Quartzdyne, Inc.
LVLT Circuit Specifications

Features
The LVLT Low Voltage oscillator circuit is designed for use in both 3-Volt and 5-Volt systems. The circuit will function without compromise with supplies ranging from 2.70 Volts to 5.50 Volts. The DC coupled output voltages scale with the supplied input voltage providing seamless integration with the customer’s digital circuitry. To provide noise immunity, critical oscillator circuitry is isolated from the digital supply by an internal low-dropout 2.5V regulator. In order to provide scalable output voltages, it was necessary to limit the maximum input voltage to 5.50 Volts. Do not connect this circuit to systems which supply more than 5.5 Volts.

The circuit is constructed using SMT components with SN63PB37 solder on specially plated polyimide circuit boards for reliable performance up to 150°C. The compact size of the circuit board allows for rail mounting in series QG transducers, making the circuit ideal for extremely high shock and vibration environments.

Absolute Maximum Ratings
Supply Voltage -0.5 V to +6.2 V @ 80 mA Max
Pressure Output¹ -0.5 V to +6.2 V @ 80 mA Max
Temperature Output¹ -0.5 V to +6.2 V @ 80 mA Max
Reference Output² -1.5 V to +7.0 V @ 20 mA Max
Storage Temperature -40°C to + 150°C
ESD ± 2kV (MIL-STD-883)

Recommended Operating Conditions
Operating Temperature -40°C to + 150°C
Supply Voltage (V<sub>CC</sub>) 2.7 Vdc to 5.5 Vdc
Operating Current (I<sub>CC</sub>) Dependent on Supply Voltage, Output Load, and Temperature
4.8 mA typ. @ V<sub>CC</sub> = 3.0 V (No Load)
6.0 mA typ. @ V<sub>CC</sub> = 5.0 V (No Load)
20 mA max @ V<sub>CC</sub> = 5.5V, 300pF Load Capacitance on Reference Frequency
I<sub>CC</sub> = 3.0 mA + V<sub>CC</sub> • 7.2MHz • ( 83 pF + C<sub>CABLE</sub> + C<sub>LOAD</sub> ) + 5µA/°C • ( T – 30°C)
Supply Voltage Sensitivity Minimal within specified voltage range
Start-up Time 0.5 sec typical; 2 sec maximum
Output Signals DC Coupled VHC CMOS with 50Ω R<sub>s</sub>¹
Output Low (V<sub>OL</sub>) 0.1 V Max (No Load)
Output High (V<sub>OH</sub>) V<sub>CC</sub>-0.1 Min (No Load)
Pressure Frequency 10 kHz to 80 kHz²
Temperature Frequency 10 kHz to 80 kHz²
Reference Frequency 7.200 MHz ± 7 kHz³
Pressure Duty Cycle 25% Min, 50% Max
Temperature Duty Cycle 25% Min, 50% Max
Reference Duty Cycle 35% Min, 65% Max
Load Capacitance 300pF Max⁴
Load Resistance 1.0kΩ Min⁴

Notes
1. DC Coupled Outputs are subject to permanent damage if improperly wired. Always use current-limited power supplies to protect against circuit damage.
2. Pressure and Temperature Frequency range may be further limited by transducer model
3. The reference frequency cannot be disabled internally as on other Quartzdyne circuits.
4. Long-term life may be reduced if worst-case loads are applied at maximum operating temperature.