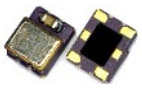
EUROQUARTZ

EMQN326D

LVDS MINIATURE TCXO 3.2 x 2.5mm 10MHz to 1450MHz

- **0.8ps rms phase jitter**
- **Quick turnround, low-cost TCXO**
- **Miniature 3.2 x 2.5 x 1.3mm SMD package**
- **Supply voltage 2.5V or 3.3 VDC**
- **Frequency stability from ±1ppm over -40 to +85°C**



DESCRIPTION

(V)EMQN326D series TCXOs are packaged in a miniature, 3.2 x 2.5mm outline, ceramic SMD package. With LVDSL output, tolerances are available from ±1.0ppm over -40° to +85°C. Low power consumption: 22mA at 156.0MHz.

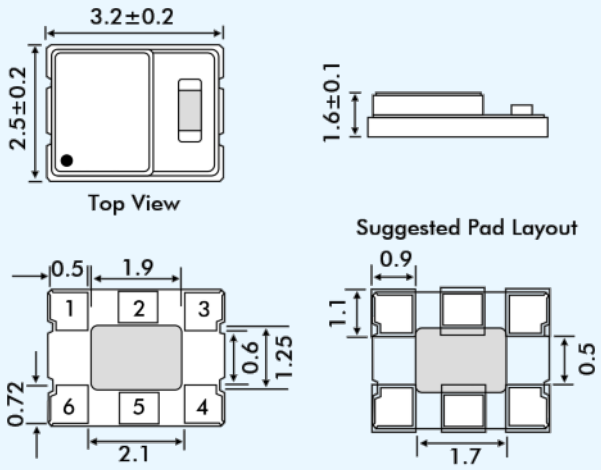
SPECIFICATION

Product Series Code	
TCXO:	EMQN326D
VCTCXO:	VEMQN326D
Frequency Range:	10.0MHz to 1450MHz
Output Waveform:	LVDS
Phase jitter rms	
12kHz to 20MHz:	1.5ps typical
1.875MHz to 20MHz:	<400fs
Initial Calibration Tolerance:	<±1.0ppm at +25°±2°C
Operating Temperature Range:	from 0°~50° to -40°~+85°C
Frequency Stability	
vs. Temperature:	±2.5ppm over -30 to 85°C (Default) ±0.5ppm over -30 to 85°C (Available) ±1.0ppm over -40 to 85°C (Available)
vs. Ageing:	±1.0 ppm max. first year
vs. Voltage Change:	±0.2 ppm max. ±5% change
vs. Load Change:	±0.2 ppm max. ±10% change
vs. Reflow (SMD type):	±1.0ppm max. for one reflow *(measured after 24 hours)*
Supply Voltage:	+2.5VDC±5% or +3.3Volts ±5%
Output High Voltage V_{OH}:	V_{DD}: 1.4V typical V_{DD}: 1.6V max.
Output Low Voltage V_{OL}:	V_{DD}: 1.1V typical V_{DD}: 0.9V min.
Rise/Fall Times:	0.2ns typ. 0.4ns max.
Duty Cycle:	50%±5% standard,
Start-up Time:	5ms typical, 10ms max.
Output Load:	Differential 100Ω
Current Consumption V_{DD} +2.5V	
at 156MHz:	22mA typical
at 600MHz:	28mA typical
at 800MHz:	30mA typical
at 1GHz:	34mA typical
Current Consumption V_{DD} +3.3V	
at 156MHz:	25mA typical
at 600MHz:	30mA typical
at 800MHz:	32mA typical
at 1GHz:	36mA typical
Current when disabled:	18mA typical

SSB PHASE NOISE at 25°C

Offset		10Hz	100Hz	1kHz	10kHz	100kHz	1 MHz	10 MHz
VMQF326D 125.00MHz	(dBc/Hz)	-51	-93	-111	-123	-125	-135	-155
RMS Jitter		0.73ps (12kHz to 20MHz integrated)						

EMQN326D - OUTLINES AND DIMENSIONS



Pad Connections

1 No connection for TCXO / Voltage control for VCTCXO
2 Output Enable
3 Ground
4 Differential Output
5 Complimentary Output
6 Supply Voltage

VEMQN326D VOLTAGE CONTROL SPECIFICATION

Control Voltage	
Vdd = +2.5V:	Vcon centre = +1.4V
Vdd = +3.3V:	Vcon centre = +1.5V
V Control Range	
Supply = +2.5V:	Vcon range = +1.4V±1.0V
Supply = +3.3V:	Vcon range = +1.5V±1.0V
Frequency Pulling Range:	±8 ppm min.
Slope Polarity:	Positive *(increase of control voltage increases output freq.*
Linearity:	±5% typical ±10% max.
Input Impedance:	1MΩ typical
Modulation Bandwidth:	10kHz min. measured at +3dB

PART NUMBERS

Example: **_EMQN326D33-50.000-2.5/-30+75**

Series Description
TCXO = EMQN326D
VCTCXO = VEMQN326D

Supply Voltage
3.3V = 33
2.5V = 25

Frequency (MHz)

Stability over OTR (±ppm)

Operating Temperature Range (OTR) (°C)
(*Lower and upper limits.*)

EUROQUARTZ LIMITED Blacknell Lane CREWKERNE Somerset UK TA18 7HE
Tel: +44 (0)1460 230000 Fax: +44 (0)1460 230001 info@euroquartz.co.uk www.euroquartz.co.uk

OUTPUT ENABLE FUNCTION ON PAD 2

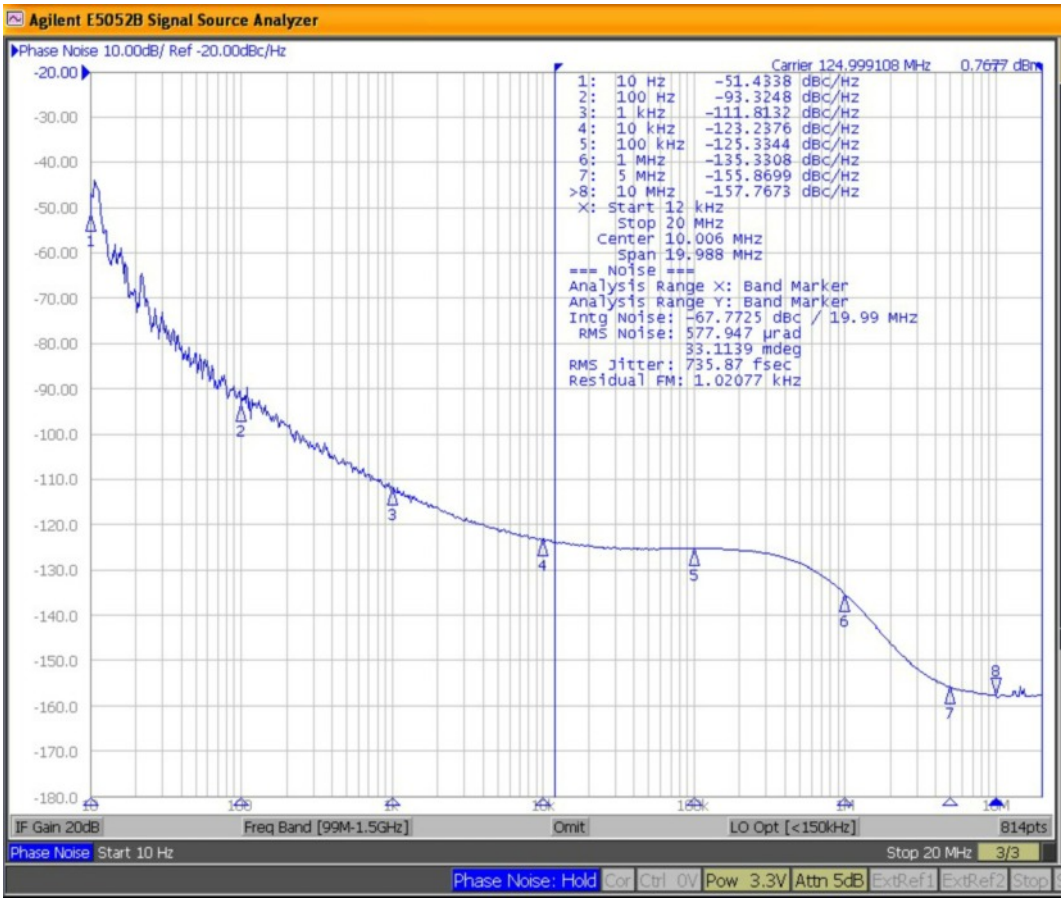
OE Control on Pad 2	
Enable:	0.7% Vdd minimum or no connection to enable output
Disable:	0.3%Vdd maximum to disable output (high impedance)
Output Enable Time:	200ns max.
Output Disable Time:	50ns max.

ENVIRONMENTAL PERFORMANCE SPECIFICATIONS

Status:	RoHS Compliant, Pb (lead) free in accordance with EU Directive 2002/95/EC 6/6(2002/95/EC) and WEEE (2002/96/EC)
Moisture Sensitivity:	Level 1 (infinite) according to IPC/JEDEC J-STD-020D.1
Second Level Interconnect:	e4
Storage Temperature Range:	-55° to +125°C
Humidity:	85%RH, 85°C, 48 hours
Fine Leak / Gross Leak:	MIL-STD-202F method 1014, condition A / MIL-STD-883, method 1014, condition C
Solderability:	MIL-STD-202F method 208E
Reflow:	260°C for 10s, x2
Vibration:	MIL-STD-202F method 204, 35g, 50 to 2000Hz
Shock:	MIL-STD-202F method 2133B, test condition E, 1000g² ½ sinewave
Resistant to Solvents:	MIL-STD-202F method 215
Temperature Cycling:	MIL-STD-883 method 1010
ESD Rating:	Human Body Model (HBM): 1500V min.
Pad Surface Finish:	Gold (Au) 0.3µm to 1.0µm over nickel (N) 1.27µm to 8.89µm
Weight of device:	0.045gm typical

PHASE NOISE PLOT OF VMQF326D33-125.00MHz

VDD = +3.3V, Vcontrol = 0.0V



EUROQUARTZ LIMITED Blacknell Lane CREWKERNE Somerset UK TA18 7HE
Tel: +44 (0)1460 230000 Fax: +44 (0)1460 230001 info@euroquartz.co.uk www.euroquartz.co.uk