ISSUE 14; January 2018

Description

- Sub 1ppm performance TCXO/VCTCXO, a single chip oscillator and analogue compensation circuit operating over an extended temperature range. Its ability to function down to a supply voltage of 2.4V and low power consumption make it particularly suitable for mobile applications.
- -1A No ref voltage, ageing adj option
- -1B No ref voltage, no freq adj option
- -2A Ref voltage = 2.2V, ageing adj option
- -3A Ref voltage = 2.7V, ageing adj option

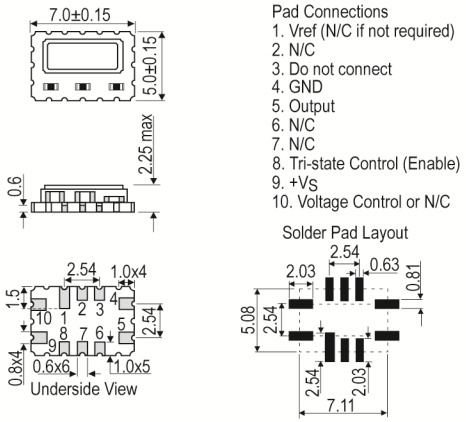
Frequency Parameters

- Frequency 10.0MHz to 40.0MHz
- Frequency Tolerance ±1.00ppm
- Frequency Stability ±0.30ppm to ±2.50ppm
- Acceleration sensitivity (Gamma vector, 3-axes, 30-1500Hz): <2 ppb/g typ
- Supply Voltage Variation (±10% change reference to frequency at nominal supply voltage): ±0.2ppm typ
- Load Variation (±5pF change reference to frequency at nominal load): ±0.2ppm typ
- Ageing:
  ±1ppm maximum in 1st year, frequency <20MHz
  ±3ppm maximum for 10 years (including the 1st year), frequency <20MHz
  ±2ppm maximum in 1st year, frequency ≥20MHz
  ±5ppm maximum for 10 years (including the 1st year), frequency ≥20MHz
- After Reflow: ±1ppm max

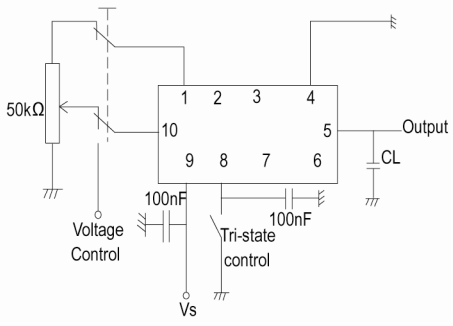
Electrical Parameters

- Supply Voltage 3.3V ±10%
- Current Draw: 1+Frequency(MHz)*1.2*{Load(pF)+30}*10–3mA
- Supply voltages in the range 2.4V to 6.0V available to order, please contact our sales offices

Outline (mm) -3A = Ref voltage = 2.7V, ageing adj option



Test Circuit



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Frequency Adjustment

- Optional reference voltage output on pad 1, suitable for potentiometer supply or DAC reference:
  1. No output (standard option)
  2. 2.2V, for Min. VS>2.4V
  3. 2.7V, for Min. VS>3.0V
  Maximum load current (mA) = Vref/10
- For manual frequency adjustment connect an external 50kΩ potentiometer between pad 1 (Reference Voltage) and pad 4 (GND) with wiper connected to pad 10 (Voltage Control). Please specify reference voltage as part of the ordering code.
- Three options with external Voltage Control applied to pad 10:
- A. Standard Pulling Adjustment:
  ±5ppm min, frequency ≤20MHz
  ±7ppm min, frequency >20MHz
- B. No frequency adjustment initial calibration @ 25°C < ±1.0ppm
- C. High Pulling ±10ppm to ±20ppm can be available depending on frequency and stability options (please contact our sales offices)
- Linearity: <1%
- Slope: Positive
- Input Resistance: >100kΩ
- Modulation Bandwidth: >2kHz
- Voltage Control Range:
  Without reference voltage: 1.65V±1V
  With reference voltage: Vc = 0V to Vref

Operating Temperature Ranges

- 0 to 50°C
- 0 to 70°C
- -20 to 70°C
- -30 to 75°C
- -40 to 85°C

Output Details

- Output Compatibility — Clipped Sine
- Drive Capability — 10kΩ//10pF
- AC-coupled
- 0.8V pk-pk min

Output Control

- Tri-state Operation:
  Logic '1' (>60% Vs) to pad 8 enables output
  Logic '0' (<20% Vs) to pad 8 disables output
  The tristate control (enable) pin has a internal 100kΩ pull up resistor which allows the pin to be left unconnected if not required. When in tristate mode, the output stage is disabled, but the oscillator and compensation circuit are still active (current consumption typ. ≤ 1.0mA).

Noise Parameters

- Phase Noise (typical @ 13.0MHz):
  -65dBc/Hz @ 1Hz
  -95dBc/Hz @ 10Hz
  -120dBc/Hz @ 100Hz
  -135dBc/Hz @ 1kHz
  -140dBc/Hz @ 10kHz
  -145dBc/Hz @ 100kHz

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Environmental Parameters

- Storage Temperature Range: –55 to 125°C
- Shock: IEC 60068-2-27, Test Ea: 1500g acceleration for 0.5ms, 1/2 sine pulse, 3 shocks in each of 3 mutually perpendicular axes.
- Vibration: IEC 60068-2-6, Test Fc, 10Hz-60Hz at 10g 30mins in 3 mutually perpendicular axes at 1 octave per minute.
- Solderability: MIL-STD-202, Method 208, Category 3

Manufacturing Details

- RoHS Terminations NiCoAu
- RoHS Reflow 260degC 30s

Ordering Information

- Frequency*
  Model*
  Reference Voltage + Frequency Adjustment Options*
  Output
  Frequency Stability (over operating temperature range)*
  Operating Temperature Range*
  Supply Voltage
  (*minimum required)
- Example
  10.0MHz CFPT-9008-1A
  Clipped Sine ±1.0ppm -20 to 70C 3.3V
- Note: Certain frequency stability / temperature range combinations may not be available for all frequencies.

Compliance

- RoHS Status (2011/65/EU) Compliant
- REACh Status Compliant
- MSL Rating (JDEC-STD-033): 1

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
  Pack Size: 1,000
- Pack Style: Bulk Bulk pack
  Pack Size: 10

Electrical Specification - maximum limiting values 3.3V ±10%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
10.0MHz	40.0MHz	0 to 70	±0.5	-	-	-
		0 to 50	±0.3	-	-	-
		-20 to 70	±0.5	-	-	-
		-30 to 75	±1.0	-	-	-
		-40 to 85	±1.0	-	-	-

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