IQMS-500, -510, -520, -530 SERIES MEMS OSCILLATORS

ISSUE 1; 29 APRIL 2009 - RoHS 2002/95/EC

Description

- A series of factory programmable SMD plastic packaged oscillators based on MEMS technology with high performance and low jitter

Package Outlines

- 7 x 5mm (IQMS-500, 501, 502, 503)
- 5 x 3.2mm (IQMS-510, 511, 512, 513)
- 3.2 x 2.5mm (IQMS-520, 521, 522, 523)
- 2.5 x 2mm (IQMS-530, 531, 532, 533)

Frequency Range

- 1 to 110MHz

Output Compatibility & Load

- Tri-state / Standby CMOS
- Drive Capability 15pF max

Frequency Stabilities

- ±25ppm, ±30ppm, ±50ppm, ±100ppm over the operating temperature range (inclusive of supply voltage variation, load variation, ageing, shock and vibration)

Operating Temperature Ranges

- –20 to 70°C (IQMS-500, 510, 520, 530 series)
- –40 to 85°C (IQMS-500I, 510I, 520I, 530I series)

Storage Temperature Range

- –55 to 125°C

Tri-state Operation (TS option)

- Logic '1' (≥70%Vs) to pad 1 enables oscillator output
- Logic '0' (≤30%Vs) to pad 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state
- No connection to pad '1' enables oscillator output

Standby (ST option)

- Logic '1' (≥70%Vs) to pad 1 enables oscillator output
- Logic '0' (≤30%Vs) to pad 1 oscillator output is low level; oscillation stops (output weakly pulled down)
- No connection to pad '1' enables oscillator output
- Standby Current: 10μA max

Supply Voltage

- 1.8V IQMS-503, 513, 523, 533
- 2.5V IQMS-502, 512, 522, 532
- 2.8V IQMS-501, 511, 521, 531
- 3.3V IQMS-500, 510, 520, 530

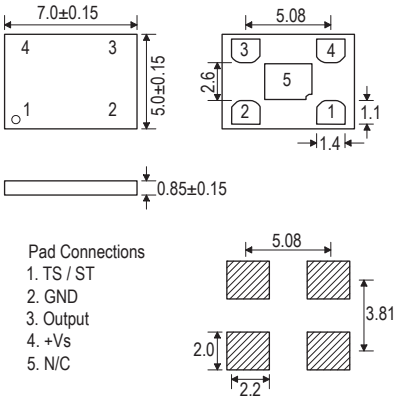
RMS Period Jitter @ 48MHz

- 6ps max (IQMS-503, 513, 523, 533)
- 4ps max (IQMS-500, 501, 502, 510, 511, 512, 520, 521, 522, 530, 531, 532)

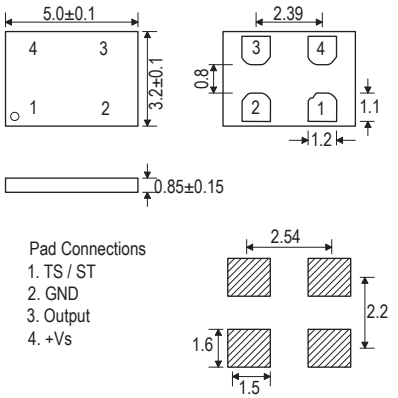
Start-Up Time

- 6ms max

Outline (mm) - IQMS-500, -501, -502, -503



Outline (mm) - IQMS-510, -511, -512, -513



Ageing

- ±1ppm max in 1st year @ 25°C

Environmental

- Shock: MIL-STD-883F, Method 2002
- Vibration: MIL-STD-883F, Method 2007
- Temperature Cycle: JESD22, Method A104
- Solderability: MIL-STD-883F, Method 2003
- MSL level 1

Marking Includes

- Frequency (may be truncated)

Packaging

- Bulk or Tape & Reel

Minimum Order Information Required

- Frequency + Model Number + Tri-state/Standby Code + Operating Temperature Code (if applicable) + Frequency Stability

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Electrical Specification - maximum limiting values

Frequency Range	Frequency Stability	Supply Voltage	Supply Current (no load @ 20MHz)	Rise Time (tr) (10-90%)	Fall Time (tf) (90-10%)	Duty Cycle	Model Number
1.0 to 70.0MHz	±25ppm, ±30ppm, ±50ppm, ±100ppm	3.3V ±10%	10mA	2ns	2ns	45/55%	IQMS-500, 500I IQMS-510, 510I
>70.0 to 110.0MHz						40/60%	IQMS-520, 520I IQMS-530, 530I
1.0 to 70.0MHz		2.8V ±10%				45/55%	IQMS-501, 501I IQMS-511, 511I
>70.0 to 110.0MHz						40/60%	IQMS-521, 521I IQMS-531, 531I
1.0 to 70.0MHz		2.5V ±10%				45/55%	IQMS-502, 502I IQMS-512, 512I
>70.0 to 110.0MHz						40/60%	IQMS-522, 522I IQMS-532, 532I
1.0 to 70.0MHz		1.8V ±5%	9mA			45/55%	IQMS-503, 503I IQMS-513, 513I
>70.0 to 110.0MHz						40/60%	IQMS-523, 523I IQMS-533, 533I

Ordering Example: 10.0MHz IQMS-500 TS I B

Frequency:

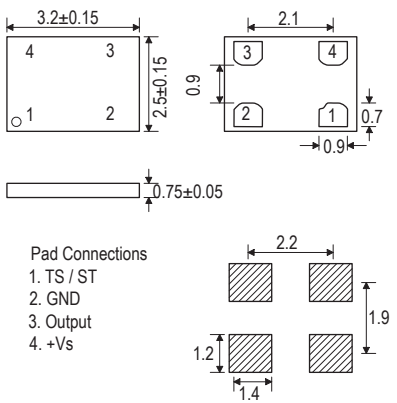
Model No:

Tri-State / Standby Code: TS = Tri-State; ST = Standby

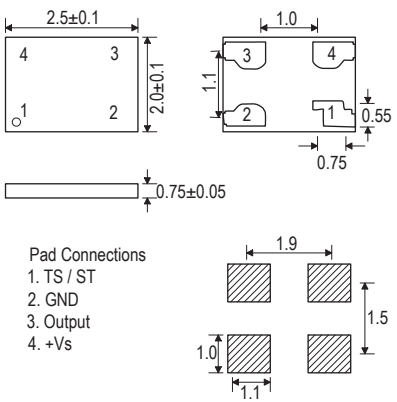
Operating Temperature Code: I = –40 to 85°C; Not applicable for –20 to 70°C

Frequency Stability Code: A = ±25ppm; H = ±30ppm; B = ±50ppm; C = ±100ppm

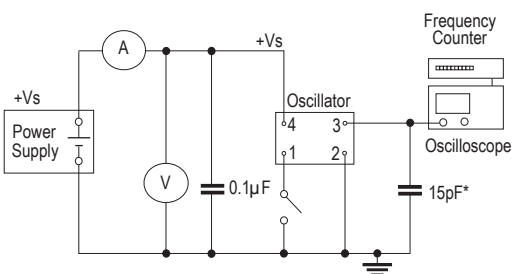
Outline (mm) - IQMS-520, 521, 522, 523



Outline (mm) - IQMS-530, 531, 532, 533

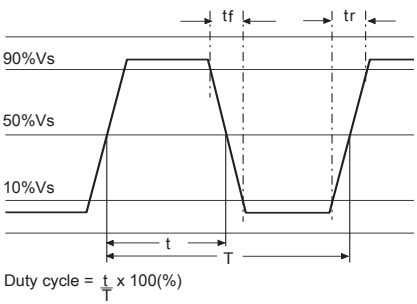


Test Circuit



*Inclusive of jigging and equipment capacitance

Output Waveform



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