s | ≤ 2E-13 (standard),≤ 8E-14 (custom) |
| Interface | | sma (portable) or BNC (desktop) |
| Operating voltage (AC) | | 210V ~ 230V |
| Dimensions (height × width × depth) | | Portable: ≤ 127mm × 325mm × 281mm<br>Desktop: ≤ 495mm × 189mm × 468mm |



# BM2201-31 Tame Clock Source

## Key features:

- The cesium clock signal can be locked to significantly improve the frequency stability and phase noise index of the output signal;
- The 1s level frequency stability is improved to 5e-13 or lower; the phase noise can be improved to-115dBc/Hz @ 1Hz,-163dBc/Hz @ 10kHz;
- After being tamed by cesium clock or GNSS signal, high frequency accuracy and small time deviation can be maintained for a long time;

## Product introduction:

BM2201-31 is the high-performance tame clock source with built-in ultra-high stability and low phase noise crystal oscillator. When cesium clock signals are input, the short-and medium-term frequency stability and phase noise of the cesium clock can be improved. Accept external cesium clock 1PPS/10MHz or GNSS receiver 1PPS tame, tame, even if the external signal is disconnected, can still maintain high frequency accuracy and long-term frequency stability for a long time.

## Technical indicators

| ITEMS | | Technical indicators |
|---|---|---|
| Input signal | | Can be tamed with GNSS receiver or cesium clock output 1PPS,<br>Or use 10MHz for phase-locked taming |
| Output frequency signal | | 10MHz,100MHz, Optional 5MHz and 1MHz |
| Frequency Frequency Accuracy | | Same as input |
| Output signal frequency stability (10MHz) | 100ms | ≤ 5E-13 |
| | 1s | ≤ 5E-13 |
| | 10s | ≤ 3E-13 |
| | 100s | ≤ 1E-13 |
| | 1000s | ≤ 5E-14 |
| | 10000s | ≤ 5E-14 |
| | ≥ 10000s | Same as input |
| Output Signal Phase Noise (10MHz) | 1Hz | ≤-115dBc/Hz |
| | 10Hz | ≤-145dBc/Hz |
| | 100Hz | ≤-157dBc/Hz |
| | 1kHz | ≤-160dBc/Hz |
| | 10kHz | ≤-163dBc/Hz |
| | 100kHz | ≤-163dBc/Hz |
| output pulse signal | | 1PPS,+5V TTL,50Ω |
| Operating voltage (AC) | | 210V ~ 230V |
| Dimensions (height × width × depth) | | ≤ 89mm × 482.6mm × 420mm |