

CFPV-7 Low Power Miniature SMD VCXO

ISSUE 4 - draft; 4 OCTOBER 2004

Delivery Options

- Please contact our sales office for current leadtimes

Description

- Voltage controlled crystal oscillator (VCXO) with crystal packed into its own holder
- Grounded crystal enclosure acts like a shield and provides low EMI
- Non PLL based design ensures low jitter
- 3.3V or 5V supply voltage
- CMOS, PECL, SINE or LVDS Output

RoHS Compliance

- Parts with the suffix 'LF' on the part number are fully compliant with the European Union directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Note: The RoHS compliant parts are suitable for assembly using both Lead-free solders (see Lead-free Reflow soldering profile) and Tin / Lead solders (see Tin / Lead Reflow soldering profile)

Standard Frequencies

- 8.192, 20.0, 24.576, 32.768, 34.368, 38.88, 39.3216, 44.736, 50.0, 51.84, 52.0, 61.44, 63.8976, 77.76, 80.0, 82.3341, 140.0, 155.52MHz

Frequency Range

- 2.0 to 170MHz

Package Outline

- 4-pad (style 578) or 6-pad (style 579) Industry Standard, Glass Epoxy laminate (FR4) based with standard Tin/Lead solder finish end terminations and High Temperature Plastic cover

Supply Current

- 3.3V $\pm 5\%$ (option)
- 5.0V $\pm 5\%$ (option)

Supply Voltage

- Ranging from typ. 10mA @ 2MHz/3.3V CMOS to typ. 80mA @ 170MHz/5V PECL, at nominal load. Contact sales office for specific values

CMOS Output (option)

- Load: 15pF nom.
- Duty Cycle @ 50%: 40/60%
- Rise & Fall Time (20 to 80%): ≤ 2 ns typ.
- VoH: $\geq 90\%$ Vs

- VoL: $\leq 10\%$ Vs
- Tri-state control (6 pad package only)
Control Input Logic '0' ($\leq 30\%$ Vs) will put the output in the tri-state mode
Control Input Logic '1' ($\geq 70\%$ Vs) or left unconnected will enable the output
'Active High' is standard but a version with 'Active Low' can be supplied on request

Single Ended or Differential PECL Output (option)

- Load: 50 Ω to Vs-2V
- Duty Cycle @ 50%: 40/60%
- Rise & Fall Time (20%-80%): ≤ 0.5 ns typ.
- VoH: 2.4V typ. @Vs=3.3V
- VoL: 1.5V typ. @Vs=3.3V
- Tri-state control
The output is enabled if tri-state control is:-
a) Left open circuit
b) Connected to GND
c) Connected to a voltage $<(Vs-1.65V)$ = PECL logic low
The output is disabled if tri-state control is:-
a) Connected to Vs
b) Connected to a voltage $>(Vs-0.96V)$ = PECL logic high
When disabled, pad 5 goes low and pad 4 goes high.
The tri-state control pad has an internal 75k Ω pull down to GND resistor

Sine Output (option)

- Load: 50 Ω
- Level: can be specified up to +8dBm
- Harmonics: ≤ -20 dBc

LVDS Output (option)

- Load: 100 Ω differential +10pF each output to GND
- Diff. output voltage: ± 250 mV min. ± 400 mV max.
- Duty Cycle @ 50%: 40/60%
- Rise & Fall Time (20 to 80%): ≤ 0.5 ns typ.
- Tri-state control (6 pad package only)
Control Input Logic '0' (0.8V) will put the output in tri-state mode
Control Logic '1' (>2.0 V) will enable the output

Frequency Stability

- All causes stability (including calibration, temperature, supply, load, reflow and ageing) can be specified down to ± 30 ppm, 0 to 70 $^{\circ}$ C or ± 50 ppm, -40 to 85 $^{\circ}$ C. Please specify operating condition; Temperature Range, Lifetime, etc.

Control Voltage Range

- 1.65V \pm 1.35V ($V_s = 3.3V$)
- 2.5V \pm 2.0V ($V_s = 5.0V$)

Frequency Pulling

- $\geq \pm 60$ ppm standard, other values on request
- Positive Transfer Function
- Modulation Bandwidth ≥ 10 kHz
- Input Impedance $\geq 100k\Omega$
- Linearity (MIL-PRF-55310) $\leq \pm 10\%$

Jitter (rms, typ. @ 155.52 MHz)

- 12kHz to 5MHz 0.18ps
- 12kHz to 20MHz 0.36ps
- 12kHz to 80MHz 0.72ps

Phase Noise (typ. @ 155.52MHz)

- 100Hz -75dBc/Hz
- 1kHz -105dBc/Hz
- 10kHz -130dBc/Hz
- ≥ 100 Hz -145dBc/Hz

Marking

- Model number
- Frequency

Environmental Specification

- Storage: -40 to 100°C
- Vibration: IEC 60068-2-6 Test Fc Procedure B4, 10 - 60Hz 0.75mm displacement, 60 - 500Hz, 98.1m/s² (10gn) acceleration, 30 minutes in each of three mutually perpendicular planes at 1 octave per minute
- Shock: IEC 60068-2-27 Test Ea, 981m/s² (100gn) acceleration for 6ms duration, 3 shocks in each direction along three mutually perpendicular axes
- Soldering: SMD product, suitable for Convection Reflow soldering. Peak temperature 230°C. Maximum time 200°C, 90 secs.
- Sealing: Non hermetic package
- Marking: Label resistant to all common solvents

Solder Conditions

- For typical soldering conditions, please see the relevant page in the Application Notes

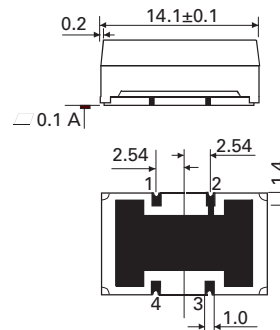
Minimum Order Information Required

- Frequency
- Supply voltage

- Output type
- All causes stability
- Temperature range
- Lifetime
- Package style
- RoHS compliance
- Other requirements

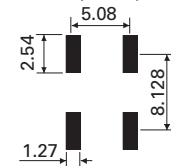
Outline in mm - (4 pad) (Style 578)

Tri-state / Enable Control and Differential Output are not available in this package.

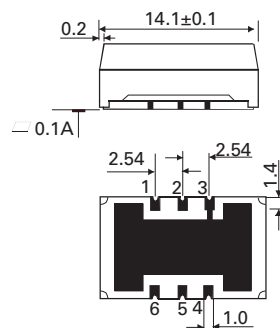


- Pad Connections
1. Voltage Control
 2. GND
 3. Output
 4. +Vs

Solder pad layout

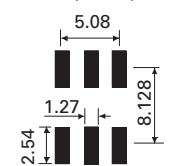


Outline in mm - (6 pad) (Style 579)



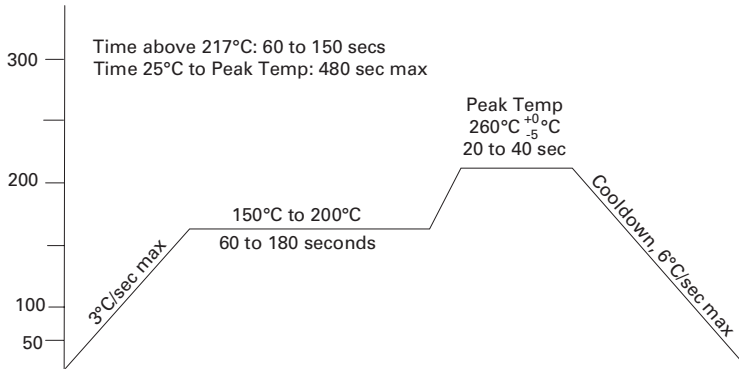
- Pad Connections
1. Voltage Control
 2. Enable/Tri-state control
 3. GND
 4. Output 1
 5. Output 2
 6. +Vs

Solder pad layout



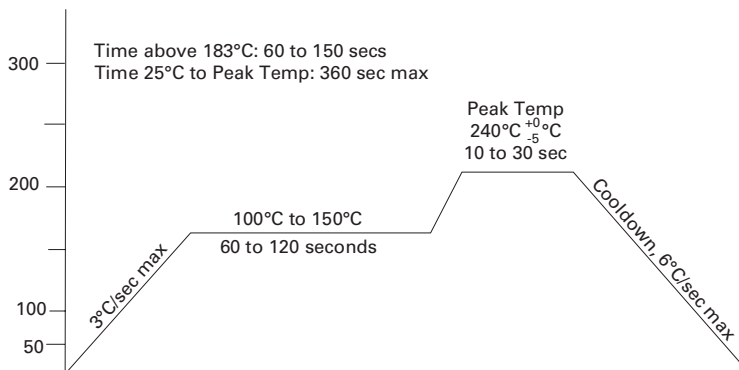
SURFACE MOUNT
VXOs

Lead Free Reflow Soldering Profile *



SURFACE MOUNT
VCXOs

Tin / Lead Reflow Soldering Profile *



*Note: These profiles were used during the qualification testing of the product and therefore represent worst case conditions. They are not recommended for use by the customer in the actual assembly of these parts.