



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
- -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



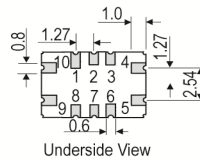
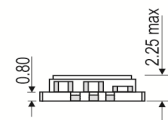
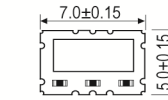
Frequency Parameters

- 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+Frequency(MHz)*Supply(V)*{Load(pF)+15}*10-3 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.

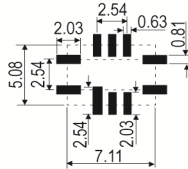
Outline (mm)



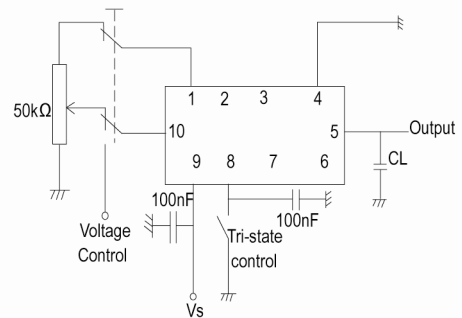
Pad Connections

- 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



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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 $<20\text{MHz}$
 $>\pm 7\text{ppm}$, frequency $>20\text{MHz}$
 - 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: $>100\text{k}\Omega$
- Modulation Bandwidth: $>2\text{kHz}$
- Voltage Control Range:
Without reference voltage: $2.5\text{V}\pm 1\text{V}$
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: $\pm 1\text{ppm max}$

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' ($>60\%$ 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 $<1\text{mA}$)

Output Levels

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

Noise Parameters

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

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