

ISSUE 13; April 2016

Description

- Sub 1ppm performance TCXO, 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 Stability: $\pm 0.30\text{ppm}$ to $\pm 2.50\text{ppm}$
- Ageing: $\pm 2\text{ppm}$ max in 1st year (See Note 2)

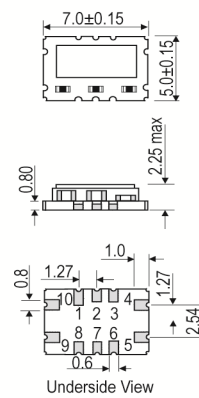
Electrical Parameters

- Supply Voltage: $3.3\text{V} \pm 10\%$
- Supply Current: $< 8\text{mA}$
- Supply voltages in the range 2.4V to 6.0V available to order, please contact our sales offices
- Optional reference voltage output on pad 1, suitable for potentiometer supply or DAC reference:
 - No output (standard option)
 - 2.2V, for Min. $V_S > 2.4\text{V}$
 - 2.7V, for Min. $V_S > 3.0\text{V}$
 Maximum load current (mA) = $V_{ref}/10$
- For manual frequency adjustment connect an external 50k Ω 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.

Frequency Adjustment

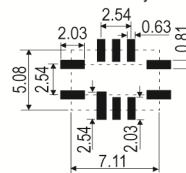
- Three options with external Voltage Control applied to pad 10:
 - Ageing Adjustment:
 - $> \pm 5\text{ppm}$, frequency $< 20\text{MHz}$
 - $> \pm 7\text{ppm}$, frequency $> 20\text{MHz}$
 - No frequency adjustment initial calibration @ 25°C $\pm 1.0\text{ppm}$
 - High Pulling $\pm 10\text{ppm}$ to $\pm 50\text{ppm}$ can be available depending on frequency and stability options (please contact our sales offices)
- Linearity: $< 1\%$
- Slope: Positive
- Input Resistance: $> 100\text{k}\Omega$
- Modulation Bandwidth: $> 2\text{kHz}$
- Voltage Control Range:
 - Without reference voltage: $1.65\text{V} \pm 1\text{V}$
 - With reference voltage: $V_c = 0\text{V}$ to V_{ref}
- Ageing:
 - $\pm 1\text{ppm}$ maximum in 1st year, frequency $< 20\text{MHz}$
 - $\pm 3\text{ppm}$ maximum for 10 years (including the 1st year), frequency $< 20\text{MHz}$
 - $\pm 2\text{ppm}$ maximum in 1st year, frequency $\geq 20\text{MHz}$
 - $\pm 5\text{ppm}$ maximum for 10 years (including the 1st year), frequency $\geq 20\text{MHz}$
- After Reflow: $\pm 1\text{ppm}$ max

Outline (mm) -1A = No ref voltage, ageing adj option

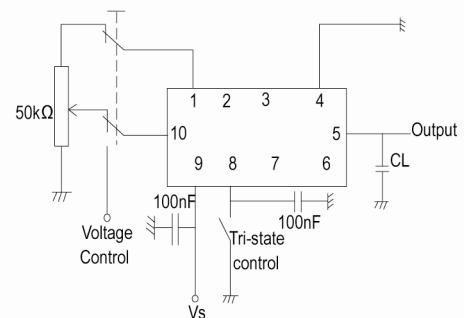


- Pad Connections
- 1.V ref
 - 2.N/C
 - 3.Do not connect
 - 4.GND
 - 5.Output
 - 6.N/C
 - 7.N/C
 - 8.Tri-state Control *
 - 9.+Vs
 - 10.Voltage Control*
- * Leave unconnected if not required

Solder Pad Layout



Test Circuit



Sales Office Contact Details:

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Operating Temperature Ranges

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

Output Details

- Output Compatibility Sine
- Load: 10kΩ // 10pF, AC-coupled
- Tri-state Operation:
Logic '1' (>60% Vs) to pad 8 enables output
Logic '0' (<20% Vs) to pad 8 disables output
When at logic '0' the output stage is disabled for all output options, but the oscillator and compensation circuit are still active (current consumption <1mA)

Output Levels

- < 20MHz: > 1.0Vpk-pk
> 20MHz: > 0.5Vpk-pk

Noise Parameters

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

Environmental Parameters

- Storage Temperature Range: -55 to 125°C
- Shock: IEC 60068-2-27, Test Ea: 1500G acceleration for 6ms, 3 shocks in each of 3 mutually perpendicular planes
- Vibration: IEC 60068-2-6, Test Fc, Procedure B4: 10Hz-60Hz, 1.5mm displacement, 60-2000Hz at 98.1m/s², 30mins in 3 mutually perpendicular planes at 1 oct/min
- Solderability: MIL-STD-202, Method 208, Category 3

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-9007-1A
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

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Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
Pack Size: 1,000
- Pack Style: Bulk Loose in 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 50	±0.3	-	-	-
		-20 to 70	±0.5	-	-	-
		-30 to 75	±1.0	-	-	-
		-40 to 85	±1.0	-	-	-

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