ISSUE 1; April 2016

Description

- A high performance, surface-mount Temperature Compensated Crystal Oscillator (TCXO) utilising an analogue IC and offering excellent phase noise, frequency stability and VC tilt compensation.
- FEATURES:
  Excellent Phase Noise and Frequency Stability performance. Frequency Slope and Perturbation specifications can be customised.
- APPLICATIONS:
  Communications, Base Station, Handset, Femtocell, DSL/ADSL, LTE, SONET/SDH, WiMAX/WiBro, WLAN, IP Timing, Precision GPS.

Frequency Parameters

- Frequency 5.0MHz to 52.0MHz
- Frequency Tolerance ±1.00ppm
- Tolerance Condition @ 25°C ±2°C
- Frequency Stability (referenced to (Fmax+Fmin)/2, temperature ramp ≤1°C/min and VC=2.5V): ±0.1ppm to 3.0ppm
- Ageing (@ 25°C): ±1ppm max over 1yr
- Frequency Slope (minimum of one frequency reading every 2°C over the operating temperature range, temperature ramp ≤1°C/min and VC=2.5V): 0.1ppm/°C max
- Static Temperature Hysteresis (frequency change after reciprocal temperature ramped over the operating range - frequency measured before and after @ 25°C): 0.4ppm max
- Supply Voltage Variation (±5% change @ 25°C): ±0.1ppm max
- Load Variation (±10% change @ 25°C and load as stated in Output Details section): ±0.2ppm max
- Reflow Variation (after two consecutive reflows as per profile shown and 1hr recovery @ 25°C): ±1ppm max
- Note: Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents can lead to short term frequency drift.

Electrical Parameters

- Supply Voltage Range: 2.8V to 5.5V
- Supply Current (@ TA=25°C, Vs max and load as stated in Output Details section): 2.9mA max

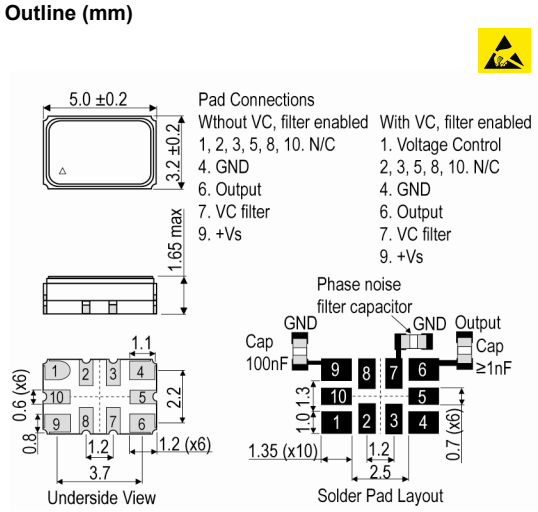
Frequency Adjustment

- Pulling ±6ppm to ±30ppm
- Control Voltage 2.5V ±2.0V
- Input Impedence 100kΩ min
- Linearity (deviation from straight line curve fit): 10% max
- Note: VC of 4.5V is only applicable when a Vs of 5.0V is applied.

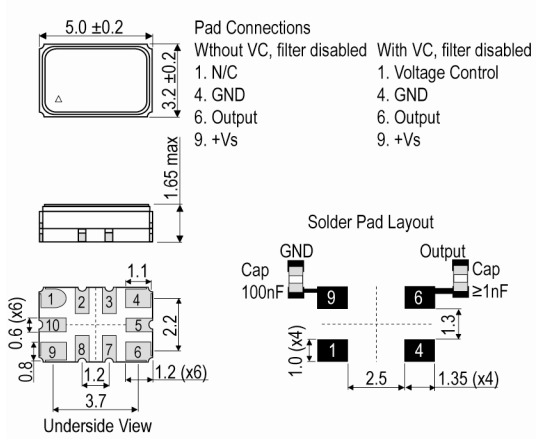
Operating Temperature Ranges

- -40 to 85°C

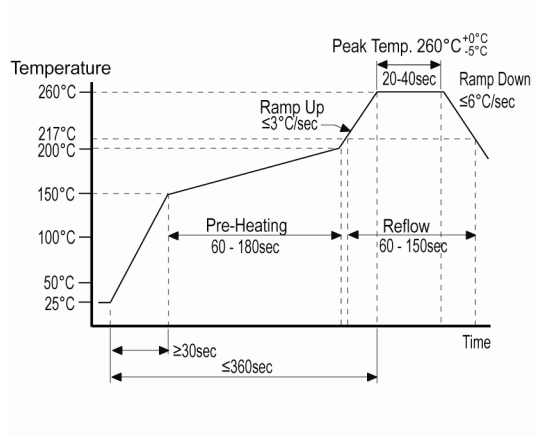
Outline (mm)



Outline (mm)



Pb-Free Reflow



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Output Details

- Output Compatability HCMOS/Clipped Sine
- HCMOS Output Waveform:
  Output Voltage Level Low (VoL): 10%Vs max
  Output Voltage Level High (VoH): 90%Vs min
  Rise and Fall Times (measured @ 10pF): 5ns max
  Duty Cycle (measured @ 50% level): 40/60% max
  Output Load Capability: 10pF
  Settling Time (time taken for frequency to reach specified Frequency Tolerance): 10ms max
- Note: Assumes no phase noise filtering - if low phase noise is required the Settling Time will be extended.
- Clipped Sine Output Waveform:
  Output Voltage Level (@ TA=25°C, Vs min and load=10kΩ//10pF): 0.8V pk-pk min
  Output Load Capability: 10kΩ//10pF
  Output: DC-coupled
  Note: AC-coupled output requires an external capacitor, ≥1nF recommended.
  Start Up Time (amplitude within 90% of specified output level): 1ms max
  Settling Time (time taken for frequency to reach specified Frequency Tolerance): 10ms max
- Note: Assumes no phase noise filtering - if low phase noise is required the Settling Time will be extended.

Noise Parameters

- Phase Noise (typical for a 10MHz HCMOS oscillator @ 25°C):
  -75dBc/Hz @ 1Hz
  -98dBc/Hz @ 10Hz
  -127dBc/Hz @ 100Hz
  -147dBc/Hz @ 1kHz
  -152dBc/Hz @ 10kHz
  -155dBc/Hz @ 100kHz
  -157dBc/Hz @ 1MHz

Environmental Parameters

- Storage Temperature Range: -40 to 85°C
- Mechanical Shock: IEC 60068-2-27: Half sine-wave acceleration of 100G peak amplitude for 6ms duration, 3 times in 3 mutually perpendicular planes.
- Vibration: 10G rms from 30Hz to 1500Hz random for 4hrs in 3 mutually perpendicular planes, 12hrs total.
- Thermal Shock: Exposed @ -40°C for 30mins then 85°C for 30mins constantly for a period of 5 days.
- Humidity: After 48hrs @ 85°C ±2°C, 85% RH non-condensing.
- Note: The environmental conditions will cause a frequency shift @ 25°C of ≤1ppm.

Manufacturing Details

- Maximum Process Temperature: 260°C (40secs max)

Compliance

- RoHS Status (2011/65/EU) Compliant
- REACh Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

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Packaging Details

- Pack Style: Reel — Tape & reel in accordance with EIA-481-D
  Pack Size: 2,000
- Pack Style: Bulk — Bulk pack
  Pack Size: 1

Electrical Specification - maximum limiting values

Frequency Min	Frequency Max	Temperature Range	Stability	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
5.0MHz	52.0MHz	-40 to 85	-	-	-	-

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Chipset Approval Table

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQXT-313-1	509164	30.720MHz	OCTEON Fusion CNF71xx	Cavium	
IQXT-313-2	509237	12.80MHz	82V3910, 82V3911, 8V89316 and all 82V33xx SyncE chipsets.	IDT	
IQXT-313-3	509407	24.5760MHz	ZL30152, ZL30155, ZL30157, ZL30159, ZL30160, ZL30165	Microsemi	
IQXT-313-4	509673	19.20MHz	FSM9xxx, FSM99xx	Qualcomm	
IQXT-313-5	509756	25.0MHz	Transcede 2000, Transcede 3000, Transcede 4000	Intel	
IQXT-313-6	512476	19.20MHz	Transcede 2000, Transcede 3000, Transcede 4000	Intel	

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