ISSUE 1; April 2016

Description

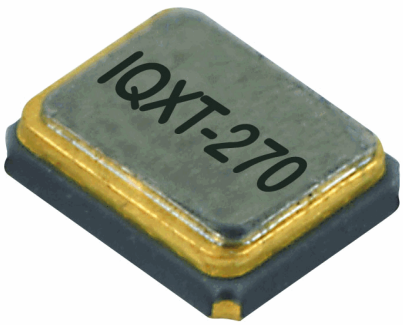
- The IQXT-270 employs an analogue ASIC for the oscillator and a high order temperature compensation circuit in a 2.0 x 1.6mm size package. The device can be placed in power down mode through a single input pin. During standard operation, power consumption is minimised by operating down to a supply voltage of 1.8V. The IQXT-270'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
  Communications
  Consumer
- Features:
  Excellent phase noise performance
  Low start up drift rate
  Height less than 0.8mm
  Operates at 1.8V supply
  Power Down Mode
  Standard temperature stability of ±0.5ppm over wide temperature ranges

Frequency Parameters

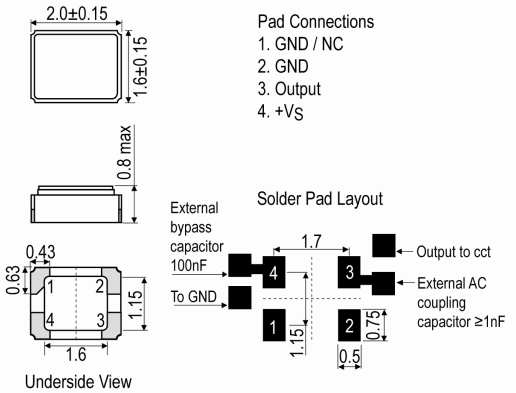
- Frequency 13.0MHz to 52.0MHz
- Frequency Tolerance ±2.00ppm
- Frequency Stability ±0.50ppm to ±2.00ppm
- Frequency calibration + reflow: offset from nominal frequency measured at 25˚C ±2˚C. Two consecutive reflows as per profile after 2 hours
  relaxation at 25°C
- Frequency stability over temperature: 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): 0.05 to 0.1ppm/°C
- Static temperature hysteresis: frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25°C: ±0.6ppm max
- Supply voltage variation (±5% change at 25°C): ±0.1ppm max
- Load variation (±10% change, note 2): ±0.2ppm max
- Long term stability, frequency drift over 1 year at 25°C: ±1ppm max

Electrical Parameters

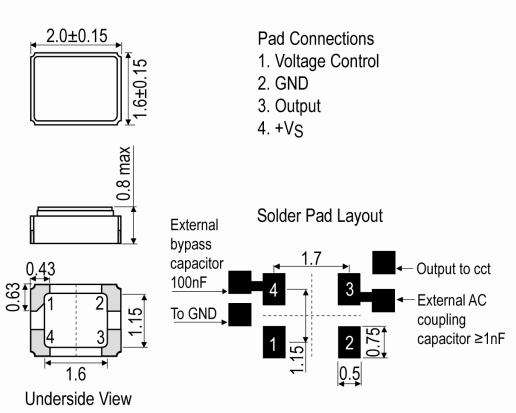
- Supply voltage range: 1.8 to 3.0V
- Supply current (see note 2)
- Note 1: Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents can lead to short term frequency drift.
- Note 2: Specified for the load stated in the oscillator output section at 25°C
- Note 3: External AC-Coupling capacitor required. 1nF or greater recommended.
- Note 4: Frequency shift ≤1ppm after environmental conditions



Outline (mm) Pad 1 GND/NC



Outline (mm) = Pad 1 VC



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Frequency Adjustment

- Pulling ±6ppm to ±30ppm
- Input Impedence 500kΩ min

Operating Temperature Ranges

- -40 to 85°C

Output Details

- Output Compatability Clipped Sine
- Drive Capability 10kΩ//10pF ±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 +0.2V or GND.
  Supply voltage ≤2.3V): 0.3 to 1.5V
  Supply voltage >2.3V: 0.4 to 2.4V
- Linearity (deviation from straight line curve fit): 10% max
- 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: 0.01µA max
- Start-Up Time (amplitude) within 90% of specified output: 0.5ms max
- Start-Up Time (frequency) within ±0.5ppm of steady state: 2ms max

Output Levels

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

Noise Parameters

- Phase Noise (typ @ 26MHz):
  -65dBc/Hz @ 1Hz
  -93dBc/Hz @ 10Hz
  -117dBc/Hz @ 100Hz
  -137dBc/Hz @ 1kHz
  -149dBc/Hz @ 10kHz
  -151dBc/Hz @ 100kHz

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 4 minutes per sweep. 4 sweeps in each of the 3 orientations. Swept from 20-2000Hz
- Storage Temperature Range: -40 to 85°C

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Ordering Information

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

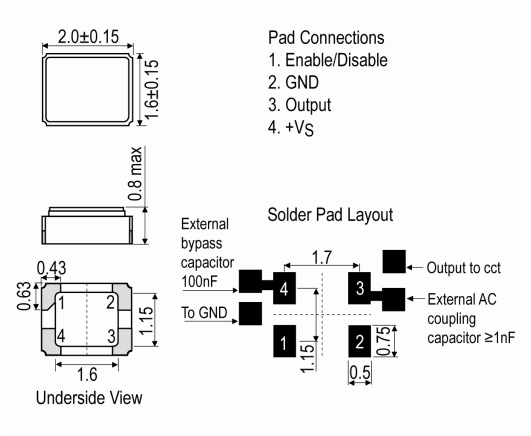
Compliance

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

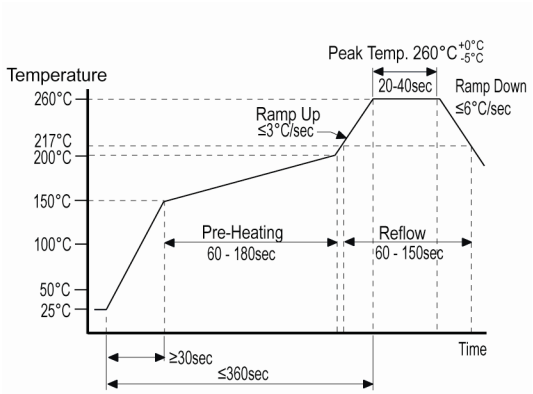
Packaging Details

- Pack Style: Bulk Loose in bulk pack
  Pack Size: 1
- Pack Style: Reel Tape & reel in accordance with EIA-481-D
  Pack Size: 4,000

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
		°C	ppm	mA	ns	%
13.0MHz	52.0MHz	-40 to 85	±0.5	2.2	-	-

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Chipset Approval Table

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQXT-270-1	509430	26MHz	SirfStar 3 (SS3), SirfStar 4 (SS4), SirfStar 5 (SS5)	CSR	
IQXT-270-2	512546	26MHz	SirfStar 3 (SS3), SirfStar 4 (SS4), SirfStar 5 (SS5)	CSR	
IQXT-270-3	508200	16.369MHz	SirfStar 3 (SS3), SirfStar 4 (SS4), SirfStar 5 (SS5)	CSR	
IQXT-270-4	508205	19.2MHz	APQ Family, APQ8064	Qualcomm	
IQXT-270-5	508206	19.2MHz	APQ Family, APQ8064	Qualcomm	
IQXT-270-6	507869	26MHz	BCM2075, BCM2076, BCM4750, BCM4751, BCM47511, BCM4752, BCM47521, BCM4760	Broadcom	
IQXT-270-7	509764	26MHz	u-blox 6 (UBX-M6000, UBX-M6010), u-blox 7 (UBX-M7020), u-blox 8 (UBX-M8030)	uBlox	
IQXT-270-8	511891	26MHz	u-blox 6 (UBX-M6000, UBX-M6010), u-blox 7 (UBX-M7020), u-blox 8 (UBX-M8030)	uBlox	
IQXT-270-9	508222	19.2MHz	MDM Family, MDM6xxx, MDM7xxx, MDM8xxx, MDM6085, MDM6270,MDM6200, MDM6600, MDM8200A, MDM8220, MDM8215, MDM8227	Qualcomm	
IQXT-270-10	507867	19.2MHz	MDM Family, MDM6xxx, MDM7xxx, MDM8xxx, MDM6085, MDM6270,MDM6200, MDM6600, MDM8200A, MDM8220, MDM8215, MDM8228	Qualcomm	

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