



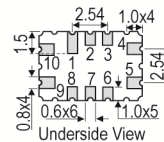
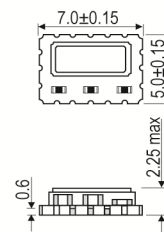
ISSUE 13; September 2014 - RoHS 2011/65/EU

Description

- Sub 1ppm performance TCXO manufactured for us by Rakon utilising their Pluto™ ASIC technology, 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
- 1 = Optional reference voltage output on pad 1, suitable for potentiometer supply or DAC reference: No output (standard option)
A = Ageing Adjustment:
>±5ppm, frequency <20MHz
>±7ppm, frequency >20MHz
- -1B No ref voltage, no freq adj option
- 1 = Optional reference voltage output on pad 1, suitable for potentiometer supply or DAC reference: No output (standard option)
B = No frequency adjustment initial calibration @ 25°C < ±1.0ppm
- -2A Ref voltage = 2.2V, ageing adj option
- 2 = Reference voltage output on pad 1, for Min. VS>2.4V, suitable for potentiometer supply or DAC reference: 2.2V
Note: Maximum load current (mA) = Vref/10
A = Ageing Adjustment:
>±5ppm, frequency <20MHz
>±7ppm, frequency >20MHz
- -3A Ref voltage = 2.7V, ageing adj option
- 3 = Reference voltage output on pad 1, for Min. VS>3.0V, suitable for potentiometer supply or DAC reference: 2.7V
Note: Maximum load current (mA) = Vref/10
A = Ageing Adjustment:
>±5ppm, frequency <20MHz
>±7ppm, frequency >20MHz



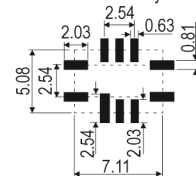
Outline (mm)



Pad Connections

1. Vref (N/C if not required)
2. N/C
3. Do not connect
4. GND
5. Output
6. N/C
7. N/C
8. Tri-state Control (Enable)
9. +Vs
10. Voltage Control or N/C

Solder Pad Layout



Frequency Parameters

- Frequency 1.25MHz to 40.0MHz
- Frequency Tolerance ±1.00ppm
- Tolerance Condition @ 25°C
- Frequency Stability ±0.30ppm to ±2.50ppm
- Ageing:
 - ±1ppm max in 1st year, frequency ≤20MHz
 - ±3ppm max for 10 years (including the 1st year), frequency ≤20MHz
 - ±2ppm max in 1st year, frequency >20MHz
 - ±5ppm max for 10 years (including the 1st year), frequency >20MHz
- Supply Voltage Variation (±10% change): ±0.2ppm typ
- Load Variation (±5pF change): ±0.2ppm typ
- After Reflow (measured at least 60mins after reflow): ±1ppm max

Sales Office Contact Details:

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**Electrical Parameters**

- Supply Voltage 3.3V $\pm 10\%$
- Supply Current:
 $1 + \text{Frequency(MHz)} * \text{Supply(V)} * \{\text{Load(pF)} + 15\} * 10^{-3} \text{ mA}$
e.g. 20MHz, 3.3V, 15pF $\approx 2\text{mA}$
- Optional reference voltage output on pad 1, suitable for potentiometer supply or DAC reference:
 1. No output (standard option)
 2. 2.2V for min $V_s > 2.4\text{V}$
 3. 2.7V for min $V_s > 3.0\text{V}$Maximum load current (mA) = $V_{\text{ref}}/10$
- 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.
- Note: Supply Voltages in the range 2.4V to 6.0V are available, please contact an IQD Sales Office

Frequency Adjustment

- Slope: Positive
- Standard Voltage Control Ranges:
Without Reference Voltage $V_s = 3.3\text{V } 1.65\text{V} \pm 1.0\text{V}$
With Reference Voltage $V_s = 0\text{V to } V_{\text{ref}}$
- Linearity: 1% max
- Input Impedance: 100k Ω min
- Modulation Bandwidth: 2kHz min
- A. Pulling:-
 $\geq \pm 5\text{ppm}$, frequency $\leq 20\text{MHz}$
 $\geq \pm 7\text{ppm}$, frequency $> 20\text{MHz}$
- B. No frequency adjustment initial calibration @ $25^\circ\text{C} \leq \pm 1.0\text{ppm}$
- C. High Pulling $\pm 10\text{ppm}$ to $\pm 50\text{ppm}$ can be available depending on frequency and stability options (please contact an IQD Sales Office)

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 HCMOS
- Drive Capability 15pF

Output Control

- Tri-state Operation:
Logic '1' ($> 60\% V_s$) or no connection 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 $< 1\text{mA}$)

Output Levels

- VoL: $< 10\% V_s$
- VoH: $> 90\% V_s$

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- Phase Noise (typical for 13.0MHz @ 25°C):
 - 65dBc/Hz @ 1Hz
 - 95dBc/Hz @ 10Hz
 - 120dBc/Hz @ 100Hz
 - 135dBc/Hz @ 1kHz
 - 140dBc/Hz @ 10kHz
 - 145dBc/Hz @ 100kHz

Environmental Parameters

- Shock: IEC 60068-2-27, Test Ea: 1500G acceleration for 0.5ms, half sine pulse, 3 shocks in each of 3 mutually perpendicular planes
- Vibration: IEC 60068-2-6, Test Fc: 10Hz-60Hz, 1.5mm displacement, 60-2000Hz at 10G, 30mins in 3 mutually perpendicular planes at 1oct/min
- Solderability: MIL-STD-202, Method 208, Category 3
- Storage Temperature Range: -55 to 125°C

Manufacturing Details

- Pb-free Reflow Soldering: 260°C max for 30sec max

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-9006-1A
HCMOS $\pm 1.0\text{ppm}$ -20 to 70C 3.3V
- Note: Certain frequency stability / temperature range combinations may not be available for all frequencies.

Compliance

- | | |
|------------------------------|-----------|
| ■ RoHS Status | Compliant |
| ■ REACH Status | Compliant |
| ■ MSL Rating (JDEC-STD-033): | 1 |

Packaging Details

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

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Electrical Specification - maximum limiting values 3.3V $\pm$ 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	$\pm$ 0.3	-	8	45/55
		-20 to 70	$\pm$ 0.5	-	8	45/55
		-30 to 75	$\pm$ 1.0	-	8	45/55
		-40 to 85	$\pm$ 1.0	-	8	45/55

This document was correct at the time of printing; please contact your local sales office for the latest version.

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