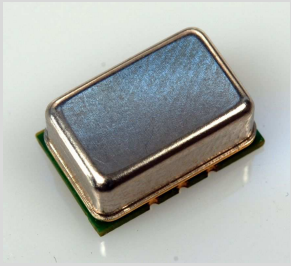
Miniature SMD (VC)OCXO

DESCRIPTION:

O-9000-HS is a very small sized SMD 'Oven Controlled Crystal Oscillator' **(VC)OCXO** offering exceptional tight frequency stability of ±0.01 ppm (±10 ppb) over a wide temperature range of up to -40/+85 °C.
The part comes in a **hermetically sealed 14 mm x 9 mm x 8 mm SMD** package taped on reel what makes it also suitable for automatic pick & place machine assembly.

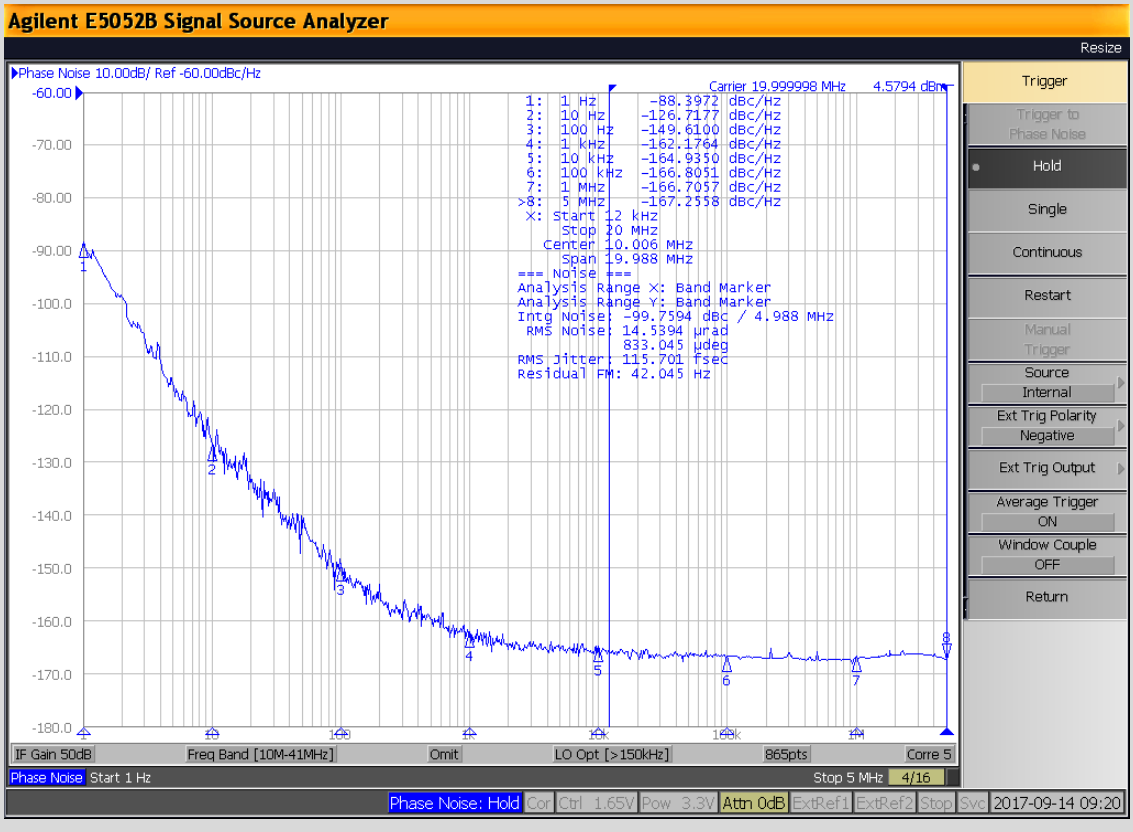


FEATURES:

- Small HS SMD package
- Fast Warm-up Time
- Low Power Consumption
- Tight Frequency Stability
- Good Long-Term Stability
- Frequency Tuning Input option
- Output Enable/Disable option

APPLICATIONS:

- Instrument Reference
- Microwave Communication
- Clock Reference for Microwave Signal Source
- Test & Measurement
- Telecom Systems



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ROHS-Compliant Product

O-9000-HS Series

1. Specification (preliminary)

Test conditions: T_A = +25 °C; V_C = 2.5 V resp. +1.65 V unless otherwise identified

Frequency Range:	10.000 to 40.000 MHz	
Standard Frequencies:	10.0, 19.2, 20.0 MHz	
Type:	**O-9500-HS**	**O-9300-HS**
Supply voltage V_S:	**+5.0 V ± 5 %**	**+3.3 V +5 % -10%**
Frequency stability vs. temperature options:		
≤ ± 10 ppb vs. -20 °C to +70 °C:	**9501**	**9301**
≤ ± 20 ppb vs. -20 °C to +70 °C:	**9511**	**9311**
≤ ± 30 ppb vs. -20 °C to +70 °C:	**9521**	**9321**
≤ ± 50 ppb vs. -20 °C to +70 °C:	**9531**	**9331**
≤ ± 10 ppb vs. -40 °C to +85 °C:	**9541**	**9341**
≤ ± 20 ppb vs. -40 °C to +85 °C:	**9551**	**9351**
≤ ± 30 ppb vs. -40 °C to +85 °C:	**9561**	**9361**
≤ ± 50 ppb vs. -40 °C to +85 °C:	**9571**	**9371**
Long term stability (aging) (after 30 days of continuous operation)		
1st year:	≤ ± 0.2 ppm	
10 years:	≤ ± 1.0 ppm	
Frequency stability		
vs. supply voltage changes V_S ± 5 %:	≤ ± 5.0 ppb	
vs. load changes ± 10 %:	≤ ± 2.0 ppb	
Frequency control by external tuning voltage :	≥ ± 2.0 ppm	≥ ± 1.0 ppm
Tuning voltage range:	+0.5 V to +4.5 V	+0.3 V to 3.0 V
Transfer function / Linearity:	Positive / ≤ 10 %	
Input impedance:	≥ 100 kOhm	
Supply current		
steady state @ +25 °C:	≤ 120 mA (0.6 W)	≤ 180 mA (0.6 W)
during warm-up:	≤ 400 mA (2 W)	≤ 600 mA (2 W)
Warm-up time: (for a typical accuracy of < ± 1 x 10^{-7} @ +25 °C referred to final frequency after 1 hour)	≤ 60 sec.	
Output signal type:	(LV)HCMOS	
Level:	V_{OL} ≤ 0.1 x V_S; V_{OH} ≥ 0.9 x V_S	
Load:	1 kOhm // 15 pF	
Duty cycle:	45% to 55%	
Rise & fall time	≤ 5 ns	

ED	Description	Date	Name
4	Stability + dimensions	25.04.2018	Balzer
3	Frequency Control Range; Part numbering	12.12.2017	Rudolph
6	pack. height; aging; phase noise; suppl volt. range	08.08.2018	Rudolph
5	Phase Noise @ 10 MHz removed	08.06.2018	Rudolph

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Subject to technical modification

O-9000-HS Series

1. Specification (preliminary) continued

Test conditions: T_A = +25 °C; V_C = 2.5 V resp. +1.65 V unless otherwise identified

Phase noise (**typical for 20 MHz**):	
10 Hz:	-126 dBc / Hz
100 Hz:	-149 dBc / Hz
1 kHz:	-162 dBc / Hz
10 kHz:	-164 dBc / Hz
100 kHz:	-165 dBc / Hz
1 MHz:	-165 dBc / Hz
Short term stability (Allan Deviation)	Typ.
1 sec:	0.05 ppb
10 sec:	0.1 ppb
100 sec:	0.2 ppb
Storage temperature range:	-45 °C to +90 °C

2. Environmental conditions

According to KVG Product Qualification Procedure AA-QM-200

3. Marking

Manufacturer's name, date code (week/year), Specification; Center frequency

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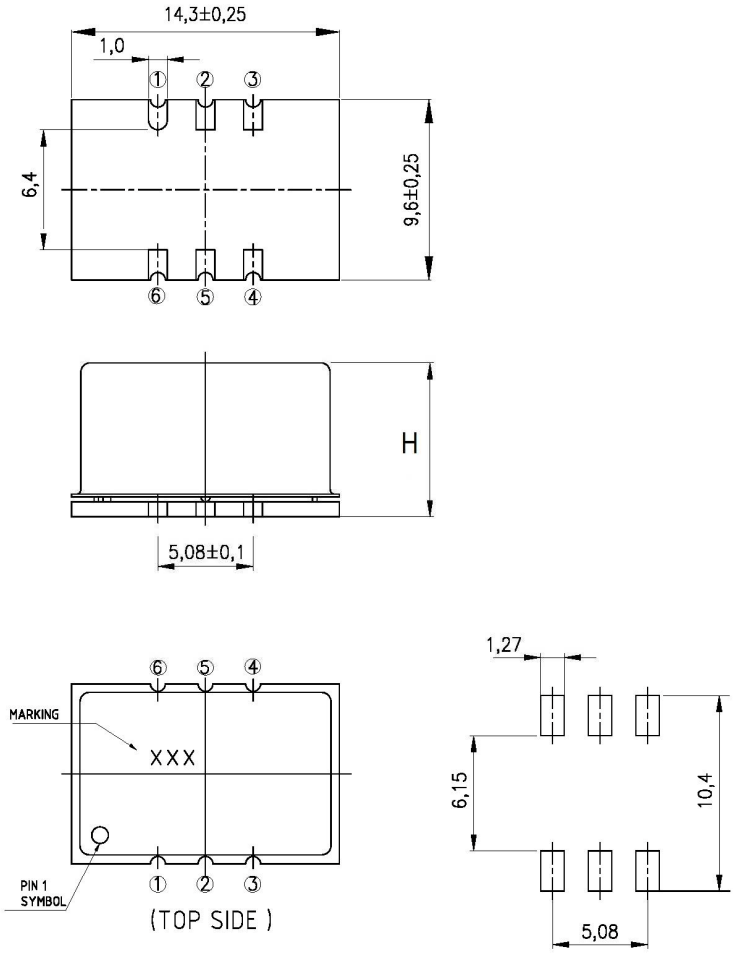
O-9000-HS Series

4. Case

BF157-8.2-HS/SMD



H = 8.2 mm max.

Pin Configuration

1. V_C or N.C.
2. RF Enable or N.C.
3. GND and Case
4. RF Output
5. N.C.
6. Supply voltage $+V_S$

Notes:

1. Provided the data sheet does not specify any parameters for Pin 1 and/or Pin 2, then that respective Pin is not connected internally.

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4	Stability + dimensions	25.04.2018	Balzer	**KVG Quartz Crystal Technology GmbH**
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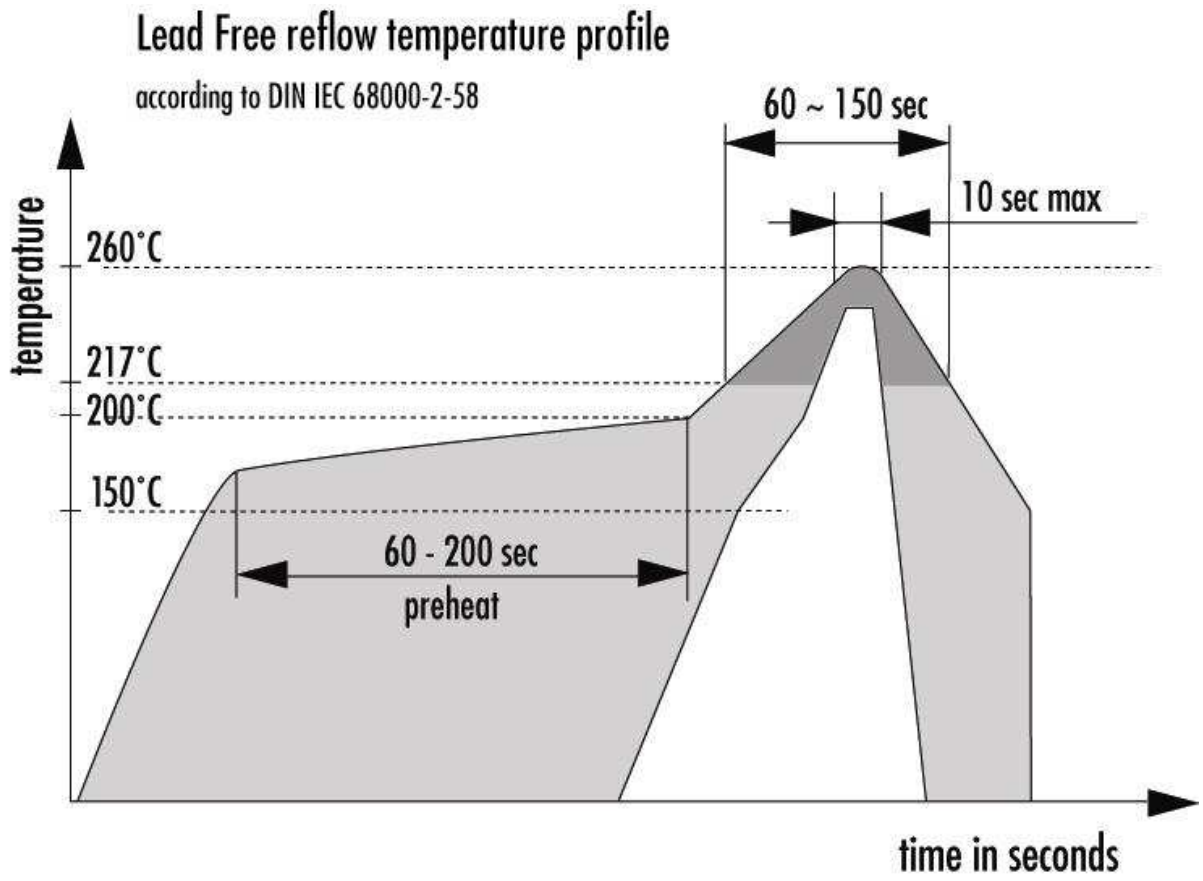
O-9000-HS Series

5.Recommended soldering profile



6. Ordering Information

Type Code	Package Code	Supply Voltage	Temp. Range	Frequ. Stability	Aging	Hermetically Sealed	Nominal Frequency
OCXO	14.4 x 9.5 mm	3.3 V	-40/+85 °C	±20 ppb	±1 ppm		20.000
O-	**9**	**3**	**4**		**1**	**-HS**	**– XX.YYY MHz**

Example: O-9341-HS-20.000 MHz

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4	Stability + dimensions	25.04.2018	Balzer
3	Frequency Control Range; Part numbering	12.12.2017	Rudolph
6	pack. height; aging; phase noise; suppl volt. range	08.08.2018	Rudolph
5	Phase Noise @ 10 MHz removed	08.06.2018	Rudolph

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