Differential Output (VC)TCXO 10MHz to 1500MHz

- **1.0pS RMS integrated phase jitter**
- **Quick turnaround, low-cost TCXO**
- **Miniature package sizes**
- **Supply voltage 2.5V or 3.3 VDC**
- **Frequency stability from ±1ppm over -40 to +85°C**

DESCRIPTION

(V)EMQF 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, an integrated phase jitter performance of 1.0 pS RMS and a quick delivery time, these provide an excellent solution for both propotypes and low-cost volume production.

GENERAL SPECIFICATION

Output Logic	CMOS	PECL	LVDS
Packages	(V)EMQF326T, (V)EMQF574T, (V)EMQF576T	(V)EMQF326P, (V)EMQF576P	(V)EMQF326D, (V)EMQF576D
Supply Voltage, Vdd	+2.5V±5% or +3.3V±5%	+2.5V±5% or +3.3V±5%	+2.5V±5% or +3.3V±5%
Available Frequency Range	10MHz~250MHz	10MHz~1,500MHz	10MHz~1,500MHz
Output Load	15pF	50Ω into Vcc-2V, or Thévenin Equivalent	100Ω
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	600MHz: 38mA
	200MHz: 40mA	1,000MHz: 60mA	1,000MHz: 44mA
Current Consumption (max.) @Vdd=+3.3V	50MHz: 36mA	156MHz: 50mA	156MHz: 35mA
	125MHz: 40mA	600MHz: 55mA	600MHz: 40mA
	200MHz: 44mA	1,000MHz: 62mA	1,000MHz: 46mA
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	±1.0ppm (max.) at +25±2°C for 3.2x2.5mm packages	
	±2.0ppm (max.) at +25±2°C for 5.0x7.0mm packages	
Frequeny Stability	Temperature	±2.0ppm over -40°C +85°C standard for programmable TCXO, ±1.0ppm available
	Aging @+25°C	±2.0ppm (max.) first year; ±10ppm (max.) over 10 years
	Voltage Change	±0.2ppm (max.) for a ±5% input voltage change
	Load Change	±0.2ppm (max.), for a ±10% load condition change
	Reflow	±1.0ppm (max.), 1 reflow and measured 24hrs afterwards
Duty Cycle	50±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
	156.250MHz	-65	-92	-108	-114	-117	-139	-147
	212.500MHz	-61	-90	-106	-110	-112	-133	-142
	312.500MHz	-51	-79	-97	-102	-103	-125	-134

VOLTAGE CONTROL FUNCTION

Control Voltage Function on Pad 1	
Control Voltage Centre and Range	+1.5±1.0V for both Vdd = 2.5V or 3.3V
Frequency Pulling Range	±8ppm (min.)
Linearity	1% (typ.); 10%(max.)
Absolute Voltage	4.0V (max.)
Transfer Function	Positive Transfer
Input Impedance	770KΩ (typ.)

Output Enable Function on Pad 2	
OE Control on Pad 2	70% of Vdd (min.) to enable output (Do not leave open)
	30% of Vdd (max.) to disable output
Linearity	1% (typ.); 10%(max.)
Output Enable/Disable Time	200nsec. (max.) / 50nsec.(max.)

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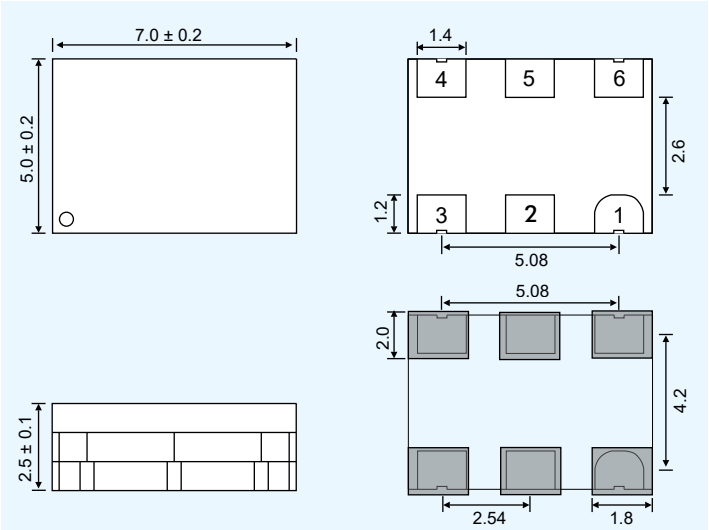
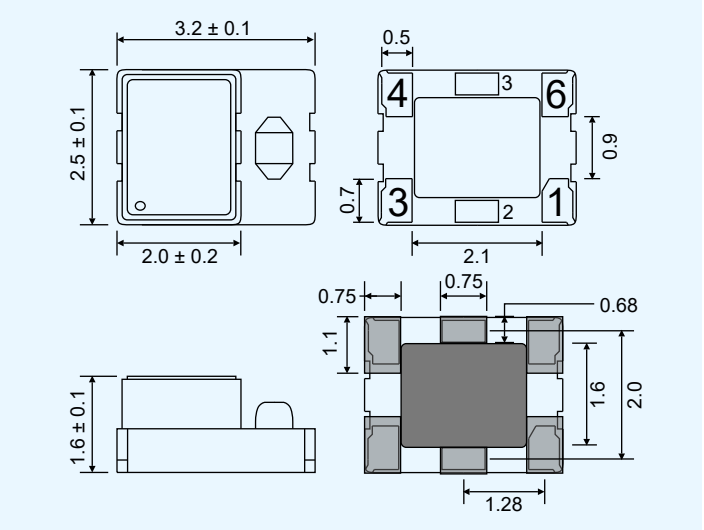
OUTLINES AND DIMENSIONS

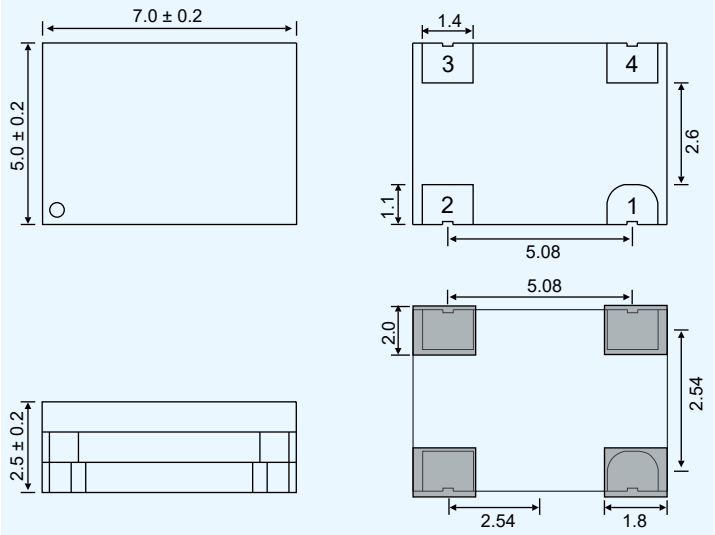
(V)EMQF576D, (V)EMQF576T, (V)EMQF576P



(V)EMQF326T, (V)EMQF326D, (V)EMQF326P



(V)EMQF574T



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: **VEMQF576P33-50.000-2.0/-40+85**

Series Description
TCXO = EMQF
VCTCXO = VEMQF

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)

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