

43-3107 circuit description

Door Bell Unit:

VCO:

The VCO composes of transistor Q6, Q7 and varactor diodes VD1 and PLL IC U2 (KB8825). The function of the PLL IC (U2) is to lock the desired channel frequency set by MCU. The operation channel frequencies are 912.45MHz, 913.45MHz and 914.45MHz for 3 channels with 1MHz channel spacing. The VCO output is amplified by the buffer amplifier Q7. The output from the buffer amplifier Q7 is then applied to mixer IC (uPC2757T), PLL IC (KB8825) and transmitter amplifier Q8 and Q9.

RX section:

The receiver amplifier composes of Q1 and Q2. The received RF signal is amplified by Q1 and Q2 and then is applied to 914MHz SAW filter (FIL1) to cut image interference. The output from the 914MHz SAW is then applied to pin 1 of the mixer (uPC2757T). The function of the mixer IC (uPC2757T) is to down convert the input frequency to 10.7MHz IF frequency. The IF frequency is applied to 10.7MHz ceramic filter (FIL2) and then being amplified by IF amplifier (Q4). The amplified IF signal is applied to FM demodulation IC U1 (TA31161). The demodulated base-band signal is applied to squelch circuit U101A and U101B (LMV324/LMP324) and audio power amplifier U102 (MC34119).

TX section:

The audio input signal is amplified by mic amplifier U101C and U101D (LMV324) and then being feed to the VCO. The modulation can be adjusted by tuning variable resistor (VR101). The data output from MCU is also fed to U101D and then modulate to VCO. The RF signal that output from the VCO is amplified by Q8 and Q9. The amplified signal pass through the antenna switching diodes of D1 and D2 and then being feed to the antenna.

Transistor switches:

Transistors Q103, Q104 and Q105 act as switch that control TX_3.5V, RX_3.5V and PLL_3.5V on and off respectively. Transistor Q106 and Q107 act as switch that control the SPK_V+ on and off.

MCU TMP87C405

The MCU TMP87C405 (U3) controls all transistor switches and channel switching. It also acts as interface with PLL IC KB8825B (U2).

Reset circuit

Transistor Q109 acts as reset circuit to reset the MCU once the unit is powered up.