



Quartzdyne, Inc. LVLT Circuit Specifications

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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 Output ¹	-0.5 V to +6.2 V @ 80 mA Max
Temperature Output ¹	-0.5 V to +6.2 V @ 80 mA Max
Reference Output ¹	-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 _{CC})	2.7 Vdc to 5.5 Vdc
Operating Current (I _{CC})	Dependent on Supply Voltage, Output Load, and Temperature
4.8 mA typ. @ V _{CC} = 3.0 V (No Load)	
6.0 mA typ. @ V _{CC} = 5.0 V (No Load)	
20 mA max @ V _{CC} = 5.5V, 300pF Load Capacitance on Reference Frequency	
I _{CC} ≈ 3.0 mA + V _{CC} • 7.2MHz • (83 pF + C _{CABLE} + C _{LOAD}) + 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 _S ¹
Output Low (V _{OL})	0.1 V Max (No Load)
Output High (V _{OH})	V _{CC} -0.1 Min (No Load)
Pressure Frequency	10 kHz to 80 kHz ²
Temperature Frequency	10 kHz to 80 kHz ²
Reference Frequency	7.200 MHz ± 7 kHz ³
Pressure Duty Cycle	25% Min, 50% Max
Temperature Duty Cycle	25% Min, 50% Max
Reference Duty Cycle	35% Min, 65% Max
Load Capacitance	300pF Max ⁴
Load Resistance	1.0kΩ Min ⁴

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.