

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

- Miniature 7 x 5 x 2.8mm ceramic SMD package
- Frequency range: 12.0MHz to 800.0MHz
- Supply voltage 3.3 Volts
- Low cost, low jitter for general applications
- RoHS compliant



DESCRIPTION

EMF576D series TCXOs are packaged in a miniature 6 pad 7 x 5 x 2.8mm ceramic SMD package. With LVDS output, tolerances are available from ± 1.0 ppm over -30° to $+75^{\circ}\text{C}$. The part has a 0.01 μF decoupling capacitor built in.

SPECIFICATION

Product Series Code	TCXO: EMF576D VCTCXO: VEMF576D
Frequency Range:	12.0MHz to 800.0MHz
Output Waveform:	LVDS
Initial Calibration Tolerance:	$\leq \pm 2.0$ ppm at $+25^{\circ}\pm 2^{\circ}\text{C}$
Standard Frequencies: (Partial list)	12.8, 16.0 19.44, 20.0, 25.0, 27.0, 30.0, 32.0, 32.768, 38.880, 40.0, 50.0, 54.0, 64.0, 65.536, 77.76, 80.0, 100.0, 128.0, 155.52, 160.0, 200.0, 204.8, 311.04, 320.0, 409.6, 622.08, and 800.0MHz
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
Differential Output Voltage V_{OD} :	247mV min., 355mV typical; 454mV max., Output 1 - Output 2
Differential Output Error dV_{OD} :	-50mV min., 50mV max.
Output Offset Voltage V_{OS} :	1.125V min., 1.200V typ., 1.375V max.
Offset Magnitude Error dV_{OS} :	0mV min., 3.0mV typ., 25mV max.
Rise and Fall Times:	1.5ns typical
Duty Cycle:	50% $\pm 5\%$
Start-up Time:	5ms typical, 10ms max.
Current Consumption: 12MHz to 24MHz:	$< 33\text{mA}$ max., 24MHz to 96MHz: $< 50\text{mA}$ max., 96MHz to 800MHz: $< 85\text{mA}$ max.
Output Load:	50 Ω from each load
Drive Capability:	100W between LVDS and Complementary LVDS
Storage Temperature:	-55° to $+125^{\circ}\text{C}$
Phase Jitter (RMS) (12kHz to 20MHz):	0.4ps typ., 0.5ps max

ENABLE/DISABLE FUNCTION

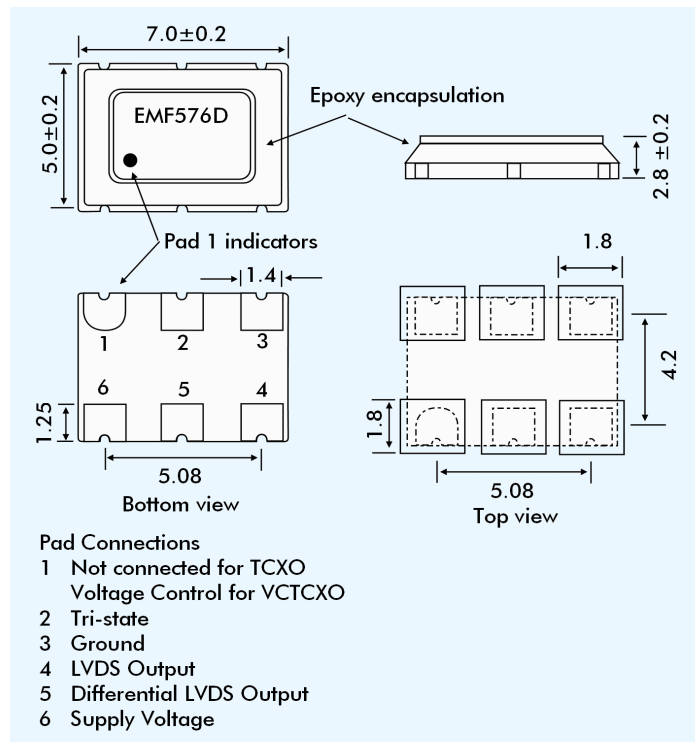
Pad 2 not connected: LVDS and Differential LVDS outputs enabled.
 Disable: Pad 2 taken below 0.45Vcc referenced to Ground. Osc. is always on, only buffer stage is disabled. Disable current: 50 μA max. (at 0.0V). Disable time: 10ns max.
 Enable: Pad 2 taken above 0.45V ref. to Ground. Enable time: 10ns max.

FREQUENCY STABILITY OVER TEMPERATURE

Stability (ppm)	± 1.0	± 2.0	± 2.5	± 3.0	± 4.0	± 5.0
Temp. Range ($^{\circ}\text{C}$)						
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

EMF576D - OUTLINES AND DIMENSIONS



VEMF576D VOLTAGE CONTROL SPECIFICATION

Control Voltage:	$+1.5 \pm 1.0$ Volts
Frequency Deviation:	± 6.0 ppm min. with $V_{con} = +1.5 \pm 1.0\text{V}$
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 = EMF576D33					
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	311.020
RMS (typ.)	2.5ps	2.5ps	3.0ps	3.0ps
Peak to Peak	18.0ps	18.0ps	20.0ps	25.0ps

PART NUMBERING SCHEDULE

Example: **EMF576D33-155.52-2.5/-30+75**

Series Description

TCXO = EMF576D

VCTCXO = VEMF576D

Supply Voltage

33 = 3.3 VDC

Frequency (MHz)

Stability over OTR ($\pm$ ppm)

Operating Temperature Range (OTR) ($^{\circ}\text{C}$)

Lower and upper limits