

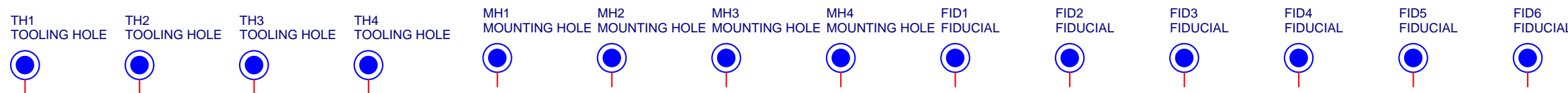
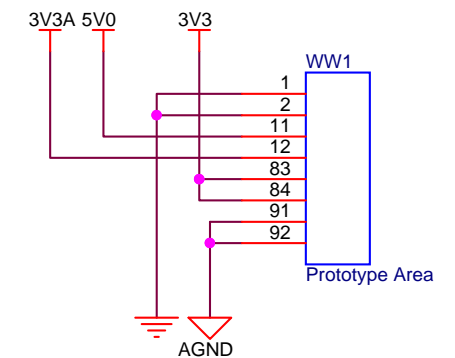
# RENESAS DEVELOPMENT KIT FOR RL78G13

## REVISION HISTORY

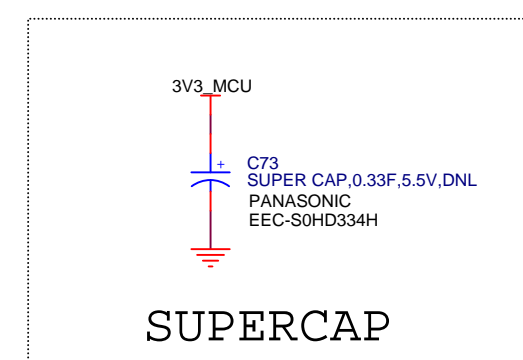
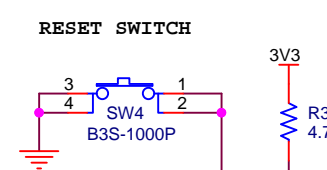
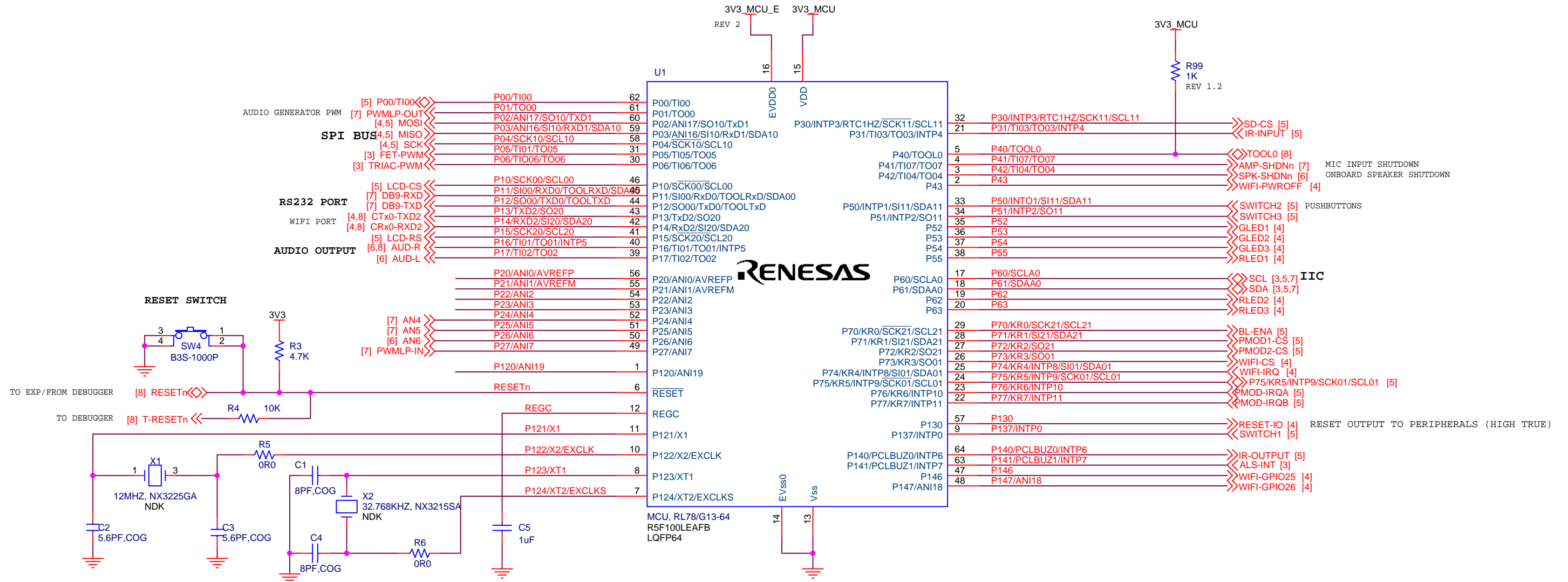
REV 1.0	07/18/2011	INITIAL RELEASE
REV 1.1	08/11/2011	CORRECT EEPROM WP CONNECTIVITY
REV 1.2	08/15/2011	ADD 1K PULLUP TO TOOL0
REV 2.0	08/30/2011	PRODUCTION RELEASE
REV 2.1	11/02/2011	LOAD FET CIRCUITRY CHANGE TO NDK CRYSTALS AND SPECIFIED CAPS

PAGE	DESCRIPTION
1	INDEX
2	RL78G13 MCU
3	FET/TRIAC/EEPROM/ALS
4	REDPINE WIFI/PWR INPUT/LEDS
5	OKAYA LCD/PBTN/BEAGLE/uSD/IR/PMOD
6	NSC AUDIO OUTPUT
7	ADI MIC/ACCEL/TEMP/RS232
8	USB DEBUGGER

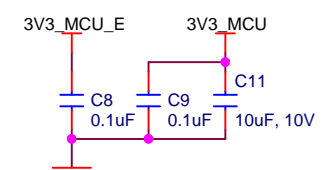
**NOTE:**  
**R : FIXED RESISTOR**  
**VR : POTENTIOMETER**  
**U : INTEGRATED CIRCUIT**  
**X : CRYSTAL**  
**SW : PUSHBUTTON/DIP SWITCH**  
**LED : LIGHT EMITTING DIODE**  
**J : CONNECTOR, JUMPER**  
**L : FERRITE BEAD/INDUCTOR**  
**D : DIODE**



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J17	RL78 PINS	J18
P120/ANI19	64	P140/PCLBUZ0/INTP6
P43	63	P141/PCLBUZ1/INTP7
P42/TI04/TO04	62	P00/TI00
P41/TI07/TO07	61	P01/TO00
P40/TOO0	60	P02/ANI17/SO10/TXD1
RESETEn	59	P03/ANI16/SI10/RXD1/SDA10
	58	P04/SCK10/SCL10
	57	P130
	56	P20/ANI0/AVREFP
	55	P21/ANI1/AVREFM
	54	P22/ANI2
	53	P23/ANI3
	52	P24/ANI4
	51	P25/ANI5
	50	P26/ANI6
	49	P27/ANI7
	48	P147/ANI18
	47	P146
	46	P10/SCK00/SCL00
	45	P11/SI00/RXD0/TOOLRXD/SDA00
	44	P12/SO00/TXD0/TOOLTxD
	43	P13/TXD2/SO20
	42	P14/RXD2/SI20/SDA20
	41	P15/SCK20/SCL20
	40	P16/TI01/TO01/INTP5
	39	P17/TI02/TO02
	38	P55
	37	P54
	36	P53
	35	P52
	34	P51/INTP2/SO11
	33	P50/INTO1/SI11/SDA11
	32	P30/INTP3/RTC1HZ/SCK11/SCL11
	31	P31/TI03/TO03/INTP4
	30	P06/TIO06/TO06
	29	P05/TIO05/TO05
	28	P02/ANI17/SO10/TXD1
	27	P03/ANI16/SI10/RXD1/SDA10
	26	P04/SCK10/SCL10
	25	P01/TO00
	24	P02/ANI17/SO10/TXD1
	23	P03/ANI16/SI10/RXD1/SDA10
	22	P04/SCK10/SCL10
	21	P05/TIO05/TO05
	20	P06/TIO06/TO06
	19	P10/SCK00/SCL00
	18	P11/SI00/RXD0/TOOLRXD/SDA00
	17	P12/SO00/TXD0/TOOLTxD
	16	P13/TXD2/SO20
	15	P14/RXD2/SI20/SDA20
	14	P15/SCK20/SCL20
	13	P16/TI01/TO01/INTP5
	12	P17/TI02/TO02
	11	P20/ANI0/AVREFP
	10	P21/ANI1/AVREFM
	9	P22/ANI2
	8	P23/ANI3
	7	P24/ANI4
	6	P25/ANI5
	5	P26/ANI6
	4	P27/ANI7
	3	P42/TI04/TO04
	2	P41/TI07/TO07
	1	P40/TOO0



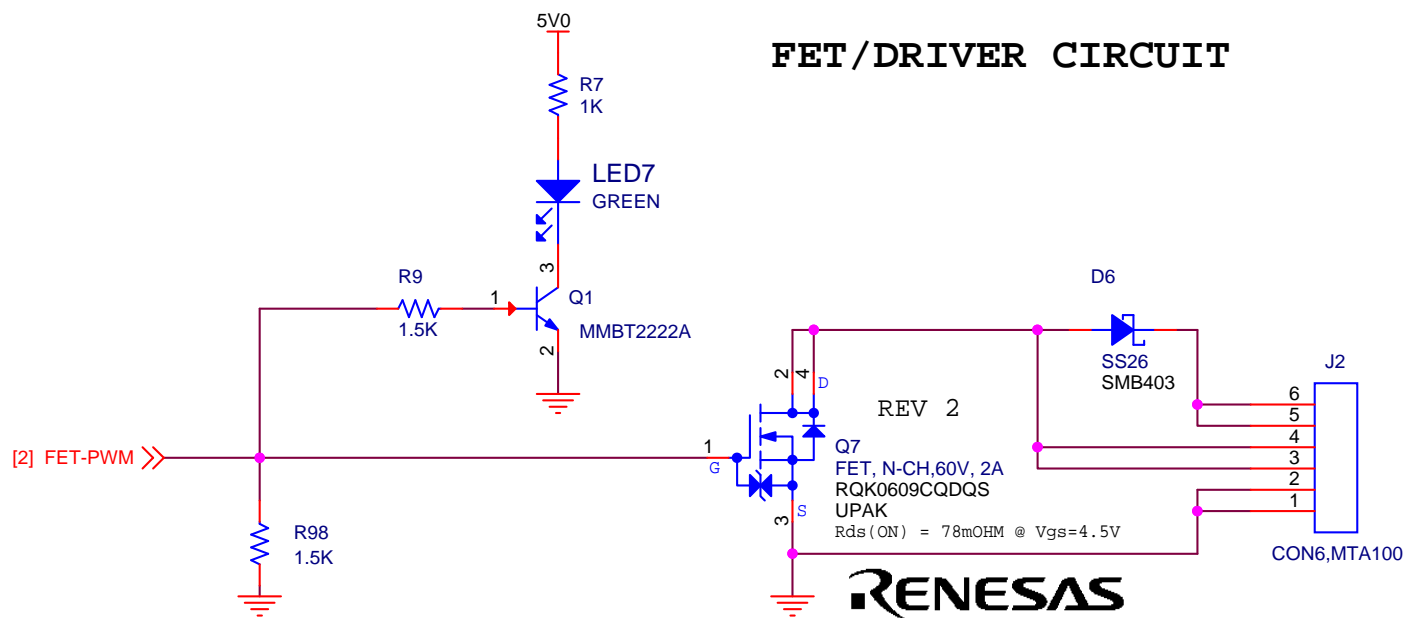
EXPANSION HEADER



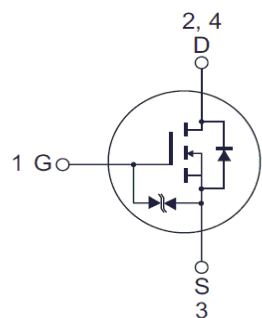
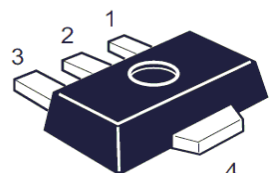
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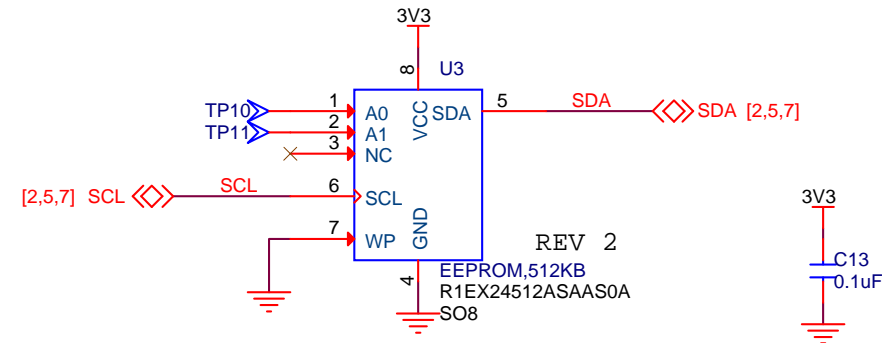
### FET/DRIVER CIRCUIT



REV 2.1 - FET CIRCUITRY LOADED

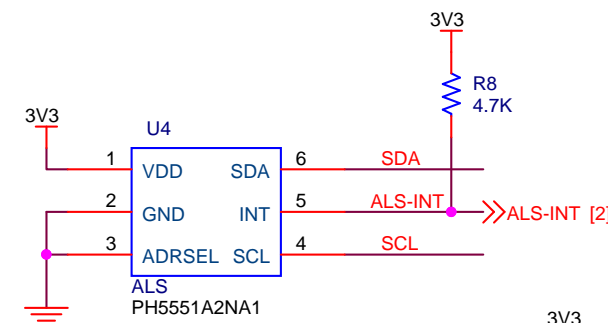


- 1. Gate
- 2. Drain
- 3. Source
- 4. Drain



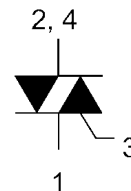
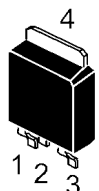
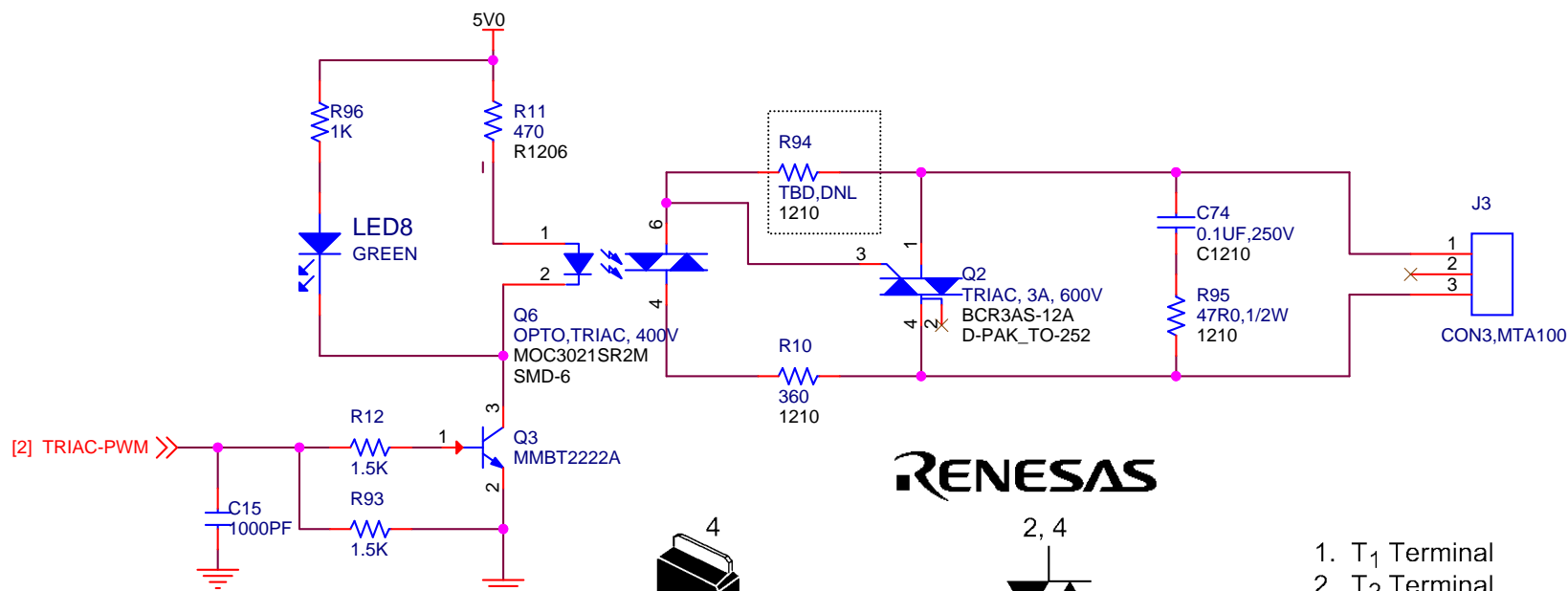
### SERIAL EEPROM STORAGE

I2C ADDR = 0xA0 (1010aaxr)  
 aa = A2:A1 I2C address  
 x = A16 of memory address  
 r=R/Wn, Read/Write

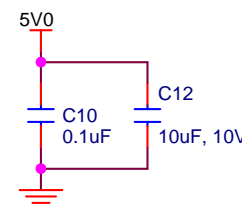


### AMBIENT LIGHT SENSOR

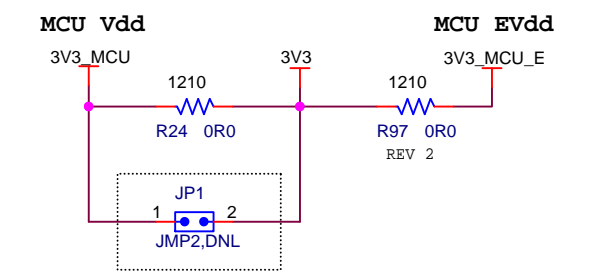
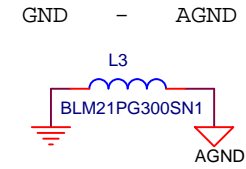
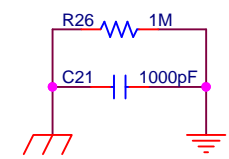
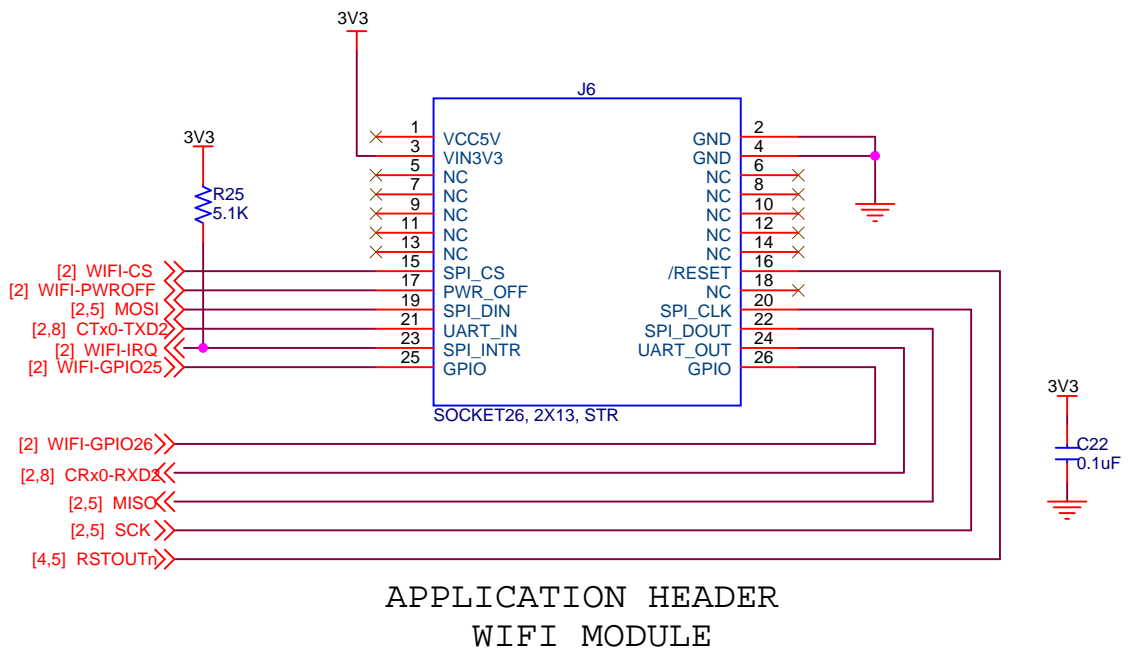
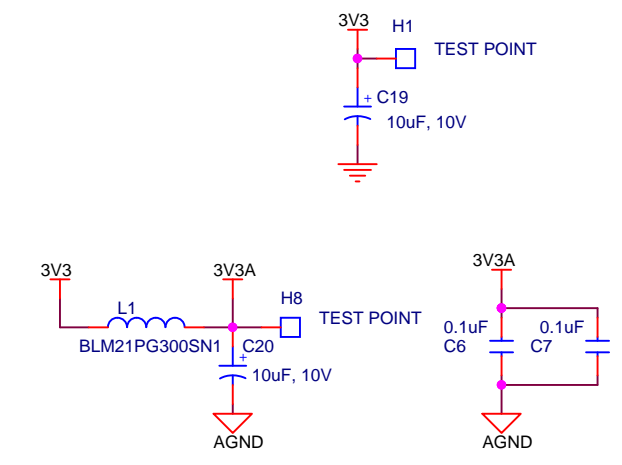
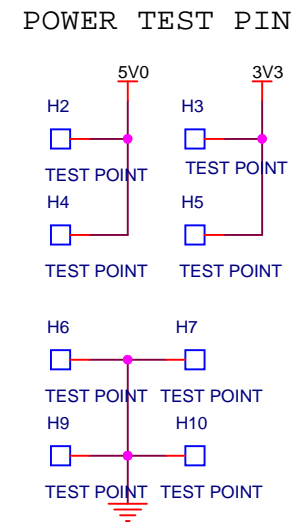
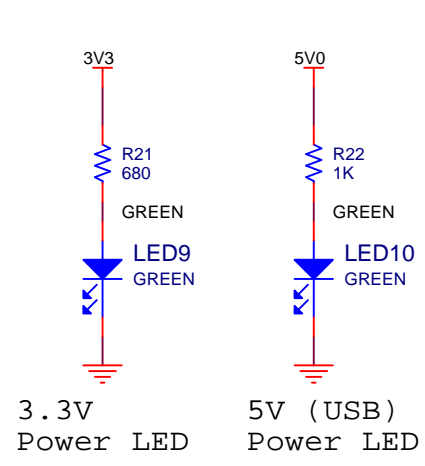
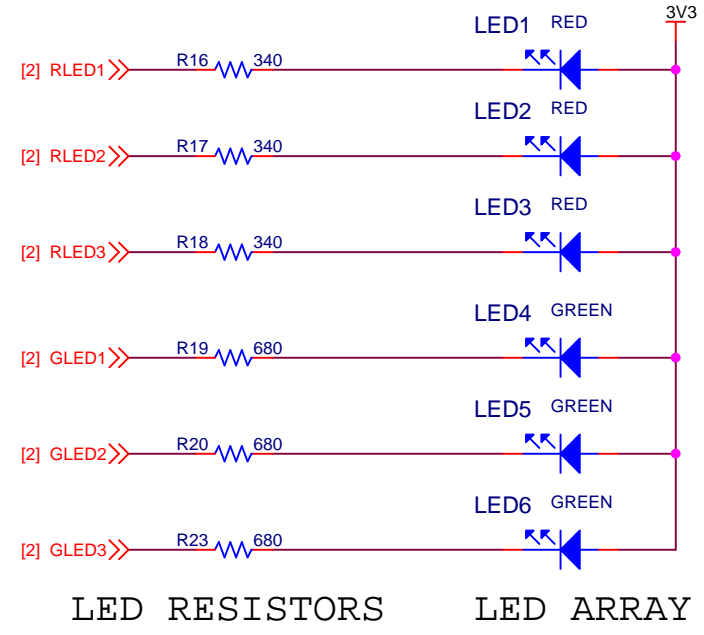
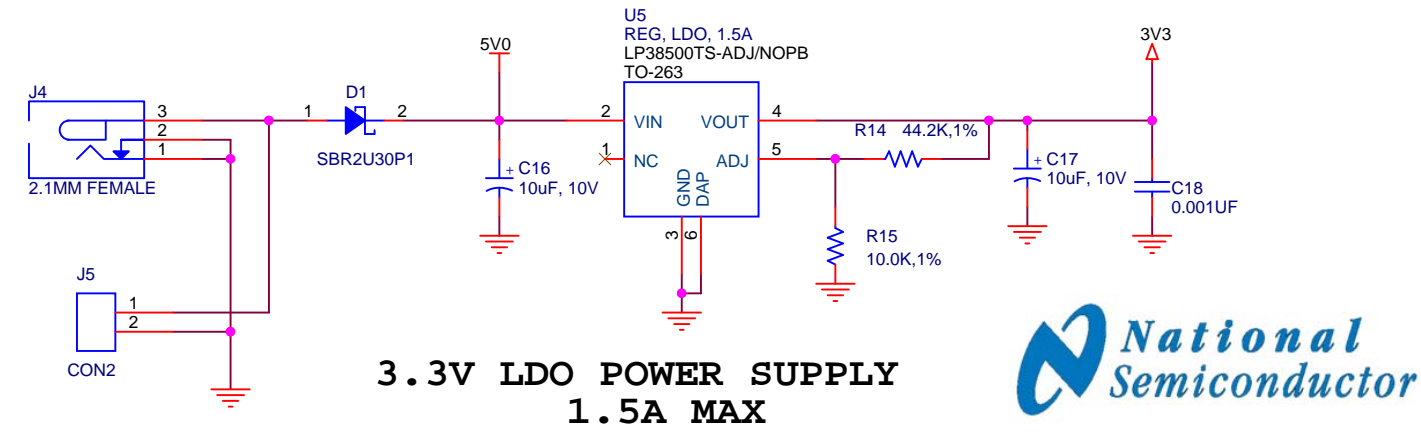
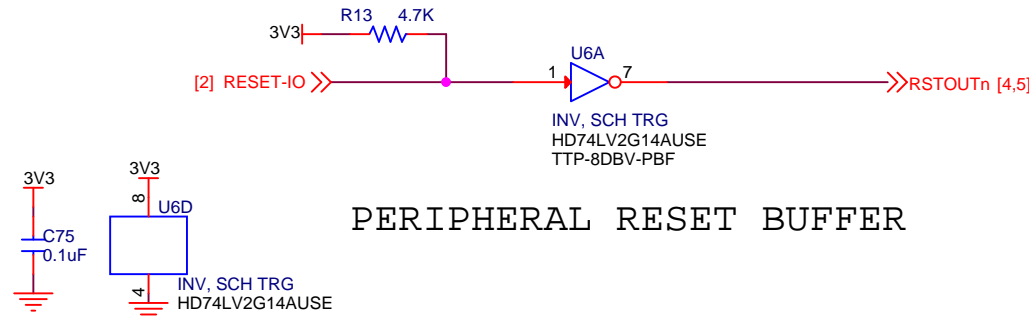
DEFAULT I2C ADDR = 0x72 (0111001r)  
 r=R/Wn, Read/Write



- 1. T<sub>1</sub> Terminal
- 2. T<sub>2</sub> Terminal
- 3. Gate Terminal
- 4. T<sub>2</sub> Terminal



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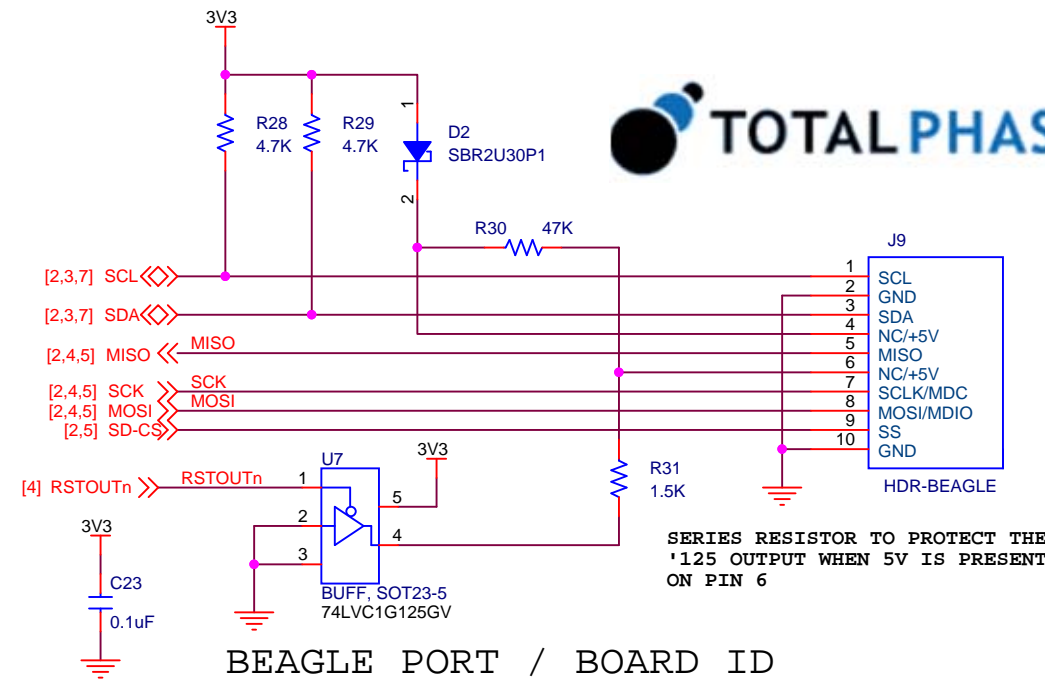
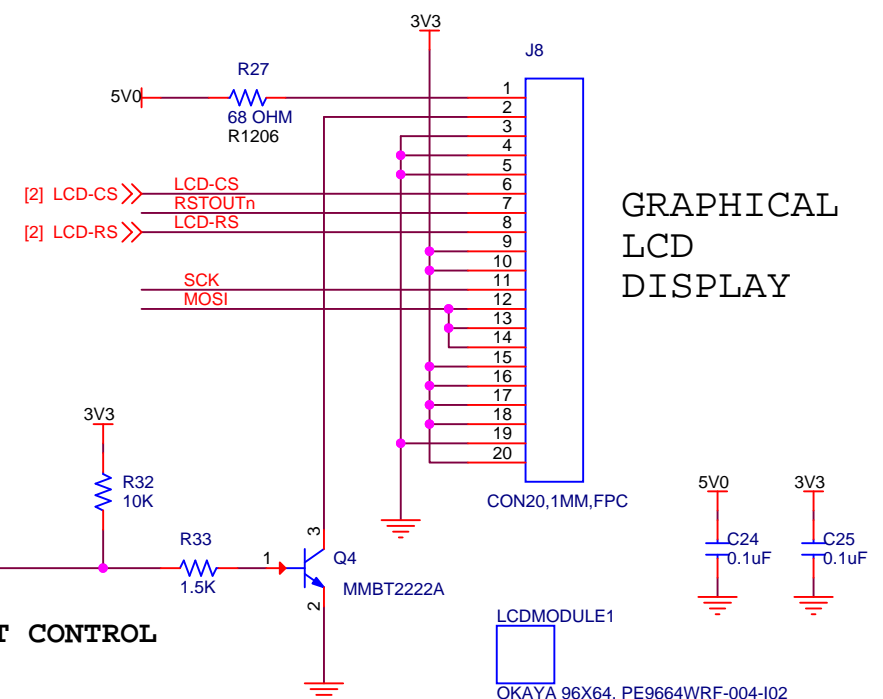


**MCU CURENT MEASUREMENT**  
**NOTE RL78 Vdd REQUIREMENTS:**  
**1.6V <= Evdd <= Vdd <= 5.5V**

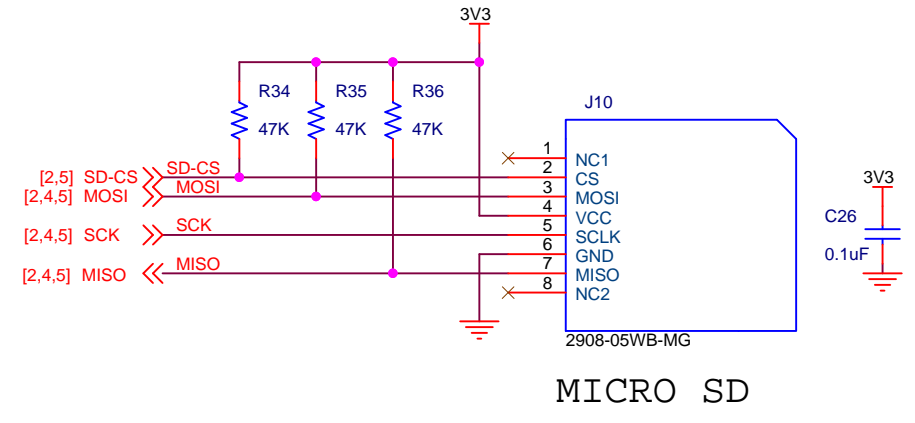
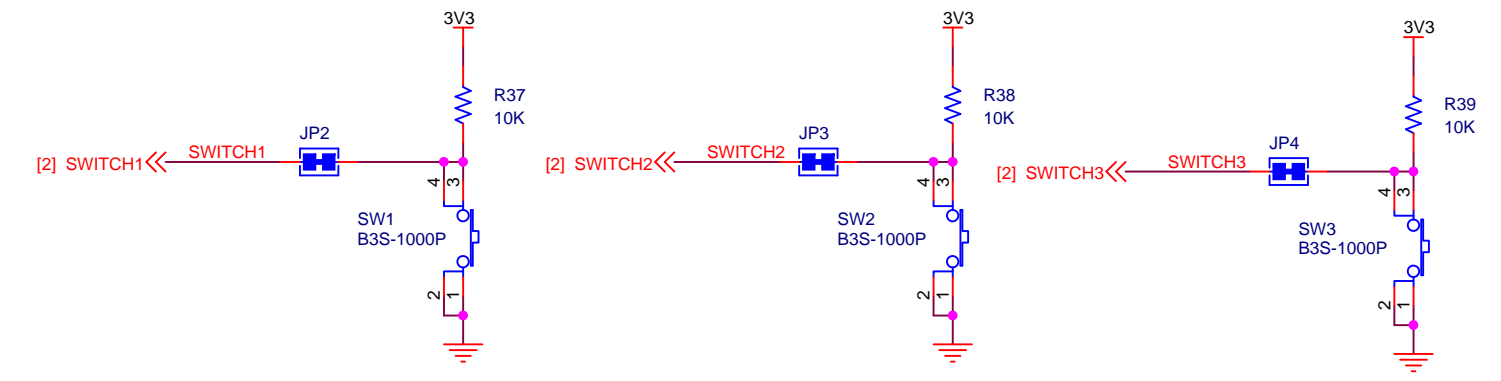
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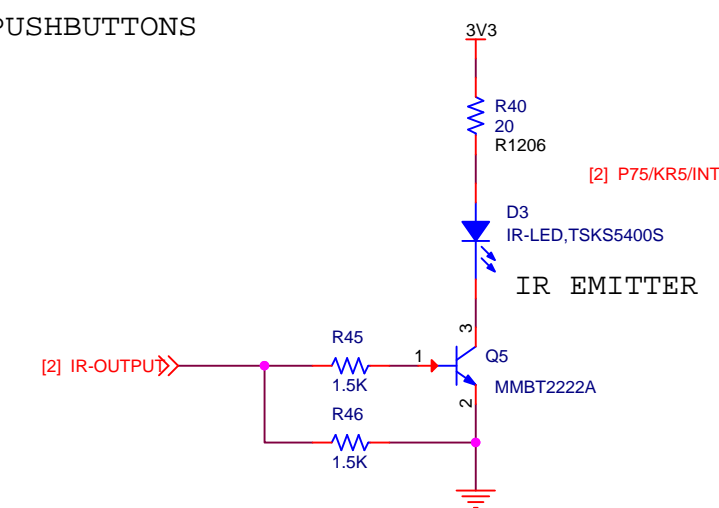
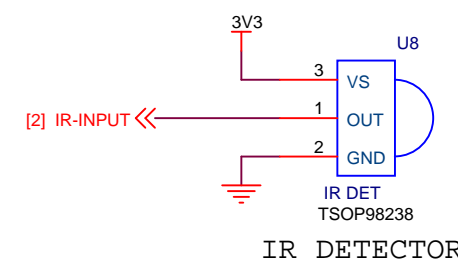
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**BACKLIGHT CONTROL**

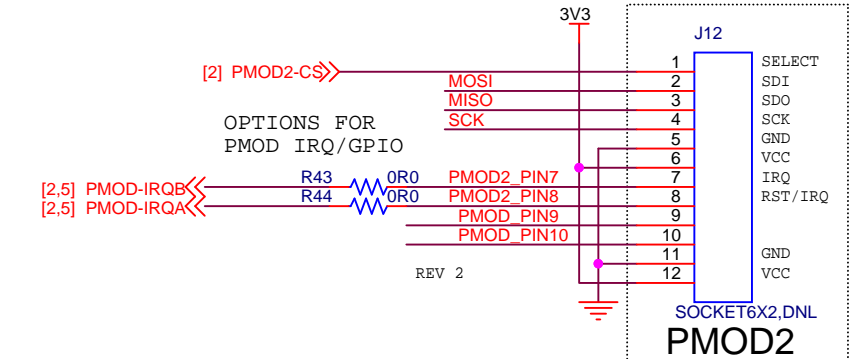
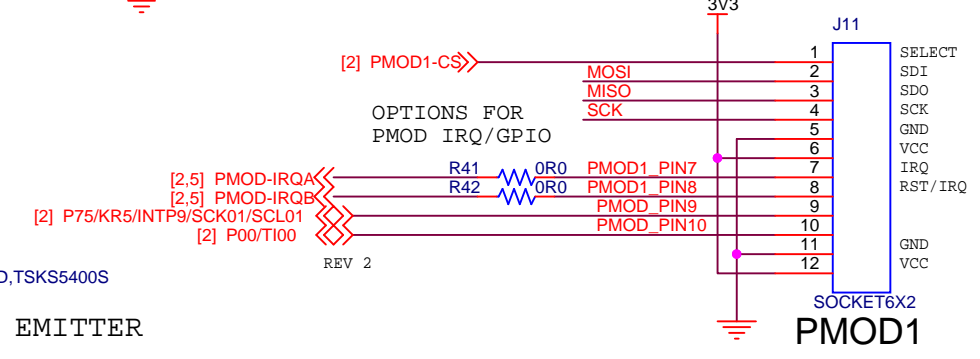
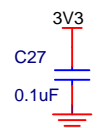


**USER PUSHBUTTONS**



**IR INTERFACES**

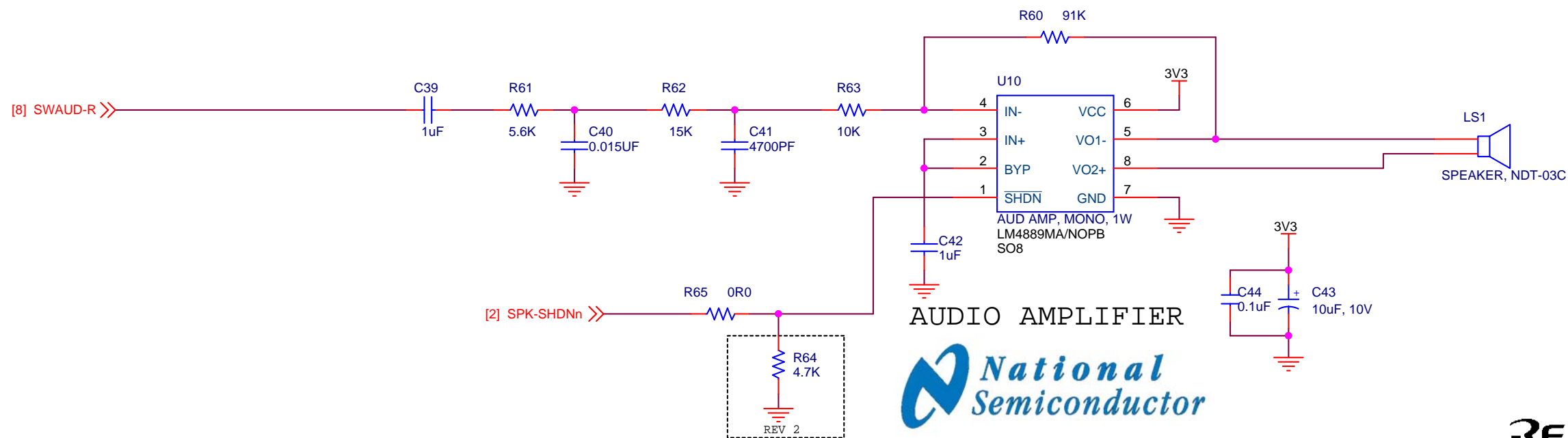
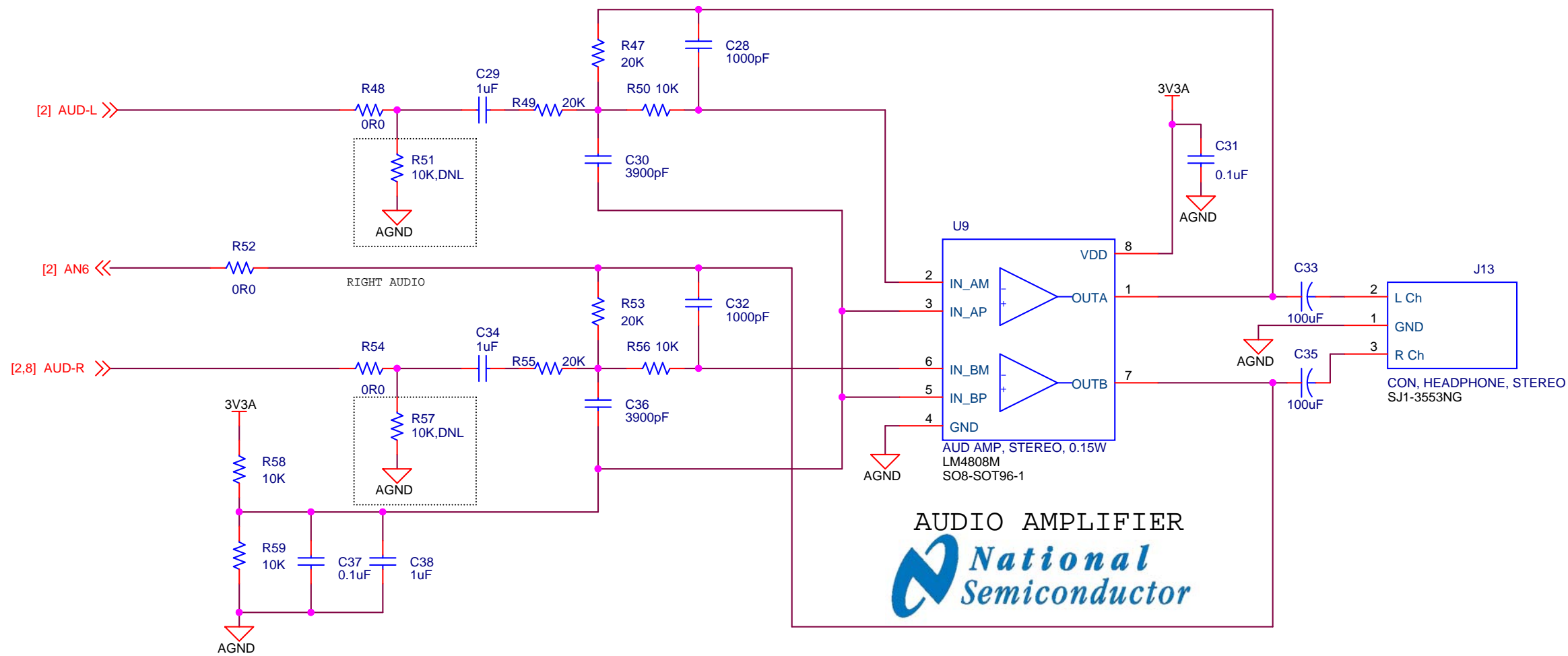
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**PMOD CONNECTORS**



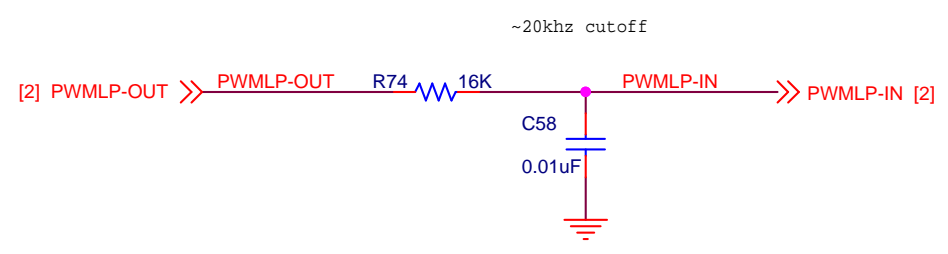
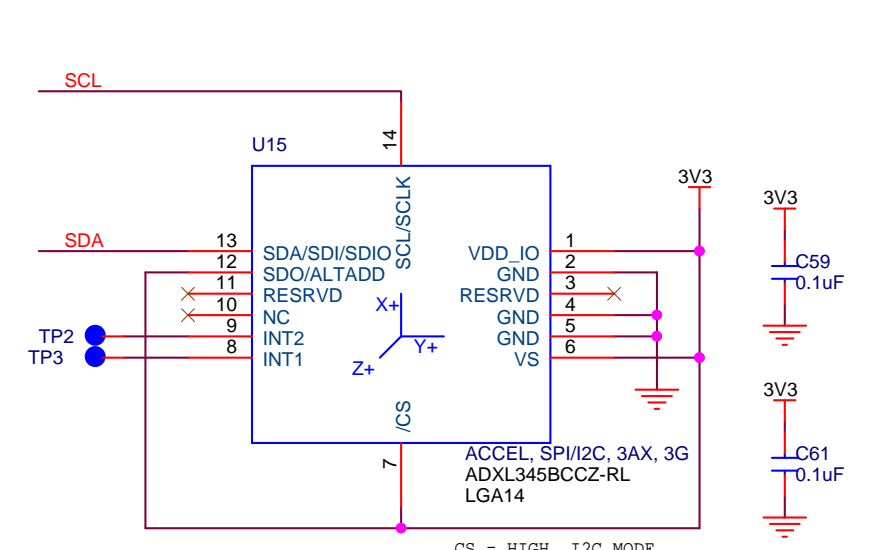
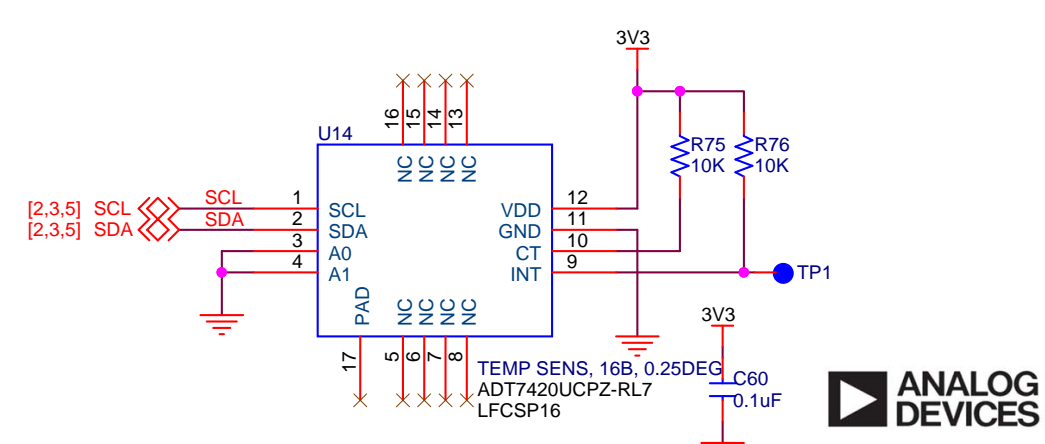
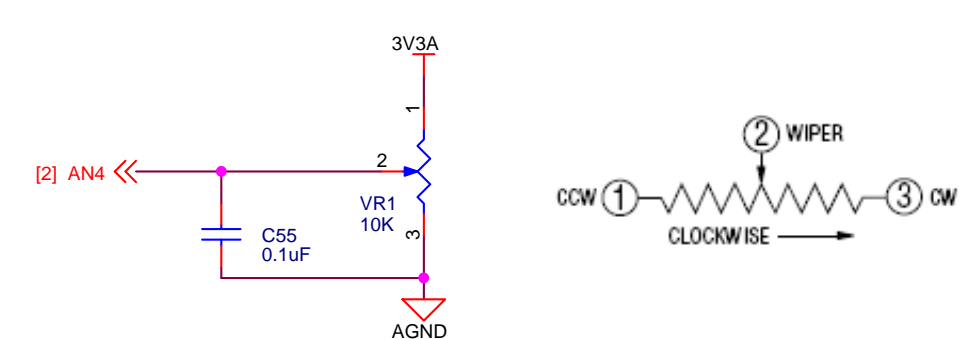
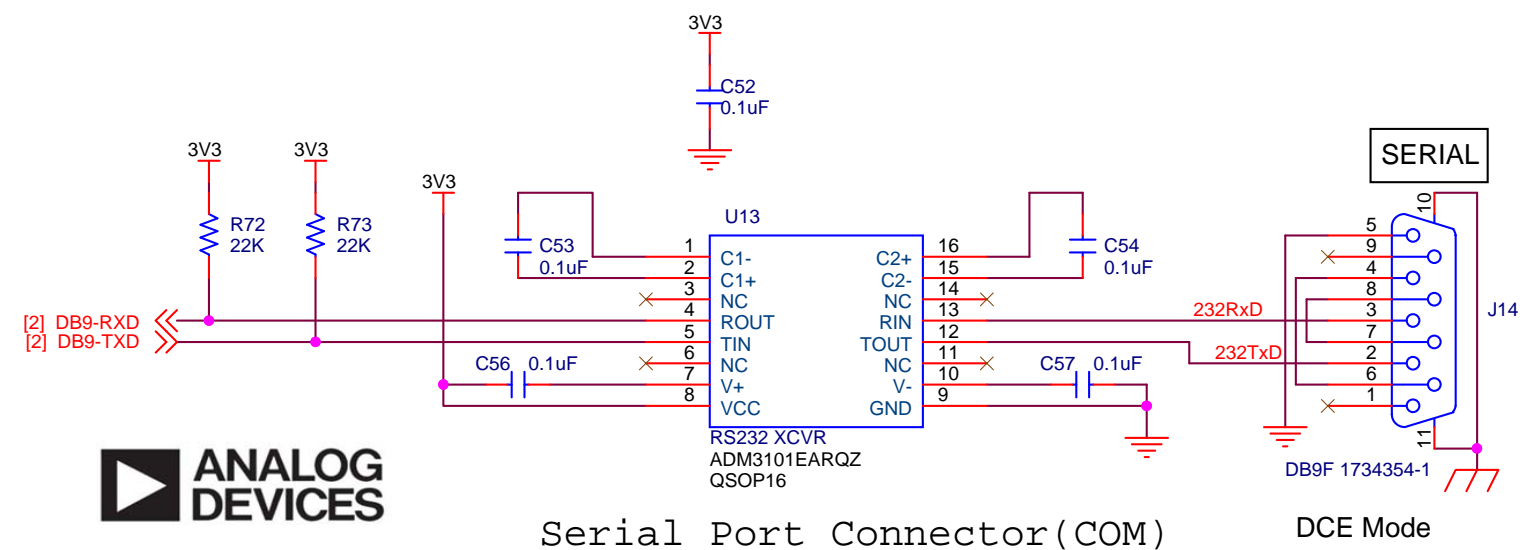
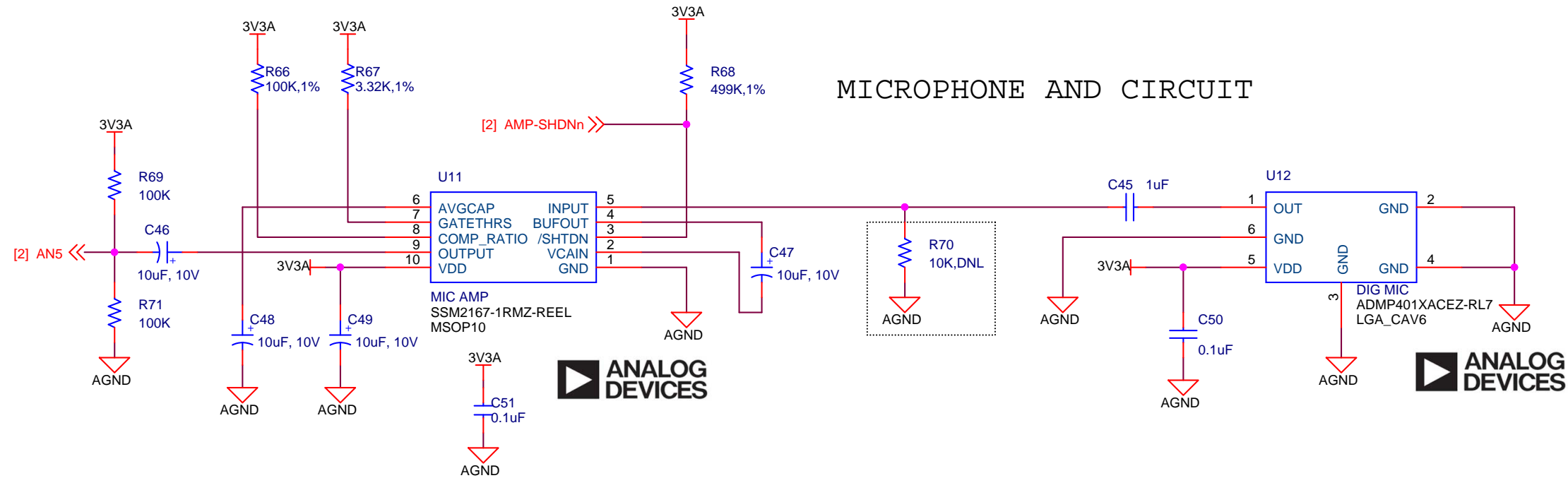
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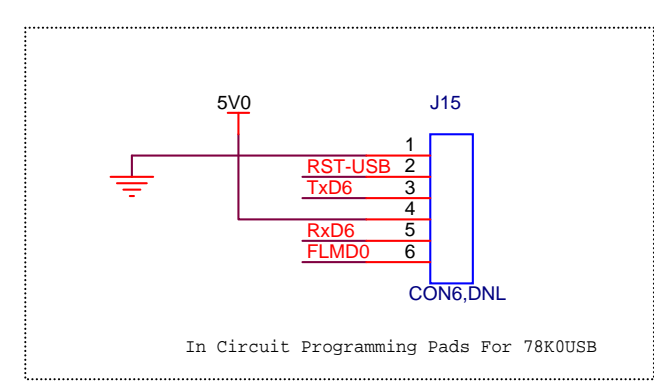
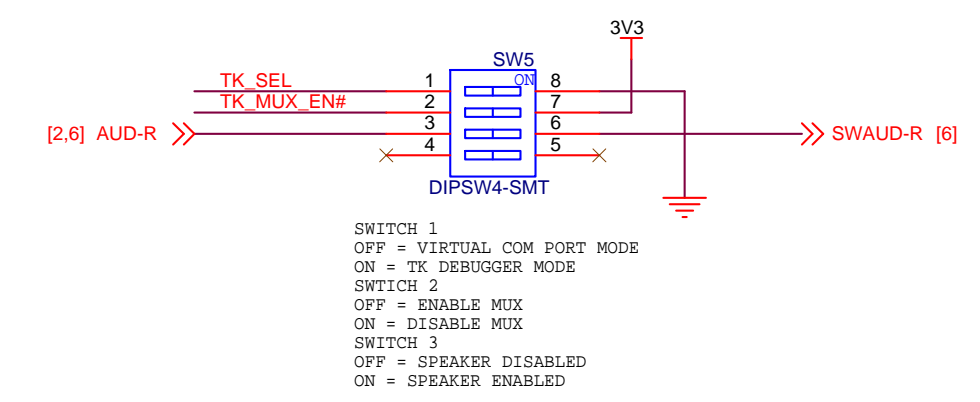
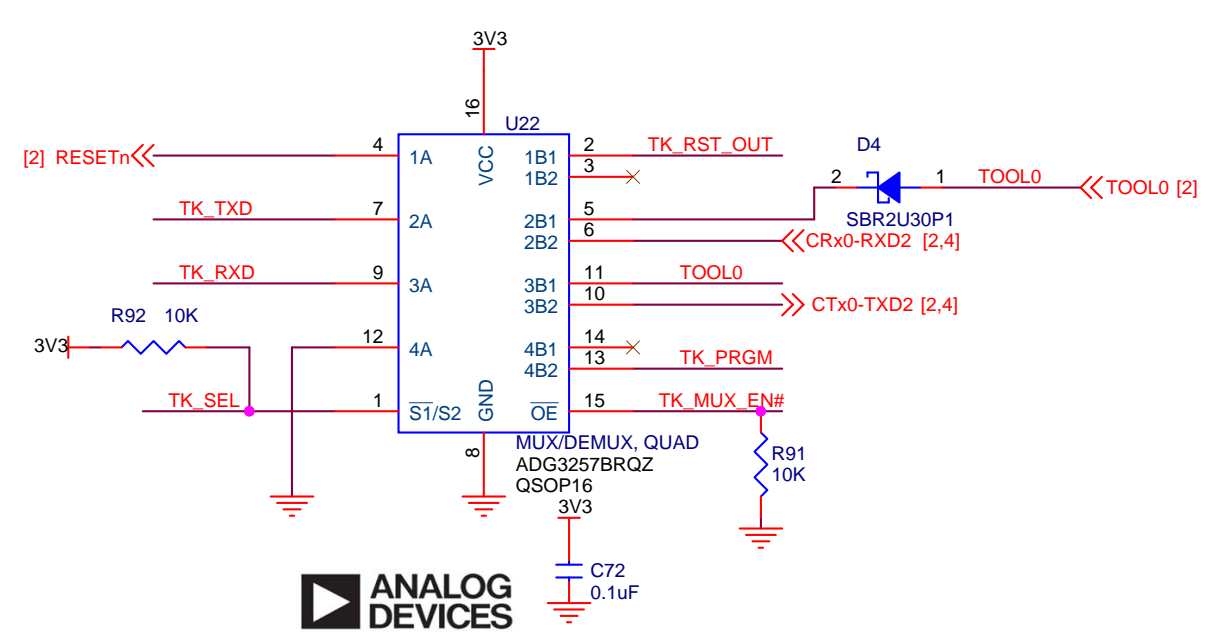
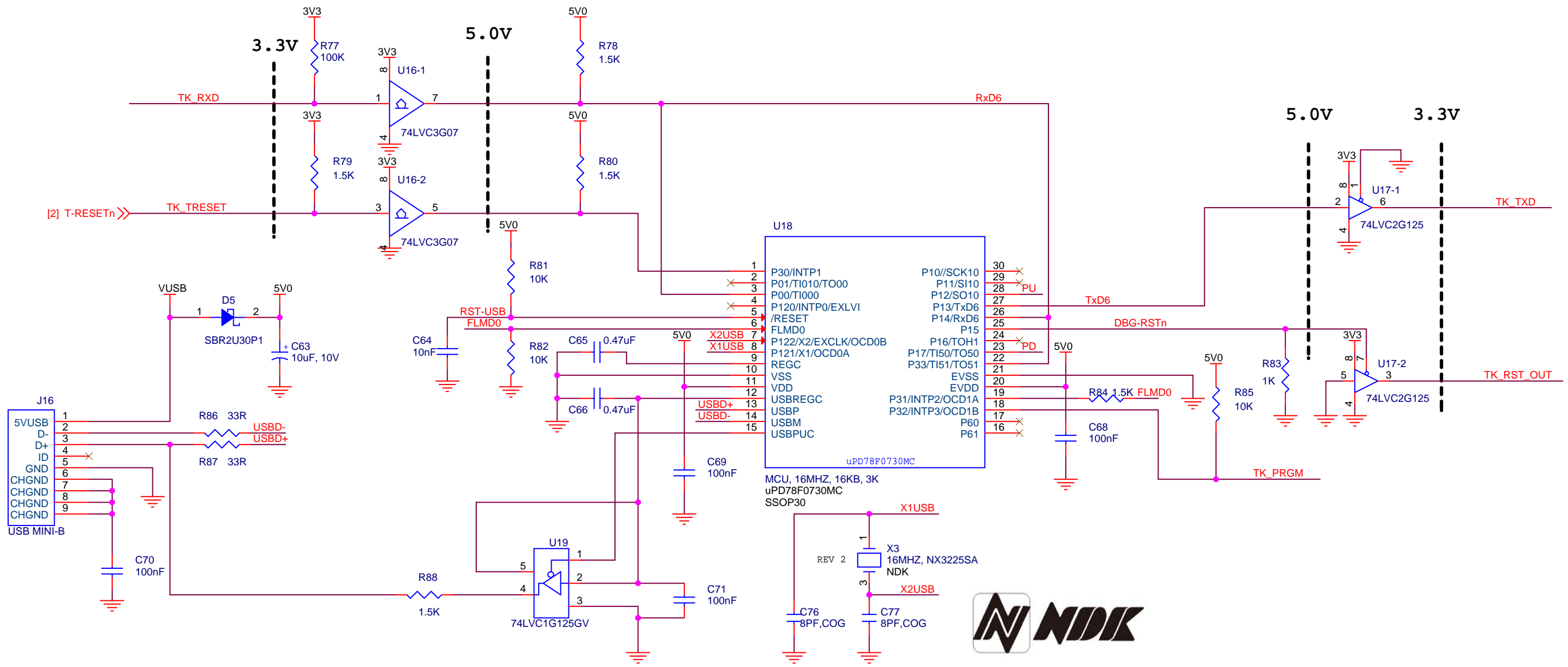


I2C ADDR = 0x90  
(10010aar), aa = A1:A0, r=R/Wn  
MAKE SURE TO PLACE AWAY FROM ANY HEAT SOURCE

I2C ADDR = 0x3A  
(0011101r), r=R/Wn

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