EUROQUARTZ

EMQN576T

CMOS TCXO 7 x 5mm — 10MHz to 245MHz

- **Low current consumption, CMOS TCXO**
- **Quick turnaround, low-cost TCXO**
- **Standard 5.0 x 7.0mm, 6 pad SMD package**
- **Supply voltage 2.5V or 3.3 VDC**
- **Member of the QuikXO family of products**

DESCRIPTION

EMQN576T series TCXOs are packaged in a standard, 7.0 x 5.0mm outline, SMD package. With squarewave (CMOS) output, tolerance is from ±1.0ppm over -40° to +85°C. The part has low supply current, 24mA typical at 50MHz.

SPECIFICATION

Product Series Code	
TCXO:	EMQN576T
VCTCXO:	VEMQN576T
Frequency Range:	10.0MHz to 245MHz
Supply Voltage:	+2.5VDC±5% or +3.3Volts ±5%
Output Logic Levels:	Logic High: 90% Vdd min. Logic Low: 10% Vdd max.
Output Waveform:	Squarewave, LVCMOS
Phase jitter rms (12kHz to 20MHz):	0.8ps typical
Initial Calibration Tolerance:	±2.0ppm at +25°±2°C
Frequency Stability	
vs. Temperature:	
-30° to +85°C:	±2.0ppm standard ±1.0ppm available
-40 to +85°C:	±2.5ppm standard ±1.0ppm available
vs. Ageing:	±1.0 ppm max. per year 25°C
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 and measured after 24 hours.
Rise/Fall Times:	1.5ns typ. 10% to 90% wavef.
Duty Cycle:	50%±5% standard,
Start-up Time:	5ms typical, 10ms max.
Output Load:	15pF
Current Consumption Vdd +2.5V	
at 50MHz:	24mA typical
at 125MHz:	28mA typical
at 200MHz:	30mA typical
Current Consumption Vdd +3.3V	
at 50MHz:	26mA typical
at 125MHz:	30mA typical
at 200MHz:	34mA typical
Current with output disabled:	18mA typical
Start-up Time:	5ms max.
Phase Jitter rms (12kHz to 20MHz):	0.8ps typ., 1.0ps max.
Phase Jitter rms (1.875MHz to 20MHz):	200fs max.

PART NUMBERS

Example: **_EMQN576T33-50.000-2.5/-30+85**

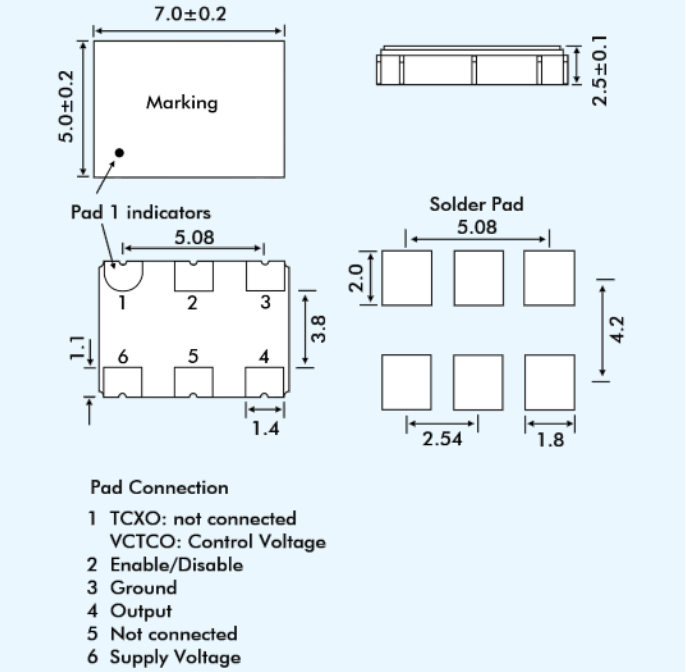
Series Description
TCXO = EMQN576T
VCTCXO = VEMQN576T

Supply Voltage Code
3.3V = 33
2.5V = 25
Frequency (MHz)

Stability over OTR (±ppm)

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

EMQN576T - OUTLINES AND DIMENSIONS



VEMQN576T VOLTAGE CONTROL SPECIFICATION

Control Voltage Centre & Range:	+1.5V±1.0V for both +2.5V and 3.3V supplies
Frequency Pulling Range:	±8 ppm min.
Slope Polarity:	Positive *(increase of control voltage increases output freq.*
Linearity:	±1% typical ±10% max.
Input Impedance:	770kΩ typical
Harmonics:	-5.0dBc max.

SSB PHASE NOISE and PHASE JITTER DATA

(Typical VDD = +3.3V, V Control = 0.0V) dBc/Hz

Frequency	96MHz	192MHz
10Hz Offset	-71	-56
100Hz	-96	-91
1kHz	-114	-108
10kHz	-124	-119
100kHz	-127	-122
1MHz	-134	-128
5MHz	-153	-151
10MHz	-154	-153
20MHz	-156	-152
Phase Jitter ps 12kHz - 20MHz rms	0.85	0.77

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

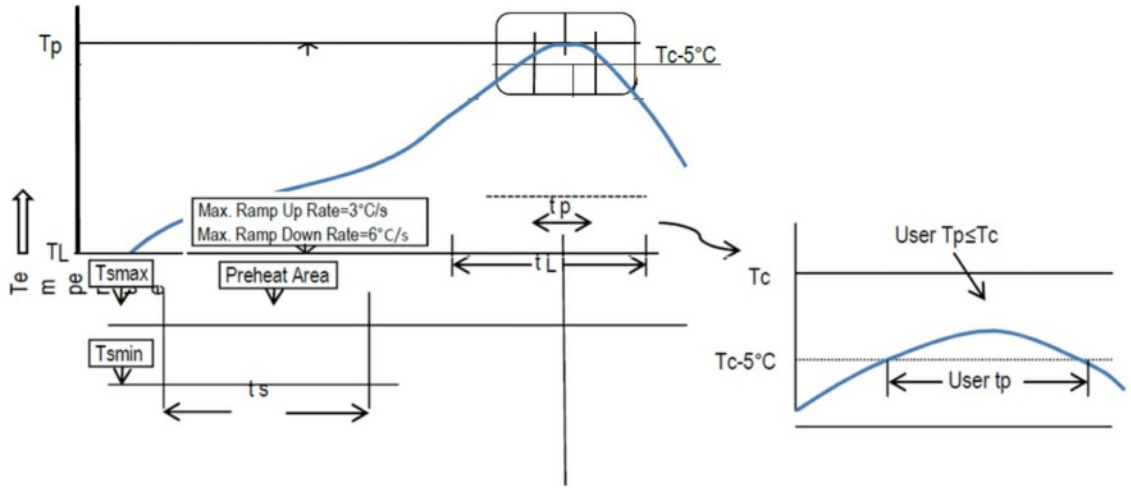
OE Control	Enable:	0.9% Vdd minimum or no connection to enable output
	Disable:	0.1%Vdd maximum to disable output (high impedance)
Output Enable Time:		200ns max.
Output Disable Time:		50ns max.

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

RECOMMENDED SOLDER REFLOW PROFILE

Per IPC/JEDEC J-STD-020D.1



Profile Feature	SN-Pb Eutectic Assembly	PB-Free Assembly
Preheat/Soak - Temperature min. (Ts min.) - Temperature max. (Ts max.) - Time (Ts (Ts min. to Tz max.)	 100°C 150°C 60 to 120 seconds	 150° 200° 60 to 120 seconds
Ramp-up Rate (TL to Tp)	3°C/sec. max.	3°C/sec. max.
Liquidous Temperature (TL) Time (TL) maintained above TL	183°C 60 to 150 seconds	217°C 60 to 150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time (Tp) within 5°C of the classification temperature Tc	10 to 30 seconds	20 to 40 seconds
Ramp-down rate (Tp to TL)	6°/second max.	6°/second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

All temperatures refer to topside of the package, measured on the package body surface.

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