ISSUE 1; September 2016

Description

- A miniature, highly integrated oven controlled crystal oscillator providing comparable stability to traditional OCXOs but in a small SMD package. Manufactured for us by Rakon.
- Features:
  Small form factor
  Frequency stability over temperature as low as ±10ppb over -20 to 70°C
  Low power consumption
  High reliability
- Applications:
  Basestation
  Broadcasting
  Communications
  Instrumentation
  Microwave
  Satellite Communication
  Time & frequency reference
  Picocell

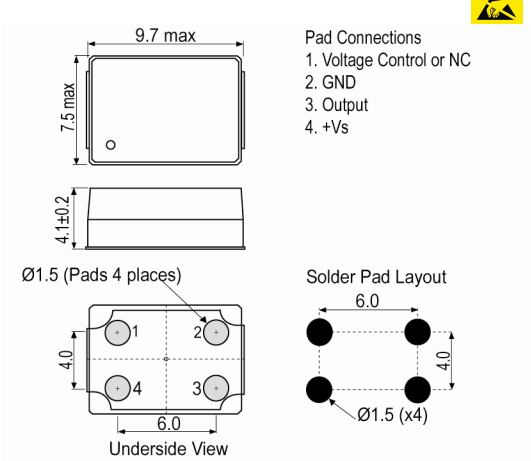
Frequency Parameters

- Frequency 5.0MHz to 50.0MHz
- Frequency Tolerance ±500.00ppb
- Tolerance Condition at 25°C ±2°C
- Frequency Stability ±10.00ppb to ±100.00ppb
- Developed Frequencies: 10.0, 12.80MHz, 19.20MHz, 20.0MHz, 24.5760MHz, 25.0MHz, 30.720MHz, 30.880MHz, 40.0MHz, 49.1520MHz and 50.0MHz
- Reflow Shift: Pre to post reflow ΔF (measured ≥ 60 minutes after reflow): ±1 ppm
- Frequency stability over temperature in still air reference to (Fmax+Fmin)/2
- Supply Voltage Variation (5% change, freq ≤ 26MHz): ±10ppb typ
- Ageing:
  ±2ppb max per day (After 30 days of continuous operation)
  ±1ppm max in 1st year
  ±3ppm max over 10 years

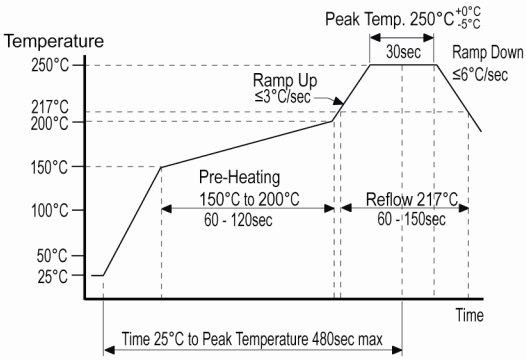
Electrical Parameters

- Frequency Slope: (temperature ramp 1°C/min): ±2ppb/°C max
- Supply Voltage Operable Range: 2.7 to 5.5V
  The oscillator will continue to function over this range but may not meet specified performance.
  Standard available nominal supply voltages are 3.3 and 5.0V, other nominal supply voltages may be available upon request, please contact our sales offices.
- Load Variation (±5pF change, freq ≤26MHz): ±10ppb typ
- Warm Up Time @25°C (Time needed for frequency to be within ±20ppb reference to frequency after 1 hour at 25°C. Parameter is frequency, assembly and operating history dependent): <3 minutes
- Power Consumption:
  Warm up: ≤0.8W (ref -20 to 70°C devices)
  Warm up: ≤1.0W (ref -40 to 85°C devices)
  Steady State @ 25°C : ≤0.35W (still air) (ref -20 to 70°C devices)
  Steady State @ 25°C : ≤0.4W (still air) (ref -40 to 85°C devices)

Outline (mm)



Pb-Free Reflow



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Frequency Adjustment

- Frequency Adjustment (option):
  Control Voltage: 1.5V ±1.0V
  Frequency Tuning Range: ±5ppm typ (ref VC = 1.5V)
  Linearity: 1% max (ref MIL-PRF-55310)
  Slope: Positive +8ppm/V typ
  Input Impedance: 80kΩ min
  Modulation Bandwidth: 3.5kHz typ
  No Control Voltage: Fixed frequency
  Note: The GND of the control voltage needs to be connected directly to pad 2 as ground lead impedance may cause performance degradation.

Operating Temperature Ranges

- -20 to 70°C
- -40 to 85°C

Output Details

- Output Compatability HCMOS/Clipped Sine
- Clipped Sine Output (at minimum supply voltage): 0.8V pk-pk min, 1.1V typ
- HCMOS Output Details:
  Output Low (Vol): 10% max
  Output High (Voh): 90% min
  Duty Cycle (@ 50% level): 45/55% max
  R/F Time (10-90%): 4ns max
  Load: 15pF typ, 30pF max

Noise Parameters

- Phase Noise @ 12.8MHz typ:
  –70dBc/Hz @ 1Hz
  –96dBc/Hz @ 10Hz
  –123dBc/Hz @ 100Hz
  –143dBc/Hz @ 1kHz
  –152dBc/Hz @ 10kHz
  –153dBc/Hz @ 100kHz
  –154dBc/Hz @ 1MHz
- Root Allan Variance (20MHz @ 25°C):
  tau = 0.1s (typ 7E-11)
  tau = 1.0s (typ 7E-11)
  tau = 10s (typ 7E-11)
  tau = 100s (typ 8E-11)
  tau = 1000s (typ 8E-11)

Environmental Parameters

- G-sensitivity (Gamma vector of all three axes from 30Hz to 1500Hz): <2ppb/G typ
- Storage Temperature Range: -55 to 125°C
- Shock: IEC 60068-2-27, Test Ea: 1500G, 0.5ms duration, 18 shocks total
- Vibration: IEC 60068-2-6, Test Fc: 20G, 60Hz-2000Hz, 12hrs total
- Solderability: JESD-22-B102D, Method 2: Preconditioning 150°C, 16hrs
- Humidity: EIA/JEDEC-22-A101: 85°C/85% RH, 1000hrs
- Acceleration Steady State: IEC 60068-2-7, Test Ga: 5000G, 10sec at peak acceleration, Y axis only
- Temperature Cycling: IEC 60068-2-14, Test Na: 400 cycles, -40 to +125°C

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Manufacturing Details

- Soldering: IPC/JEDEC J-STD-020C, Package Peak Reflow Temperature 250°C

Ordering Information

- Frequency*
  Model Number*
  Output
  Frequency Stability*
  Operating Temperature Range*
  Supply Voltage
  Frequency Adjustment*
- Example:
  10.0MHz IQOV-71-1
  HCMOS ±10ppb -20+70°C 3.3V ±5ppm
- Note: Stability / temperature range options other than listed may be available upon request, please contact our sales offices.
- Note: For stability/temperature combinations of ±10ppb over -20 to 70°C and ±20ppb over -40 to 85°C, please consult sales offices for availability.

Compliance

- RoHS Status (2011/65/EU) Compliant
- REACh Status Compliant
- MSL Rating (JDEC-STD-033): 1

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
  Pack Size: 100
- Pack Style: Bulk Loose in bulk pack
  Pack Size: 10

Electrical Specification - maximum limiting values

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppb	mA	ns	%
5.0MHz	50.0MHz	-20 to 70	±10.0	-	-	-
		-40 to 85	±20.0	-	-	-

This document was correct at the time of printing; please contact your local sales office for the latest version.
Click to view latest version on our website.

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Chipset Approval Table

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQOV-71-8	M6457LF	40MHz	TBA	TBA	
IQOV-71-9	M5626LF	12.8MHz	82V3399, 82V3391, 82V3398, SyncE/SONET Sync Equipment Timing Source (SETS)	IDT	
IQOV-71-10	M5649LF	12.8MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T, ACS8522BT, ACS8509, ACS8510, ACS8514, ACS8515, ACS8520, ACS8520A, ACS8522	Semtech	
IQOV-71-11	M5890LF	25MHz	BCM88600, BCM88650, BCM88750	Broadcom	
IQOV-71-12	M5917LF	40MHz	Transcede 2000, Transcede 3000, Transcede 4000	Intel	
IQOV-71-13	M6049LF	19.2MHz	TCI6612, TCI6614, TCI6630	TI	
IQOV-71-14	M6069LF	24.576MHz	TCI6612, TCI6614, TCI6630	TI	
IQOV-71-15	M6226LF	20MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T	Semtech	
IQOV-71-16	M6260LF	20MHz	ACS9522T, ACS9550, ACS9593T	Semtech	
IQOV-71-17	M6261LF	20MHz	ACS9522T, ACS9550, ACS9593T	Semtech	
IQOV-71-18	M6451LF	12.8MHz	TBA	TBA	
IQOV-71-19	M6452LF	20MHz	TBA	TBA	
IQOV-71-20	M6453LF	24.576MHz	TBA	TBA	
IQOV-71-21	M6454LF	25MHz	TBA	TBA	
IQOV-71-22	M6455LF	30.72MHz	TBA	TBA	
IQOV-71-23	M6456LF	38.88MHz	TBA	TBA	
IQOV-71-24	M5627LF	20MHz	ZL30152, ZL30155, ZL30157, ZL30159, ZL30160, ZL30165	Microsemi	
IQOV-71-24	M5627LF	20MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T	Semtech	
IQOV-71-24	M5627LF	20MHz	TBA	Vitesse	
IQOV-71-25	M5776LF	12.8MHz	ACS1790T, ACS9510, ACS9520T, ACS9522T, ACS9550, ACS9593T, ACS8522BT, ACS8509, ACS8510, ACS8514, ACS8515, ACS8520, ACS8520A, ACS8522	Semtech	
IQOV-71-26	M5834LF	24.576MHz	ZL30152, ZL30155, ZL30157, ZL30159, ZL30160, ZL30165, ZL30145, ZL30146, ZL30150, ZL30152, ZL30155, ZL30158, ZL30159, ZL30160, ZL30165, MAX24	Microsemi	
IQOV-71-27	M5856LF	12.8MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56850	Broadcom	

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IQOV-71-28	M5857LF	25MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56850	Broadcom	
IQOV-71-29	M5858LF	12.8MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56850	Broadcom	
IQOV-71-30	M5859LF	25MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56851	Broadcom	
IQOV-71-31	M5942LF	49.152MHz	ZL30152, ZL30155, ZL30157, ZL30159, ZL30160, ZL30165, ZL30145, ZL30146, ZL30150, ZL30152, ZL30155, ZL30158, ZL30159, ZL30160, ZL30165, MAX24	Microsemi	
IQOV-71-32	M5948LF	50MHz	BCM560xx, BCM561xx, BCM562xx, BCM563xx, BCM564xx, BCM56440, BCM565xx, BCM566xx, BCM567xx, BCM56750, BCM568xx, BCM56853	Broadcom	
IQOV-71-33	M6141LF	12.8MHz	IDT8V97051	IDT	
IQOV-71-34	M6326LF	20MHz	TopPort Boundary Clock module	Semtech	
IQOV-71-35	M6328LF	30.72MHz	CNF71xx	Cavium	
IQOV-71-38	M6635LF	25MHz	TBA	Vitesse	

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