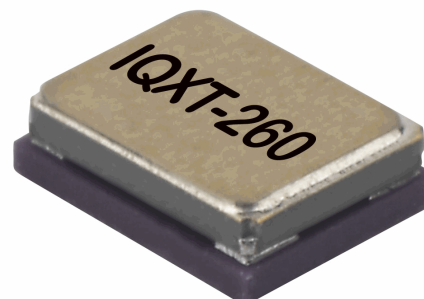


ISSUE 1; April 2016

Description

- The IQXT-260 employs an analogue ASIC for the oscillator and a high order temperature compensation circuit in a 2.5 x 2.0mm size package. The device can be placed in power down mode through a single input pin. During standard operation, power consumption is minimised by operating down to a supply voltage of 1.8V. The IQXT-260's high stability, low power consumption, small footprint and powerful compensation method makes it a TCXO ideally suited for demanding GPS mobile applications.
- Applications:
 - GPS
 - Smartphone
 - PNS
 - Consumer Communications
 - Wi-Fi
 - WiMax/W-LAN
- Features:
 - Frequency slope and perturbation specifications can be customised to the application requirement
 - Excellent phase noise performance
 - Standard temperature stability choices are $\pm 0.5\text{ppm}$, $\pm 1\text{ppm}$, $\pm 1.5\text{ppm}$ and $\pm 2.5\text{ppm}$ over wide temperature ranges



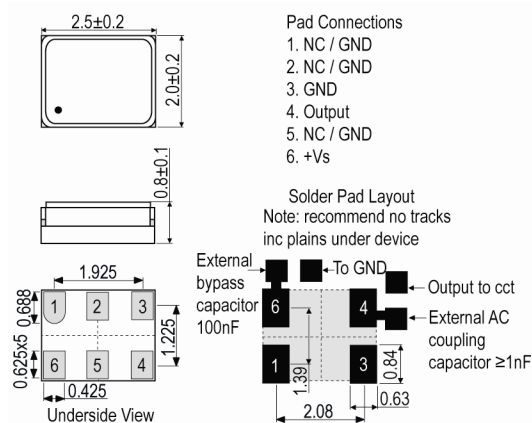
Frequency Parameters

- Frequency: 10.0MHz to 52.0MHz
- Frequency Tolerance: $\pm 1.00\text{ppm}$
- Frequency Stability: $\pm 0.50\text{ppm}$ to $\pm 2.50\text{ppm}$
- Frequency calibration: Offset from nominal frequency measured at $25^\circ\text{C} \pm 2^\circ\text{C}$
- Frequency stability over temperature: referenced to the midpoint between minimum and maximum frequency value over the specified temperature range. Control voltage set to midpoint of control voltage (Note 1)
- Frequency slope, minimum of 1 frequency reading every 2°C , over the operating temperature range (Note 1): 0.1 to $1\text{ppm}/^\circ\text{C}$
- Static temperature hysteresis: frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25°C : $\pm 0.6\text{ppm}$ max
- Supply voltage variation ($\pm 5\%$ change at 25°C): $\pm 0.1\text{ppm}$ max
- Load variation ($\pm 10\%$ change, note 2): $\pm 0.2\text{ppm}$ max
- Long term stability, frequency drift over 1 year at 25°C : $\pm 1\text{ppm}$ max

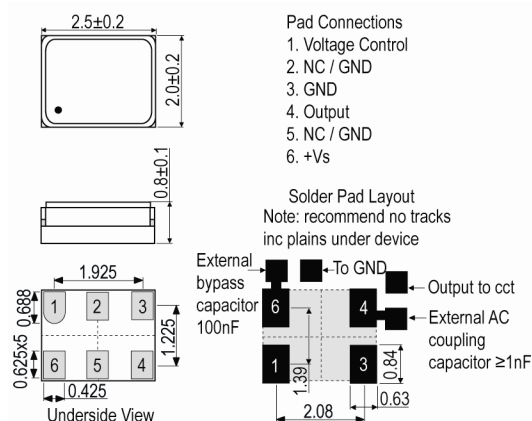
Electrical Parameters

- Reflow shift: Two consecutive reflows as per profile after 1 hour recovery at 25°C : $\pm 1\text{ppm}$ max
- Supply voltage range: 1.8 to 3.3V
- Supply current (see note 2)
- Note 1: Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents can lead to short term frequency drift.
- Note 2: Specified for the load stated in the oscillator output section at 25°C
- Note 3: External AC-Coupled output requires an external capacitor $\geq 1\text{nF}$ recommended.
- Note 4: Frequency shift $\leq 1\text{ppm}$ after environmental conditions

Outline (mm) Pad 1 GND/NC



Outline (mm) = Pad 1 VC



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Frequency Adjustment

- Pulling $\pm 10\text{ppm min}$
- Input Impedence $500\text{k}\Omega \text{ min}$

Operating Temperature Ranges

- $-40 \text{ to } 85^\circ\text{C}$

Output Details

- Output Compatability Clipped Sine
- Drive Capability $10\text{k}\Omega/10\text{pF} \pm 10\%$
- Output: DC coupled (see note 3)

Output Control

- Control voltage range: The nominal control voltage value is midway between the minimum and maximum. Voltage control should not exceed the supply voltage $+0.2\text{V}$ or GND.
Supply voltage $\leq 2.3\text{V}$: $0.3 \text{ to } 1.5\text{V}$
Supply voltage $> 2.3\text{V}$: $0.4 \text{ to } 2.4\text{V}$
- Power Down Mode:
Logic low ($20\%V_s \text{ max}$) to E/D disables output.
Logic high ($80\%V_s \text{ min}$) to E/D enables output.
- Standby current: $0.01\mu\text{A max}$
- Start-Up Time (amplitude) within 90% of specified output:
 0.5ms max
- Start-Up Time (frequency) within $\pm 0.5\text{ppm}$ of steady state: 2ms max

Output Levels

- Output voltage level (at min supply voltage): 0.8V min (Note 2)

Noise Parameters

- Phase noise for a 38.4MHz oscillator @ 25°C :
 $-62\text{dBc/Hz @ } 1\text{Hz}$
 $-86\text{dBc/Hz @ } 10\text{Hz}$
 $-109\text{dBc/Hz @ } 100\text{Hz}$
 $-132\text{dBc/Hz @ } 1\text{kHz}$
 $-148\text{dBc/Hz @ } 10\text{kHz}$

Environmental Parameters

- Shock [MIL-STD-202 M213] (Note 4): Half sine-wave acceleration of 3000G peak amplitude. Duration: 0.3ms , Velocity: 12.3ft/s
- Moisture resistance [MIL-STD-202 M106g] (Note 4): 1000 hours at 85°C , 85% relative humidity. Biased.
- Thermal cycling [JESD22 METHOD JA-104C] (Note 4): 1000 temperature cycles, where each cycle consists of a 25 minutes soak time at -40°C followed by a 25 minute soak time at 85°C , with a 60 second maximum transition time between temperatures. Air to air transition.
- Vibration [JESD22-B103-B] (Note 4): 10G peak acceleration for 20 minutes. 12 cycles in each of the 3 orientations. Test from $10\text{-}2000\text{Hz}$
- Storage Temperature Range: $-40 \text{ to } 85^\circ\text{C}$

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Ordering Information

- *minimum information required
- Frequency*
- Model*
- Supply Voltage*
- Pad 1 function*
- Frequency Stability*
- Operating Temperature Range*

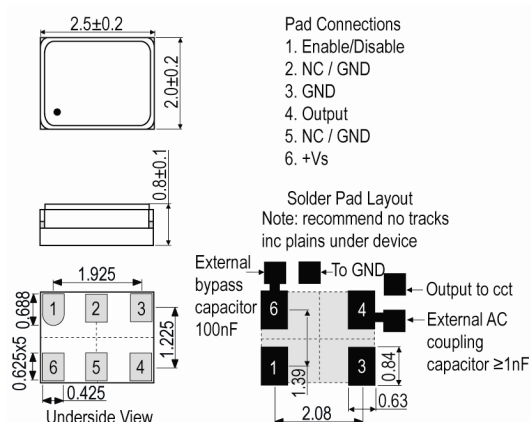
Compliance

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

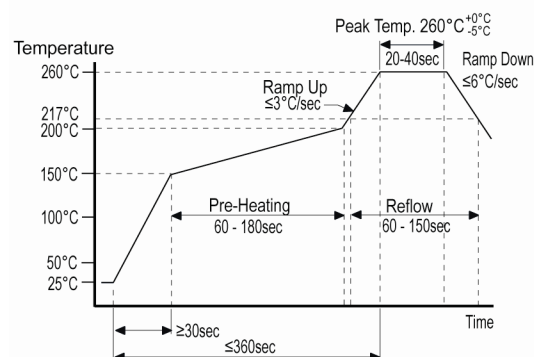
Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
Pack Size: 3,000
- Pack Style: Bulk Loose in bulk pack
Pack Size: 1

Outline (mm) = Pad 1 E/D



Pb-Free Reflow



Electrical Specification - maximum limiting values

Frequency	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		$^{\circ}\text{C}$	ppm	mA	ns	%
10.0MHz	52.0MHz	-40 to 85	± 0.5	2	-	-

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Chipset Approval Table

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQXT-260-5	512883	26MHz	BCM2075, BCM2076, BCM4750, BCM4751, BCM47511, BCM4752, BCM47521, BCM4760	Broadcom	
IQXT-260-6	512238	26MHz	MediaTek Combo Chip, MT6620, MT6628, MT6627	Mediatek	
IQXT-260-7	511890	19.2MHz	APQ Family, APQ8064	Qualcomm	
IQXT-260-8	513644	26MHz	TBA	uBlox	
IQXT-260-9	511743	16.369MHz	SirfStar 3 (SS3), SirfStar 4 (SS4), SirfStar 5 (SS5)	CSR	
IQXT-260-10	511741	26MHz	SirfStar 3 (SS3), SirfStar 4 (SS4), SirfStar 5 (SS5)	CSR	
IQXT-260-11	512242	19.2MHz	APQ Family, APQ8064	Qualcomm	
IQXT-260-12	511911	26MHz	u-blox 6 (UBX-M6000, UBX-M6010), u-blox 7 (UBX-M7020), u-blox 8 (UBX-M8030)	uBlox	
IQXT-260-13	513636	26MHz	uBlox	TBA	
IQXT-260-16	512222	19.2MHz	MDM Family, MDM6xxx, MDM7xxx, MDM8xxx, MDM6085, MDM6270, MDM6200, MDM6600, MDM8200A, MDM8220, MDM8215, MDM8225	Qualcomm	
IQXT-260-17	512240	19.2MHz	MDM Family, MDM6xxx, MDM7xxx, MDM8xxx, MDM6085, MDM6270, MDM6200, MDM6600, MDM8200A, MDM8220, MDM8215, MDM8226	Qualcomm	
IQXT-260-18	513028	26MHz	TBA	TBA	
IQXT-260-26	514621	16.369MHz	SirfStar 5 (SS5)	CSR	
IQXT-260-27	514054	38.4MHz	DWM1000	Decawave	

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