



ROHS-Compliant Product

O-40-ULPN-100M



DESCRIPTION:

O-40-ULPN-100M is a high performance 'Oven Controlled Crystal Oscillator' (OCXO) offering exceptional Ultra Low Phase Noise (**ULPN**), Low G Sensitivity (**LGS**) and tight frequency stability.

The part comes in a robust but still small hermetically sealed metal can package what makes it also suitable for humid environmental conditions.

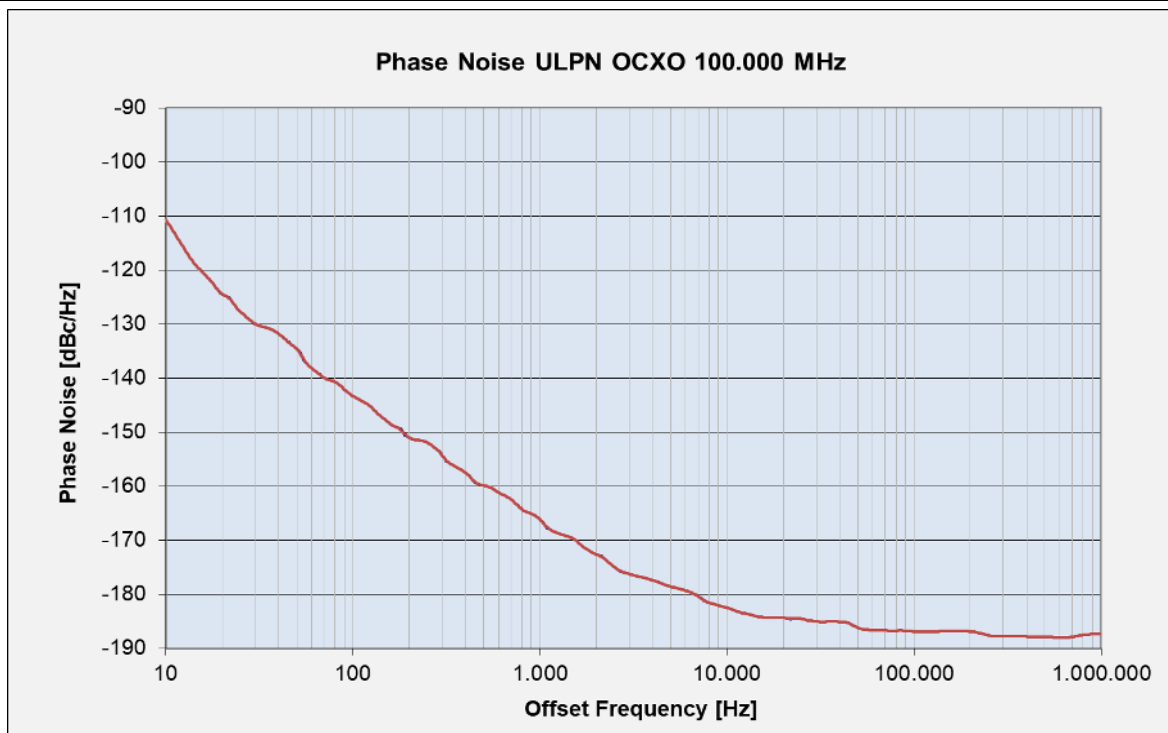


FEATURES:

- Ultra low Phase Noise:
-138 dBc / Hz @ 100 Hz
-185 dBc / Hz Noise Floor
- Low G Sensitivity
- Tight frequency stability
- Electrical frequency tuning input
- Small hermetically sealed package

APPLICATIONS:

- Instrument Reference
- Microwave Communication Systems
- Clock Reference for Microwave Signal Sources
- Test & Measurement Systems
- Radar Systems
- Medical (MRT)



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1. Specification

Test conditions: $V_S = +5\text{ V}$; $T_A = +25 \pm 3\text{ }^\circ\text{C}$; $V_C = +5\text{ V}$ unless otherwise identified

Nominal frequency F_N :	100.000 MHz			
Initial frequency tolerance: ($V_C = +5\text{ V}$; $T_A = +25\text{ }^\circ\text{C}$, after power on for 30 min)	$\leq \pm 300\text{ ppb}$			
Frequency stability vs. temperature range -20 °C to +70 °C (T-option 2070):	<u>Class H</u> $\pm 100\text{ ppb}$		<u>Class G</u> $\pm 50\text{ ppb}$	
Frequency stability vs. temperature range -40 °C to +85 °C (T-option 4085):	<u>Class J</u> $\pm 500\text{ ppb}$	<u>Class I</u> $\pm 200\text{ ppb}$	<u>Class H</u> $\pm 100\text{ ppb}$	<u>Class G</u> $\pm 50\text{ ppb}$
Frequency stability vs. supply voltage changes $V_S \pm 5\%$: vs. load changes 50 Ohm $\pm 10\%$:	$\leq \pm 5\text{ ppb}$ $\leq \pm 5\text{ ppb}$			
Aging (after 30 days of continuous operation) per day: per year: 15 years:	$\leq \pm 5\text{ ppb}$ $\leq \pm 300\text{ ppb}$ $\leq \pm 2\text{ ppm}$			
Frequency tuning range (referred to F_N):	$\geq \pm 2.5\text{ ppm}$			
Frequency control voltage range V_C :	0 V to +10 V			
Modulation bandwidth:	$\geq 1\text{ kHz}$			
Supply voltage V_S :	$+5.0\text{ V} \pm 5\%$			
Power consumption steady state @ +25 °C: during warm-up:	$\leq 2.0\text{ W}$ $\leq 5.0\text{ W}$			
Warm up time: (to $dF/F_0 \leq \pm 50\text{ppb}$ referred to F_0 after 1 hr)	$\leq 5\text{ min}$			
Phase Noise (<u>max.</u>) @ offset frequency:	<u>Option P1</u>	<u>Option P2</u>	<u>Option P3</u>	
10 Hz:	-100 dBc/Hz	-105 dBc/Hz	-108 dBc/Hz	
100 Hz:	-130 dBc/Hz	-135 dBc/Hz	-138 dBc/Hz	
1 kHz:	-157 dBc/Hz	-162 dBc/Hz	-164 dBc/Hz	
10 kHz:	-180 dBc/Hz	-180 dBc/Hz	-180 dBc/Hz	
100 kHz:	-185 dBc/Hz	-185 dBc/Hz	-185 dBc/Hz	
1 MHz:	-185 dBc/Hz	-185 dBc/Hz	-185 dBc/Hz	
Output voltage:	Sine wave			
Initial output level:	$\geq +15\text{ dBm}$			
Output load impedance:	50 Ohm $\pm 10\%$			

4	Stability options @ -40 to 85°C	13.05.2020	Schweickert	KVG Quartz Crystal Technology GmbH Waibstadter Str. 2-4 D-74924 Neckarbischofsheim Tel. +49 (0) 7263 / 648-0 Fax. +49 (0) 7263 / 6196
3	Phase Noise Option P3 amended	13.08.2019	Rudolph	
2	Supply voltage + 12 V added	28.02.2019	Balzer	
5	Supply voltage 5 V only	12.04.2023	Schweickert	
ED	Description	Date	Name	



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1. Specification (continued)

Harmonics: Spurious (100 Hz to 5 MHz from carrier):	≤ -30 dBc ≤ -100 dBc
Allan Deviation for $\tau = 1$ sec :	$\leq 5 \times 10^{-11}$
Jitter (RMS) 12 kHz to 20 MHz:	≤ 50 fsec
G-Sensitivity (X or Y or Z axis):	≤ 1 ppb / g
Storage emperature range:	-45 °C ... +90 °C

2. Environmental conditions

According to KVG Product Qualification Procedure AA-QM-200 resp. AA-QM-202:

BMP (Bumping):

DIN EN 60068-2-29 Test Eb; 4000 shocks per axis; 40g / 6 ms; 3 axes, both directions

VIB (Vibration):

DIN EN 60068-2-6 Test Fc; 10..55 Hz ; 0.75 mm peak; 55..2000 Hz; 10g peak,
10 Cycles; 3 axes ; 1 Oct./min

SHK (Shock):

DIN EN 60068-2-27 Test Ea; 6 shocks per axis; 100g / 6 ms

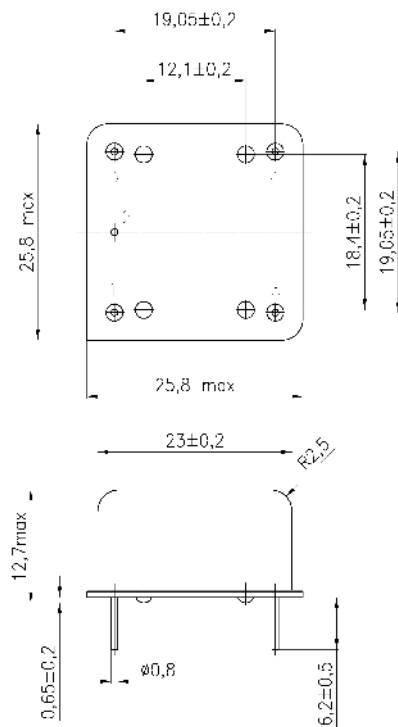
3. Marking

Manufacturer's name, date code (week/year); specification; nominal frequency

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4. Case

Case style: BF171-IS-S-12.7



Pin configuration

1. RF output
2. Ground, case
3. Control voltage input V_c
4. N.C.
5. Supply voltage V_s

RoHS-6 compliant

5. Ordering information

Type code	Package code	Supply voltage	Temperature option	Frequency stability	Phase Noise option	Nominal frequency
OCXO	25.8 x 25.8 mm	5 V	-20 / +70 °C or -40 / +85 °C	± 50 ppb to ± 500 ppb	P1, P2 or P3	-XXX.YYY
O	-40	B	4085	I	-P2	100.000 MHz

Example: O-40B4085I-P2 - 100.000 MHz

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