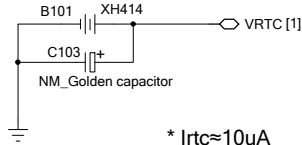


# Moudle Design

Charge golden capacitor or battery when VBAT is applied.

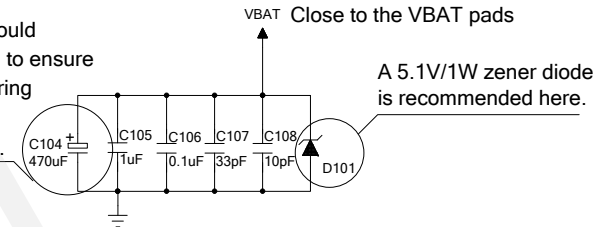
If unused, keep VRTC open.



\* Irtc=10uA

\* As only powering the VRTC pin to keep the RTC will lead an error about 5 minutes a day, it is recommended to power VBAT and VRTC pin at the same time when RTC function is needed. For more details, please refer to M26 HD.

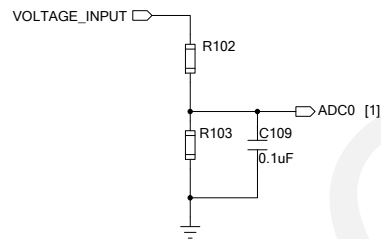
Capacitance of C104 should be chosen by debugging to ensure the max voltage drop during the burst transmission does not exceed 400mV.



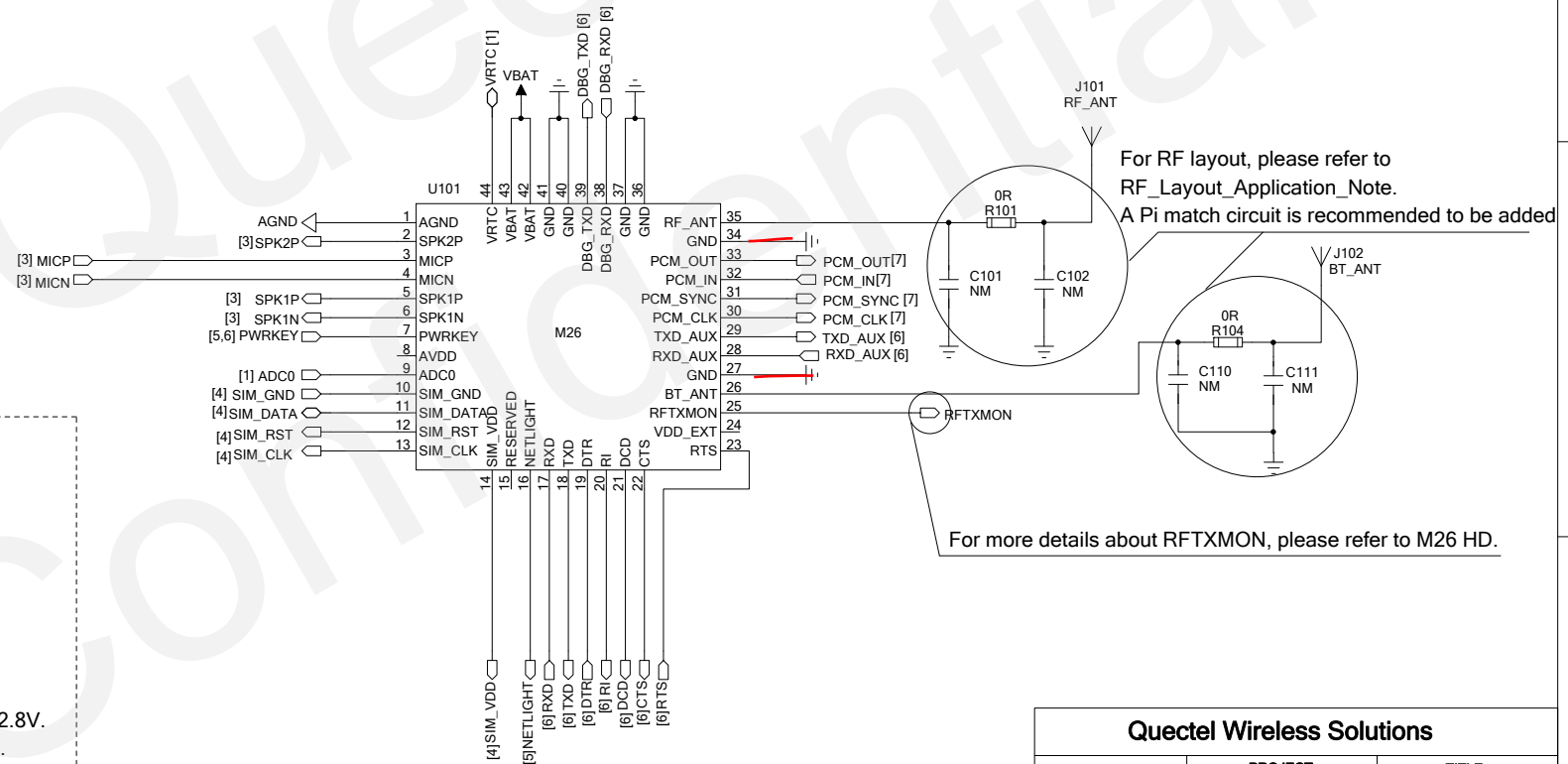
A 5.1V/1W zener diode is recommended here.

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 more than 2mm.
4. Capacitance is arranged in ascending order, the smallest one closes to the VBAT pad, and keep all capacitance as close to the VBAT pad as possible.

## Reference circuit of ADC



- \* The voltage range of ADC input channel is 0 to 2.8V.
- \* Please select a high-precision divider resistance.



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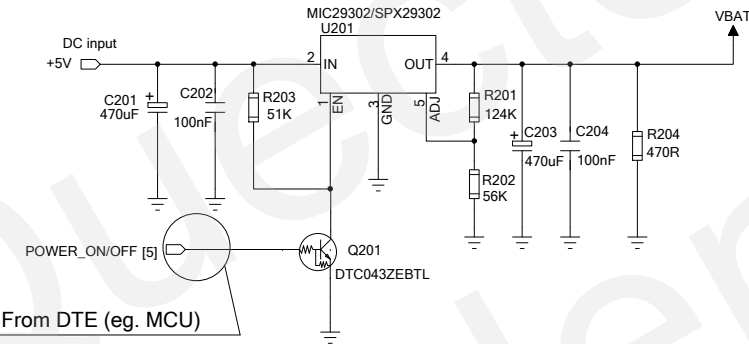
# Power Supply

## NOTE

The voltage converter should provide current at least 2.0A.

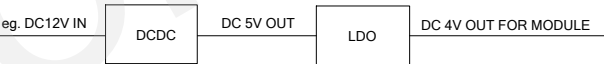
## LDO Application

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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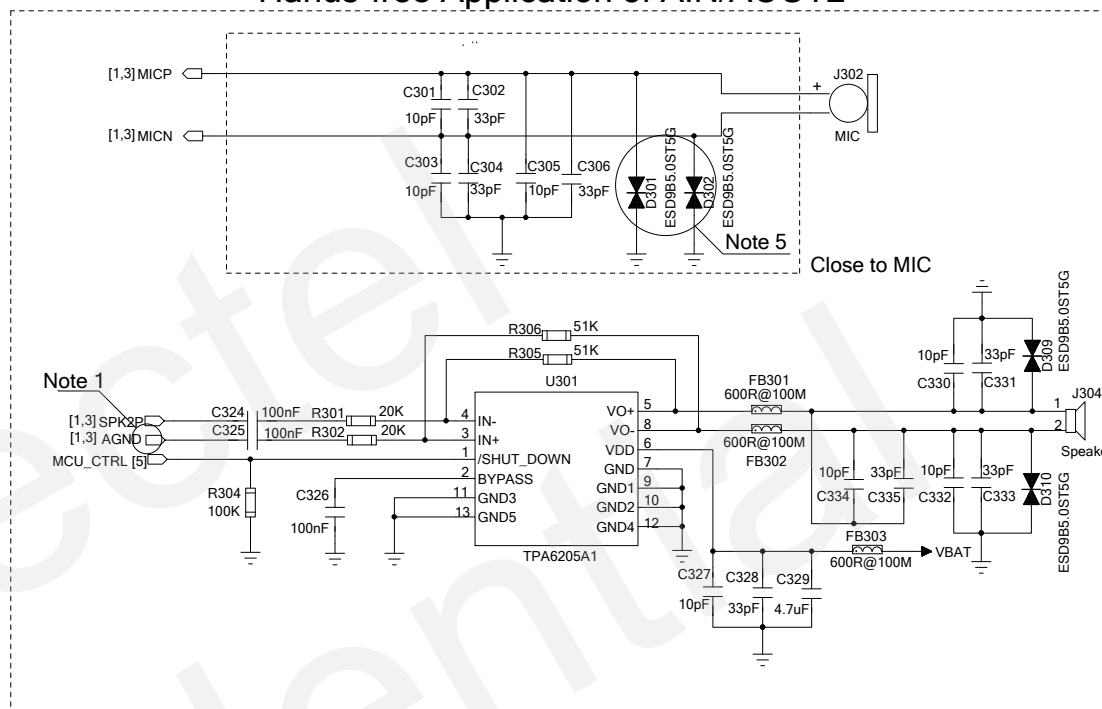
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# Audio Design

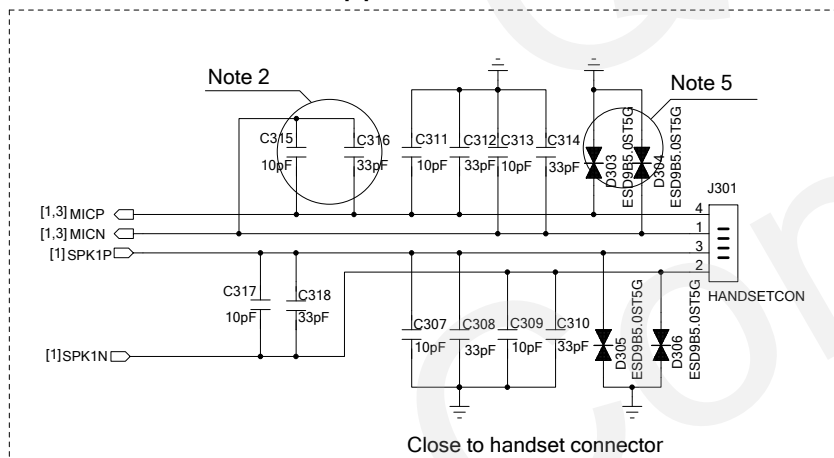
## NOTES

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.
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.

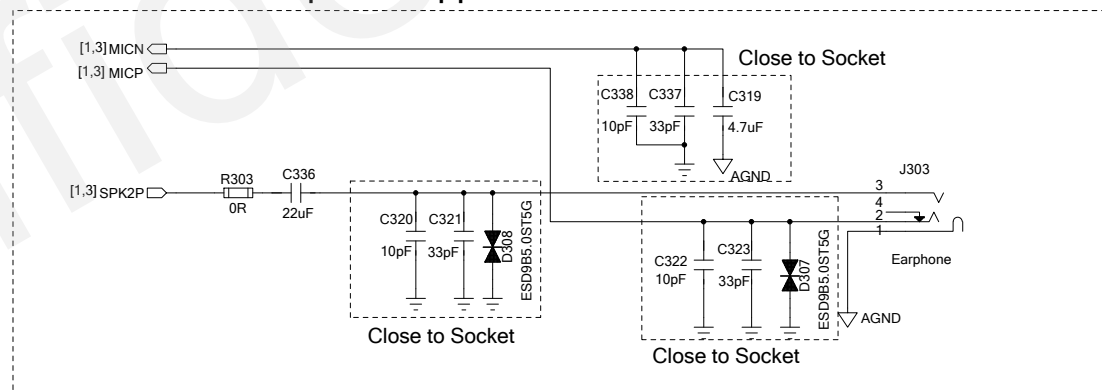
## Hands-free Application of AIN/AOUT2



## Handsets Application of AIN/AOUT1



## Earphone Application of AIN/AOUT2



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## SIM Card Interface

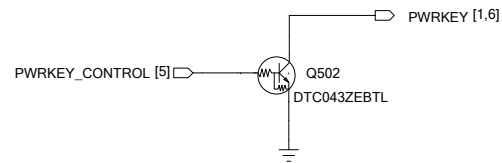


1. The value of C401 should be less than 1uF.
2. U401 is used for protecting SIM card against ESD, and the junction capacitance should be less than 50pF.  
It should be placed nearby SIM card holder J401.
3. For M26 module, Ground of SIM card is recommended to be routed to the Pin 10 ("SIM\_GND") of the module separately.

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# Drive

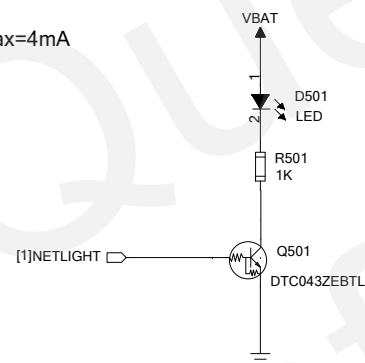
## Turn On/Off



Recommended circuit for turning on/off the module.

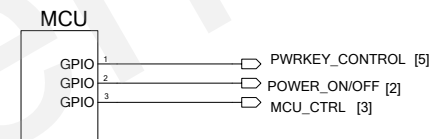
## LED Indication

Iout\_max=4mA



Pin "NETLIGHT" indicates the network status.

## MCU GPIO



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# Serial Interface

Electric characteristics of module's input and output port:

$VOH_{min}=0.85 \times VDD\_EXT$

$VOL_{max}=0.15 \times VDD\_EXT$

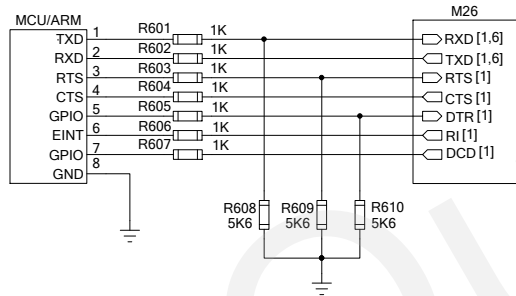
$VIL_{max}=0.25 \times VDD\_EXT$

$VIH_{min}=0.75 \times VDD\_EXT$

$VIH_{max}=VDD\_EXT+0.2V$

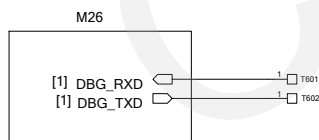
$VDD\_EXT=2.8V$  (typical value)

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



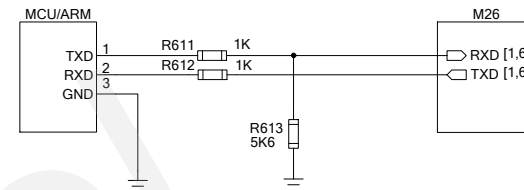
### NOTES

1. CTS&RTS will be used for HW flow control when mass data has been sent.
2. When AT+QSCCLK=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.
3. RI will output an indication signal when activity such as voice call or SMS is coming.
4. DCD is mainly applied in modem communication (PPP), the active status represents the communication link has been set up.
5. Please pay attention to the level match of UART in product application.



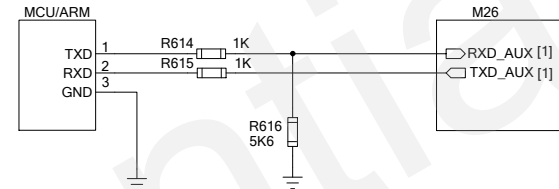
It is recommended to reserve the points for debug port.

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



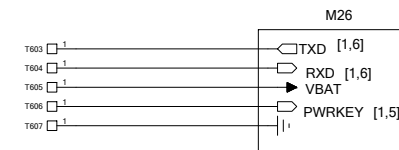
\* Please pay attention to the level match of UART in product application.

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



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

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

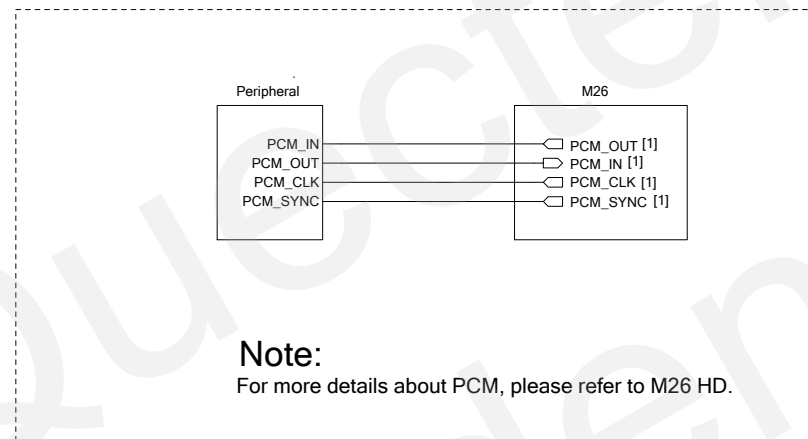


\* Please pay attention to the level match of UART in product application.

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# PCM Design



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