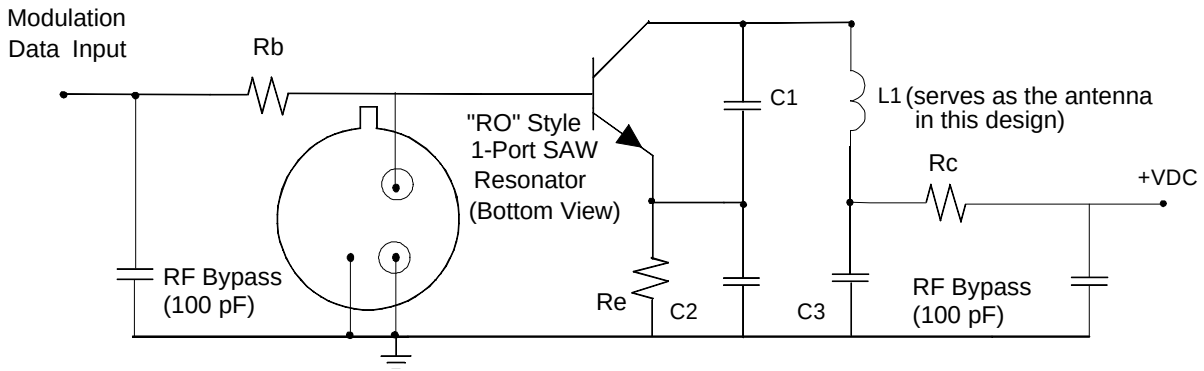
300 ~ 418 MHz Transmitter Design Notes

For either application, RFM recommends surface mount components and a careful RF PCB layout to ensure highest output power and best harmonic suppression. Best achievable performance occurs when the ground of the SAW device, C2 and C3, are physically close, preferably a single point on the PCB. Transistor selection may be the BFS-17A, MMBR-901, MMBTH-10LT1, MMBTH-17LT1 or similar NPN Silicon transistor. C1, C2 and L1 are the most critical components and will require value optimization for each PCB layout or other design change.

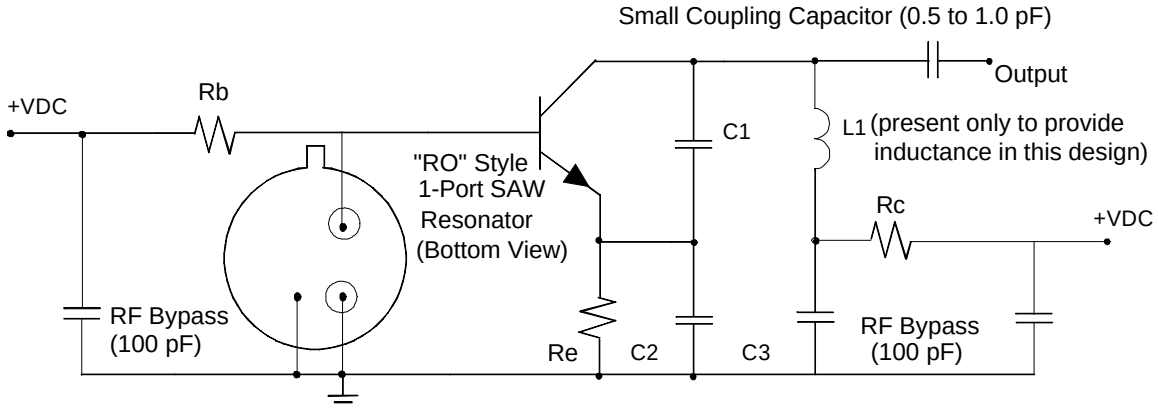
Consider utilizing the following values when starting your design:
C1 ≈ 1 to 5pF, C2 ≈ 8.2 to 18 pF and L1 selected/designed to resonate with the series combination of C1 and C2. Values for Rb ≈ 100 KΩ and Rc ≈ 47 Ω. Resistor Re ≈ 470 Ω, contingent on the voltage of the selected battery.

Typical AM Transmitter Application



Typical Local Oscillator Application

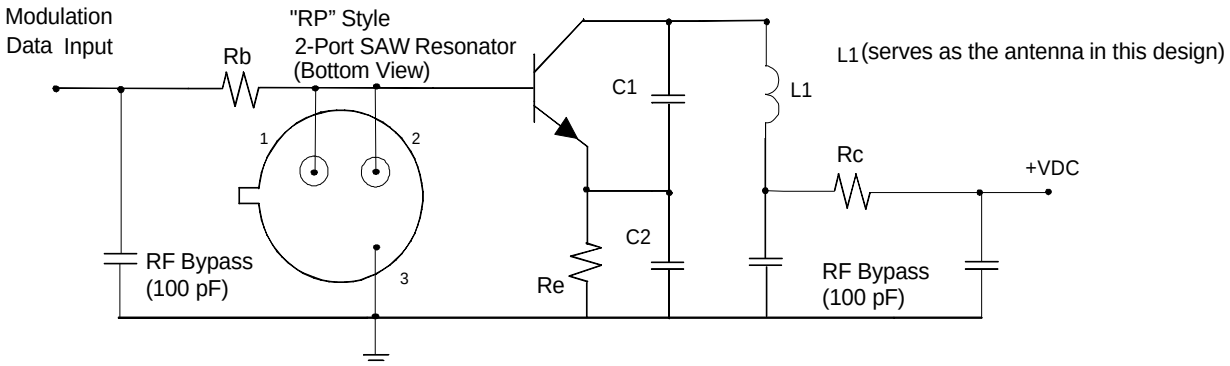
This approach can also be used for transmitters by coupling the output to an antenna.



902 ~ 928 MHz Transmitter Design Notes

For both applications, surface mount RF components and a very careful RF PCB layout are required for best results. The Motorola MMBR901 or similar is suggested for the NPN Silicon transistor. L1, C1, C2 are the most critical values that require optimization for each PCB layout or other design change. The following values might be used as starting points: C1 might be about 1 pF, C2 ≈ 6.8 pF, and L1 about 3 to 5nH. For +5 VDC supply voltage, typical R values are: Rb = 5.1K, Re = 330, and Rc = 10.

Typical AM Transmitter Application



Typical Local Oscillator Application

This approach can also be used for transmitters by coupling the output to an antenna.