



ROHS-Compliant Product

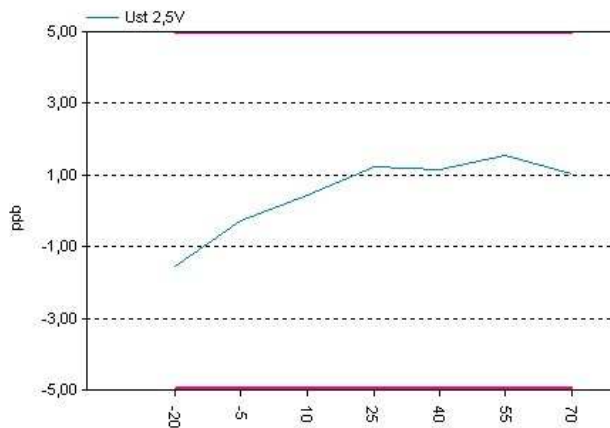
# O.60.800388-LF



## Description:

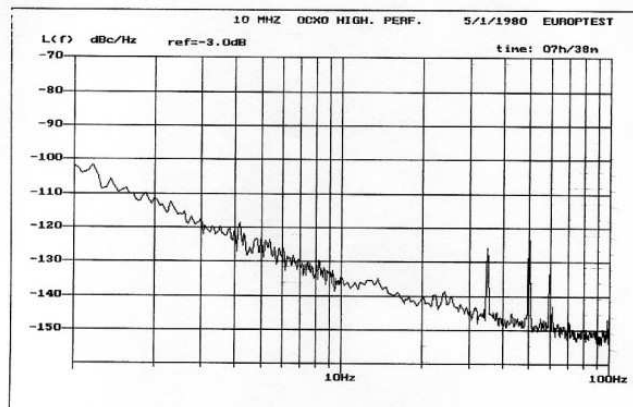
**O.60.800388-LF** is a 10 MHz high performance 'Oven Controlled Crystal Oscillator' (OCXO) offering exceptional low phase noise and tight frequency stability down to  $\pm 5$  ppb.

The part comes in a small sized SMD package taped on reel what makes it also suitable for automatic pick & place machine assembly



## FEATURES:

- Small SMD package
- Fast Warm-up Time
- Low Power Consumption
- Tight Frequency Stability
- Excellent Long-Term Stability
- Very Low Phase Noise
- El. Frequency Tuning Input
- Reference Voltage Output
- RoHS-Compliant (lead-free)



## APPLICATIONS:

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

### KVG Quartz Crystal Technology GmbH

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**O.60.800388-LF**

1. Specification	
Nominal Frequency $F_N$ :	10.000 MHz
Frequency stability in the temperature range -20 °C to +70 °C: vs. supply voltage changes $V_S \pm 5\%$ : vs. load changes 50 Ohm $\pm 5\%$ :	$\leq \pm 5 \times 10^{-9}$ $\leq \pm 5 \times 10^{-10}$ $\leq \pm 5 \times 10^{-10}$
Aging (after 30 days of continuous operation): per day: per month: 1st year: 15 years:	$\leq \pm 5 \times 10^{-10}$ $\leq \pm 5 \times 10^{-9}$ $\leq \pm 3 \times 10^{-8}$ $\leq \pm 5 \times 10^{-7}$
Frequency control range (referred to $F_N$ ) :	$\pm 0.5 \text{ ppm} \dots \pm 1.5 \text{ ppm}$
Control voltage range $V_C$ :	0 V ... +5 V
Pulling slope $dF/dV_C$ :	positive
Tuning coverage :	$\geq 15 \text{ years}$
Reference Voltage $V_{ref}$ : Drift of $V_{ref}$ over temperature and life time: Internal resistance of $V_{ref}$ :	$+5 \text{ V} \pm 1.5\%$ $\leq \pm 0.2\%$ $\leq 100 \text{ Ohm}$
Supply voltage $V_S$ :	$+12.0 \text{ V} \pm 5\%$
Supply current $I_S$ : steady state @ $T_A = +25\text{ °C}$ : during warm-up:	$\leq 100 \text{ mA}$ $\leq 350 \text{ mA}$
Warm up time @ $T_A = +25\text{ °C}$ to $dF/F < \pm 5 \times 10^{-8}$ referred to final frequency after 1 hour:	$\leq 5 \text{ min}$
Oven alarm $V_{OA}$ (Pin 2) logic LOW ( $\leq +0.33 \text{ V}$ ): logic HIGH ( $\geq +2.97 \text{ V}$ ; $\leq +3.3 \text{ V}$ ): oven alarm current:	ALARM (not ready) ready 100 $\mu\text{A}$ min.
Oscillator ON/OFF (Pin 6) Logic LOW or not connected ( $V_{ED} < +0.8 \text{ V}$ ): Logic HIGH ( $V_{ED} > +2.4 \text{ V}$ ; up to +12.5 V max):	Osc. disabled (OFF) Osc. enabled (ON)
Output voltage : level: load :	sine wave $+7.5 \text{ dBm} \pm 2.5 \text{ dBm}$ 50 Ohm
Harmonics: Spurious (100 Hz to 1 MHz from carrier):	$\leq -20 \text{ dBc}$ $\leq -90 \text{ dBc}$

4	temp. range -20/+70	27.06.08	Rudolph	<b>KVG Quartz Crystal Technology GmbH</b> P.O. Box 6 1 D-74924 Neckarbischofsheim Tel. +49 (0) 7263 / 648-0 Fax. +49 (0) 7263 / 6196
3	Temp.range 0/+70°C	08.11.07	M. Zupan	
2	Current consumption	24.09.07	M. Zupan	
5	warm-up time; steady state supply current	06.08.09	Rudolph	
ED	Description	Date	Name	



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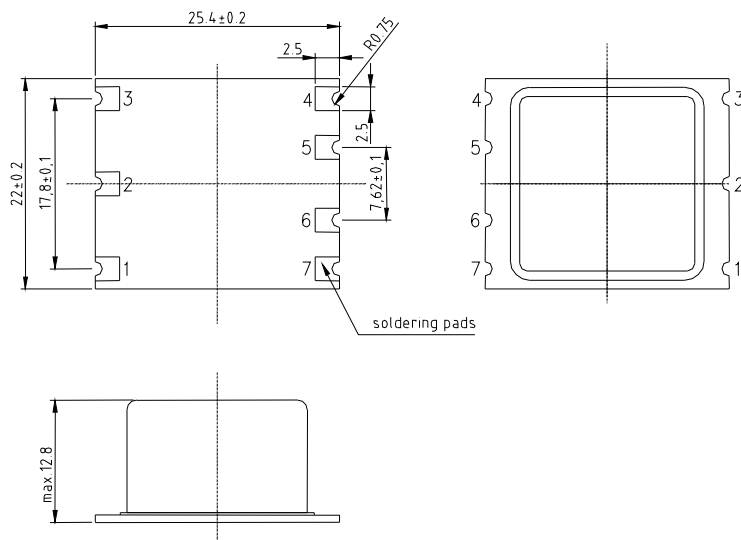
**O.60.800388-LF****1. Specification (preliminary)**

<b>Phase noise:</b> 1 Hz: 10 Hz: 100 Hz: 1 kHz: 10 kHz: 100 kHz:	Typical $\leq -100$ dBc / Hz $\leq -130$ dBc / Hz $\leq -150$ dBc / Hz $\leq -160$ dBc / Hz $\leq -165$ dBc / Hz $\leq -170$ dBc / Hz
Short term stability (Allan Variance) @ tau = 1 sec: @ tau = 10 sec: @ tau = 100 sec:	$\leq 5.0 \times 10^{-12}$ $\leq 1.0 \times 10^{-11}$ $\leq 1.0 \times 10^{-10}$
Temperature ranges Operating: Operable: Storage:	-20 °C ... +70 °C -30 °C ... +80 °C -40 °C ... +80 °C
MTBF @ +45 °C per MIL-HDBK-217F ( $\pi_E = G_B$ ):	$\geq 1 \times 10^5$ hours
<b>2. Environmental conditions</b>	
According to KVG Product Qualification Procedure AA-QM-200	
<b>3. Marking</b>	
Manufacturer's name, date code (week/year); Specification; Nominal frequency	

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**O.60.800388-LF****4. Case****Case style: BF144-12.8B-SMD****max. weight: 40 gram****1.Pin configuration**

1. RF output
2. Oven Alarm out
3. Ground, case
4. Vref out
5. Vadj in
6. Osc – enable in
7. Vs

**5. Test circuit**

to be amended

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