

## IQMS-950, -952 SERIES MEMS OSCILLATORS

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

### Description

- LVDS output MEMS oscillator in a plastic package
- Factory programmable for a fast lead time
- Stock parts listed at the beginning of this chapter

### Frequency Ranges

- 1 to 220MHz
- 220 to 800MHz (contact IQD sales offices)

### Output Compatibility & Load

- LVDS
- Differential Output Voltage ( $V_{OD}$ ) 0.25V min, 0.35V typical
- Offset Voltage ( $V_{OS}$ ) 1.2V typical
- Output Load 100 $\Omega$

### Supply Voltages

- 3.3V IQMS-950
- 2.5V IQMS-952

### Frequency Stabilities

- $\pm 10$ ppm,  $\pm 15$ ppm  $\pm 20$ ppm,  $\pm 25$ ppm,  $\pm 50$ ppm over the operating temperature range (inclusive of tolerance, supply voltage variation, load variation)
- Note:  $\pm 10$ ppm only available over 0 to 70°C

### Operating Temperature Ranges

- 0 to 70°C
- -20 to 70°C
- -40 to 85°C

### Storage Temperature Range

- -65 to 150°C

### Tri-State Operation (TS option)

- Logic '1' to pad 1 ( $\geq 70\%V_S$ ) enables oscillator output
- Logic '0' to pad 1 ( $\leq 30\%V_S$ ) 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' to pad 1 ( $\geq 70\%V_S$ ) enables oscillator output
- Logic '0' to pad 1 ( $\leq 30\%V_S$ ) disables oscillator output; when disabled the oscillator output goes to the high impedance state, oscillation stops
- No connection to pad 1 enables oscillator output
- Standby Current: 25 $\mu$ A typical @3.3V  
15 $\mu$ A typical @2.5V

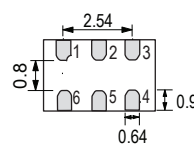
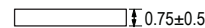
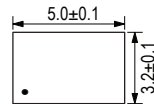
### RMS Period Jitter @ 200MHz

- 1.8ps typical at 3.3V
- 2.4ps typical at 2.5V

### RMS Phase Jitter @ 200MHz, BW 1MHz to 20MHz

- 0.7ps typical

### Outline (mm)

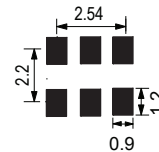


Underside View

### Pad Connections

1. TS / ST
2. N/C
3. GND
4. Output +
5. Output -
6. +V<sub>S</sub>

### Solder Pad Layout



### Ageing

- $\pm 1$ ppm typ in 1st year at 25°C

### Environmental

- Shock: MIL-STD-883F, Method 2002
- Vibration: MIL-STD-883F, Method 2007
- Temperature Cycle: MIL-STD-883F, Method 1010
- 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
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Supply Voltage
- TS/ST Option\*

### Example

- 40.00MHz IQMS-950  
LVDS  $\pm 25$ ppm -40 to 85C 3.3V ST

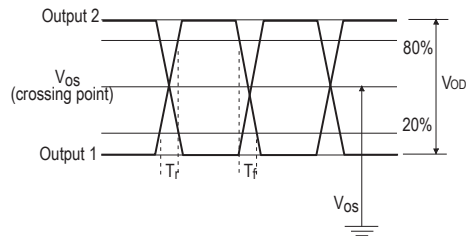


**Electrical Specifications - maximum limiting values**

Frequency Range	Frequency Stability	Supply Voltage	Supply Current (no load)	Rise Time (tr) (20-80%)	Fall Time (tf) (80-20%)	Duty Cycle	Model Number
1.0 to 220.0MHz	$\pm 10\text{ppm}$ $\pm 15\text{ppm}$ $\pm 20\text{ppm}$ $\pm 25\text{ppm}$ $\pm 50\text{ppm}$	3.3V $\pm 10\%$	79mA	325ps	325ps	45/55%	IQMS-950
		2.5V $\pm 10\%$	76mA				IQMS-952

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

**Output Waveform**



**Test Circuit**

