

# M210x Series

5x7 mm, 3.3/2.5/1.8 Volt, LVPECL/LVDS/CML, Clock Oscillator



## Features:

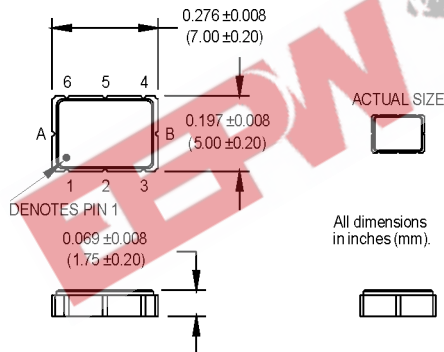
- Featuring *QiK Chip™* Technology
- Superior Jitter Performance (comparable to SAW based)
- Frequencies from 150 MHz to 1.4 GHz
- Designed for a short 2 week cycle time

## Applications:

- Telecommunications such as SONET / SDH / DWDM / FEC / SERDES / OC-3 thru OC-192
- Wireless base stations / WLAN / Gigabit Ethernet
- Avionic flight controls and military communications

## Ordering Information

|                                |                        |   |   |   |   |   |   |         |     |
|--------------------------------|------------------------|---|---|---|---|---|---|---------|-----|
|                                | M210                   | 0 | 6 | 8 | B | P | N | 00.0000 | MHz |
| Product Series                 |                        |   |   |   |   |   |   |         |     |
| Supply Voltage                 |                        |   |   |   |   |   |   |         |     |
| 0: 3.3 V                       | 1: 2.5 V               |   |   |   |   |   |   |         |     |
| 2: 1.8 V                       |                        |   |   |   |   |   |   |         |     |
| Temperature Range              |                        |   |   |   |   |   |   |         |     |
| 2: -40°C to +85°C (see Note 1) |                        |   |   |   |   |   |   |         |     |
| 6: -20°C to +70°C              |                        |   |   |   |   |   |   |         |     |
| Stability                      |                        |   |   |   |   |   |   |         |     |
| 4: ±50 ppm                     | 3: 100 ppm             |   |   |   |   |   |   |         |     |
| 8: ±20 ppm                     |                        |   |   |   |   |   |   |         |     |
| Enable/Disable                 |                        |   |   |   |   |   |   |         |     |
| B: Enable High (pin 1)         | G: Enable High (pin 2) |   |   |   |   |   |   |         |     |
| S: Enable Low (pin 1)          | M: Enable Low (pin 2)  |   |   |   |   |   |   |         |     |
| U: No Enable/Disable           |                        |   |   |   |   |   |   |         |     |
| Logic Type                     |                        |   |   |   |   |   |   |         |     |
| P: LVPECL                      | L: LVDS                |   |   |   |   |   |   |         |     |
| M: CML                         |                        |   |   |   |   |   |   |         |     |
| Package/Lead Configuration     |                        |   |   |   |   |   |   |         |     |
| N: 5x7 mm Leadless             |                        |   |   |   |   |   |   |         |     |
| Frequency (customer specified) |                        |   |   |   |   |   |   |         |     |

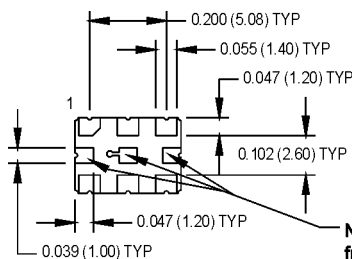


### PIN 1 ENABLE

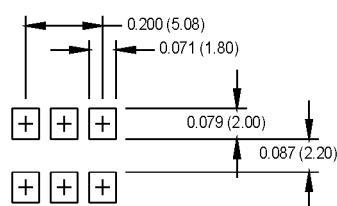
- Pad1: Enable/Disable
- Pad2: N/C
- Pad3: Ground
- Pad4: Output Q (LVPECL, LVDS, CML)
- Pad5: Output  $\bar{Q}$  (LVPECL, LVDS, CML)
- Pad6: Vcc
- PadA: Do not connect!
- PadB: Do not connect!
- PadC: Do not connect!

### PIN 2 ENABLE

- Pad1: N/C
- Pad2: Enable/Disable
- Pad3: Ground
- Pad4: Output Q (LVPECL, LVDS, CML)
- Pad5: Output  $\bar{Q}$  (LVPECL, LVDS, CML)
- Pad6: Vcc
- PadA: Do not connect!
- PadB: Do not connect!
- PadC: Do not connect!



### SUGGESTED SOLDER PAD LAYOUT



MtronPTI reserves the right to make changes to the product(s) and service(s) described herein without notice. No liability is assumed as a result of their use or application.

Please see [www.mtronpti.com](http://www.mtronpti.com) for our complete offering and detailed datasheets. Contact us for your application specific requirements: MtronPTI 1-800-762-8800.

# M210x Series

5x7 mm, 3.3/2.5/1.8 Volt, LVPECL/LVDS/CML, Clock Oscillator



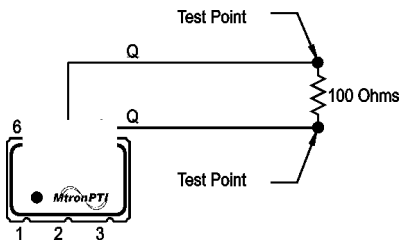
| PARAMETER                  | Symbol                         | Min.   | Typ.       | Max.                  | Units  | Condition/Notes                                    |            |
|----------------------------|--------------------------------|--|------------|-----------------------|--------|--|------------|
| Frequency Range            | F                              | 150  |            | 1400                  | MHz    | See Note 2   |            |
| Operating Temperature      | T <sub>A</sub>                 | (See ordering information)   |            |                       |        |  | See Note 1 |
| Storage Temperature        | T <sub>s</sub>                 | -55  |            | +125                  | °C     |  |            |
| Frequency Stability        | ΔF/F                           | (See ordering information)   |            |                       |        |  | See Note 3 |
| <b>Aging</b>               |                                |  |            |                       |        |  |            |
| 1st Year                   |                                | -3   |            | +3                    | ppm    |  |            |
| Thereafter (per year)      |                                | -1   |            | +1                    | ppm    |  |            |
| Supply Voltage             | V <sub>cc</sub>                | 1.71   | 1.8        | 1.89                  | V      |  |            |
|                            |                                | 2.375  | 2.5        | 2.625                 | V      |  |            |
|                            |                                | 3.135  | 3.3        | 3.465                 | V      |  |            |
| Input Current              | I <sub>cc</sub>                |  |            | 125                   | mA     | LVPECL/LVDS/CML                                    |            |
| Load                       |                                | 50 Ohms to (V <sub>cc</sub> -2) V <sub>dc</sub><br>100 Ohm differential load                           |            |                       |        | See Note 4<br>LVPECL Waveform<br>LVDS/CML Waveform |            |
| Symmetry (Duty Cycle)      |                                | 45   |            | 55                    | %      | @ 50% of waveform                                  |            |
| Output Skew                |                                |  | TBD        |                       |        |  |            |
| Differential Voltage       |                                | 350  | 425<br>TBD | 500                   | mVppd  | LVDS<br>CML  |            |
| Common Mode Output Voltage | V <sub>cm</sub>                |  | 1.2        |                       | V      | LVDS   |            |
| Logic "1" Level            | V <sub>oh</sub>                | V <sub>cc</sub> -1.02  |            |                       | V      | LVPECL   |            |
| Logic "0" Level            | V <sub>ol</sub>                |  |            | V <sub>cc</sub> -1.63 | V      | LVPECL   |            |
| Rise/Fall Time             | T <sub>r</sub> /T <sub>f</sub> |  | 0.23       | 0.50                  | ns     | @ 20/80% LVPECL                                    |            |
| Enable Function            |                                | 80% V <sub>cc</sub> min.: or N/C; output active<br>20% V <sub>cc</sub> max.: output disables to high-Z |            |                       |        | Output Option B or G                               |            |
|                            |                                | 20% V <sub>cc</sub> max.: output active<br>80% V <sub>cc</sub> min.: output disables to high-Z         |            |                       |        | Output Option S or M                               |            |
| Start up Time              |                                |  | 10         |                       | ms     |  |            |
| Phase Jitter @ 622.08 MHz  | φ <sub>J</sub>                 |  | 0.3        |                       | ps RMS | Integrated 12 kHz – 20 MHz                         |            |
| Phase Noise                |                                |  |            |                       |        | @ 622.08 MHz                                       |            |
| 10 Hz                      |                                |  | -50        |                       |        | dBc/Hz   |            |
| 100 Hz                     |                                |  | -80        |                       |        | dBc/Hz   |            |
| 1 KHz                      |                                |  | -106       |                       |        | dBc/Hz   |            |
| 10 KHz                     |                                |  | -117       |                       |        | dBc/Hz   |            |
| 100 KHz                    |                                |  | -120       |                       |        | dBc/Hz   |            |
| 1 MHz                      |                                |  | -130       |                       |        | dBc/Hz   |            |
| 10 MHz                     |                                |  | -147       |                       |        | dBc/Hz   |            |
| 40 MHz                     |                                |  | -150       |                       |        | dBc/Hz   |            |
| <b>Environmental</b>       |                                |  |            |                       |        |  |            |
| Mechanical Shock           |                                | Per MIL-STD-202, Method 213, Condition C (100 g's, 6 ms duration, ½ sinewave)                          |            |                       |        |  |            |
| Vibration                  |                                | Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)   |            |                       |        |  |            |
| Hermeticity                |                                | Per MIL-STD-202, Method 112, (1x10 <sup>-8</sup> atm. cc/s of Helium)                                  |            |                       |        |  |            |
| Thermal Cycle              |                                | Per MIL-STD-883, Method 1010, Condition B (-55°C to +125°C, 15 min. dwell, 10 cycles)                  |            |                       |        |  |            |
| Solderability              |                                | Per EIAJ-STD-002   |            |                       |        |  |            |
| Soldering Conditions       |                                | +240°C max. for 10 secs.   |            |                       |        |  |            |

Note 1: If the device is powered up below -20°C and then the ambient temperature rises 105°C during normal operation, the output will be interrupted for approximately 2-3 ms. A correction is in process and will be available Q1 2007.

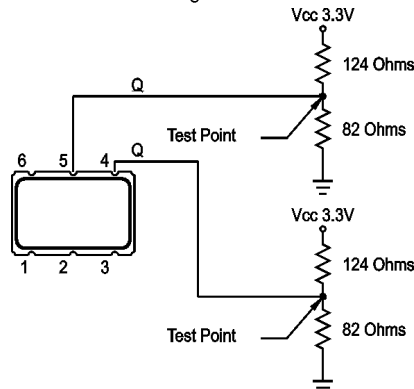
Note 2: Contact factory for exact frequency availability over 945 MHz

Note 3: Stability is inclusive of initial tolerance, deviation over temperature, shock, vibration, supply voltage, and aging for one year at 50°C mean ambient temperature.

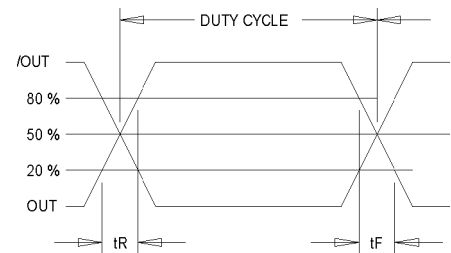
Note 4: See Load Circuit Diagram in this Datasheet. Consult factory with nonstandard output load requirements.



LVDS Load Circuit



3.3V LVPECL Load Circuit



Output Waveform: LVDS/CML/PECL

MtronPTI reserves the right to make changes to the product(s) and service(s) described herein without notice. No liability is assumed as a result of their use or application.

Please see [www.mtronpti.com](http://www.mtronpti.com) for our complete offering and detailed datasheets. Contact us for your application specific requirements: MtronPTI 1-800-762-8800.