

Customer Part:

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.
- No ref voltage, ageing adj option
- Model CFPT-9006-1A
- Model Issue number 15

Frequency Parameters

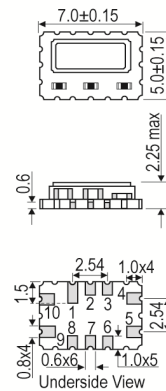
- Frequency 10.0MHz
- Frequency Tolerance $\pm 1.00\text{ppm}$
- Tolerance Condition @ 25°C
- Frequency Stability $\pm 1.00\text{ppm}$
- Operating Temperature Range -40.00 to 85.00°C
- Acceleration sensitivity (Gamma vector, 3-axes, 30-1500Hz): <2 ppb/g typ
- Ageing:
 - $\pm 1\text{ppm}$ max in 1st year, frequency $\leq 20\text{MHz}$
 - $\pm 3\text{ppm}$ max for 10 years (including the 1st year), frequency $\leq 20\text{MHz}$
 - $\pm 2\text{ppm}$ max in 1st year, frequency $> 20\text{MHz}$
 - $\pm 5\text{ppm}$ max for 10 years (including the 1st year), frequency $> 20\text{MHz}$
- Supply Voltage Variation ($\pm 10\%$ change reference to frequency at nominal supply voltage): $\pm 0.2\text{ppm}$ typ
- Load Variation ($\pm 5\text{pF}$ change reference to frequency at nominal load): $\pm 0.2\text{ppm}$ typ
- After Reflow: $\pm 1\text{ppm}$ max

Electrical Parameters

- Supply Voltage 3.3V $\pm 10\%$
- Supply Current (typical):
 - HCMOS: $1 + \text{Frequency}(\text{MHz}) \times \text{Supply}(\text{V}) \times \{\text{Load}(\text{pF}) + 15\} \times 1\text{E}-3\text{mA}$
 - i.e @ 20MHz, 3.3V, 15pF $\approx 3\text{mA}$
 - Calculation: $1 + (20 \times 3.3 \times (15 + 15) \times 0.001) = 2.98\text{mA}$

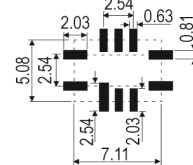


Outline (mm)

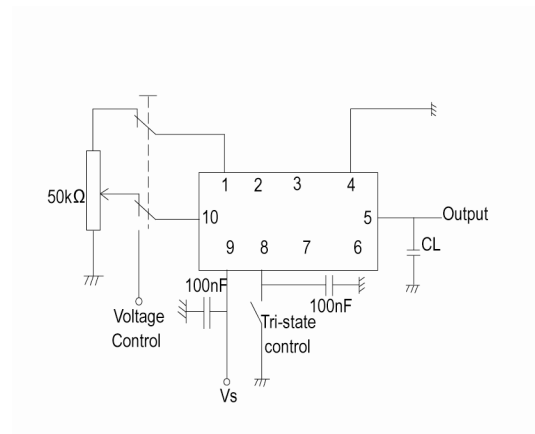


- Pad Connections
1. Vref (N/C if not required)
 2. N/C
 3. Do not connect
 4. GND
 5. Output
 6. N/C
 7. N/C
 8. Tri-state Control (Enable)
 9. +Vs
 10. Voltage Control or N/C

Solder Pad Layout



Test Circuit



Sales Office Contact Details:

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Customer Part:
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 $V_s > 2.4V$
 3. 2.7V for min $V_s > 3.0V$
 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.
- Standard Voltage Control Ranges:
 - Without Reference Voltage $V_s = 3.3V$ $1.65V \pm 1.0V$
 - With Reference Voltage $V_s = 0V$ to V_{ref}
- Linearity: 1% max
- Slope: Positive
- Input Impedance: 100k Ω min
- Modulation Bandwidth: 2kHz min
- A. Standard Pulling Adjustment:
 - $\pm 5ppm$ min, frequency $\leq 20MHz$
 - $\pm 7ppm$ min, frequency $> 20MHz$
- B. No frequency adjustment initial calibration @ 25°C $\leq \pm 1.0ppm$
- C. High Pulling $\pm 10ppm$ to $\pm 20ppm$ can be available depending on frequency and stability options (please contact an IQD Sales Office)

Output Details

- | | |
|------------------------|-----------|
| ■ Output Compatibility | HCMOS |
| ■ Drive Capability | 15pF |
| ■ Rise and Fall Time | 8.0ns max |
| ■ Duty Cycle | 45/55% |
| ■ VoL: $< 10\% V_s$ | |
| ■ VoH: $> 90\% V_s$ | |

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
 - The tristate control (enable) pin has a internal 100k Ω 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. $\leq 1.0mA$).

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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Customer Part:**Environmental Parameters**

- Storage Temperature Range: -55 to 125°C
- Thermal Shock: IEC 60068-2-14, Test Nc Conditions: 15 cycles -55°C to +125°C
- Mechanical Shock: IEC 60068-2-27, Test Ea Conditions: 15 cycles 1500g 0.5ms 5 pulses/axis
- Vibration: IEC 60068-2-6, Test Fc, Conditions: 20g from 10 – 2000 Hz 12 hours total
- Solderability: MIL-STD-202, Method 208, Category 3

Manufacturing Details

- Pb-free Reflow Soldering: 260°C max for 30sec max
- RoHS Terminations NiCoAu
- RoHS Reflow Temp 260degC 30s

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 1

Packaging Details

- Pack Style: Bulk Bulk pack
Standard Pack Quantity: 10
- *Alternative packing option available*

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