

## IQMS-520, -521, -522, -523 SERIES MEMS OSCILLATORS

ISSUE 2; 1 NOVEMBER 2010 - RoHS 2002/95/EC

### Description

- MEMS alternative to the CFPS-39, CFPS-40 and CFPS-41
- Low jitter MEMS oscillator with CMOS output in a plastic package
- Factory programmable for a fast lead time

### Frequency Range

- 1 to 110MHz

### Output Compatibility & Load

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

### Supply Voltages

- 3.3V IQMS-520
- 2.8V IQMS-521
- 2.5V IQMS-522
- 1.8V IQMS-523

### Frequency Stabilities

- $\pm 20$ ppm,  $\pm 25$ ppm,  $\pm 30$ ppm,  $\pm 50$ ppm,  $\pm 100$ ppm over the operating temperature range (inclusive of supply voltage variation, load variation, ageing, shock and vibration)
- Note:  $\pm 20$ ppm not available over  $-40$  to  $85^\circ\text{C}$

### Operating Temperature Ranges

- $-20$  to  $70^\circ\text{C}$
- $-40$  to  $85^\circ\text{C}$

### Storage Temperature Range

- $-65$  to  $125^\circ\text{C}$

### Tri-State Operation (TS option)

- Logic '1' ( $\geq 70\%V_S$ ) to pad 1 enables oscillator output
- Logic '0' ( $\leq 30\%V_S$ ) 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' ( $\leq 70\%V_S$ ) to pad 1 enables oscillator output
- Logic '0' ( $\leq 30\%V_S$ ) to pad 1 oscillator output is low level; oscillation stops (output weakly pulled down)
- No connection to pad 1 enables oscillator output
- Standby Current:  $10\mu\text{A}$  max

### RMS Period Jitter @ 75MHz

- 6ps max (IQMS-523)
- 4ps max (IQMS-520, 521, 522)

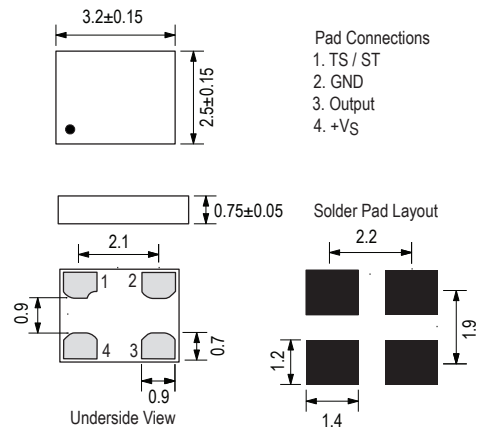
### Start-Up Time

- 10ms max

### Ageing

- $\pm 1$ ppm typ in 1st year @  $25^\circ\text{C}$

### Outline (mm)



### Pad Connections

- TS / ST
- GND
- Output
- +Vs

### Solder Pad Layout

### 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

### Packaging

- Loose in bulk pack, 100pcs per bag
- Tape and reel in accordance with EIA-481-D, 1kpcs per reel (please see pages 372 & 373)

### Ordering Information (\*minimum required)

- Frequency\*
- Model\*
- Output Compatibility
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Supply Voltage
- TS/ST Option\*

### Example

- 40.00MHz IQMS-520  
CMOS  $\pm 50$ ppm  $-20$  to  $70^\circ\text{C}$  3.3V TS

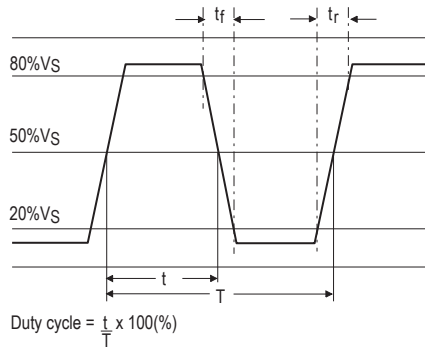


**Electrical Specification - maximum limiting values**

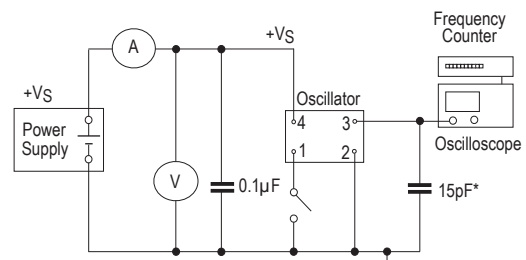
Frequency Range	Frequency Stability	Supply Voltage	Supply Current (no load @ 20MHz)	Rise Time (tr) (20-80%)	Fall Time (tf) (80-20%)	Duty Cycle	Model Number	
1.0 to 70.0MHz	±20ppm ±25ppm ±30ppm ±50ppm ±100ppm	3.3V±10%	7.5mA	2ns	2ns	45/55%	IQMS-520	
>70.0 to 110.0MHz		40/60%						
1.0 to 70.0MHz		2.8V±10%	6.7mA	2.5ns	2.5ns	45/55%	IQMS-521	
>70.0 to 110.0MHz		40/60%						
1.0 to 70.0MHz		2.5V±10%	1.8V±5%	6.7mA	2.5ns	2.5ns	45/55%	IQMS-522
>70.0 to 110.0MHz		40/60%						
1.0 to 70.0MHz		1.8V±5%	6.7mA	2.5ns	2.5ns	2.5ns	45/55%	IQMS-523
>70.0 to 110.0MHz							40/60%	

Note: For other frequency/specification combinations, please contact our sales offices

**Output Waveform**



**Test Circuit**



\*Inclusive of jigging and equipment capacitance

