

**Differential Output (VC)TCXO**
**10MHz to 1500MHz**

- 0.8pS RMS integrated phase jitter
- Miniature package sizes
- Supply voltage 2.5V or 3.3 VDC
- Frequency stability from  $\pm 1$ ppm over -40 to +85°C
- Differential Outputs and CMOS available


**DESCRIPTION**

(V)EMQN series TCXOs are packaged in miniature SMD packages, available with 6 pad LVPECL or LVDS complementary outputs, or 4-pad CMOS outputs. With characteristic low current consumption, and integrated phase jitter performance of 0.8 pS RMS.

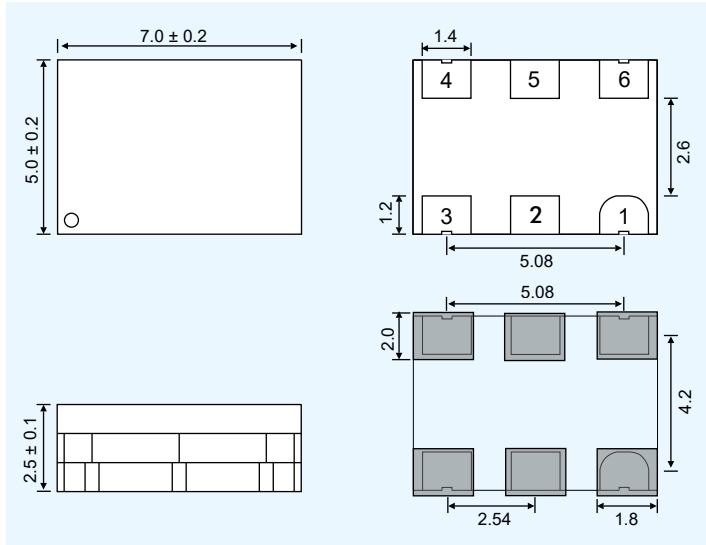
**GENERAL SPECIFICATION**

Output Logic	CMOS	PECL	LVDS					
Packages	(V)EMQN326T, (V)EMQN574T, (V)EMQN576T	(V)EMQN326P, (V)EMQN576P	(V)EMQN326D, (V)EMQN576D					
Supply Voltage, Vdd	+2.5V $\pm$ 5% or +3.3V $\pm$ 5%	+2.5V $\pm$ 5% or +3.3V $\pm$ 5%	+2.5V $\pm$ 5% or +3.3V $\pm$ 5%					
Available Frequency Range	10MHz~250MHz	10MHz~1,500MHz	10MHz~1,500MHz					
Output Load	15pF	50 $\Omega$ into Vcc-2V, or Thévenin Equivalent	100 $\Omega$					
Output Logic 'High'	90% of Vdd	Vdd-1.03 (min.), Vdd-0.6 (max.)	1.4V (typ.), 1.6V (max.)					
Output Logic 'Low'	10% of Vdd	Vdd-1.85 (min.), Vdd-1.6 (max.)	1.1V (typ.), 0.9V (max.)					
Current Consumption (max.) @Vdd=+2.5V	50MHz: 34mA	156MHz: 46mA	156MHz: 32mA					
	125MHz: 38mA	600MHz: 50mA	800MHz: 40mA					
	200MHz: 40mA	1,000MHz: 60mA	1,000MHz: 44mA					
Current Consumption (max.) @Vdd=+3.3V	50MHz: 36mA	156MHz: 50mA	156MHz: 35mA					
	125MHz: 40mA	600MHz: 55mA	800MHz: 40mA					
	200MHz: 44mA	1,000MHz: 62mA	1,000MHz: 44mA					
Current With Output Disabled	18mA (typ.)	18mA (typ.)	18mA (typ.)					
Rise/Fall Time	1.5nsec. (typ.), 3.0nsec. (max.)	0.2nsec. (typ.), 0.5nsec.(max.)	0.2nsec. (typ.), 0.4nsec. (max.)					
	Tr/Tf: 10% to 90% of waveform		Tr/Tf: 20% to 80% of waveform					
Initial Calibration Tolerance	$\pm 1.0$ ppm (max.) at +25 $\pm$ 2°C for 3.2x2.5mm packages							
	$\pm 2.0$ ppm (max.) at +25 $\pm$ 2°C for 5.0x7.0mm packages							
Frequency Stability	Temperature	$\pm 2.0$ ppm over -40°C +85°C standard for programmable TCXO, $\pm 1.0$ ppm available						
	Aging @+25°C	$\pm 2.0$ ppm (max.) first year; $\pm 10$ ppm (max.) over 10 years						
	Voltage Change	$\pm 0.2$ ppm (max.) for a $\pm 5\%$ input voltage change						
	Load Change	$\pm 0.2$ ppm (max.), for a $\pm 10\%$ load condition change						
	Reflow	$\pm 1.0$ ppm (max.), 1 reflow and measured 24hrs afterwards						
Duty Cycle	50 $\pm$ 5%							
Start-up Time	5msec.(max.)							
Storage Temperature	-55°C to 125°C							
RMS Jitter [12kHz ~ 20MHz]	1.0psec. (typ.)							
Phase Noise [dBc/Hz (typ.)]	Offset	10Hz	100Hz	1kHz	10kHz	100kHz	1MHz	10MHz
	125MHz	-51	-93	-111	-123	-125	-135	-155
	212.5MHz	-42	-87	-105	-115	-118	-130	-151

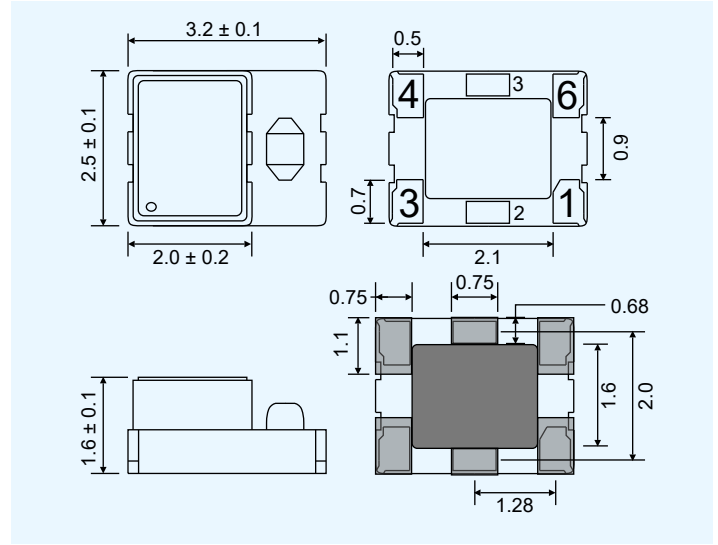
**VOLTAGE CONTROL FUNCTION**

Control Voltage Function on Pad 1		Output Enable Function on Pad 2	
Control Voltage Centre and Range	+1.5 $\pm$ 1.0V for both Vdd = 2.5V or 3.3V	OE Control on Pad 2	70% of Vdd (min.) to enable output (Do not leave open)
Frequency Pulling Range	$\pm 8$ ppm (min.)		30% of Vdd (max.) to disable output
Linearity	1% (typ.); 10%(max.)	Linearity	1% (typ.); 10%(max.)
Absolute Voltage	4.0V (max.)	Output Enable/Disable Time	200nsec. (max.) / 50nsec.(max.)
Transfer Function	Positive Transfer		
Input Impedance	770K $\Omega$ (typ.)		

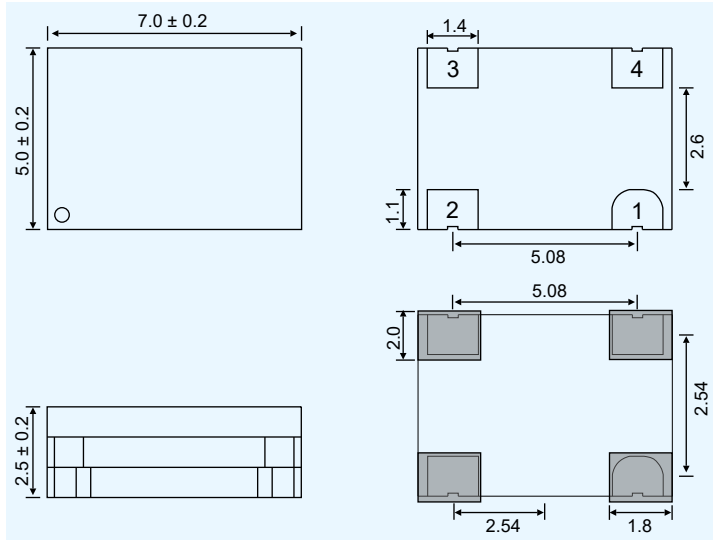
**(V)EMQN576D, (V)EMQN576T, (V)EMQN576P**



**(V)EMQN326T, (V)EMQN326D, (V)EMQN326P**



**(V)EMQN574T**



**Pad Connection**

For 6 Pad

- Pad 1: TCXO: No Connection  
VCTCXO: Control Voltage
- Pad 2: Enable/Disable
- Pad 3: Ground
- Pad 4: CMOS: Output  
PECL/LVDS: Differential
- Pad 5: CMOS: No Connection  
PECL/LVDS: Differential
- Pad 6: Supply Voltage

**Pad Connection**

For 4 Pad

- Pad 1: TCXO: No Connection  
VCTCXO: Control Voltage
- Pad 2: Ground
- Pad 3: Output
- Pad 4: Supply Voltage

**PART NUMBERS**

Example:

**VEMQN576P33-50.000-2.0/-40+85**

Series Description  
TCXO = EMQN  
VCTCXO = VEMQN

Package Size  
576: 5.0x7.0mm, 6 Pad  
574: 5.0x7.0mm, 4 Pad  
326: 3.2x2.5mm, 6 Pad

Output Type  
P = LVPECL  
D = LVDS  
T = CMOS

Supply Voltage  
3.3V = 33  
2.5V = 25

Frequency (MHz)

Stability over OTR (±ppm)

Operating Temperature Range (OTR) (°C)