

PECL 7 x 5 x 2.8mm SMD, 'F' Group

- Miniature 7 x 5 x 2.8mm ceramic SMD package
- Frequency range: 38.880MHz to 432.0MHz
- Supply voltage 3.3 Volts
- Less than 1ps phase jitter, ideal for SONET, xDSL
- RoHS compliant



DESCRIPTION

EMF576P series TCXOs are packaged in a miniature 6 pad 7 x 5 x 2.8mm ceramic SMD package. With differential PECL output, tolerances are available from ± 1.0 ppm over -30° to $+75^{\circ}$ C. The part has a 0.01 μ F decoupling capacitor built in.

SPECIFICATION

Product Series Code	TCXO:	EMF576P
	VCTCXO:	VEMF576P
Frequency Range:		38.880MHz to 432.0MHz
Output Waveform:		Differential PECL
Initial Calibration Tolerance:		$\leq \pm 2.0$ ppm at $+25^{\circ} \pm 2^{\circ}$ C
Standard Frequencies:		38.880, 40.0, 50.0, 54.0, 64.0, 65.536, 77.76, 80.0, 100.0, 128.0, 155.250, 160.0, 200.0, 204.8, 311.04, 320.0 and 409.60MHz (Partial list)
Operating Temperature Range:		See table
Frequency Stability		(see table)
vs. Ageing:		± 1.0 ppm max. first year
vs. Voltage Change:		± 0.3 ppm max. $\pm 5\%$ change
vs. Load Change:		± 0.3 ppm max. $\pm 10\%$ change
vs. Reflow (SMD type):		± 1.0 ppm max. for one reflow (Measured after 24 hours)
Supply Voltage:		+3.3 Volts
Output Logic Levels		
Logic High:		$V_{OH} = 2.275V$ (min.)
		$V_{DD} = -1.025V$ (min.)
Logic Low:		$V_{OL} = 1.680V$ (max.)
		$V_{DD} = -1.620V$ (max.)

Rise and Fall Times

< 150 MHz = 0.7ns max, 150 to 320MHz = 0.55ns max.
 < 320 MHz = 0.45ns max.

Duty Cycle: 50% $\pm$ 5%
 Start-up Time: 5ms typical, 10ms max.

Current Consumption
 38.880 to 100MHz: 75mA max.
 100.0 to 320MHz: 90mA max.
 320 to 432.0MHz: 100mA max.

Output Load: 50 Ω to $V_{DD} - 2.0$ Volts

Storage Temperature: -55° to $+125^{\circ}$ C

Phase Jitter (RMS) (12kHz to 20MHz): 0.4ps typ., 0.5ps max

ENABLE/DISABLE FUNCTION

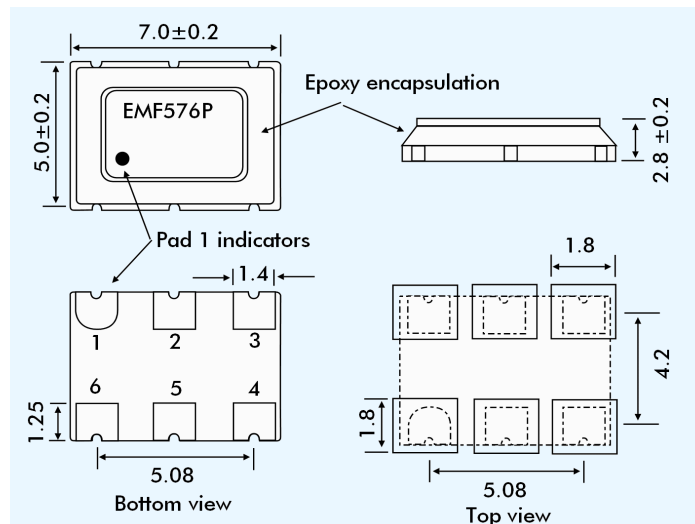
Pad 2 not connected: PECL and differential PECL outputs enabled.
 Disable: Referenced to Ground (threshold) Oscillator is always on, buffer stage is disabled. Disable current: 50 μ A max. (at 0.0V), disable time 10ns max.
 Enable: Pad 2 $> 0.45V_{CC}$ Ground (threshold) Enable time 10ns plus one period of output freq.

FREQUENCY STABILITY OVER TEMPERATURE

Stability (ppm)	± 1.0	± 2.0	± 2.5	± 3.0	± 4.0	± 5.0
Temp. Range ($^{\circ}$ C)						
0 ~ +50	✓	✓	✓	✓	✓	✓
-10 ~ +60	ASK	✓	✓	✓	✓	✓
-20 ~ +70	X	✓	✓	✓	✓	✓
-30 ~ +75	X	✓	✓	✓	✓	✓
-40 ~ +85	X	X	X	ASK	ASK	✓

✓ = available, x = not available, ASK = call Technical Sales

EMF576P - OUTLINES AND DIMENSIONS



Pad Connections

- 1 Not connected for TCXO
Voltage Control for VCTCXO
- 2 Tri-state
- 3 Ground
- 4 PECL Output
- 5 Complimentary PECL Output
- 6 Supply Voltage

VEMF576P VOLTAGE CONTROL SPECIFICATION

Control Voltage: $+1.5 \pm 1.0$ Volts
 Frequency Deviation: ± 6.0 ppm min. with $V_{con} = +1.5 \pm 1.0V$
 Slope Polarity: Positive (increase of control voltage increases output frequency.)
 Linearity: 6% typical, 10% maximum

SSB PHASE NOISE at 25° C

Offset	10Hz	100Hz	1kHz	10kHz	100kHz
Part = EMF576P33					
at 155.520MHz (dBc/Hz)	-62	-92	-120	-132	-128
at 311.020MHz (dBc/Hz)	-59	-86	-116	-129	-124

PERIOD JITTER

Frequency (MHz)	38.880	77.760	155.520	622.080
RMS (typ.)	2.5ps	2.5ps	3.0ps	3.0ps
Peak to Peak	20.0ps	18.0ps	20.0ps	25.0ps

PART NUMBERING SCHEDULE

Example: **EMF576P33-204.80-2.5/-30+75**

Series Description
 TCXO = EMF576P
 VCTCXO = VEMF576P

Supply Voltage
 33 = 3.3 VDC

Frequency (MHz)
 204.80

Stability over OTR ($\pm$ ppm)
 2.5

Operating Temperature Range (OTR) ($^{\circ}$ C)
 -30 +75

Lower and upper limits