

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
- -4A Ref voltage = 4.7V, ageing adj option



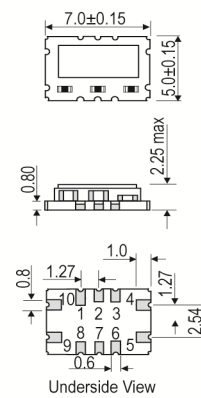
Frequency Parameters

- Frequency 1.25MHz to 40.0MHz
- Frequency Stability ±0.30ppm to ±2.50ppm
- Ageing ±2ppm max in 1st year (See Note 2)

Electrical Parameters

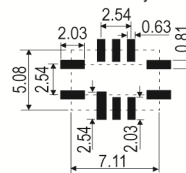
- Supply Voltage 5.0V ±10%
- Supply Current:
 $1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{ \text{Load(pF)} + 15 \} * 10^{-3} \text{ mA}$
 e.g. 20MHz, 5V, 15pF ≈ 4mA
- Supply voltages in the range 2.4V to 6.0V available to order, please contact our sales offices
- Optional reference voltage output on pad 1, suitable for potentiometer supply or DAC reference:
 1. No output (standard option)
 2. 2.2V, for Min. VS>2.4V
 3. 2.7V, for Min. VS>3.0V
 4. 4.2V, for Min. VS>4.5V
 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.

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

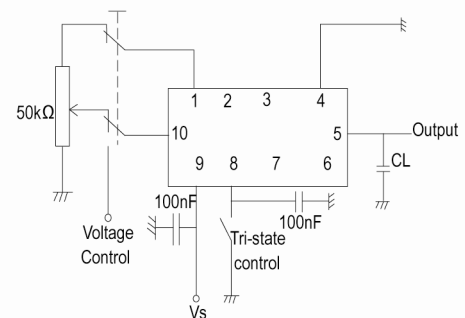


- Pad Connections
- 1.V ref
 - 2.N/C
 - 3.Do not connect
 - 4.GND
 - 5.Output
 - 6.N/C
 - 7.N/C
 - 8.Tri-state Control *
 - 9.+Vs
 - 10.Voltage Control*
- * Leave unconnected if not required

Solder Pad Layout



Test Circuit



Sales Office Contact Details:

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Germany: 0800 1808 443

France: 0800 901 383
USA: +1.760.318.2824

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Frequency Adjustment

- Pulling $\pm 10\text{ppm}$ min (See note 1)
- Three options with external Voltage Control applied to pad 10:
 - A. Ageing Adjustment:
 - > $\pm 5\text{ppm}$, frequency <20MHz
 - > $\pm 7\text{ppm}$, frequency >20MHz
 - B. No frequency adjustment initial calibration @ 25°C <
 $\pm 1.0\text{ppm}$
 - C. 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: >100k Ω
- Modulation Bandwidth: >2kHz
- Voltage Control Range:
 - Without reference voltage: 2.5V $\pm 1\text{V}$
 - With reference voltage: $V_c = 0\text{V}$ to V_{ref}
- Ageing:
 - $\pm 1\text{ppm}$ maximum in 1st year, frequency <20MHz
 - $\pm 3\text{ppm}$ maximum for 10 years (including the 1st year), frequency <20MHz
 - $\pm 2\text{ppm}$ 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

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 HCMOS
- Drive Capability 15pF

Output Control

- Tri-state Operation:
 - Logic '1' (>60% V_s) to pad 8 enables output
 - Logic '0' (<20% V_s) 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

- $V_{oH} > 90\% V_s$
 $V_{oL} < 10\% V_s$

Noise Parameters

- Phase Noise Typical (@ 13.0MHz):

Offset	dBc/Hz
10Hz	-95
100Hz	-120
1kHz	-135
10kHz	-140
100kHz	-145

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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-9001-1A
HCMOS ±1.0ppm -20 to 70C 5.0V
- 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: Bulk Loose in bulk pack
Pack Size: 10
- Pack Style: Reel Tape & reel in accordance with EIA-481-D
Pack Size: 1,000

Electrical Specification - maximum limiting values 5.0V ±10%

Frequency Min	Frequency Max	Temperature Range	Stability	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.25MHz	40.0MHz	0 to 50	±0.3	-	7	45/55%
		-20 to 70	±0.5	-	7	45/55%
		-30 to 75	±1.0	-	7	45/55%
		-40 to 85	±1.0	-	7	45/55%

*This document was correct at the time of printing; please contact your local sales office for the latest version.
[Click to view latest version on our website.](#)*

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