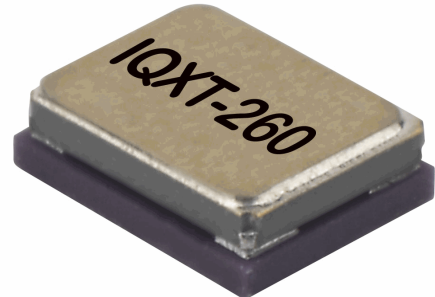


ISSUE 1; July 2016

**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



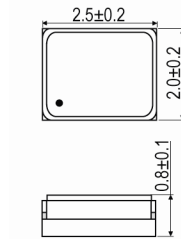
**Frequency Parameters**

- 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  $2^\circ\text{C}$ , 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  $25^\circ\text{C}$ :  $\pm 0.6\text{ppm}$  max
- Supply voltage variation ( $\pm 5\%$  change at  $25^\circ\text{C}$ ):  $\pm 0.1\text{ppm}$  max
- Load variation ( $\pm 10\%$  change, note 2):  $\pm 0.2\text{ppm}$  max
- Long term stability, frequency drift over 1 year at  $25^\circ\text{C}$ :  $\pm 1\text{ppm}$  max

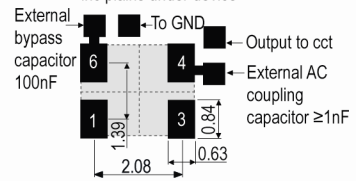
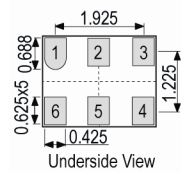
**Electrical Parameters**

- Reflow shift: Two consecutive reflows as per profile after 1 hour recovery at  $25^\circ\text{C}$ :  $\pm 1\text{ppm}$  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  $25^\circ\text{C}$
- 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

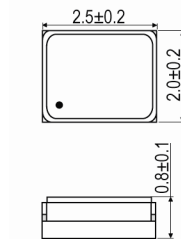
**Outline (mm) Pad 1 GND/NC**



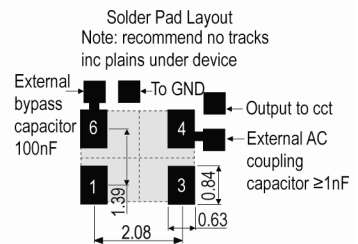
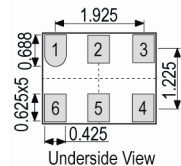
- Pad Connections
1. NC / GND
  2. NC / GND
  3. GND
  4. Output
  5. NC / GND
  6. +Vs



**Outline (mm) = Pad 1 VC**



- Pad Connections
1. Voltage Control
  2. NC / GND
  3. GND
  4. Output
  5. NC / GND
  6. +Vs



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Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

#### 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%Vs max) to E/D disables output.  
Logic high (80%Vs min) to E/D enables output.
- Standby current:  $0.01\mu\text{A max}$
- Start-Up Time (amplitude) within 90% of specified output:  
 $0.5\text{ms max}$
- Start-Up Time (frequency) within  $\pm 0.5\text{ppm}$  of steady state:  $2\text{ms max}$

#### Output Levels

- Output voltage level (at min supply voltage):  $0.8\text{V min}$  (Note 2)

#### Noise Parameters

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

#### Environmental Parameters

- Shock [MIL-STD-202 M213] (Note 4): Half sine-wave acceleration of  $3000\text{G}$  peak amplitude. Duration:  $0.3\text{ms}$ , Velocity:  $12.3\text{ft/s}$
- Moisture resistance [MIL-STD-202 M106g] (Note 4):  $1000$  hours at  $85^\circ\text{C}$ , 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  $-40^\circ\text{C}$  followed by a 25 minute soak time at  $85^\circ\text{C}$ , with a 60 second maximum transition time between temperatures. Air to air transition.
- Vibration [JESD22-B103-B] (Note 4):  $10\text{G}$  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\*

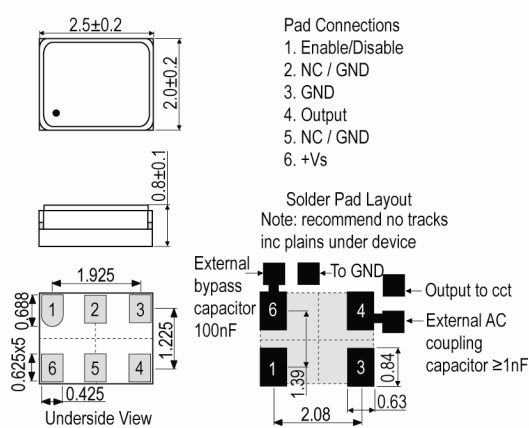
**Compliance**

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

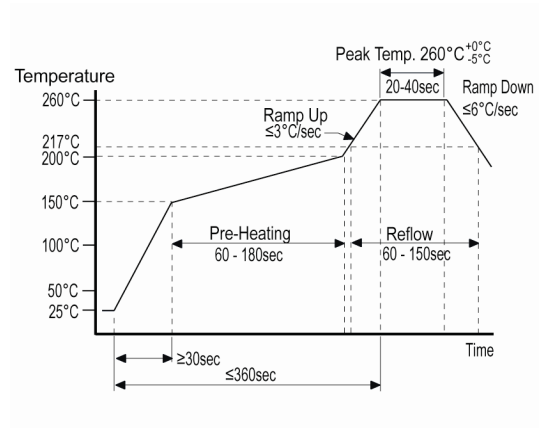
**Packaging Details**

- Pack Style: Reel      Tape & reel in accordance with EIA-481-D
- Pack Size: 3,000

**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
10.0MHz	52.0MHz	$^{\circ}C$	ppm	mA	ns	%
		-40 to 85	$\pm 0.5$	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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