

Reference Design

Semtech 137MHz to 1020MHz Low Power Long Range Transceiver

SX1276/77/78/79
168dB maximum link budget
+20 dBm - 100 mW constant RF output vs. V supply
+14 dBm high efficiency PA
Programmable bit rate up to 300 kbps
High sensitivity: down to -148 dBm
Bullet-proof front end: IIP3 = -11 dBm
Excellent blocking immunity
Low RX current of 9.9 mA, 200 nA register retention
Fully integrated synthesizer with a resolution of 61 Hz
FSK, GFSK, GMSK, LoRa™ and OOK modulation
Built-in bit synchronizer for clock recovery
Preamble detection
127 dB Dynamic Range RSSI
Automatic RF Sense and CAD with ultra-fast AFC
Packet engine up to 256 bytes with CRC
Built-in temperature sensor and low battery indicator

Details of Matching Test

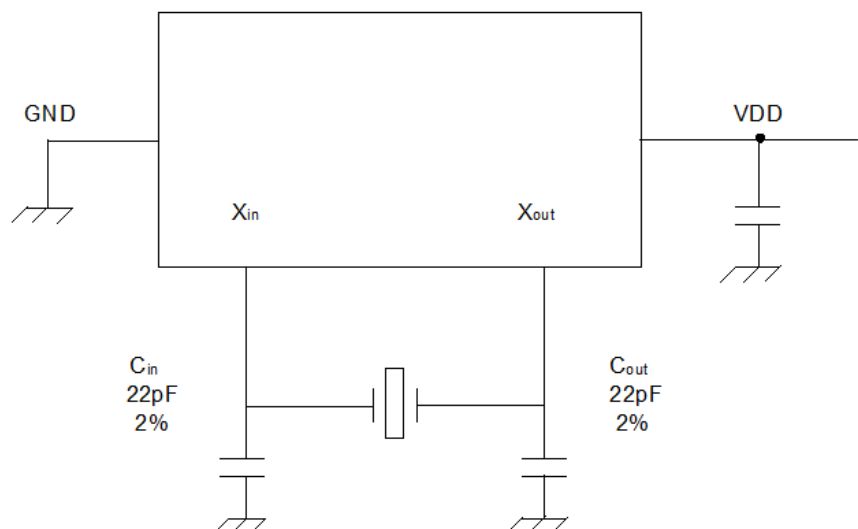
Test IC: SX1276/77/78/79

1. Circuit Diagram

IC SX1276/77/78/79
VDD +3V

Geyer Crystal

Model: KX-7T
Frequency: 32MHz
Load capacitance: CL=12pF
Part No.: 12.60030, 12.88562, 12.88599



Note

- **Negative Resistance**
The recommended oscillation margin based on empirical results which is necessary to ensure the oscillator's ability to start and maintain stable oscillation.
- **Drive Level**
Electric-power or current level under the specified conditions of a crystal unit.
If the specified maximum drive level of the crystal is exceeded, this may result in the occurrence of unstable oscillation and increase of equivalent series resistance (ESR).
- **Load capacitance**
Effective series capacitance measured from the terminals of a crystal unit to the oscillation circuit and determined as a condition when using a crystal unit in an oscillation circuit.
The operating frequency is determined by the electrical characteristics of a crystal unit and the load capacitance.

Caution

The evaluation results above should be used as a reference during the crystal selection. Depending on the actual board layout, frequency used, and other related factors the circuit characteristics may differ, therefore selection of the crystal should be done based on evaluation results of the actual circuit board. Please contact us for recommendations of crystal specifications which will work best for your applications.