

# Circuit Description

## 1. Remote Control

-When Battery(Lithium CR2032) is inserted in Remote Control Case, U2(12C508A) Micro Controller is powered with DC3V and oscillates the Internal R/C Oscillator(4MHz) inside and then U2 is in Sleep Mode.

-Whenever SW1 or SW2 is pushed, Second and Third Pins of U2 of MICOM(12C508A) controls Q3 and Q4 and supply power to Transmission part.

-And Protocol(Address bit, Data bit) is inputted to D1 frequency modulator through R2, R6.

-Q1, which supplied power from the collector of Q3 and Q4, oscillates Crystal X1(433.92MHz).

-Q2, which supplied power from the collector of Q3 and Q4, amplifies 433.92MHz oscillated from Q1 and sends the amplified signal to Antenna.

### Note.

-When Battery(Lithium CR2032) is inserted to Remote Control Case, U2 is waiting for the input of SW1 or 2 on condition of Sleep Mode.

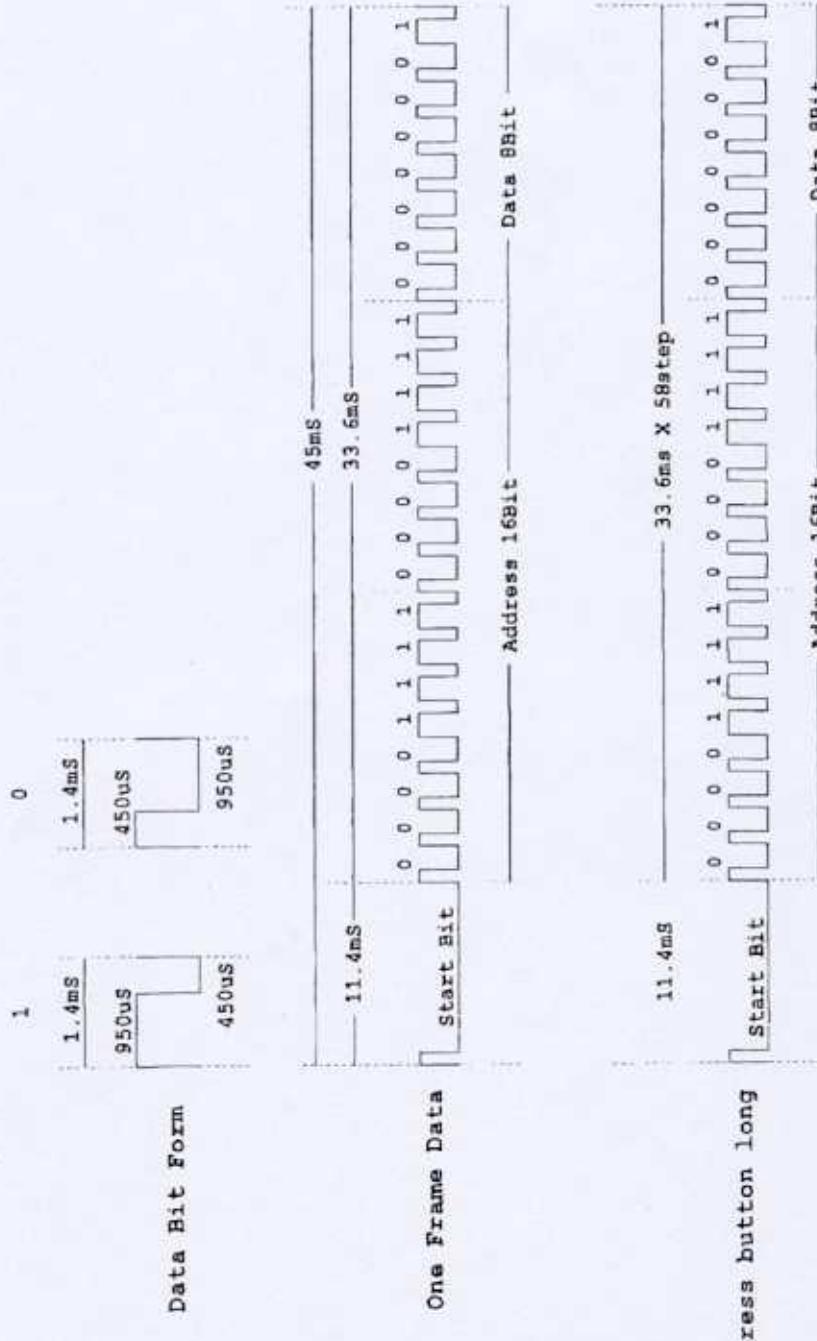
When SW1 or 2 is pushed, U2 wakes up and supplies power to Q3(KTC3906) PNP TR. Q3 PNP TR is Active High and then power is passing through bias pattern. At this moment, start bit and data 8bit \*3(3byte) is sent to D1 and RF frequency data is transmitted through the Antenna.

-When SW1 or 2 is pushed without any release, this device transmits for start bit 11.4ms + address bit + data bit(33.6ms \* 58step)1.9488s(total 1.96s). After transmitting, U2 is back to Sleep Mode regardless of pushing SW 1 or 2 without release.

- When SW 1 or 2 is released before 1.96s, U2 stops transmitting and is back to Sleep Mode.

- Refer to attached Remote Control Protocol Timing.

Remote Control  
Protocol Timing



press button short : data shut down  
press button long : 11.4ms + (33.6ms X 58step) = 1.96 sec

## 2. RF Module Unit

-DC 5V from Main Control Box is supplied to U1(TA31145FN) FSK IC through regulating circuit composed of D1, C1 and C2 and simultaneously, Receive circuit is supplied with 1V through Q3.

-FSK IC is self -oscillating by X3(20.945MHz) and this frequency is modulated by CF1 and DISC1. This modulated frequency is amplified through R19, C28, R14, R16, C21 and C22 and this delivers Protocol from Remote Control to Main Control Box through R4.

- The power supplied through Q3 makes X1 oscillated through R15, L10, C24, R21, L13, CT2, C36, C34, C35, L14 and Q5 and this is tuned at the frequency(137.5066MHz) f/3 which intermediate frequency(21.4MHz) is subtracted.

- This frequency goes through f/0(412.520MHz) frequency filter composed of L11, C29 and C4 and through f/0 frequency filter composed of C5, C30, L12 and C25 and it is delivered to Q1.

-The data received from Remote Control through the Antenna is delivered to Q4 through L5 and C17. Q4 amplifies f/0 frequency through L4, C3, R11 and R3 and this amplified frequency goes through f/0 filter composed of C19, L8, C2, C3, CT1, L9 and C13 and is delivered to Q2. CT1 is regulated to reduce harmonics of f/0 frequency.

-Q2 amplifies f/0 frequency through R2, C5, R7 and L2 and the amplified f/0 frequency is filtered through C9, C14, L6, C1, L7 and C10.

- The frequency(412.520MHz) self -oscillated through X1 and the data received through the Antenna are inputted to intermediate frequency filter Q1.

- The intermediate frequency is amplified through R1, R6, L1, C4, C11 and R8 and X2 is oscillated, finally, the data from Remote Control is delivered to IF IC(U1).

### 3. Main Control Box

- This unit uses the power from Car Battery and is operated with DC 9V to DC 18V.
- The power circuit is composed of D1, R1, C1, EC1, IC1, C2 and EC2 and this circuit changes the power from car battery to DC 5V
- After power is supplied to IC2 micro controller, contents of IC3(eeprom) is read. This unit is operated only when the read contents is consistent with the code registered in Remote Control.
- When this is operating by the sensor of Door Open, Brake Signal and IG1 Signal not by Remote Control, this unit makes Siren/Horn operated through IC4(buffer), R16, D6, C7, R15, Q3 and D5.
- At this time, RLY1(Relay) is operating and starting engine stops.
- When SW1 of Remote Control is pressed and this unit receives the registered code, the door is unlocked through RLY2, RLY3, TNR1, TNR2.
- When SW2 of Remote Control is pressed and this unit receives the registered code, the door is locked.

\*Note : This KEYNOKEY should be memorized the proper code of Remote Control at Main Control Box. The way to memorize the code is as following.

- Repeat your car key five times over between “ACC” and “ON” position within 10 seconds during opening driver side door.
- Press Button 1(Unlock) or 2(Lock) of Remote Control after hearing one chirp sound from Horn or Siren.
- And then your code has finally been memorized after making 2 time chirp sounds from Horn or Siren.