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# WTV020-SD MODULE

WTV020-SD-20S and WTV020-SD-16P


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## 1.PRODUCT FEATURES

◎Support 1GB SD card max. or SPI flash 64MB max.
◎Support 4 Bit ADCPM format files.
◎Sampling rate from 6kHZ to 36KHZ for AD4 voice format.
◎Sampling rate from 6KHz～16KHz for WAV voice format
◎16 Bit DAC / PWM audio output.
◎Key mode，MP3 mode and two line serial mode are optional .Can choose one of them
◎Copy voice files to SD card by PC.
◎Working voltage: DC2.7～3.5V
◎Quiescent current:: 3uA

## 2.SUMMARIZE

This module with MP3 mode, key mode(control 3 group of voice with volume adjustment or 5group of voice), two line serial mode, and Loop play mode(after power on ,the module will play loop, with memory function in the mode) They are optional. Customers can choose one of the modes in a module. Also can be customized.

**MP3 mode:** With play/stop, next , previous, vol+,vol- functions

**Key mode(3 group of voice):** One key trigger one group of voice,and with vol-, and vol+ . all keys' default trigger modes are edge retrigger

**Key mode(5 group of voice):** One key trigger one group of voice, trigger mode can be follows: 1. All keys are edge retrigger. 2.All keys are ON/OFF (voice will not cycle after finished) 3.All keys are ON/OFF(voice will cycle after finished)

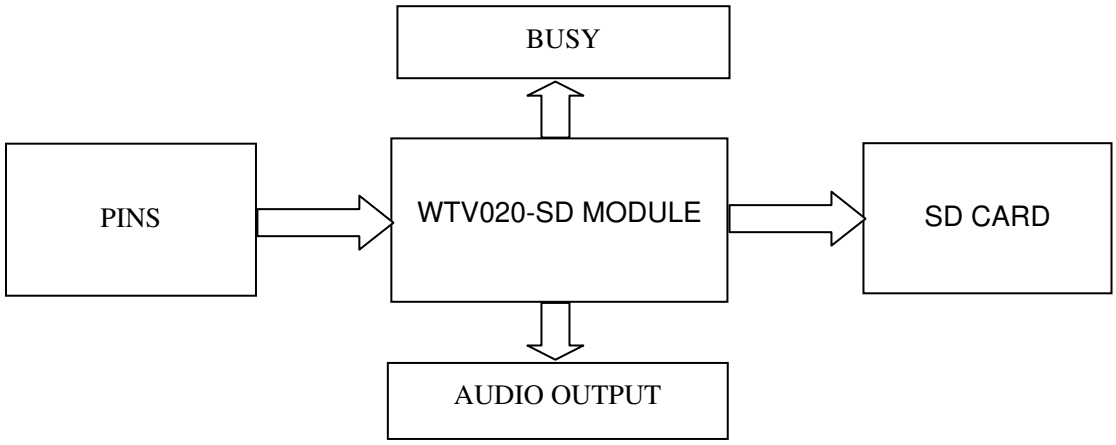
**Loop play mode:** After power on , it will play the voices automatically . it doesn't need to tirgger the I/O . and with memory function(when you playing voice 2, power was cut off,next time power on it will start from voice 2 or voice 3 .(Can be

customized)

**Two line serial mode:** WTV020-SD controlled by MCU sending data through CLK and DI . Can play voices in any address, also voices(include mute) can combined to play in this mode.

Change voice by SD card reader and PC. SD card should be FAT format. Sampling rate supported from 6KHz～32KHz and 36KHz for ad4 voice format. 6KHz～16KHz for WAV voice format.

## 3.APPLICATION DIAGRAM

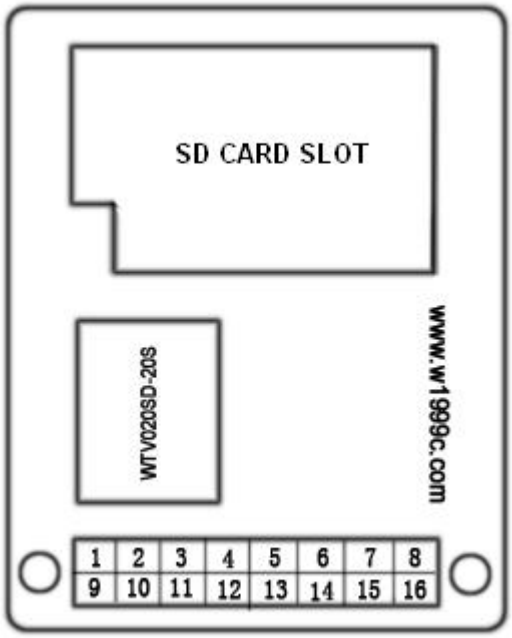



## 4.APPLICATIONS

This module can use in automobile( car bug, parking radar, GPS navigation system), Intelligent home system, house bug, Voice medical devices, household appliances(induction cooker, rice cooker, micro-wave oven), game machines, learning tools(talking book), Intelligent traffic facilities(toll gate, parking lot), communications equipment( telephone), industrial control( elevator ), toys and so on.

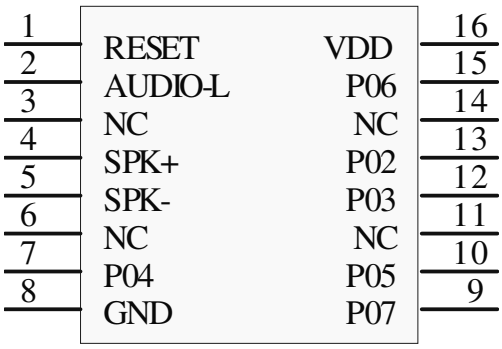
## 5.PINS

### 5.1.WTV020-SD-20S




| PIN | SYS. | FUNCTION | PIN | SYS. | FUNCTION |
|---|---|---|---|---|---|
| 1 | DC+3.3V | +3.3V | 9 | GND | GND |
| 2 | SPK+ | Audio output | 10 | DC+3.3V | +3.3V |
| 3 | P07 | I/O | 11 | SPK+ | Audio output |
| 4 | P03 | I/O | 12 | SPK- | Audio output |
| 5 | NC | NC | 13 | P06 | BUSY |
| 6 | NC | NC | 14 | RST | Reset |
| 7 | P02 | I/O | 15 | P04 | I/O |
| 8 | NC | NC | 16 | P05 | I/O |

### 5.2.WTV020-SD-16P




| PIN | SYS. | DESCRIPTION | FUNCTION |
|---|---|---|---|
| 1 | RESET | RESET | Reset pin |
| 2 | AUDIO-L | DAC+ | DAC audio output(+) to amplifier |
| 3 | NC | NC | NC |
| 4 | SP+ | PWM+ | PWM audio output to speaker |
| 5 | SP- | PWM- | PWM audio output to speaker |
| 6 | NC | NC | NC |
| 7 | P04 | K3/A2/CLK | Key /CLK in two line serial |
| 8 | GND | GND | Address pin |
| 9 | P07 | K5/A4/SBT | Key |
| 10 | P05 | K4/A3/DI | Key /DI in two line serial |
| 11 | NC | NC | NC |
| 12 | P03 | K2/A1 | Key |
| 13 | P02 | K1/A0 | Key |
| 14 | NC | NC | NC |
| 15 | P06 | BUSY | BUSY pin |
| 16 | VDD | VDD | Power input |

## 6.MODULE SELECTION

WTV020-SD-20S and WTV020-SD-16P are the same but chip package.

| MODE | VOICES | TRIGGER | BUSY | AUDIO | NOTE |
|---|---|---|---|---|---|
| MP3 | 256 | KEY | YES | DAC/PWM | |
| KEY（3 group of voice） | 3 | KEY | YES | DAC/PWM | EDGE IRRETRIGGER |
| KEY（5 group of voice） | 5 | KEY | YES | DAC/PWM | EDGE RETRIGGER |
| | 5 | KEY | YES | DAC/PWM | ON/OFF(unloop) |

| | | | | | |
|---|---|---|---|---|---|
| | 5 | KEY | YES | DAC/PWM | ON/OFF(loop) |
| LOOP PLAY(after power on) | 256 | KEY | YES | DAC/PWM | ON/OFF(edge) |
| | 256 | KEY | YES | DAC/PWM | ON/OFF(level) |
| TWO LINE SERIAL | 256 | BY MCU | YES | DAC/PWM | |

## 7.CONTROL MODES

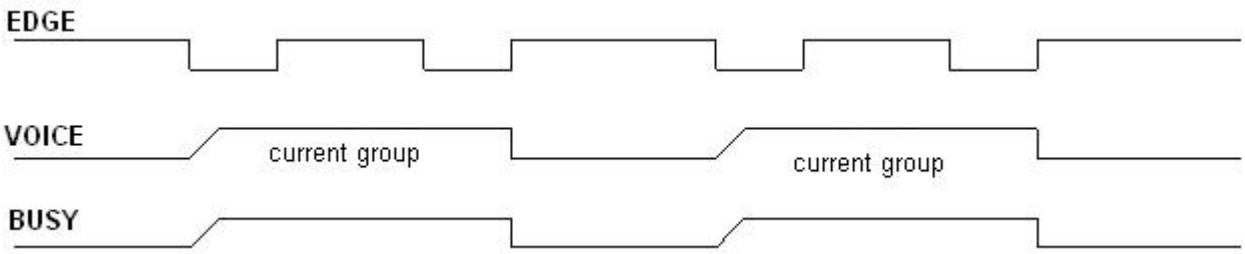
### 7.1.MP3 MODE

In the MP3 mode, WTV020-SD module default with 6 I/Os

| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | K1 | K2 | K3 | K4 | BUSY | K5 |
| TRIGGER | NEXT | PREVIOUS | VOL+ | VOL- | ------ | ON/OFF |

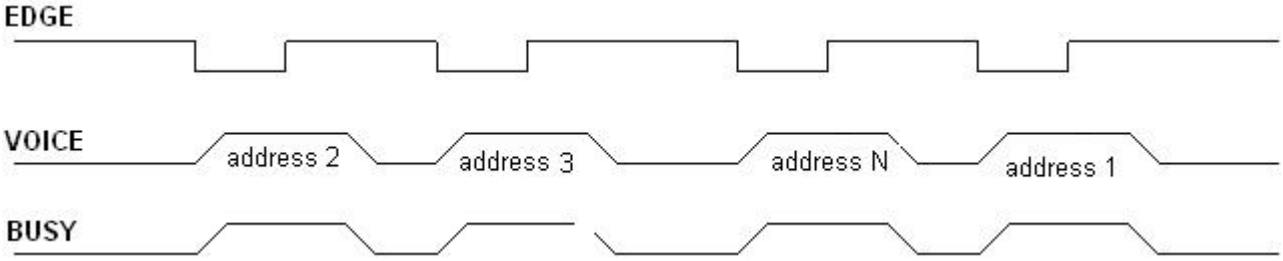
BUSY is for signal output test , when the playing voice, BUSY output is high level, can connect to LED for indicating.

#### 7.1.1. ON/OFF(PALY/STOP)



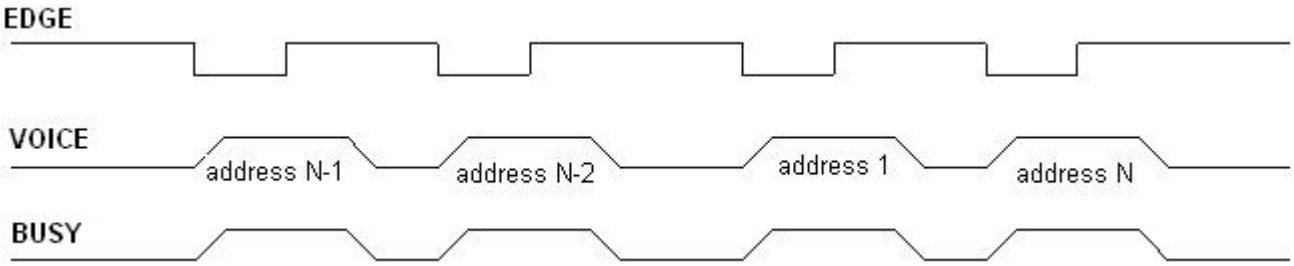

Remark: Edge trigger. A negative edge trigger to play, next negative edge to stop.

#### 7.1.2.NEXT




Remark: Edge trigger. One key trigger one group of voice. A negative edge trigger a group of voice, next negative edge trigger next group of voice, after finish last group loop to first group.

### 7.1.3.PREVIOUS




Remark: Edge trigger. One key trigger to play. A negative edge trigger a group of voice, next negative edge trigger previous group of voice, after finish first group loop to last group.

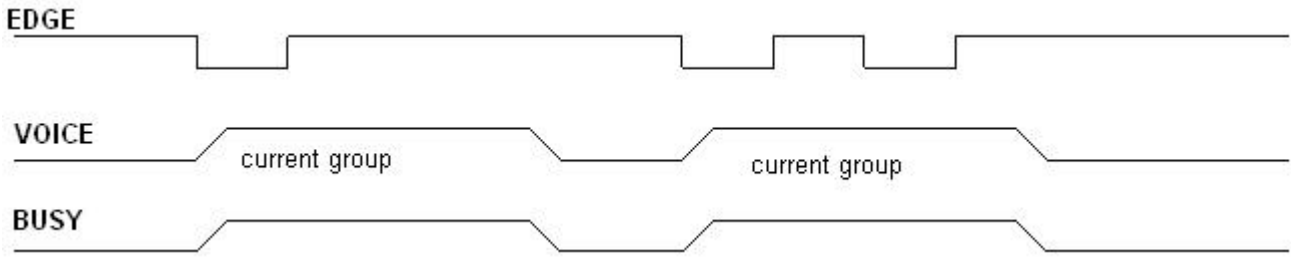
### 7.2. KEY（3 group of voice）

Pull low P02/P03/P07(short connect P02/P03/P07 with GND) can trigger the 3 group of voices separated , P04 and P05 are for volume adjustment.

| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | K1 | K2 | K3 | K4 | BUSY | K5 |
| TRIGGER | EDGE IRRTRIGGER | EDGE IRRTRIGGER | VOL+ | VOL- | ----- | EDGE IRRTRIGGER |
| VOICE | GROUP 1 | GROUP 2 | ----- | ----- | ----- | GROUP 3 |

Key K1～K3 are edge retrigger , BUSY is for signal output test , when the playing voice, BUSY output is high level, can connect to LED for indicating.

### 7.2.1. EDGE RETRIGGER




Remark: Edge trigger. When I/O test falling edge( such as this I/O short touch GND) ,the voice will be triggered. During the playing , the next falling edge will not interrupt the voice,after voice play finished,falling edge will make it replay .

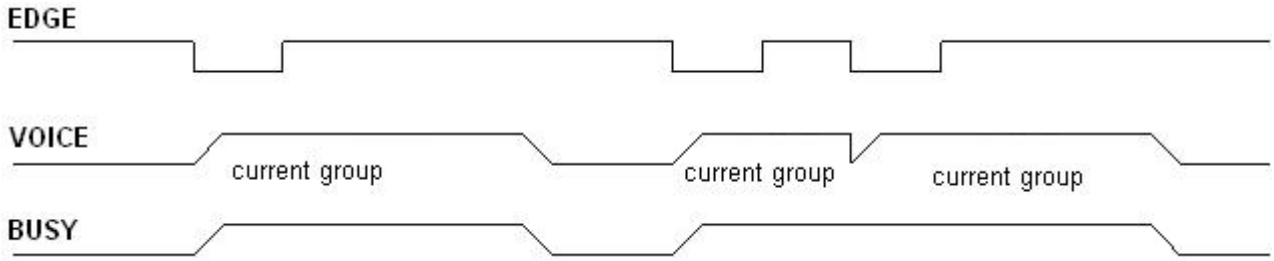
### 7.3.KEY(5 group of voice)

One button trigger one voice , total 5 group of voice , during playing BUSY output is high level, can connect LED to indicate it .
Three optional trigger mode:
a.All keys are edge retrigger
b.All keys are ON/OFF(unloop)
c.All keys are ON/OFF(loop)

### 7.3.1. All KEYS ARE EDGE RETRIGGER

| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | K1 | K2 | K3 | K4 | BUSY | K5 |
| TRIGGER | EDGE RETRIGGER | EDGE RETRIGGE R | EDGE RETRIGGER | EDGE RETRIGGER | ----- | EDGE RETRIGGER |
| VOICE | GROUP 1 | GROUP 2 | GROUP 3 | GROUP 4 | ----- | GROUP 5 |

### 7.3.2.EDGE RETRIGGER TIMING WAVEFORM



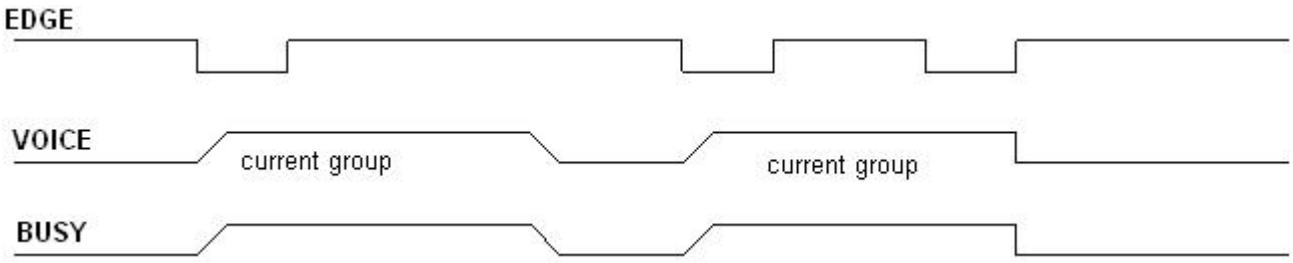

Remark: Edge trigger. When I/O test falling edge( such as this I/O short touch GND) ,the voice will be triggered. During the playing , the next falling edge will interrupt the voice and replay from beginning.

### 7.3.3.ALL KEYS ARE ON/OFF(unloop)

Trigger I/O(short connect to GND) can play voice ,next trigger make it stop. After voice play finished, it will stop .

| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | K1 | K2 | K3 | K4 | BUSY | K5 |
| TRIGGER | ON/OFF | ON/OFF | ON/OFF | ON/OFF | ----- | ON/OFF |
| VOICE | GROUP 1 | GROUP 2 | GROUP 3 | GROUP 4 | ----- | GROUP 5 |

### 7.3.4. ALL KEYS ARE ON/OFF(unloop) TIMING WAVEFORM



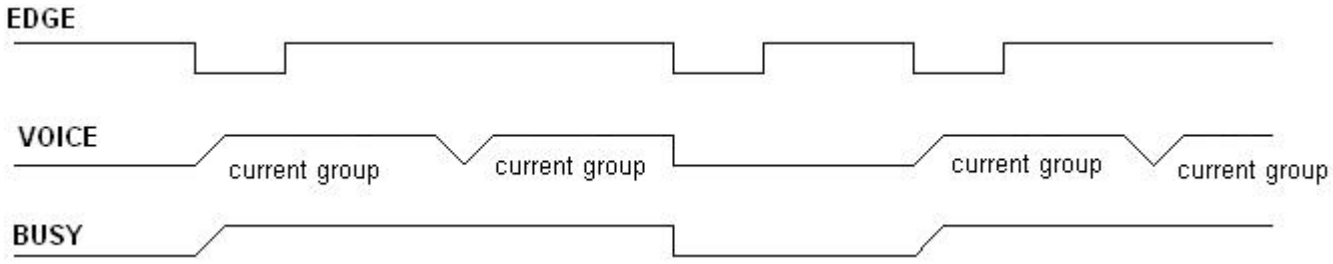

Remark: Edge trigger. When I/O test falling edge( such as this I/O short touch GND) ,the voice will be triggered. After play finished, will stop . During the playing , the next falling edge will stop the voice ,other falling edge will make it play again.

### 7.3.5. ALL EKYS ARE ON/OFF（loop）

Trigger I/O(short connect to GND) can play voice ,next trigger make it stop. After voice play finished, it will loop .

| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | K1 | K2 | K3 | K4 | BUSY | K5 |
| TRIGGER | ON/OFF | ON/OFF | ON/OFF | ON/OFF | ----- | ON/OFF |
| VOICE | GROUP 1 | GROUP 2 | GROUP 3 | GROUP 4 | ----- | GROUP 5 |

### 7.3.6. ON/OFF(loop) TIMING WAVEFORM




Remark: Edge trigger. When I/O test falling edge( such as this I/O short touch GND) ,the voice will be triggered. After play finished, will cycle play. During the playing , the next falling edge will stop the voice ,other falling edge will make it play again

### 7.4.LOOP PLAY AFTER POWER ON

After turn on the power, it will play the voice directly, trigger the relative I/O can pause, next trigger will keep playing.In this mode, when the module playing voice 2 and the power was cut off, after turn on power it will play from voice 2 or voice 3(can be customized)

Alternative trigger mode:

a.Edge tirgger to pause /play

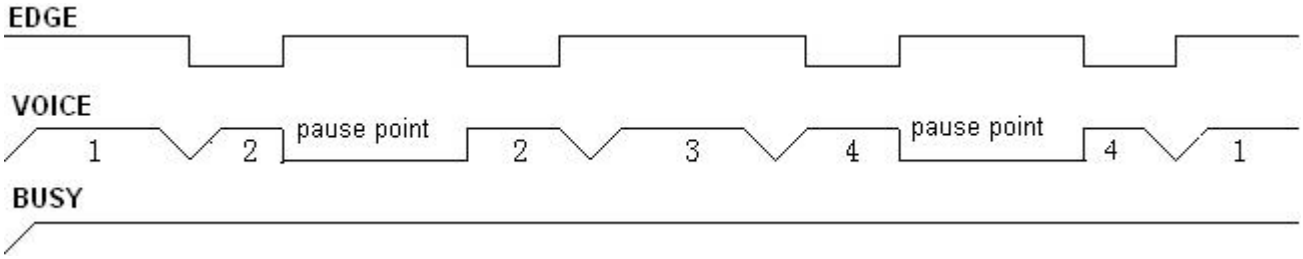
b.Level trigger to pause/play

### 7.4.1.EDGE TRIGGER TO PAUSE/PLAY

Power on, play voice automatically, negative edge tirgger P04 to pause , next trigger to play from the pause point.

| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | ------ | ------ | K1 | ------ | BUSY | ------ |
| TRIGGER | ------ | ------ | PAUSE/PLAY | ------ | ----- | ------ |
| VOICE | ------ | ------ | ALL VOICE | ------ | ----- | ------ |

### 7.4.2. EDGE TIRGGER TO PAUSE/PLAY TIMING WAVEFORM



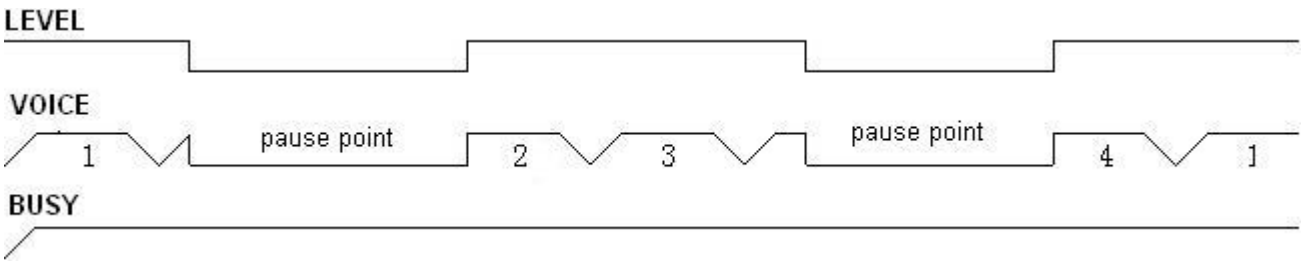

Negative edge trigger. Power on , it will play automatically, negative edge trigger P04 to pause , next tirgger to play from the pause point. After voices play finished, it will loop .

### 7.4.3.LEVEL TRIGGER TO PAUSE/PLAY

Power on , it will play automatically , Low level to trigger P05 to pause, next trigger to play from the pause point.

| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | ------ | ------ | ------ | K1 | BUSY | ------ |
| TRIGGER | ------ | ------ | ------ | PAUSE/PLAY | ------ | ------ |
| VOICE | ------ | ------ | ------ | ALL VOICE | ------ | ------ |

### 7.4.4.LEVEL TRIGGER TO PAUSE/PLAY TIMING WAVEFORM




Negative level trigger. Power on , it will play automatically, negative level trigger P05 to pause , next tirgger to play from the pause point. After voices play finished, it will loop .

### 7.5.TWO LINE SERIAL MODE

In the two line serial mode ,there are two communication port, they are CLK and DI. In addition, there is a reset port, 1 second after reset , if no action to the module, the chip will be into standby status within one second if no action after reset.

### 7.5.1、I/O FUNCTION IN TWO LINE SERIAL MODE

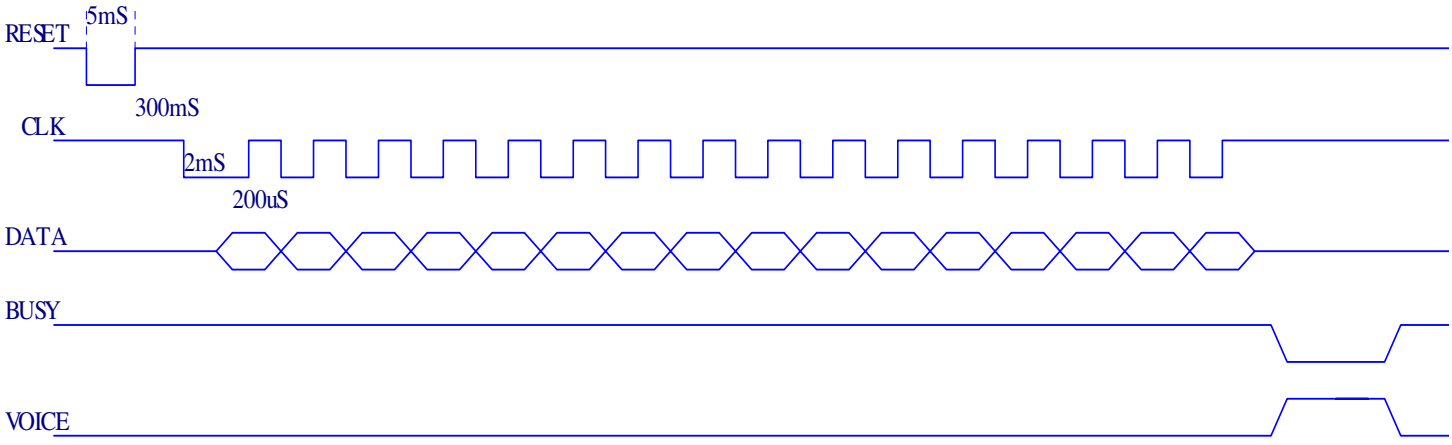
| I/O | P02 | P03 | P04 | P05 | P06 | P07 |
|---|---|---|---|---|---|---|
| FUNCTION | K1 | K2 | CLK | DI | BUSY | K3 |
| TRIGGER | NEXT | PREVIOUS | | | ------ | PALY/STOP |

### 7.5.2. VOICE ADDRESSES

512 group of voice can be loaded in SD card. The voice file name are decimal , such as 0000.ad4, 0001.ad4, ……When the MCU send data to trigger, the data should be binary data corresponding to voice file name. MCU send signal to CLK and ID at the same time. DI data send high first, then low. When there is no data, CLK and DI are high level.

| ADDRESSES | TRIGGER STATE | FILE NAME(.ad4) | TRIGGER DATA（BINARY） |
|---|---|---|---|
| ADDR 1 | PLAY 1th GROUP VOICE | 0000 | 0000000000000000 |
| ADDR 2 | 2nd | 0001 | 0000000000000001 |
| ADDR 3 | 3rd | 0002 | 0000000000000010 |
| ADDR 4 | 4th | 0003 | 0000000000000011 |
| …… | …… | …… | …… |
| ADDR 509 | 509th | 0508 | 0000000111111100 |
| ADDR 510 | 510th | 0509 | 0000000111111101 |
| ADDR 511 | 511th | 0510 | 0000000111111110 |
| ADDR 512 | 512th | 0511 | 0000000111111111 |

### 7.5.3.TIMING WAVEFORM IN TWO LINE SERIAL MODE




### 7.5.4. CODE DESCRIPTIONS

| CODE | FUNCTION | DESCRIPTION |
|---|---|---|
| FFF0H～FFF7H | VOICE VOLUME ADJUSTMENT | THE VOLUME CAN BE ADJUSTED DURING PLAY OR STAND BY STATUS. FFF0H IS MIN, FFF7H IS MAX, TOTAL 8 LEVEL . |
| FFFEH | PALY/PAUSE | PLAY/PAUSE THE VOICE IN THE ADDRESS |
| FFFFH | STOP | STOP TO PLAY THE VOICE |

The default volume is maximum. FFF0H is mute. Volume can be adjusted in play or stop status.

### 7.5.5. PROGRAM EXAMPLE

```
    ORG 0000H
        KEY EQU P1.1            ; KEY PIN
        KEY2 EQU P1.2           ;VOLUME
        KEY3 EQU P1.3           ; CLK+
        KEY4 EQU P1.6           ;CLK-
        KEY5 EQU P1.7           ;TRANSMIT VOLUME,THEN ADDRESS
         LED EQU P3.0           ;SHOW KEY PRESSED
         SCL EQU P3.2           ;CLK PIN
         SDA EQU P3.3           ;DATA PIN
         RST EQU P3.4           ;RESET PIN
    DAIFAZHI EQU 50H            ;SEND CODE VALUE TEMP
    VOICENUM EQU 51H            ;VOLUME
      CLKNUM EQU 52H            ;CLK
        MOV DAIFAZHI,#0H        ;INITIAL SEND VALUE 0
        MOV VOICENUM,#0F0H      ; VOLUME INITIAL VALUE F0H
        MOV CLKNUM,#2           ; DEFAULT SEND CODE 1MS
        MOV R5,#8               ; LOOP EIGHT TIMES
        SETB SCL
        SETB SDA
        SETB RST
MAIN:
         JB KEY,KEY22
          CLR LED
         MOV R6,#5              ; DELAY 10MS
    LCALL DELAY2MS
         JB KEY,KEY22           ; KEY PRESS DEBOUNCE
         JNB KEY,$              ;WAIT KEY PRESSED RELEASE
         SETB LED
         LCALL RESET
         LCALL TWO_LINE         ;TWO LINE SEND CODE SUBPROGRAM
         INC DAIFAZHI           ;CODE VALUE ADD 1
         MOV A,DAIFAZHI
         CJNE A,#37,XX2         ;WHETHER VOLUME REACH MAX. VALUE 128
    XX2: JC KEY22
         MOV DAIFAZHI,#0H
    KEY22:
         JB KEY2,KEY33
         CLR LED
         MOV R6,#5              ;DELAY 10MS
         LCALL DELAY2MS
```

```
        JB KEY2,KEY33          ;KEY PRESS DEBOUNCE
        JNB KEY2,$             ;WAIT KEY PRESSED RELEASE
      SETB LED
      LCALL RESET
      LCALL VOICE            ;TWO LINE SEND CODE SUBPROGRAM
      INC VOICENUM           ;CODE VALUE ADD 1
        MOV A,VOICENUM
      CJNE A,#0F8H,XX4     ;WHETHER VOLUME REACH MAX. VALUE
XX4: JC KEY33
      MOV VOICENUM,#0F0H
KEY33:
       JB KEY3,KEY44
       CLR LED
      MOV R6,#5              ;DELAY 10MS
      LCALL DELAY2MS
      JB KEY3,KEY44          ; KEY PRESS DEBOUNCE
      JNB KEY3,$             ;WAIT KEY PRESSED RELEASE
      NOP
      INC CLKNUM
      SETB LED
KEY44:
      JB KEY4,KEY55
      CLR LED
      MOV R6,#5              ; DELAY 10MS
      LCALL DELAY2MS
      JB KEY4,KEY55          ; KEY PRESS DEBOUNCE
      JNB KEY4,$             ;WAIT KEY PRESSED RELEASE

      NOP
      DEC CLKNUM
      MOV A,CLKNUM
      CJNE A,#0H,XX5         ;   SEND CODE KEEP 100US AT LEAST
      MOV CLKNUM,#1
XX5:
      SETB LED
KEY55:
      JB KEY5,MAIN
      CLR LED
      MOV R6,#5              ; DELAY 10MS
      LCALL DELAY2MS
      JB KEY5,XX6            ;WAIT KEY PRESSED RELEASE
      JNB KEY5,$             ;WAIT KEY PRESSED RELEASE
```

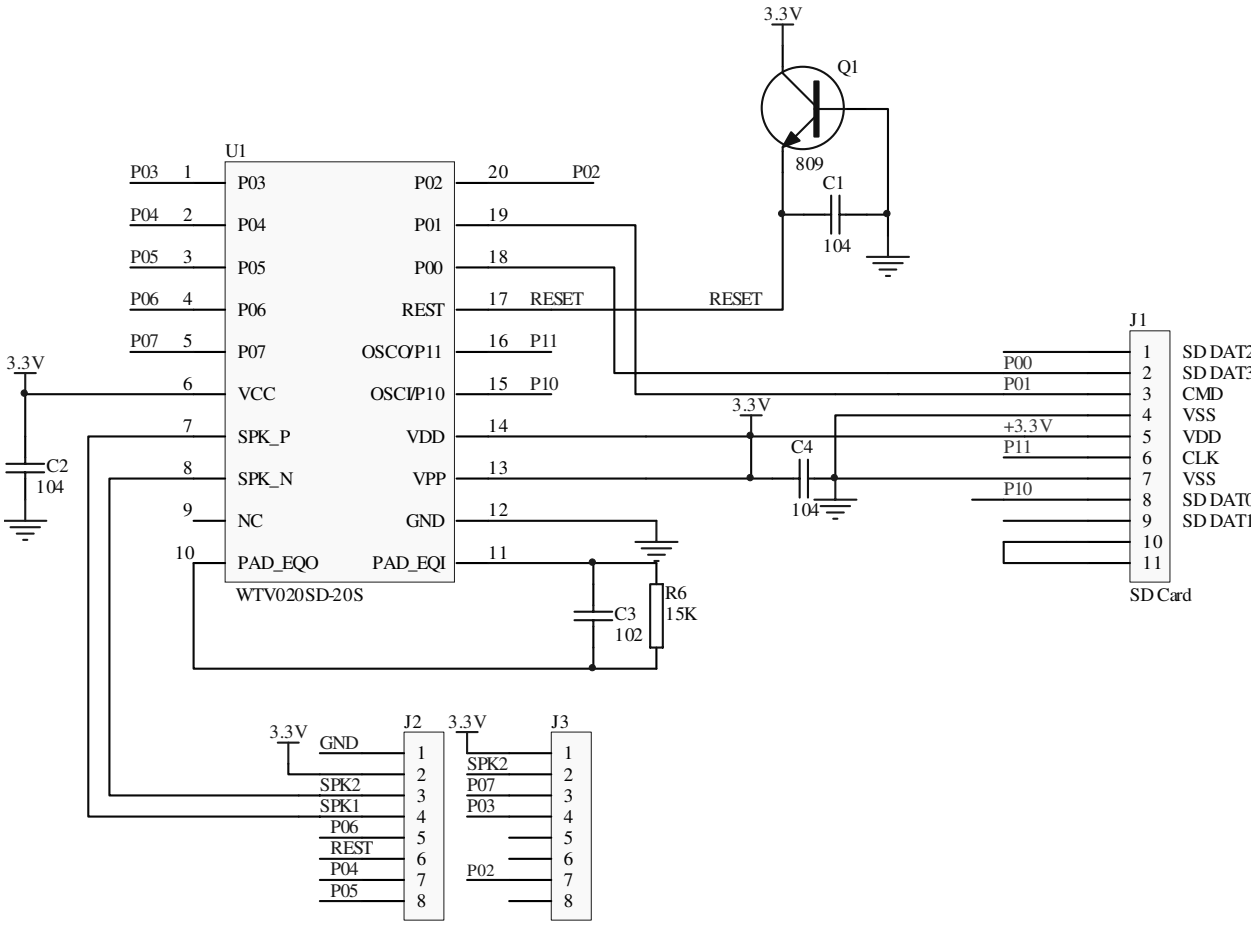
```
        LCALL RESET
        MOV VOICENUM,#0F6H
        LCALL VOICE
        LCALL TWO_LINE
XX6:
      LJMP MAIN
TWO_LINE:                    ;///VOICE ADDRESS SEND CODE SUBPROGRAM
              CLR SCL
              MOV R6,#2
              LCALL DELAY1MS
              MOV A,#0
        LOOP1:
              CLR SCL
              RLC A
              MOV SDA,C
              MOV R6,CLKNUM
              LCALL DELAY50US
              SETB SCL
              MOV R6,CLKNUM
        LCALL DELAY50US
              DJNZ R5,LOOP1
              MOV R5,#08H
              MOV A,DAIFAZHI
    LOOP2:
              CLR SCL
              RLC A
              MOV SDA,C
              MOV R6,CLKNUM
              LCALL DELAY50US
              SETB SCL
              MOV R6,CLKNUM
      LCALL DELAY50US
              DJNZ R5,LOOP2
              MOV R5,#08H
              RET

VOICE:              ;////VOLUME VALUE SEND CODE SUBPROGRAM
              CLR SCL
              MOV R6,#2
              LCALL DELAY1MS
              MOV A,#0FFH
      LOOP3:
```

```
            CLR SCL
            RLC A
            MOV SDA,C
            MOV R6,CLKNUM
            LCALL DELAY50US
            SETB SCL
            MOV R6,CLKNUM
             LCALL DELAY50US
            DJNZ R5,LOOP3
            MOV R5,#08H
            MOV A,VOICENUM
      LOOP4:
            CLR SCL
            RLC A
            MOV SDA,C
            MOV R6,CLKNUM
            LCALL DELAY50US
            SETB SCL
            MOV R6,CLKNUM
            LCALL DELAY50US
            DJNZ R5,LOOP4
            MOV R5,#08H
            RET
RESET:
            CLR RST
            MOV R6,#3
            LCALL DELAY1MS
            SETB RST
            MOV R6,#130
            LCALL DELAY2MS
        RET
DELAY2MS:                ;DELAY 2MS SUBPROGRAM, CHANGE R6 VALUE CAN CHANGE DELAY TIME
L1:       MOV R7,#248
L2:       NOP
          NOP
          NOP
          NOP
          NOP
          NOP
          DJNZ R7,L2
          DJNZ R6,L1
          RET
```

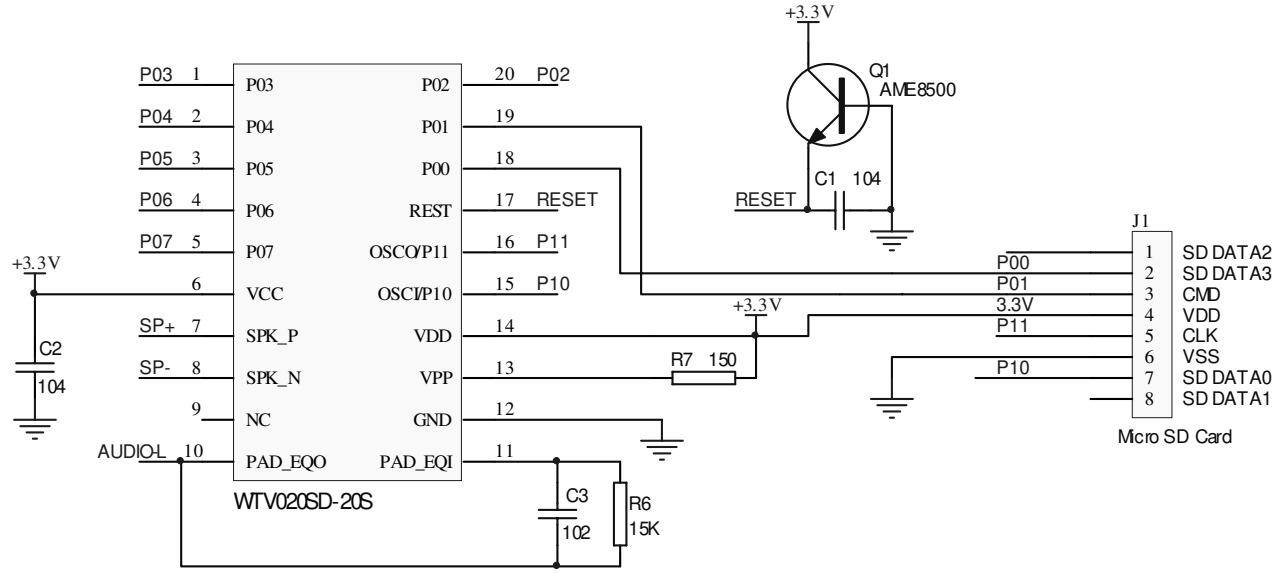
```
DELAY50US:              ; DELAY 25UM SUBPROGRAM, CHANGE R4    VALUE CAN CHANGE DELAY TIME
L11:    MOV R7,#6
L22:
            NOP
            NOP
             DJNZ R7,L22
             DJNZ R6,L11
             RET
DELAY1MS:                   ; DELAY 1MS SUBPROGRAM, CHANGE R6 VALUE CAN CHANGE DELAY TIME

L31:        MOV R7,#240
L32:            NOP
                NOP
              DJNZ R7,L32
              DJNZ R6,L31
             RET
                END
```

## 8.TYPICAL APPLICATION CIRCUIT

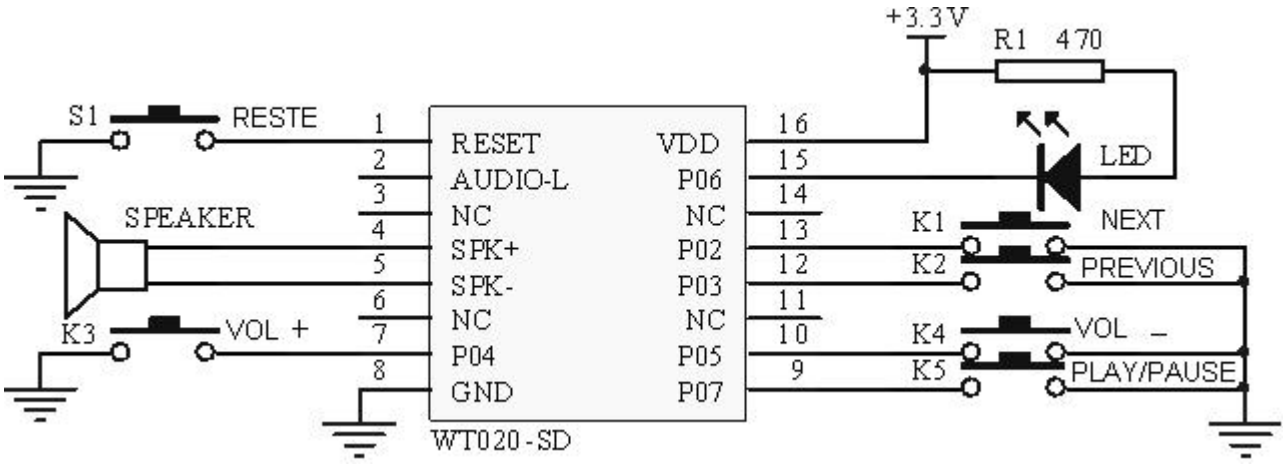
### 8.1.WTV020-SD-20S INNER CIRCUIT



## 8.2.WTV020-SD-16P INNER CIRCUIT




## 8.3.MP3 MODE APPLICATION CIRCUIT(PWM OUTPUT)

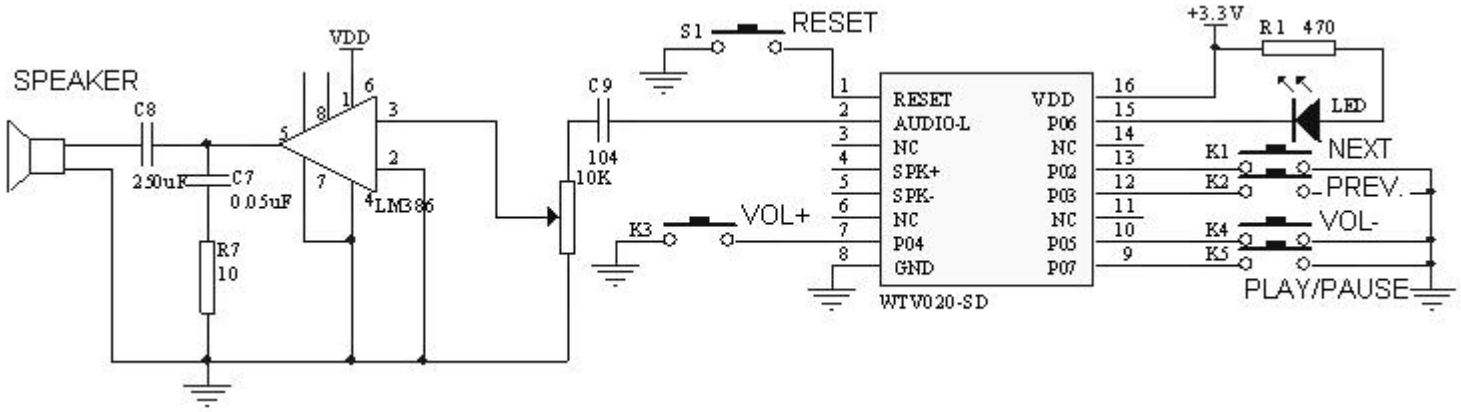



WTV020-SD-16P and WTV020-SD-20S,In PWM output, SPK+ ,SPK- connect to speaker .

In MP3 mode, edge trigger. Control I/Os by key short touch to GND, I/O P02 is PREVIOUS,P03 is NEXT,P04 is VOL+,P05 is VOL-,P07 is PLAY/STOP.

The power input is DC3.3v, if DC5V input, two serial diodes (IN4001 or 4007)connect to the positive input to low the voltage.

## 8.4.MP3 MODE APPLICATION CIRCUIT(DAC OUTPUT)

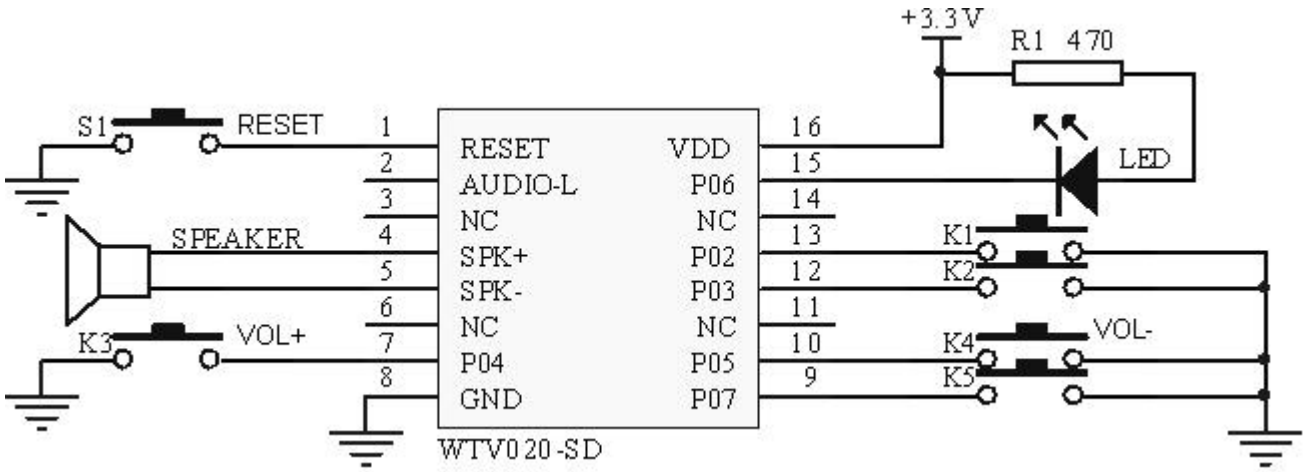



WTV020-SD-16P DAC output," Audio L" and module GND to amplifier. WTV020-SD-20S DAC output, "SPK+" and module GND to amplifier.

In MP3 mode, edge trigger. Control I/Os by key short touch to GND, I/O P02 is PREVIOUS,P03 is NEXT,P04 is VOL+,P05 is VOL-,P07 is PLAY/STOP.

The power input is DC3.3v, if DC5V input, two serial diodes (IN4001 or 4007)connect to the positive input to low the voltage.

## 8.5.KEY MODE(3 group of voice) APPLICATION CIRCUIT(PWM OUTPUT)

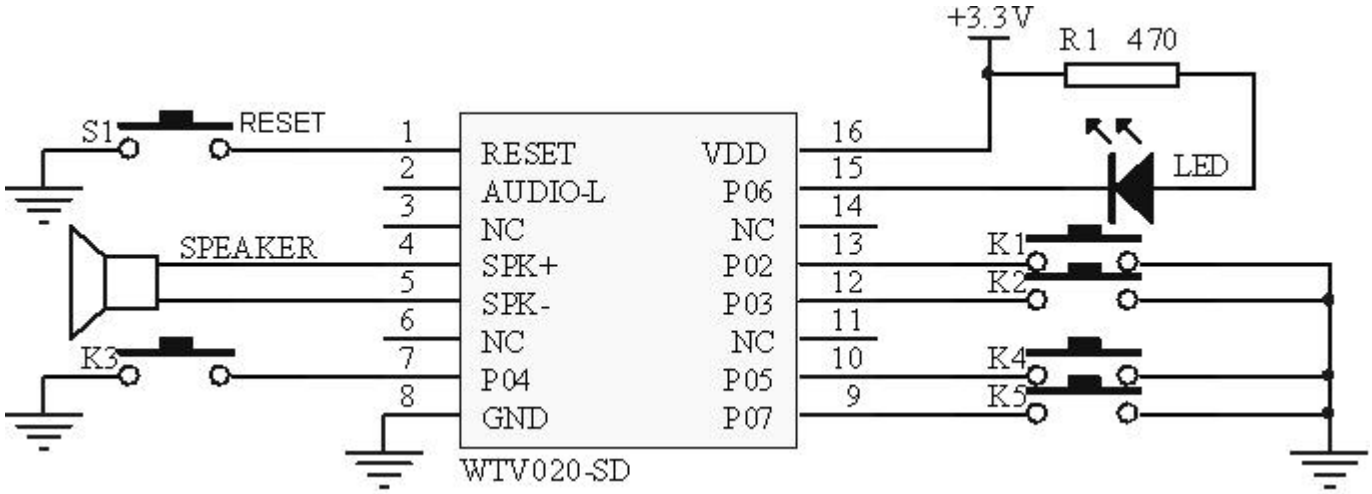



WTV020-SD-16P and WTV020-SD-20S in PWM output, "SPK+" ,"SPK-" to speaker .

In the key mode,edge trigger. GND short touch I/O to trigger voice. P02、P03、P04、P05、P07 trigger voice 1,voice 2, vol+,vol-,and voice 3 separately.

The power input is DC3.3v, if DC5V input, two serial diodes (IN4001 or 4007)connect to the positive input to low the voltage.

## 8.6.KEY MODE(5 group of voice)APPLICATION CIRCUIT(PWM OUTPUT)

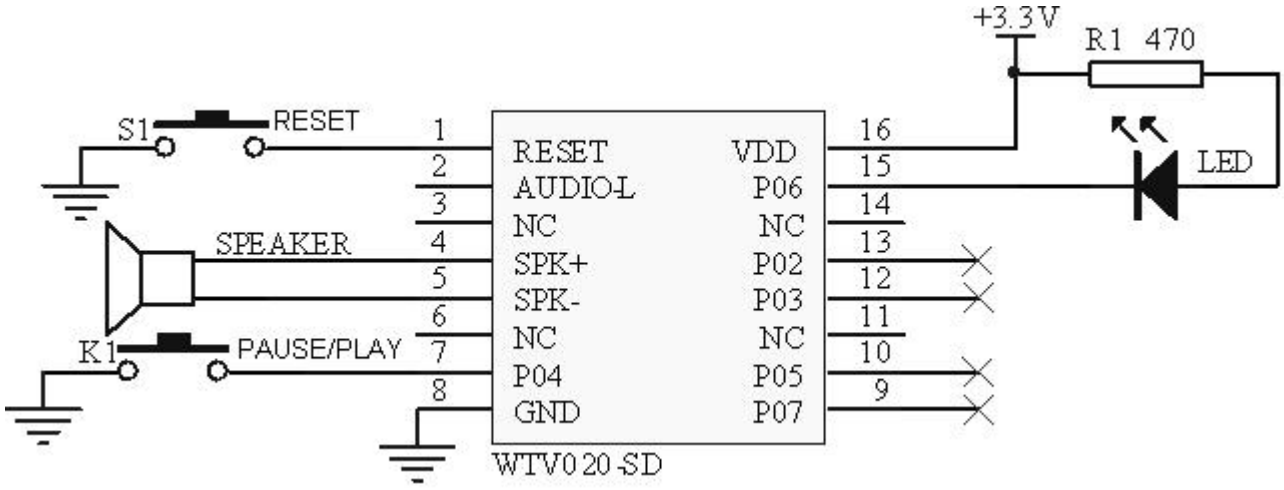



WTV020-SD-16P and WTV020-SD-20S in PWM output, “SPK+” ,”SPK-” to speaker .

In the key mode,edge trigger. GND short touch I/O to trigger voice. P02、P03、P04、P05、P07 trigger voice 1,voice 2, voice 3,voice 4,and voice 5 separately. They are edge retrigger.

The power input is DC3.3v, if DC5v input, two serial diodes (IN4001 or 4007)connect to the positive input to low the voltage.

## 8.7.LOOP PLAY AFTER POWER ON(EDGE TIRGGER PAUSE/PLAY) APPLICATION CIRCUIT(PWM OUTPUT)

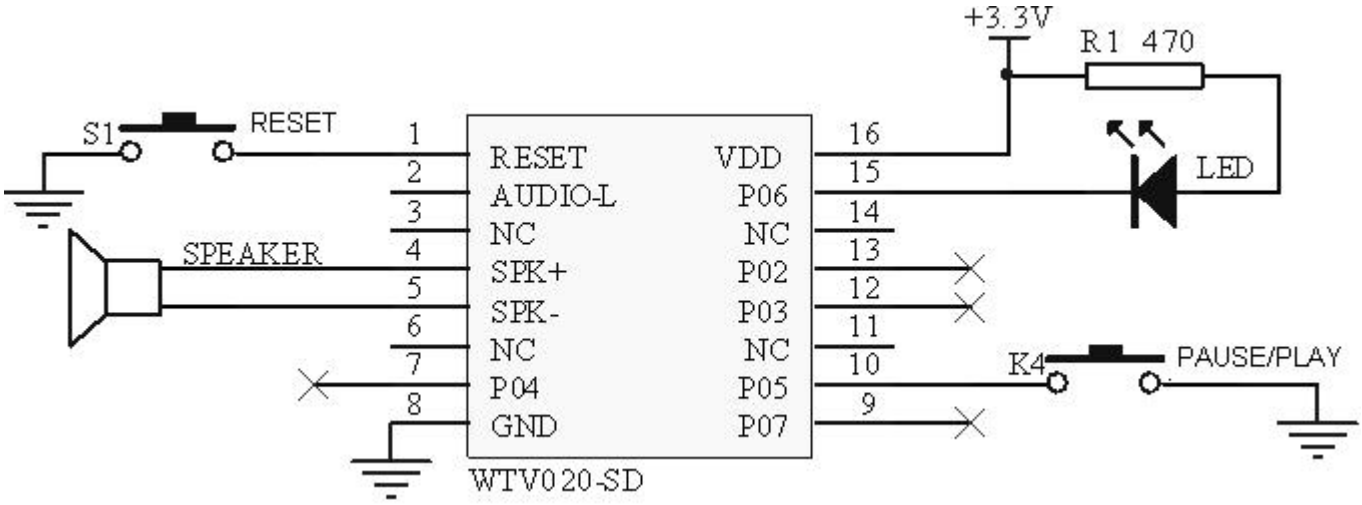



WTV020-SD-16P and WTV020-SD-20S in PWM output, “SPK+” ,”SPK-” to speaker .

In loop play mode,edge trigger. GND short touch I/O to trigger voice. P02、P03、P05、P07 are invalid, P04 trigger pause/play.

The power input is DC3.3v, if DC5v input, two serial diodes (IN4001 or 4007)connect to the positive input to low the voltage.

## 8.8.LOOP PLAY AFTER POWER ON (LEVEL TRIGGER PAUSE/PLAY)APPLICATION CIRCUIT(PWM OUTPUT)

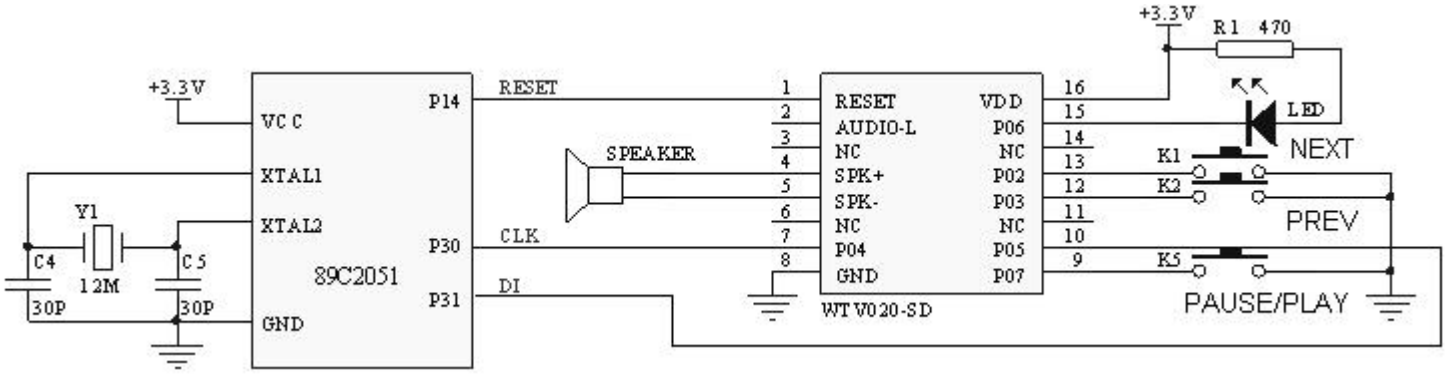



WTV020-SD-16P and WTV020-SD-20S in PWM output, “SPK+” ,”SPK-” to speaker .

In loop play mode,edge trigger. GND short touch I/O to trigger voice. P02、P03、P04、P07 are invalid, P05 trigger pause/play.

The power input is DC3.3v, if DC5V input, two serial diodes (IN4001 or 4007)connect to the positive input to low the voltage.

## 8.9.TWO LINE SERIAL MODE APPLICATION （PWM OUTPUT）




WTV020-SD-16P and WTV020-SD-20S in PWM output, “SPK+” ,”SPK-” to speaker .

In the two line serial mode, edge tirgger. MCU control I/O, P02 is next, P03 is previous, P07 is pause/play.

The power input is DC3.3v, if DC5V input, two serial diodes (IN4001 or 4007)connect to the positive input to low the voltage.

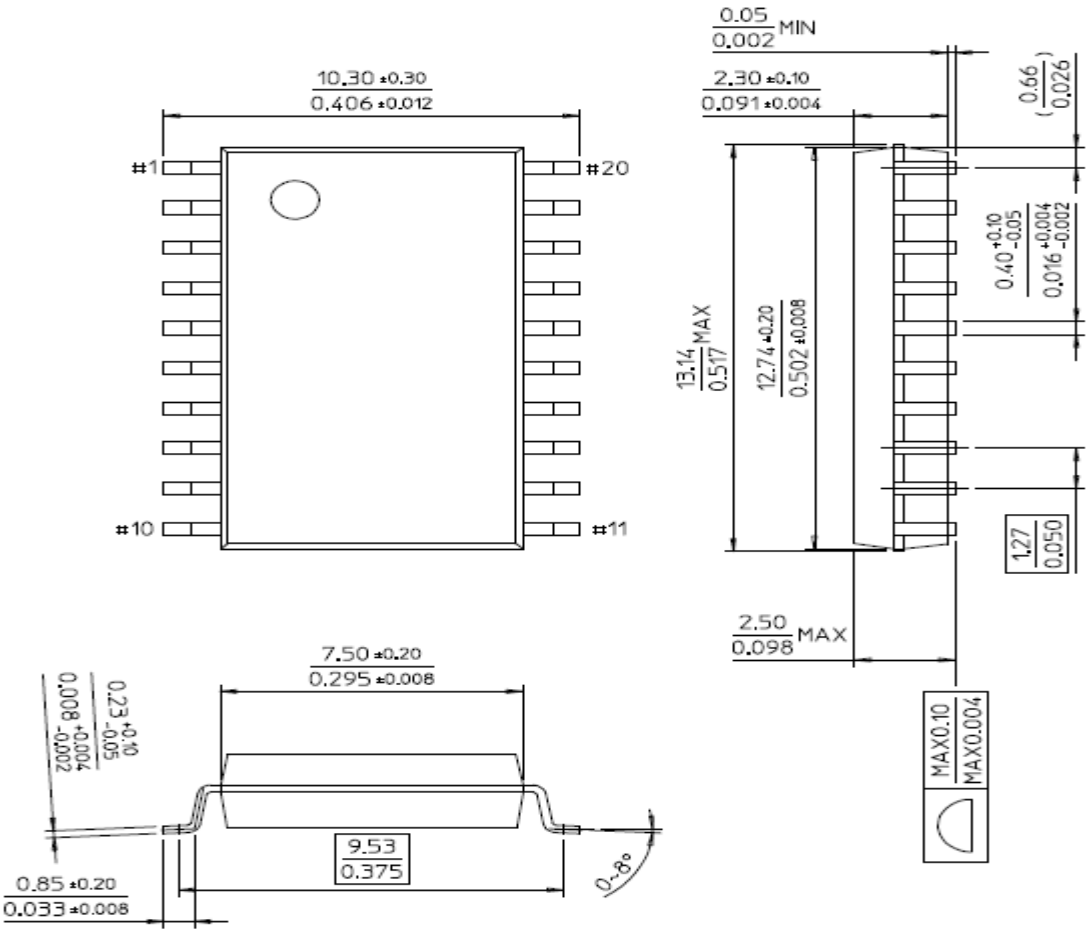
## 9.VOICE FILES IN SD CARD

Load voice files to SD card, and rename the files in this way, for WAV format voice :0000.wav , 0001.wav, 0002.wav……, for ad4 format voice: 0000.ad4, 0001.ad4,0002.ad4 ……., 512 files max. In MP3 mode and Loop play mode, voice will play in order.

## 10. PACKAGE SIZE

### 10.1.WTV020SD-20S

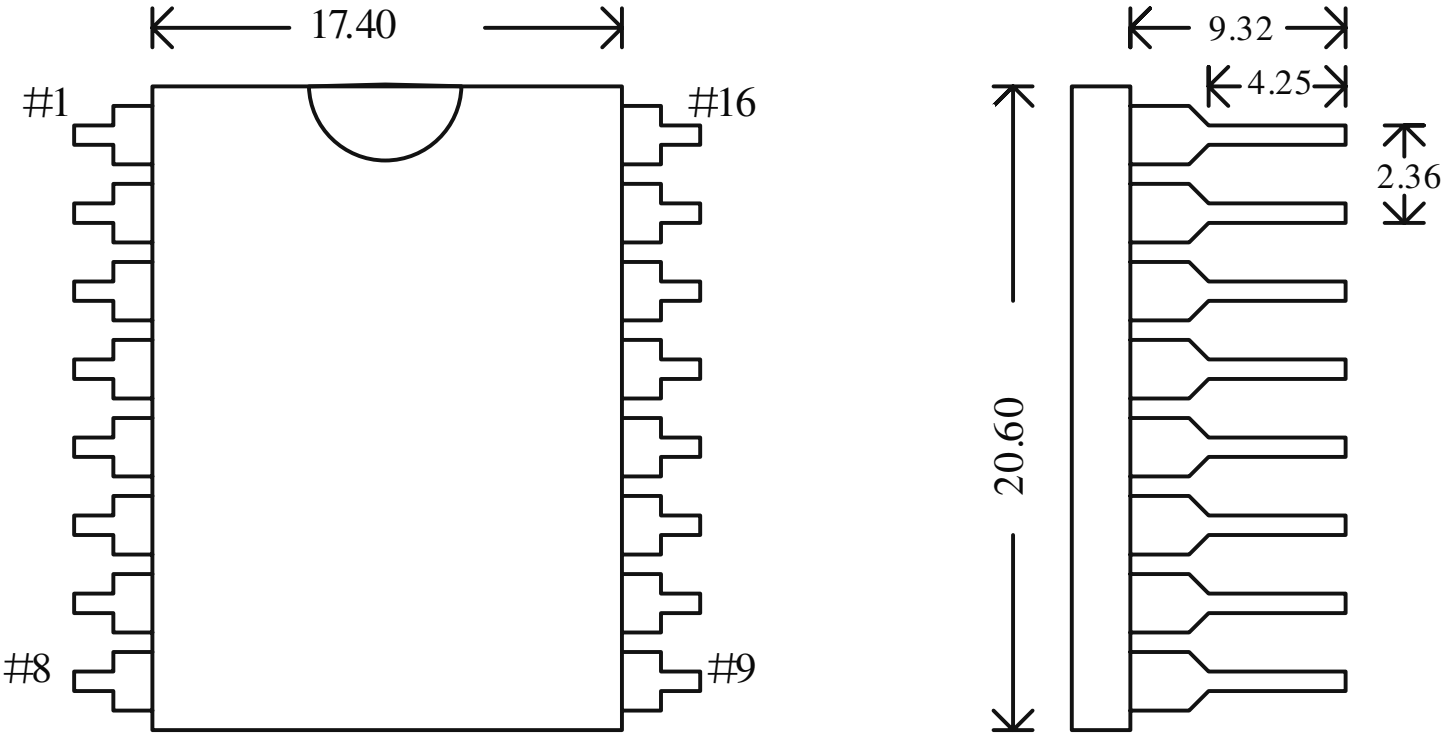
PACKAGE：SOP20
Unit：mm



**10.2.WTV020-SD-16P**

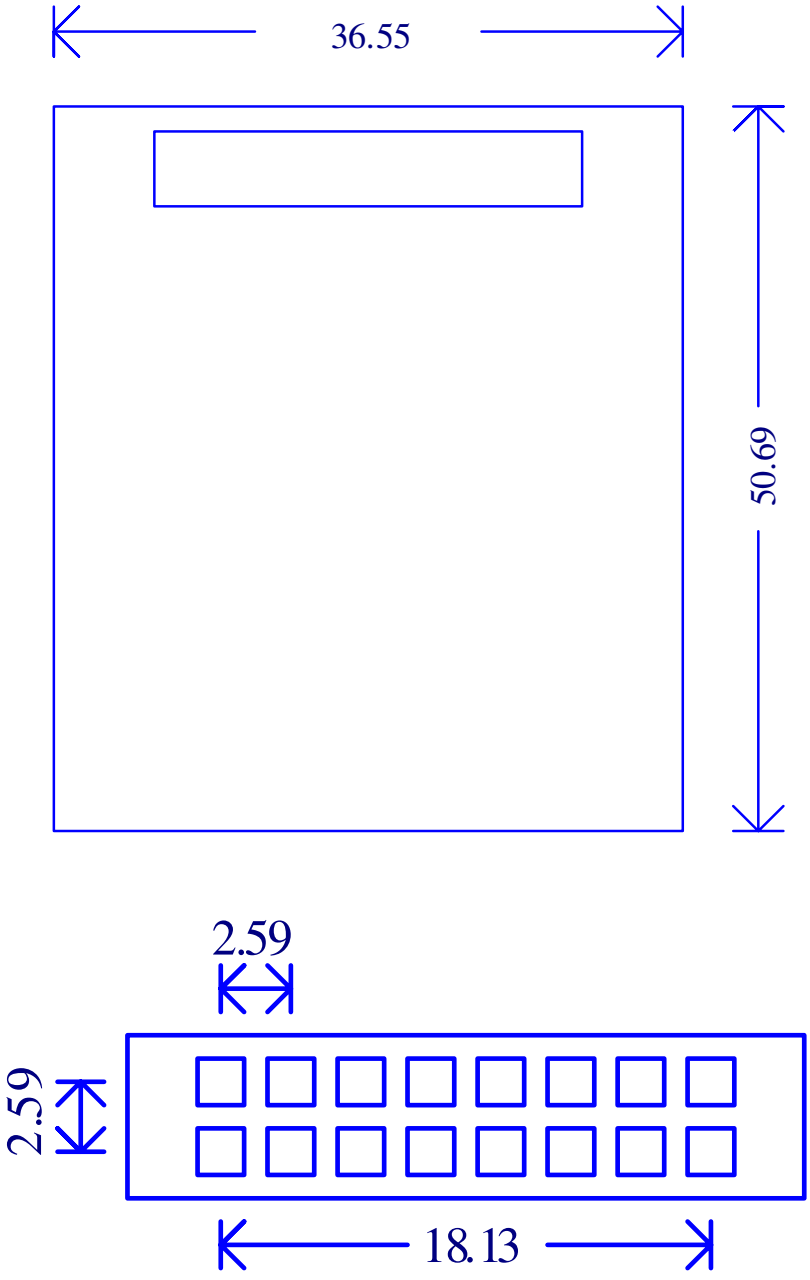
Package：DIP16

Unit：mm



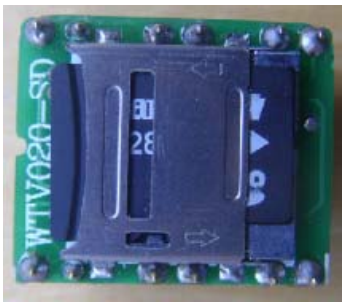
### 10.3、WTV020-SD-20S　MODULE

Unit：mm



## 11.SUPPLY INFORMATION

In order to save customers production cost ,and good looking, we are not only sell modules, also we can sell the chips on the module.customers can make it on their circuit board.

| ITEM | PICTURE |
|---|---|
| WTV020-SD-16P |  |
| WTV020-SD-20S | |
| WTV020SD-20S<br>(above two modules use this chip) | |

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Fax: 86-20-85638637