

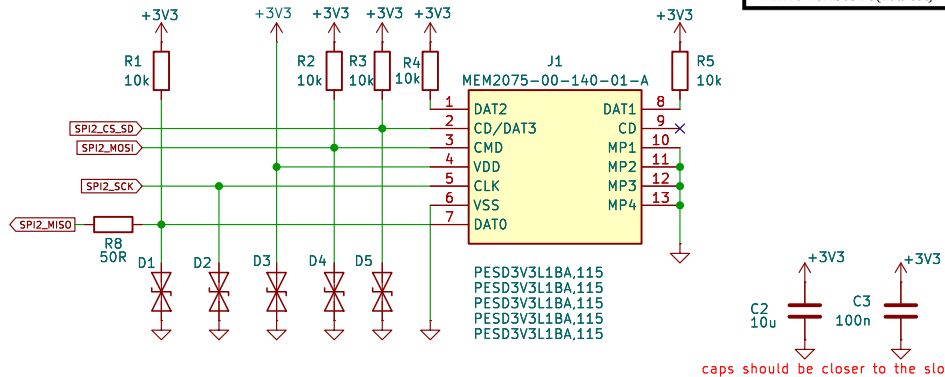
SD slot (mostly for dev purposes)

The extended DAT lines (DAT1-DAT3) are input on power up. They start to operate as DAT lines after the SET_BUS_WIDTH command. Pull-up video

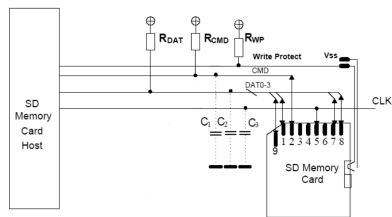
external pullup resistors to all data lines even if only DAT0 is to be used. Otherwise, non-expected high current consumption may occur due to the floating inputs of DAT1 & DAT2 (in case they are not used).

MicroSD Card SPI mode:

1. DAT3 works as CS(chip select);
2. CMD works as DI(Data In);
3. CLK works as Clock;
4. DAT0 works as DO(Data out).



Bus circuitry – datasheet link

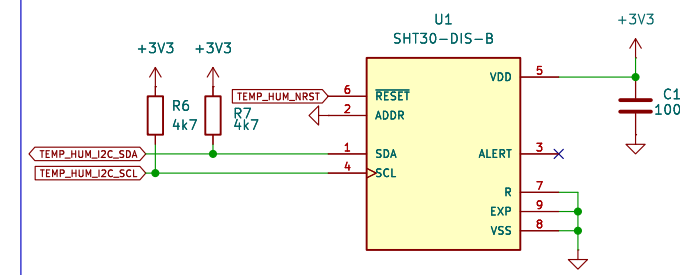


Bus Circuitry Diagram

Total Bus Capacitance = CHOST + CBUS + N CCARD					
Parameter	symbol	Min	Max	Unit	Remark
Pull-up resistance	R_{ODAT}	10	100	kΩ	to prevent bus floating
Total bus capacitance for each signal line	C_L		40	pF	1 card CHOST+CBUS shall not exceed 30 pF
Card Capacitance for each signal pin	CCARD		10	pF	
Maximum signal line inductance			16	nH	
Pull-up resistance inside card (pin1)	RDAT3	10	90	kΩ	May be used for card detection
Capacity Connected to Power Line	CC		5	uF	To prevent inrush current

Temperature & humidity sensor

select I2C pins (GPIO matrix – probably)
GPIO05, GPIO06



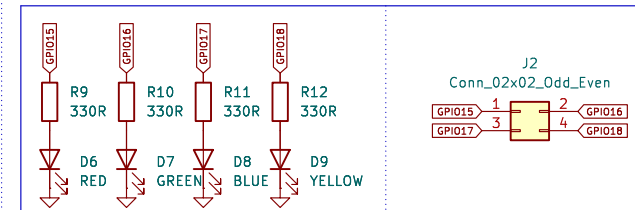
Both SCL and SDA lines are open-drain I/Os with diodes to VDD and VSS. They should be connected to external pull-up resistors (please refer to Figure 11). A device on the I2C bus must only drive a line to ground. The external pull-up resistors (e.g. $R_p=10\text{ k}\Omega$) are required to pull the signal high. For dimensioning resistor sizes please take bus capacity and communication frequency into account (see for example Section 7.1 of NXP's I2C Manual for more details¹⁾). It should be noted that pull-up resistors may be included in I/O circuits of microcontrollers. It is recommended to wire the sensor according to the application circuit as shown in Figure 11.

3.6 nRESET Pin

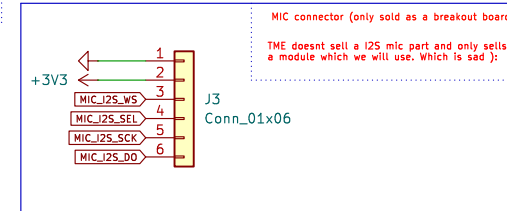
The nReset pin may be used to generate a reset of the sensor. A minimum pulse duration of 1 μs is required to reliably trigger a reset of the sensor. Its function is explained in more detail in section 4. If not used it is recommended to leave the pin floating or to connect it to VDD with a series resistor of $R \geq 2\text{ k}\Omega$. However, the nRESET pin is internally connected to VDD with a pull up resistor of $R = 50\text{ k}\Omega$ (typ.).

Pin	Name	Comments
1	SDA	Serial data; input / output
2	ADDR	Address pin; input; connect to either logic high or low, do not leave floating
3	ALERT	Indicates alarm condition; output; must be left floating if unused
4	SCL	Serial clock; input / output
5	VDD	Supply voltage; input
6	nRESET	Reset pin active low; input; if not used it is recommended to be left floating; can be connected to VDD with a series resistor of $R \geq 2\text{ k}\Omega$
7	R	No electrical function; to be connected to VSS
8	VSS	Ground

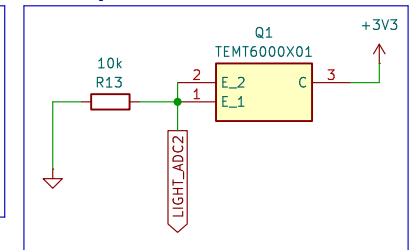
GPIO



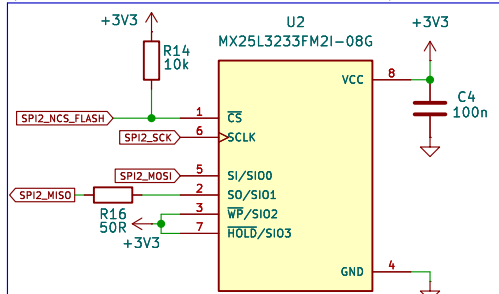
I2S mic



Ambient light sensor



FLASH memory (DO NOT SOLDER ON MAIN BOARD – DEV USE ONLY)



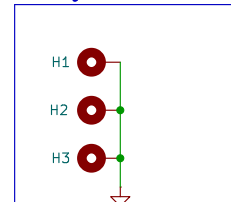
GPIO matrix(PAGE 487)

Why is there no pull-up resistor on the /WP and /HOLD pins?
Since these pins will be permanently high we don't need the resistors.
We need pullup resistors when we know the state of the line is going to change.
When for example MOSI goes low and there is a connection straight to 3V3 we would create a short circuit thus destroying the pin. When there is a pull-up no short circuit will be created since there is load between 3V3 and GND

Test points

TP1	TEMP_HUM_I2C_SDA	TP2	SPI2_SCK
TP3	TEMP_HUM_I2C_SCL	TP4	SPI2_MISO
TP5	MIC_I2S_WS	TP6	SPI2_MOSI
TP7	MIC_I2S_SEL	TP8	SPI2_CS_SD
TP9	MIC_I2S_SCK	TP10	SPI2_NCS_FLASH
TP11	MIC_I2S_DO	TP12	LIGHT_ADC2

Mounting holes



Sheet: /

File: kitchen-pcb.kicad_sch

Title: ESP32 board – root

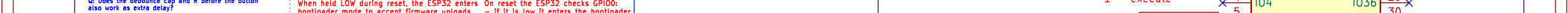
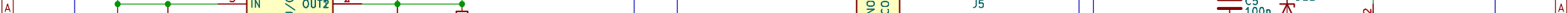
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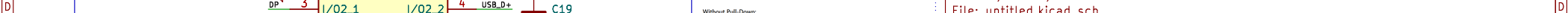
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1	2	3	4	5	6
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CC1 A5 CC2 B5



3	4	5	6
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Pin 12: GPIO18 (UART TX)



RC must be close to the ESP module

~~C16~~ ~~C17~~ ~~C18~~ ~~24~~ ~~25~~ ~~1047~~ ~~GND_11~~ ~~49~~

With Pull-Down (correct):

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