

시 방 서

1. 품목

- 해파리 탐지용 CW 구동 송수신 보드 제작

2. 제작품 개요

- 해파리 음향 탐지 시스템 제작을 위한 핵심 부분인 CW 구동 송수신부는 초음파 음향 센서로 출력되는 CW 신호 발생부, 해파리 생물에 맞고 반사되는 신호를 수신하는 수신부로 구성되는 board 임.
- 제작품 수: 3 set

3. 주요 장치의 구성

- 50 ~200 KHz CW 발생부
- Complexed Controller
- Bandpass filter
- Trigger
- Receiver
- Received signal output

4. Board 제작의 일반 사항

- 보드 장치의 구성은 하나의 통합 보드로 구성되어야 함.
- 본 보드는 해상에서 사용되므로 내구성 및 부식성을 갖추어야 함.
- 보드 내의 각 구성 요소는 제시하는 사양 및 도면과 일치해야 함.
- 제작 후 납품과 동시에 보드의 수정 도면을 제출하여야 함.
- 납품 후 1년간은 보드의 성능 유지를 위한 제반 A/S를 보증함.
- 상기 물품의 제작/납품/보안과 관련하여 확인서의 서명 날인.

5. Board 제작의 사양

(1) 전체 블록도 구조

- High Frequency Resonant Inverter with 50 kHz Sine Wave
- Receiver with 50 kHz Bandwidth
- Gain Controllable
- External Trigger Input
- Synchronized Trigger Output

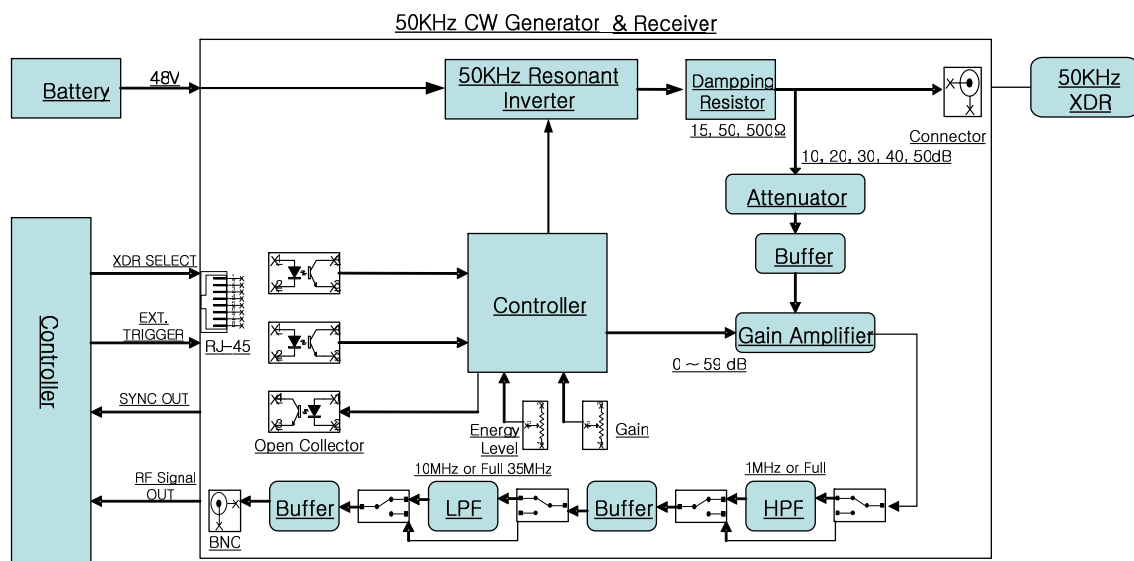


그림. CW 구동부 및 수신부 block diagram.

(2) CW – receiver 기본 사양

– Pulser part

Pulse Type	Sine Wave
Maximum Peak Amplitude	245V
Repetition Rate	100, 200, 500, 1000, 2000, 5000Hz
Damping Range	15, 50, 500 Ω
Max. Pulse Power	500W
Max. Continuous Power	10W

– Receiver part

Input Impedance	500 Ω linear range, 100 Ω for signals exceeding linear range
Output Impedance	50 Ω
Maximum Input Power	400mW @ Max. Average Power in the receiver
Voltage Gain	0~59dB, 1 or 10 dB steps
Bandwidths	10KHz ~ 100KHz, 1KHz ~ 1MHz
Maximum Output Voltage	$\pm 1V$ @ 50 Ω

(3) 상세 사양

(a) High Frequency Resonant Inverter

– Feature

- DC Input Voltage : 48V
- Output Voltage : 173Vrms, max
- Isolated L-C Resonant Topology
- Variable Output Voltage

– Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	
Input Voltage	40	–	56	V	
Output Voltage	0	–	180	V	
Output Power	–	–	500	W	
Output Impedance	45		80	Ω	
Switching Frequency		50		KHz	

(d) Receiver

- Attenuator
 - 10 or 20 or 30 or 40 or 50 dB Attenuation
 - 500 Ω Impedance
- Switch Selectable

(e) Signal Buffering

- Non-Inverting Buffering
- Clamping High Voltage Signal

(f) Gain Amplifier

- Programmable OP-Amp. Gain
- -11~+31dB with 90MHz, 9~51dB with 9MHz @AD603

(g) Band Pass Filter

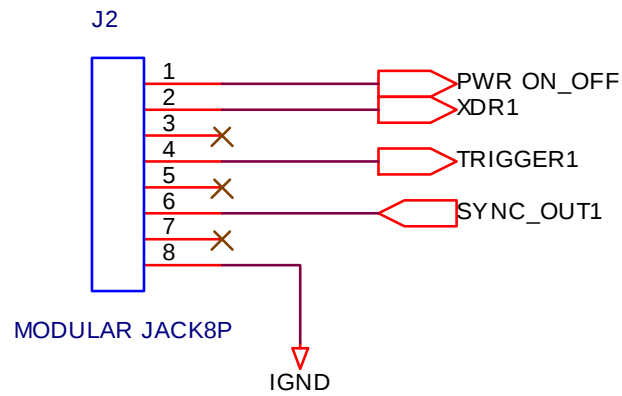
- High Pass Filter : 1MHz Cutoff frequency, Switch Selectable
- Low Pass Filter : 1 or 10KHz Cutoff frequency, Switch Selectable
- BandPass Filter Range : Full or 1 ~100KHz or 10~1MHz Selectable

(h) Controller

- Features
 - Phase Shift PWM Output
 - 1 Trigger pulse Output
 - 1 Trigger pulse Input Externally
 - 1 Synchronized trigger signal Output
 - 2 Analog Input : Energy Level Setting, Op-Amp Gain Adjust

(i) Connector Interface

- Signal Interface with Control
 - Circuit



· Pin Description

Connector	Pin	Signal Name	Description	Logic
J2	1	PWR ON_OFF	Power On/Off Control Signal	Active Low
	2	XDR1	Transducer1 Select Signal	Active Low
	3	–		
	4	TRIGGER1	Transducer1 Trigger Signal	Active Low
	5	–		
	6	SYNC_OUT1	Trigger1 Sync. Output Signal	Active Low
	7	–		
	8	IGND	Ground	

· Connector

Model	Description	Maker
AR-657PT	8P,2.54mm	ARIN

(j) RF Signal Output Interface

· Connector

Model	Description	Maker
–	BNC Connector	–

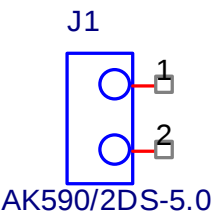
(k) Transducer Interface

· Connector

Model	Description	Maker
–	Terminal Block	–

(I) DC Power Input

· Circuit



· Pin Description

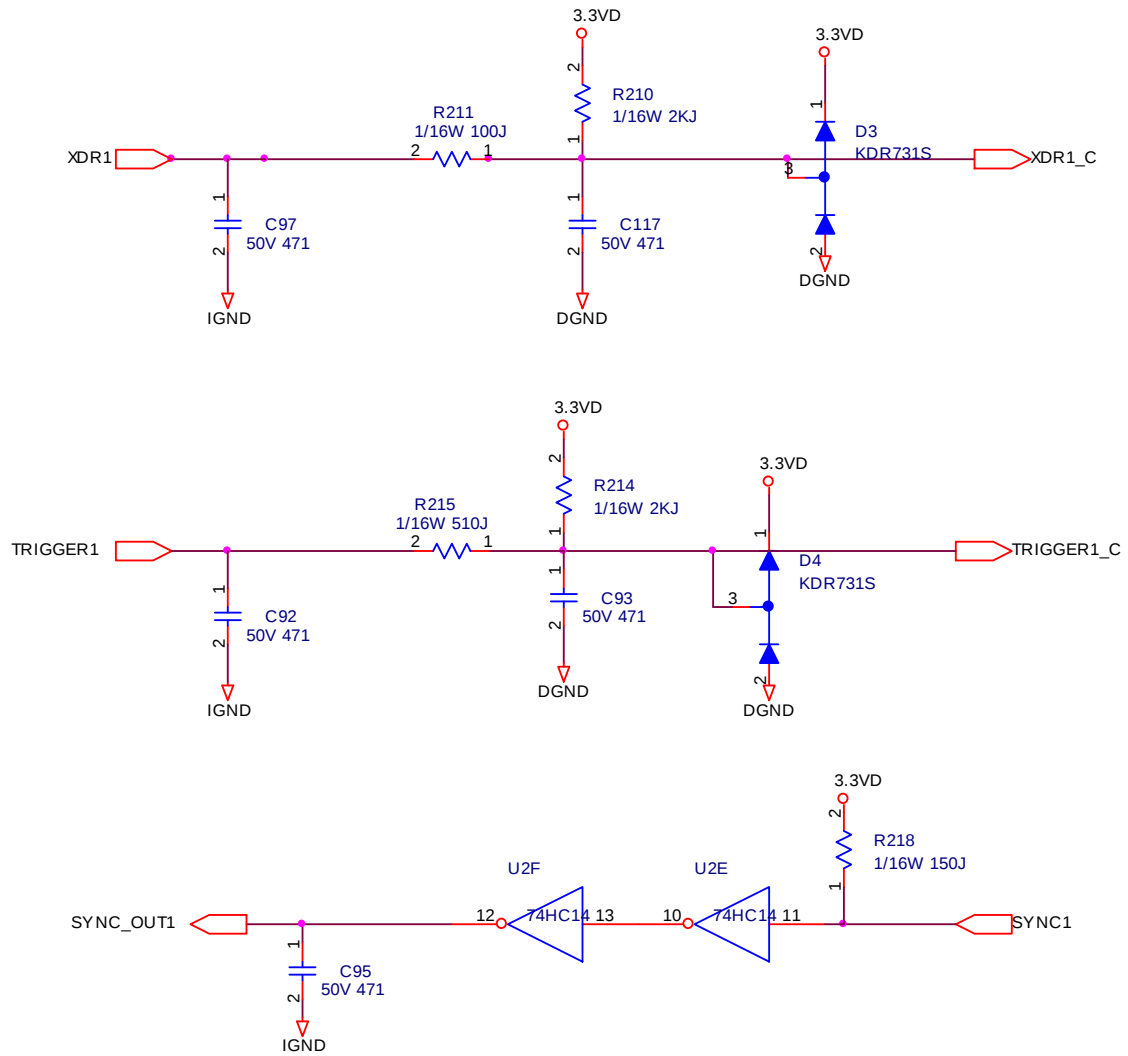
Connector	Pin	Signal Name	Description	
J1	1	DC +	DC Positive Voltage	
	2	DC-	DC Negative Voltage	

· Connector

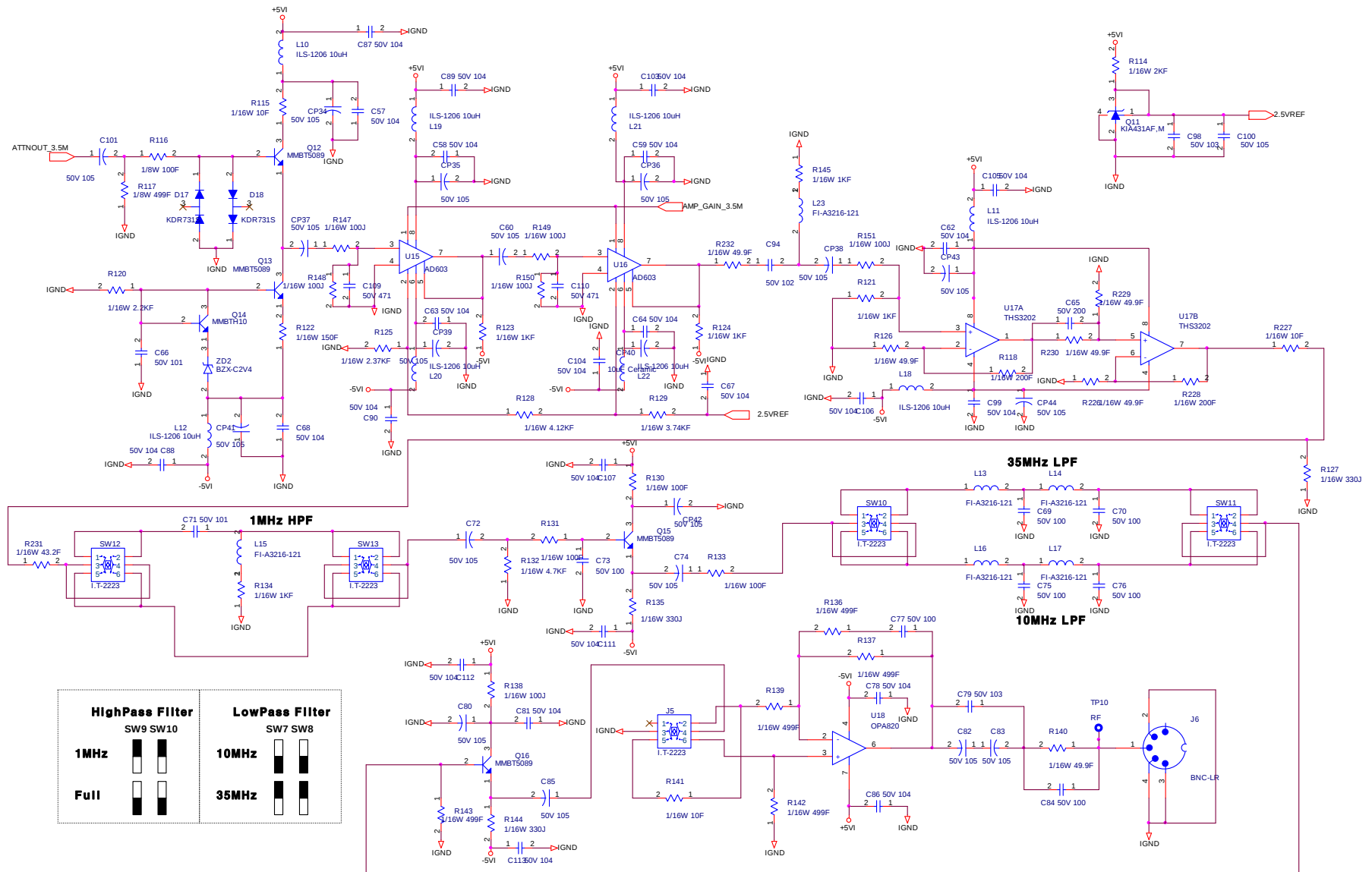
Model	Description	Maker
—	BNC Connector	—

6. Acoustic CW-receiver board 도면 (1-10)

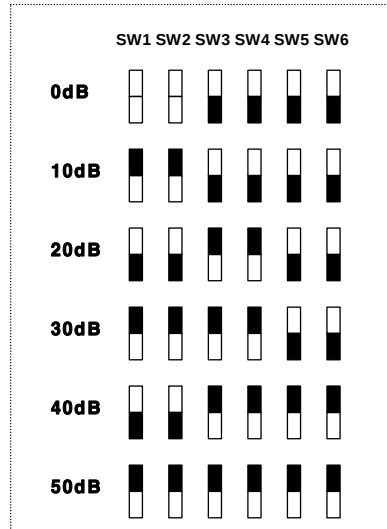
도면 1



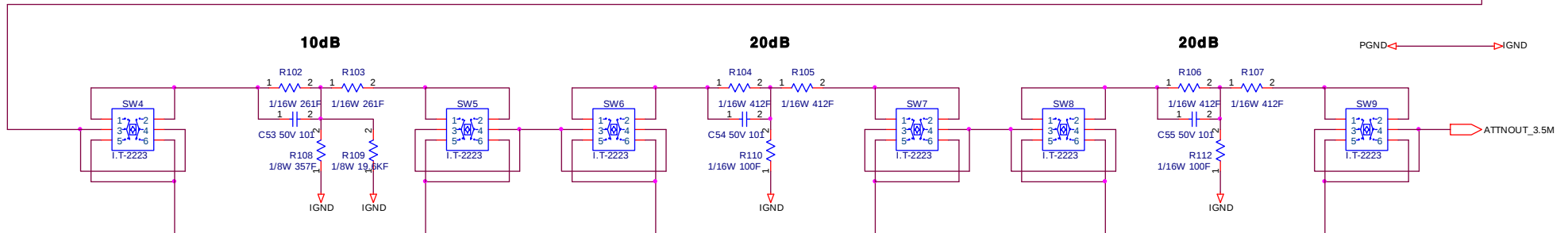
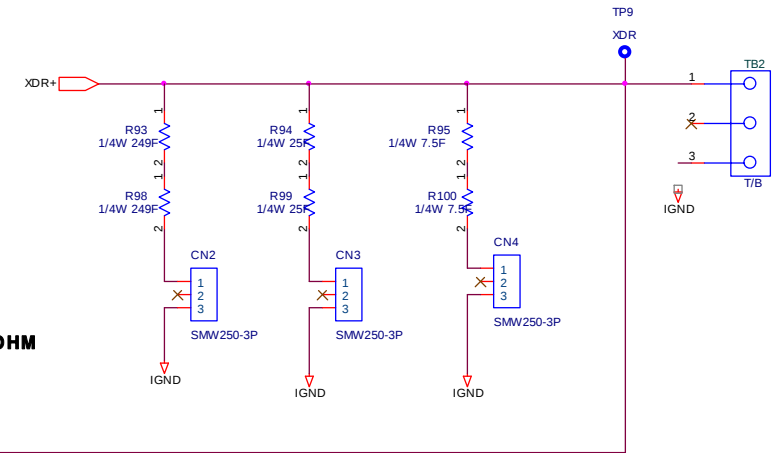
도면 2



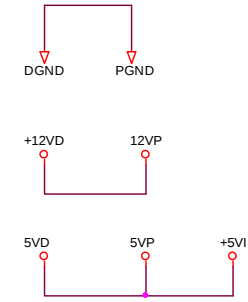
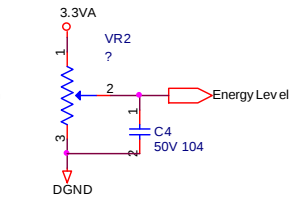
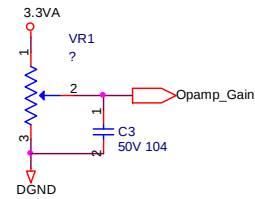
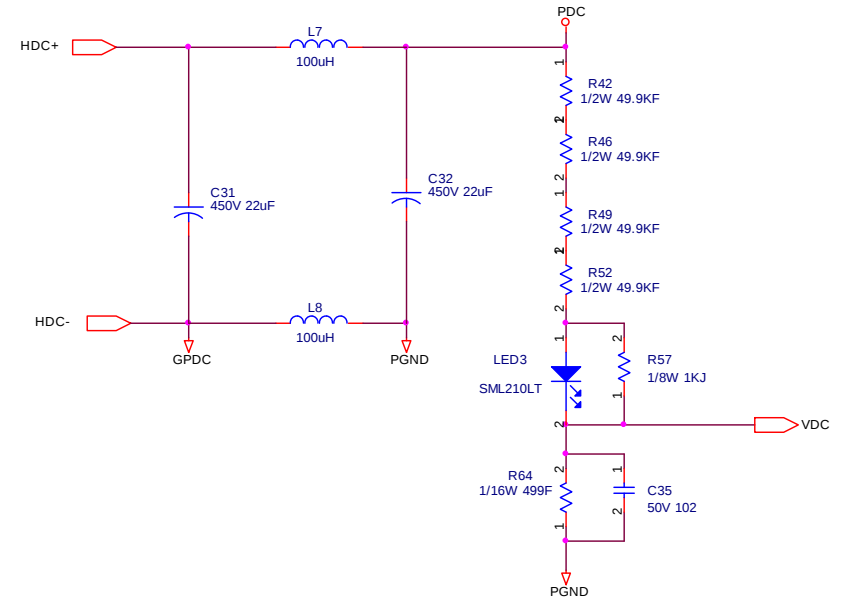
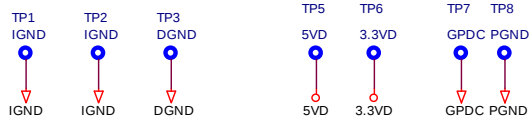
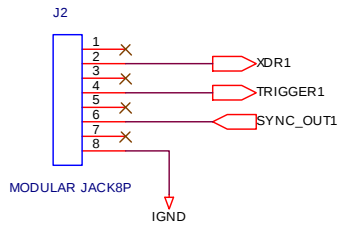
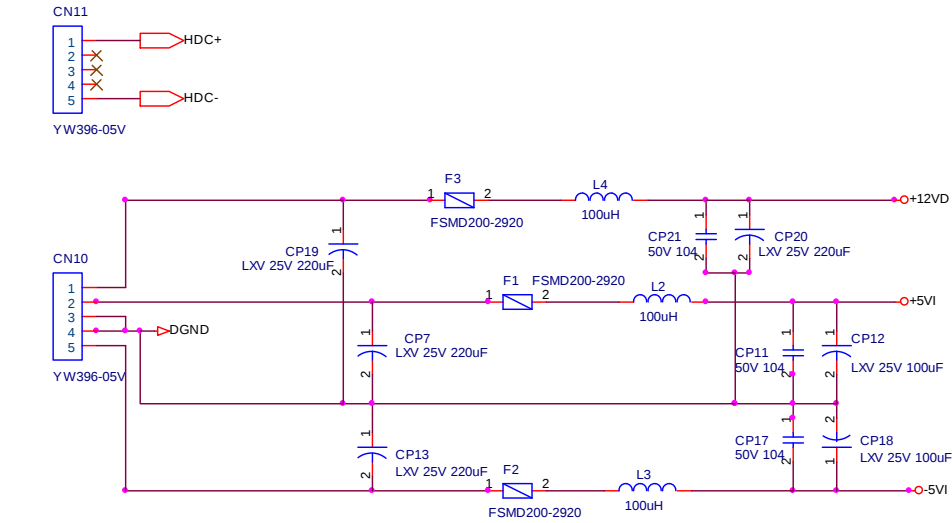
도면 3



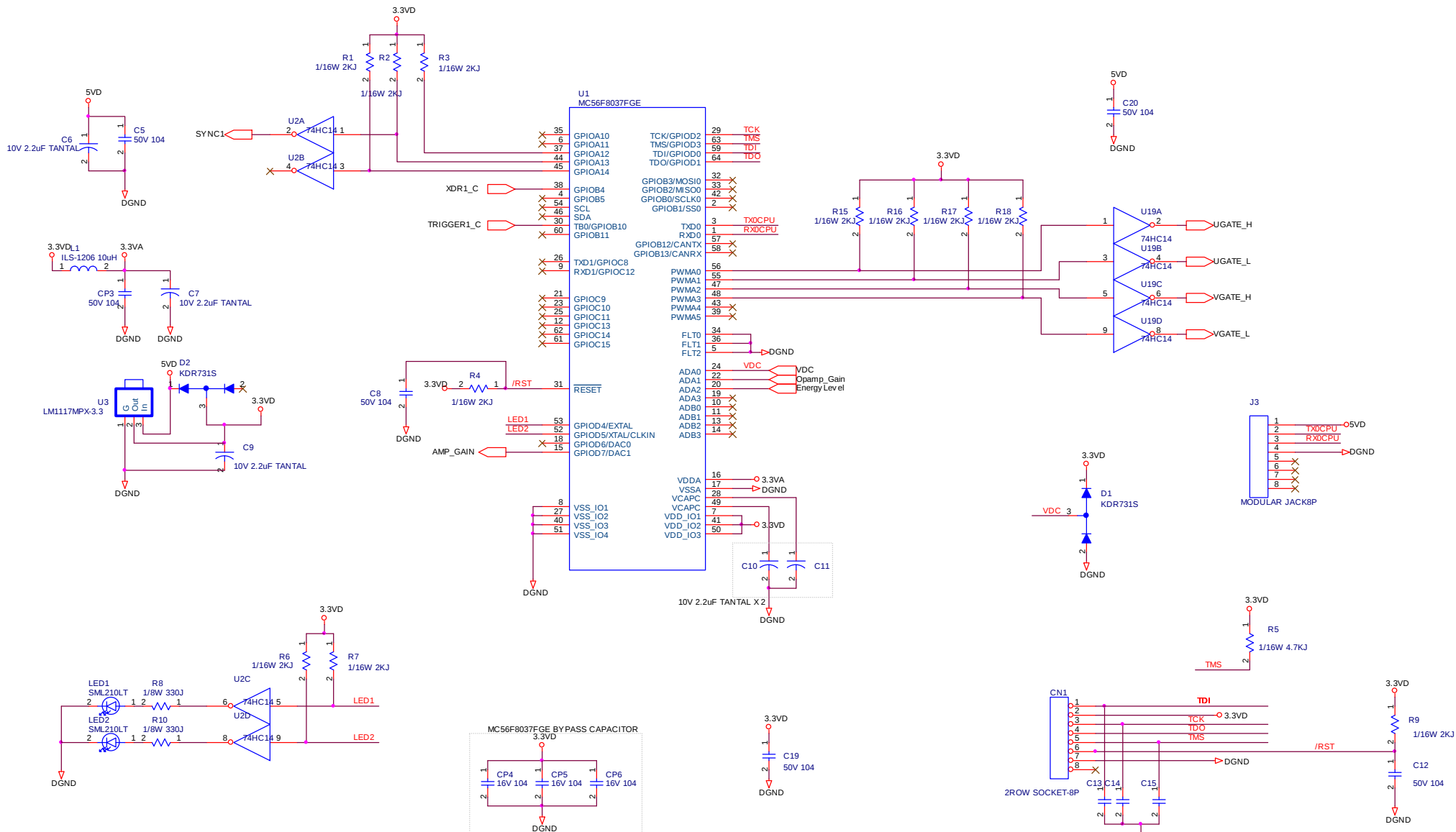
DAMPING 15, 50, 500 OHM



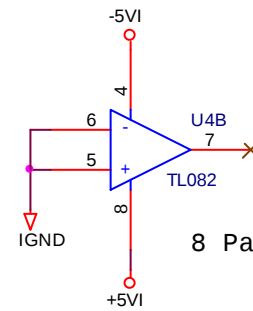
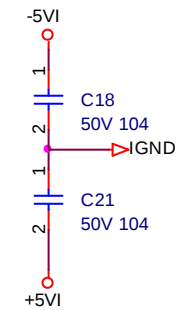
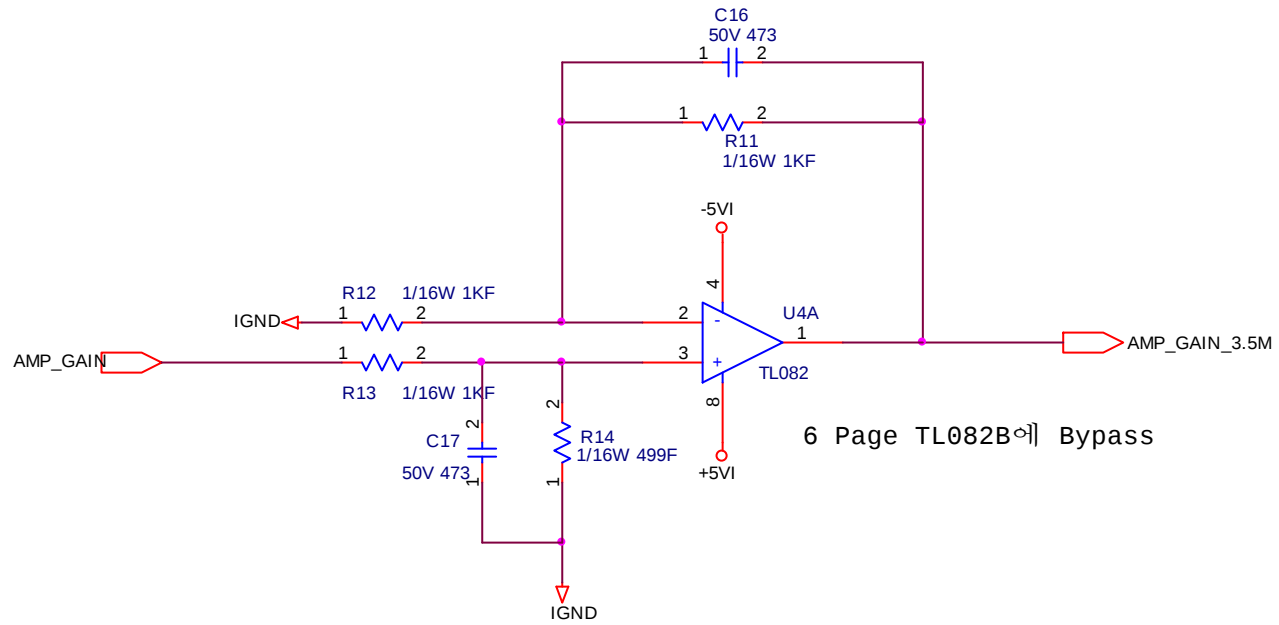
도면 4



도면 5



도면 6



도면 7

