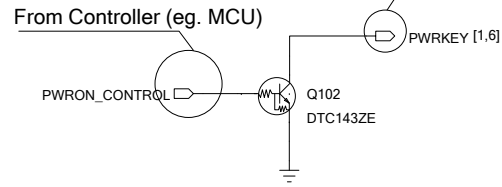
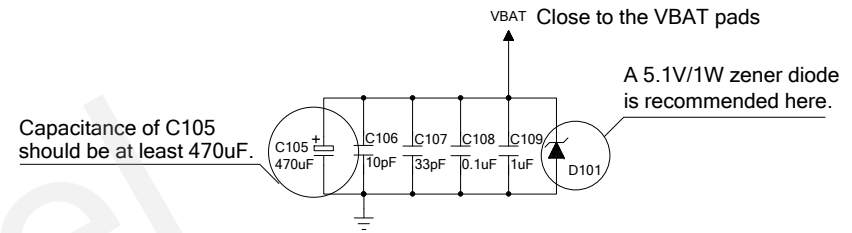


# Module Design

It is used to power on&off the module.



Recommended circuit for turning on/off the module.

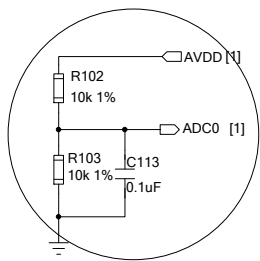


Capacitance of C105 should be at least 470uF.

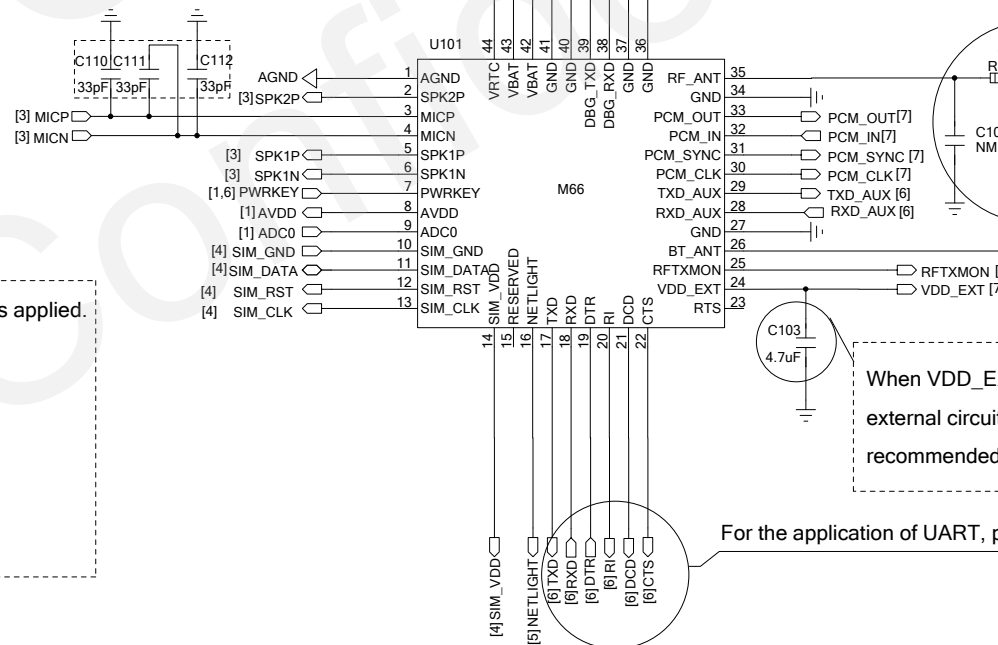
A 5.1V/1W zener diode is recommended here.

1. VBAT ranges from 3.3V to 4.6V.
2. Module drains the maximum current around 1.6A in burst time (577us).
3. The width of VBAT trace is recommended to be > 2mm.

## Reference circuit of ADC



Place all these capacitors close to the module.

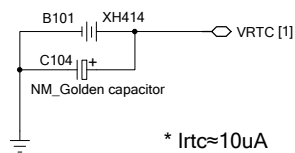


Debug UART is used for SW debug .  
If unused, keep them open.

For RF layout, please refer to RF\_Layout\_Application\_Note.  
A pi match circuit is recommended to be added between the RF connector and RF\_ANT pad.

Charge golden capacitor or battery when VBAT is applied.

If unused, keep VRTC open.



\* Irtc≈10uA

When VDD\_EXT=2.8V is used for supplying external circuit, Iout\_max=20mA, it is recommended to add a 4.7uF or 2.2uF capacitor.

For the application of UART, please refer to the "Serial Interface" sheet.



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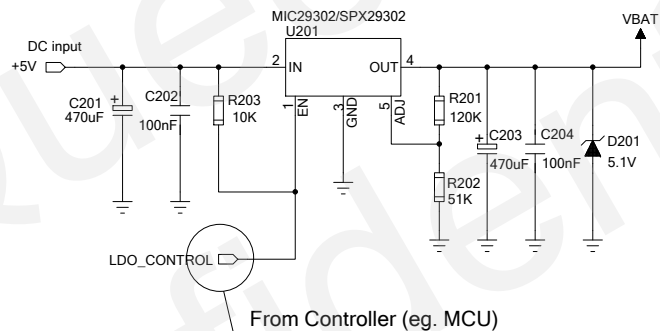
# Power Supply

## NOTE

The voltage converter should provide current at least 2.0A.

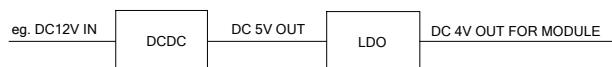
## LDO Application

It is used when the DC input voltage is below 7V.



## DC-DC Application

1. It can be used when the input voltage is above 7V in vehicle application.
2. Use DCDC to convert high input voltage to 5V and LDO will generate 4V typical voltage for the module.

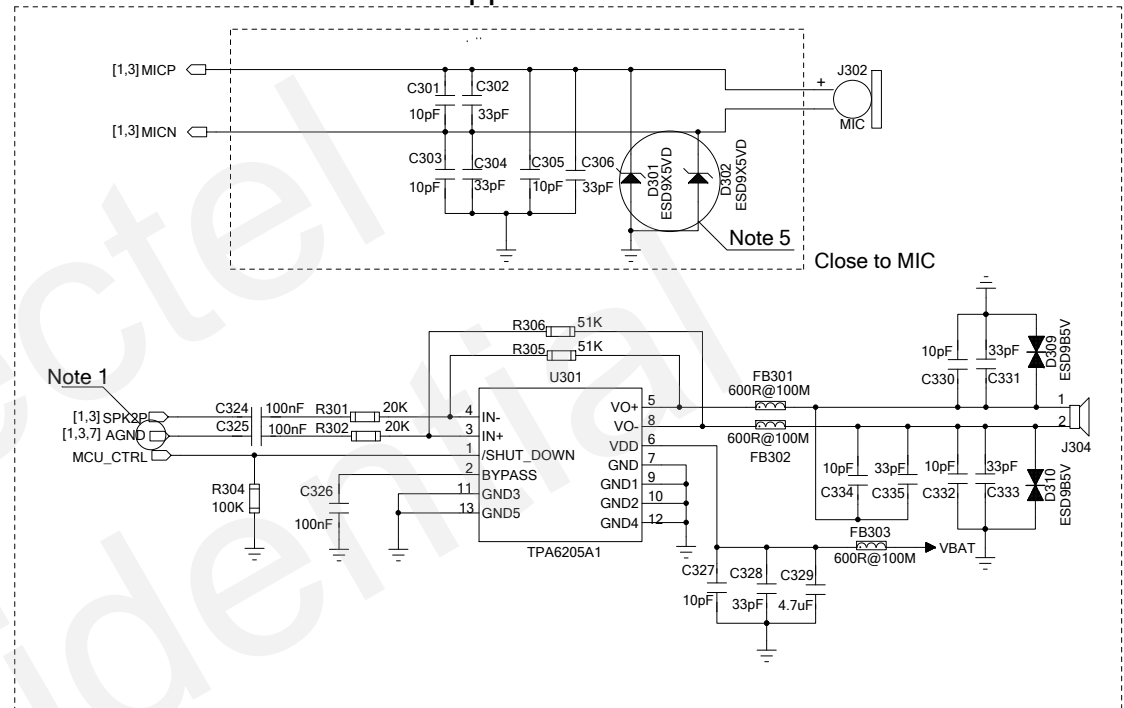


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# Audio Design

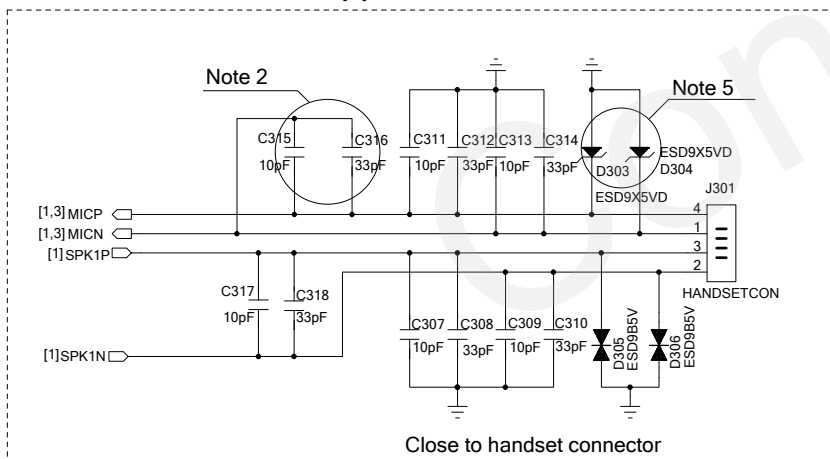
## Hands-free Application of AIN/AOUT2



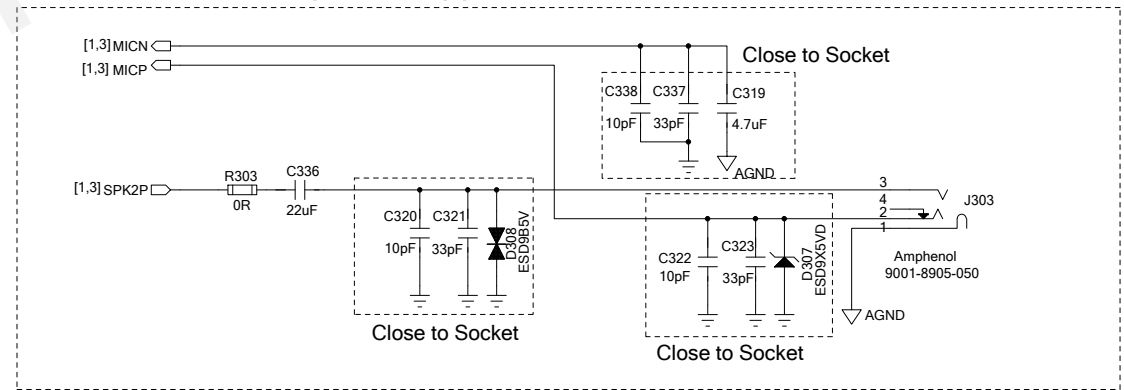
## NOTES

1. AGND is recommended to be routed separately.
2. 10pF & 33pF capacitors are used for filtering TDD noise.
3. AIN has bias voltage of microphone inside the module.
4. Both AOUT1 and AOUT2 are capable of driving 32ohm load.
5. These components are used to enhance the ESD performance of MIC lines, it is strongly recommended to reserve them.

## Handsets Application of AIN/AOUT1



## Earphone Application of AIN/AOUT2

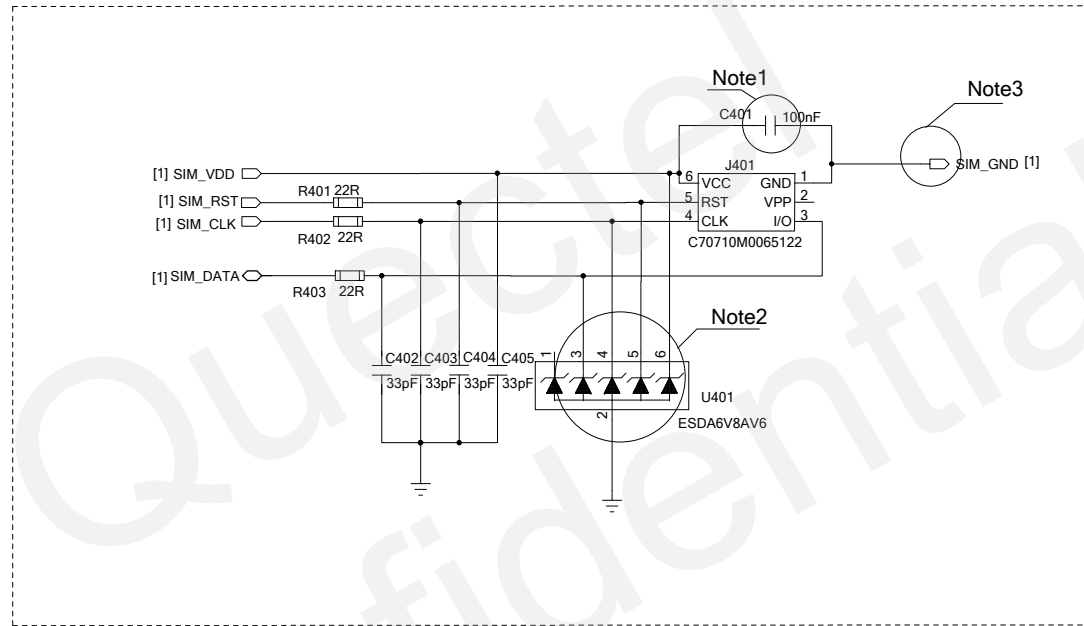


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# SIM Card

## SIM Card Interface



### NOTES

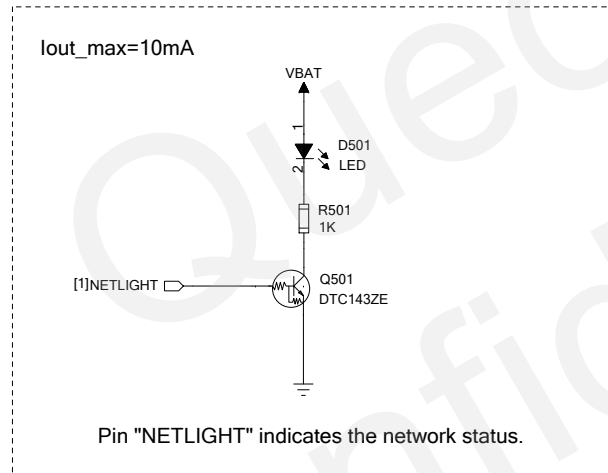
1. The value of C401 should be less than 1uF.
2. U401 is used for protecting SIM card against ESD, and the junction capacitance should be less than 50pF. It should be placed nearby SIM card holder J401.
3. For M66 module, Ground of SIM card is recommended to be routed to the Pin 10("SIM\_GND") of the module separately.

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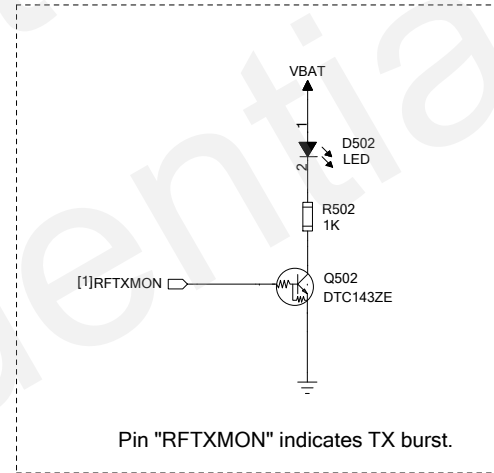
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# Indication

## LED Indication



## RF Indication



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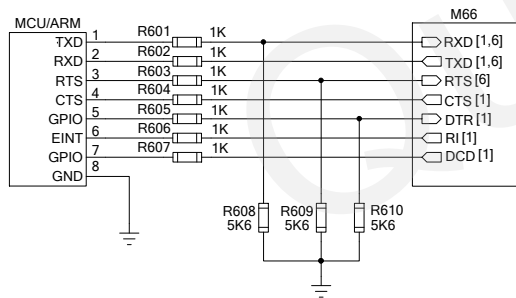
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# Serial Interface

Electric characteristics of module's input and output port:

$VOH_{min} = 0.85 * VDD\_EXT$   
 $VOL_{max} = 0.15 * VDD\_EXT$   
 $VIL_{max} = 0.25 * VDD\_EXT$   
 $VIH_{min} = 0.75 * VDD\_EXT$   
 $VIH_{max} = VDD\_EXT + 0.3V$   
 $VDD\_EXT = 2.8V$  (typical value)

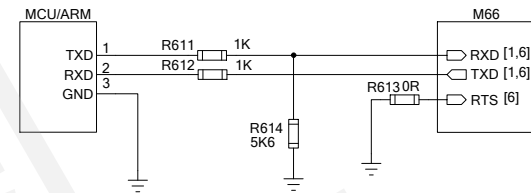
## Connection of All Functional UART Port for 3.3V System



### NOTES

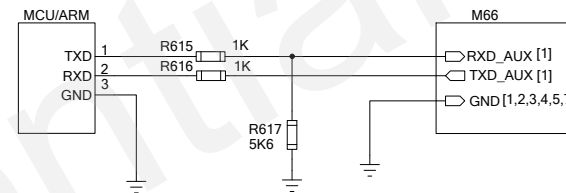
- CTS&RTS will be used for HW flow control when mass data has been sent.
- When AT+QSCLK=1 is set on the module, customer's application can control the module to enter into or exit from the sleep mode through the pin DTR. When DTR is set to high level, and there is no on-air or hardware interrupt, such as GPIO interrupt or data on serial port, the module will enter into sleep mode automatically.
- RI will output a indication signal when activity such as voice call, GPRS data, or SMS is coming.
- DCD is mainly applied in modem communication (PPP), the active status represents the communication link has been set up.
- Please pay attention to the level match of UART in product application.

## Connection of Three-line UART Port for 3.3V System



\* Please pay attention to the level match of UART in product application.

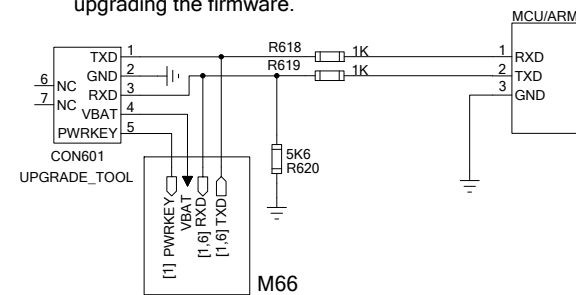
## Connection of Three-line AUX\_UART Port for 3.3V System



\* Please pay attention to the level match of UART in product application.

## Connection of Upgrade Tool for 3.3V System

It is recommended to reserve the points for upgrading the firmware.



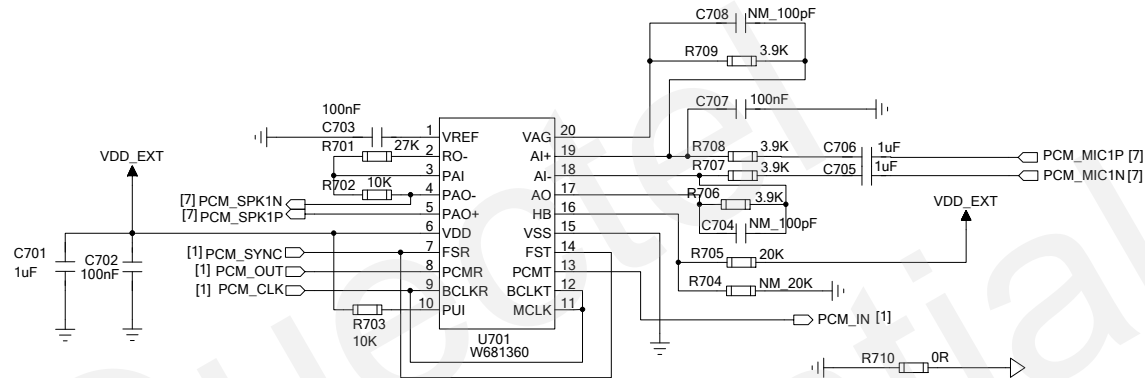
\* Please pay attention to the level match of UART in product application.

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# PCM Design

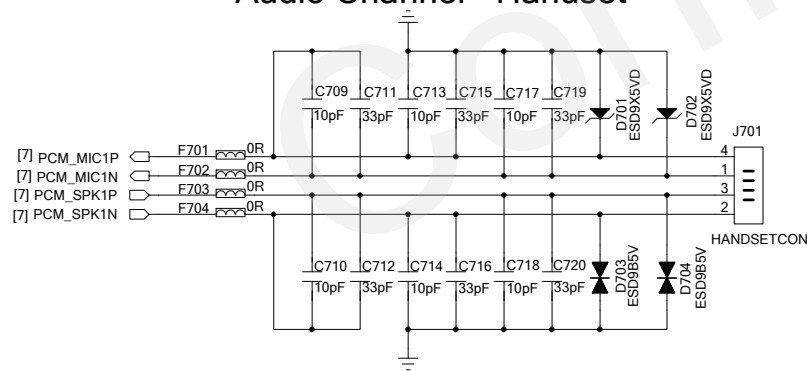
## PCM Codec Circuit



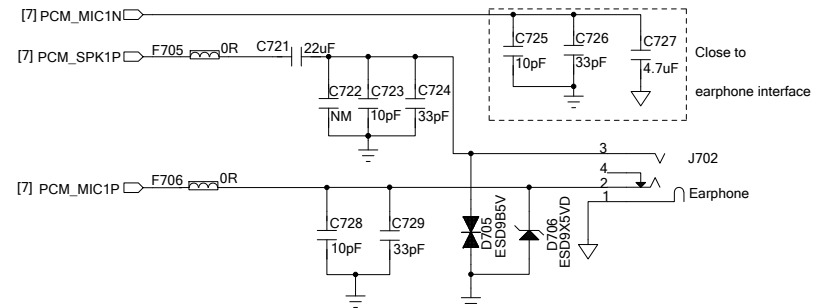
### Note:

The firmware supports W681360 application without additional software configuration by default. Refer to the document M66\_AT\_Commands\_Manual for details.

## Audio Channel - Handset



## Audio Channel - Earphone



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