

Car DVD Receiver
VXD-2310
SERVICE MANUAL

CONFIDENTIAL

목 차

1. 주의 사항

2. 제품 규격

3. 분해 및 조립

3-1. TOP COVER 분해

3-2. Ass'y Deck 분해

3-3. Ass'y Front, Rear 분해

4-4. Main PCB 분해

4. 결선도 및 BLOCK도

4-1. 결선도

4-2. BLOCK도

5. 중요 IC 내부 BLOCK 및 PIN 사양

6. 회로 설명

6-1. 전원부

6-2. MPEG(MT1389)부

6-3. VIDEO 및 AUDIO부

6-4. TUNER부

7. PCB 도면

7-1. Main PCB 도면

7-2. Front & SUB PCB 도면

7-3. 회로도

8. 기구 & 회로 자재 목록(BOM)

1. 주의 사항

1-1. 안전 예방 수칙

- 서비스 시에 원래의 리드 피복(Lead dress)을 유지하라.
만약에 쇼트가 발견되면 과열되거나 파손된 모든 부품을 교체한다.
- 서비스 후 절연 장벽, 절연 종이 벽 같은 모든 보호 장치가 제대로 설치 되었는지 확인한다.

1-2. 정전기 감지 장치

- 반도체 소자 혹은 수동 소자가 있는 장치를 다루기 전에는 즉시 당신의 몸에 있는 모든 정전하로 알려진 접지체를 접촉해서 방출시킨다.
- ESD장치가 있는 전기 기기를 떼어낸 후에 정전하가 축적되거나 노출되는 것을 막기 위해 기기를 알루미늄박과 같은 도전성 표면에 놓아야 한다.
- 반도체 소자 혹은 기타 부품을 납땜하거나 납땜을 풀기 위해서는 접지된 인두기만을 사용한다.

1-3. PICK-UP 취급시 주의 사항

- 신체의 접지(손)은 한쪽 끈이 접지된 손목 띠를 반드시 착용하십시오.
- 작업대의 접지는 구리판과 같은 접지된 도전성판을 작업대에 올려 놓는다.
- 옷에 발생된 정전기로 인한 정전과피 방지를 위해 옷이 제품에 닿지 않도록 하십시오.
- FFC는 쉽게 손상되기 때문에 주의해서 다뤄야 합니다.

2. 제품 규격

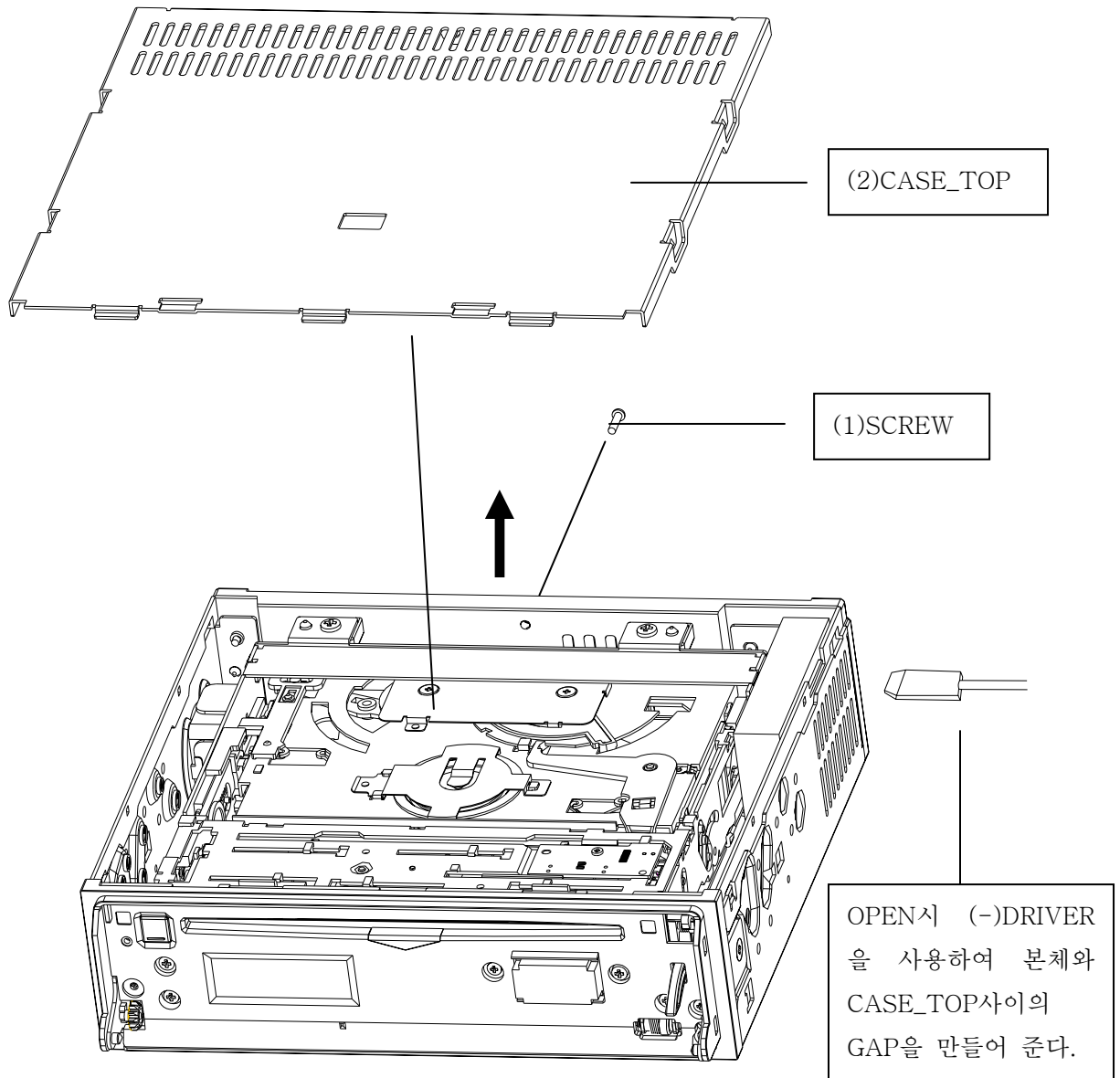
General	Compatible Discs	DVD-Video(Single/Dual)/ DVD+-R/DVD+-RW/ CDDA/CDR/CDRW/MP3 Picture CD/Hybrid SACD/HDCD...
	Power Supply	13.2V DC (10.2 V ~ 15.6 V)
	Power Consumption	Under 20W (AVG at DVD mode Vol 20)
	Weight	2.15 Kg (Approximately)
	Dimension	178 (W)* 192.1(D) * 50(H) Without Trim Ring
	Operating Temperature/Humidity	-20℃(0%) to + 65℃(90%)
	Operating Vibration	min 1.2G0-p(Z direction) at 10~200Hz, 1 oct/min
Signal System	NTSC/PAL/MULTI	
Video Output	Output Level	1.0Vp-p (75ohm)
	Output Terminal	RCA Jack
Preout Output	Output Level	2.5Vrms (1kHz, 0dB), S/N:90dB, variable
Preout Characteristics	Number of Channels	5.1ch
	Output Terminal	RCA Jack
	Frequency Response	4Hz to 44kHz (DVD fs: 96kHz)
	Signal to Noise Ratio	85dB
	Dynamic Range	80dB
	Total Harmonic Distortion	0.03%
Audio Output (Speaker)	Max. Output	45W * 4Ch, 25w * 1Ch
	Load Impedance	4 Ω
	Distortion Ratio	0.2%(1W output)
Digital Output	Coaxial Digital Output	RCA Jack
Tuner(FM)	Frequency Ratio	87.5MHz ~ 107.9MHz (100K Step)
	Practical Sensitivity	12 dBu
	Signal to Noise Ratio	Over 55dB
	Distortion Ratio	Under 0.5%
Tuner(AM)	Frequency Ratio	522KHz ~ 1602KHz (9K Step)
	Practical Sensitivity	27 dBu
	Signal to Noise Ratio	Over 50dB
	Distortion Ratio	Under 1.0%

Tone Control	Base Frequency	100Hz	±10dB
	Treble Frequency	10KHz	±10dB
	Balance Frequency	Left / Right	±10dB
	Fader Frequency	Front /Rear	±10dB
Accessories	VXD2310	1 set	
	Front Case	1 ea.	
	Frame Case	1 ea.	
	Trim Ring	1 ea.	
	Power Connector	1 ea.	
	A/V Connector	1 ea.	
	Battery (AAA size, 1.5V)	2 ea.	
	Remote Control	1 ea.	
	RCA Cable 3m	1 ea.	
	User's Manual (Installation		
	Manual and Product Warranty)	1 ea.	
	Bracket Uninstaller	2 ea.	
	Screws	M4*6mm: 6 ea., M5*6mm : 6 ea.	

3. 분해 및 조립

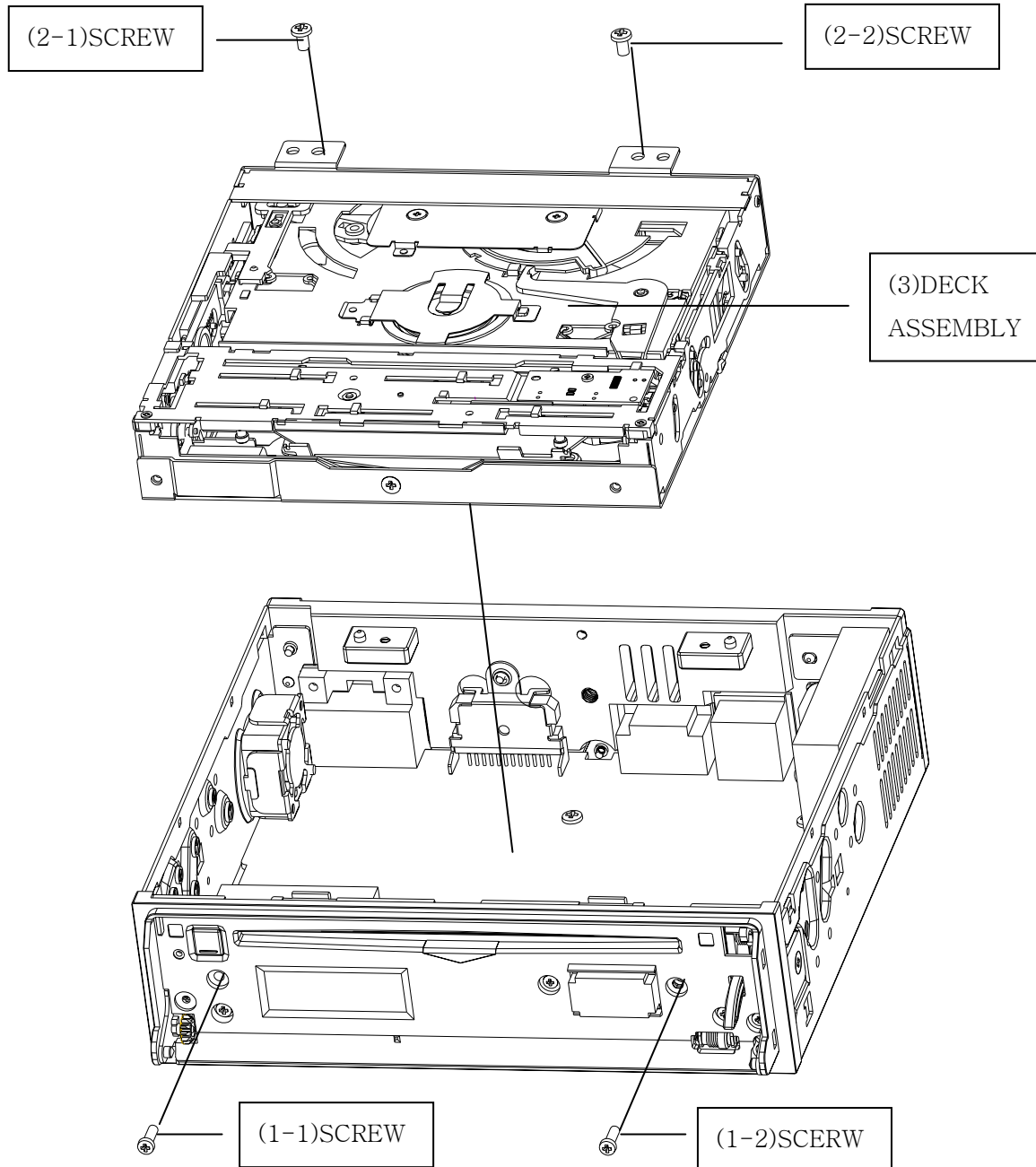
1) TOP COVER 분해

- 후면에 있는 SCREW 1개를 분리한다.
- CASE_TOP를 후면에서부터 화살표 방향으로 위로 밀면서 분리한다.
- (* OPEN시 측면 HOLE에 (-)DRIVER를 이용.
- * 분리시 CASE_TOP에 소성변형이 일어나지 않게 주의.)

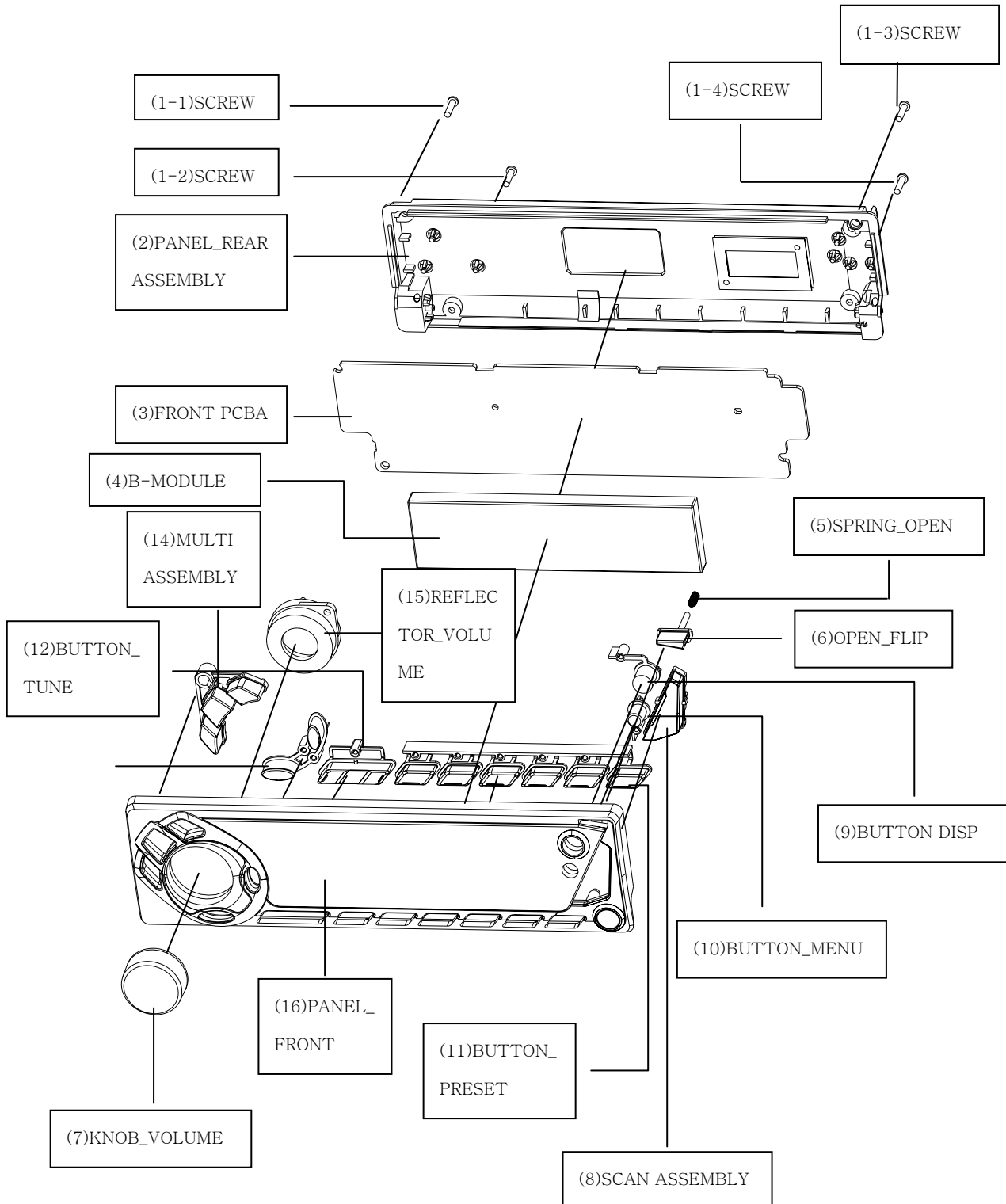


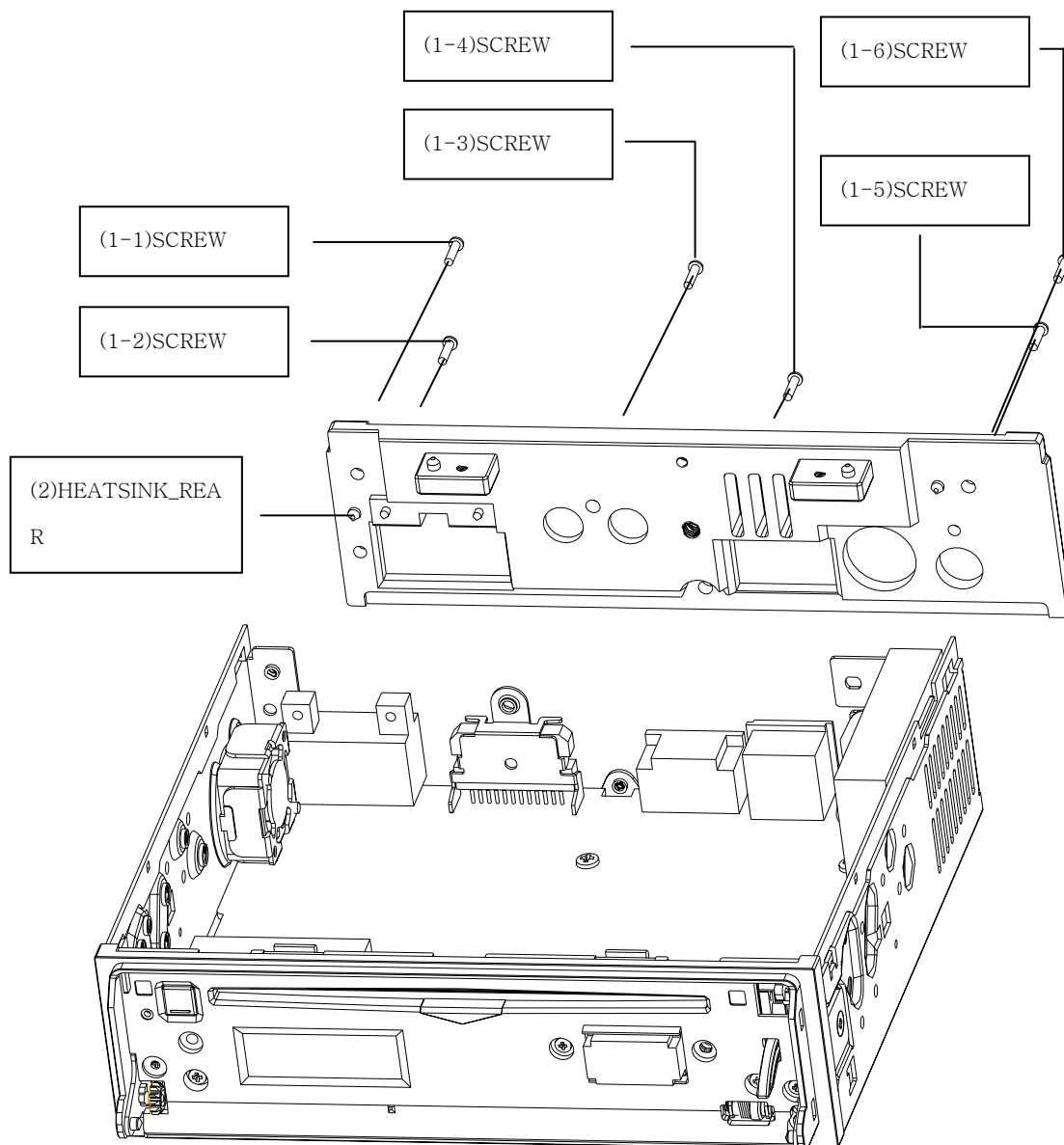
2) Ass'y Deck 분해

- FRONT면 쪽의 SCREW 2개를 분리한다.
- TOP면의 SCREW 2개를 분리한다.
- DECK ASSEMBLY를 분리한다.

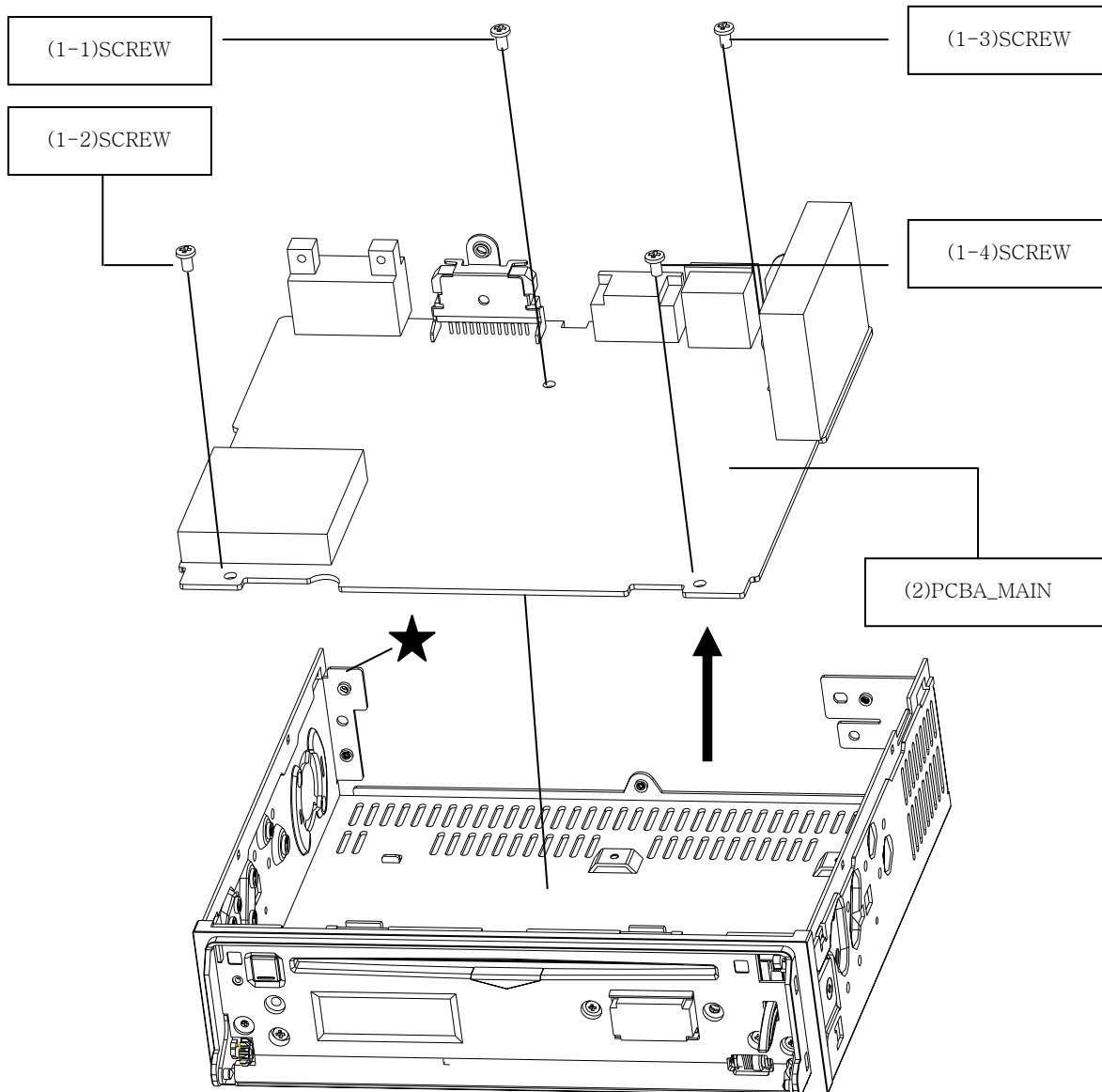


3) Ass'y Front, Rear 분해





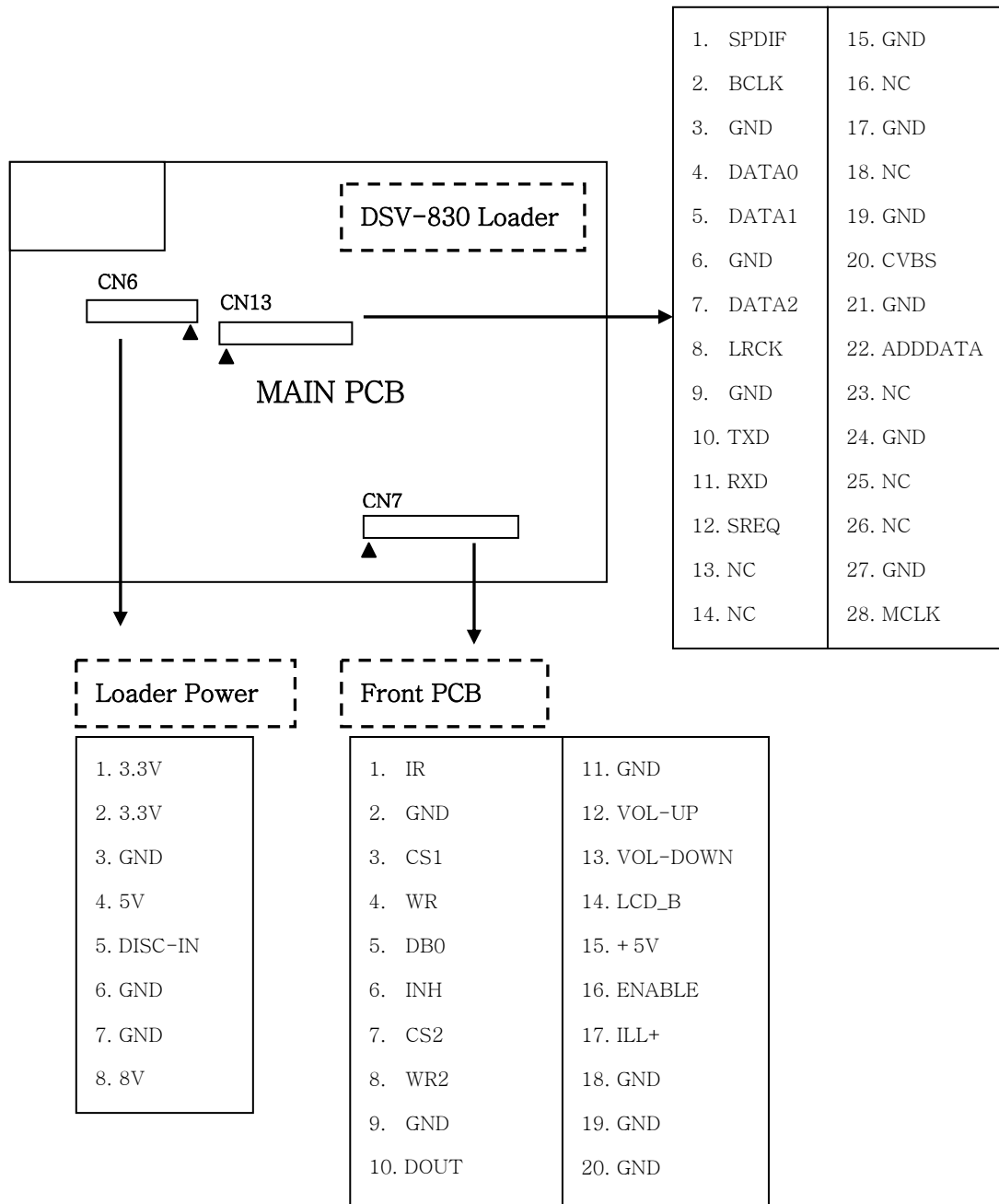
4-4. Main PCB 분해



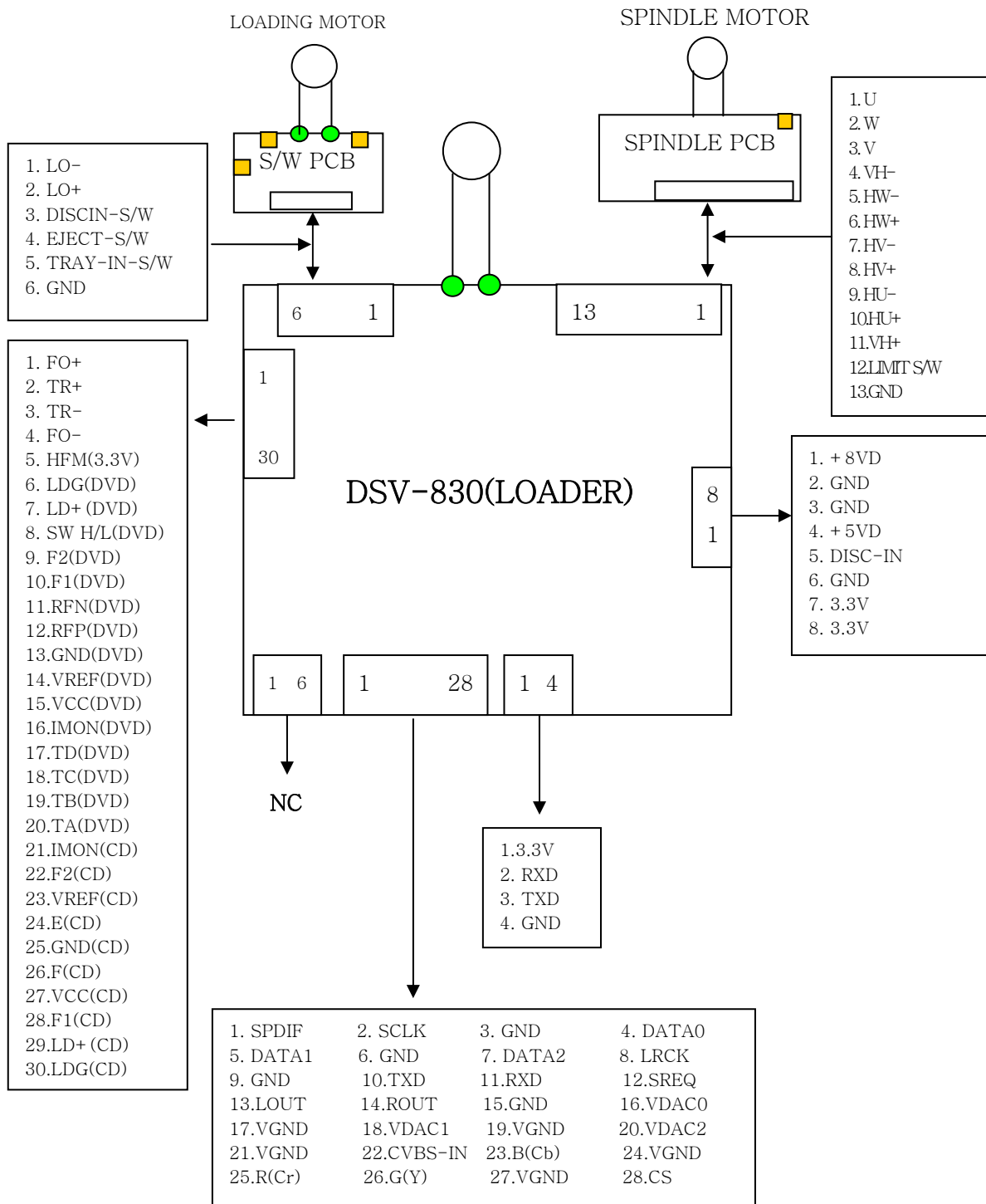
4. BLOCK도 및 결선도

4-1. 결선도

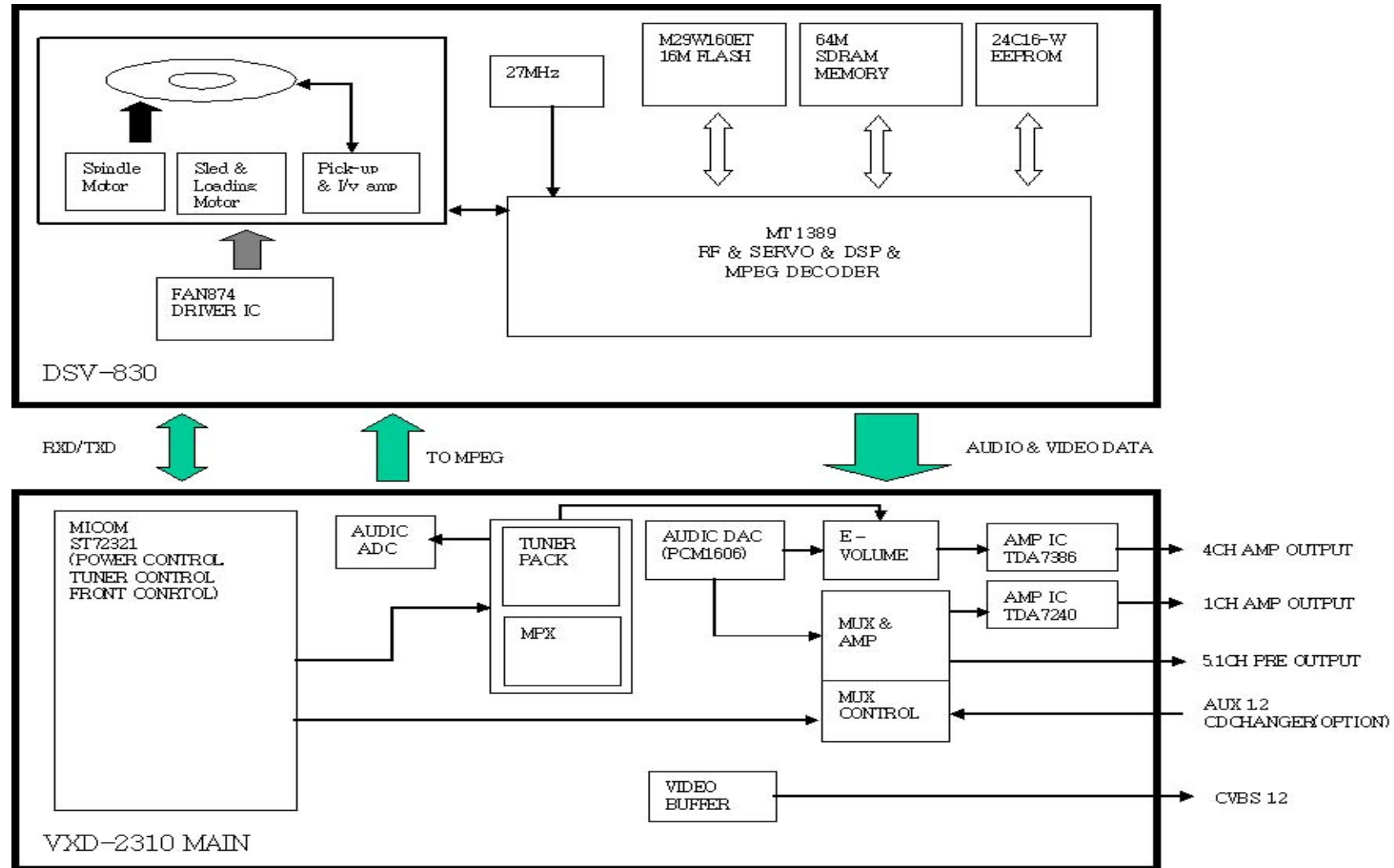
4-1-1. VXD-2310 MAIN BOARD 결선도



4-1-2. DSV-830(DVD LOADER) 결선도



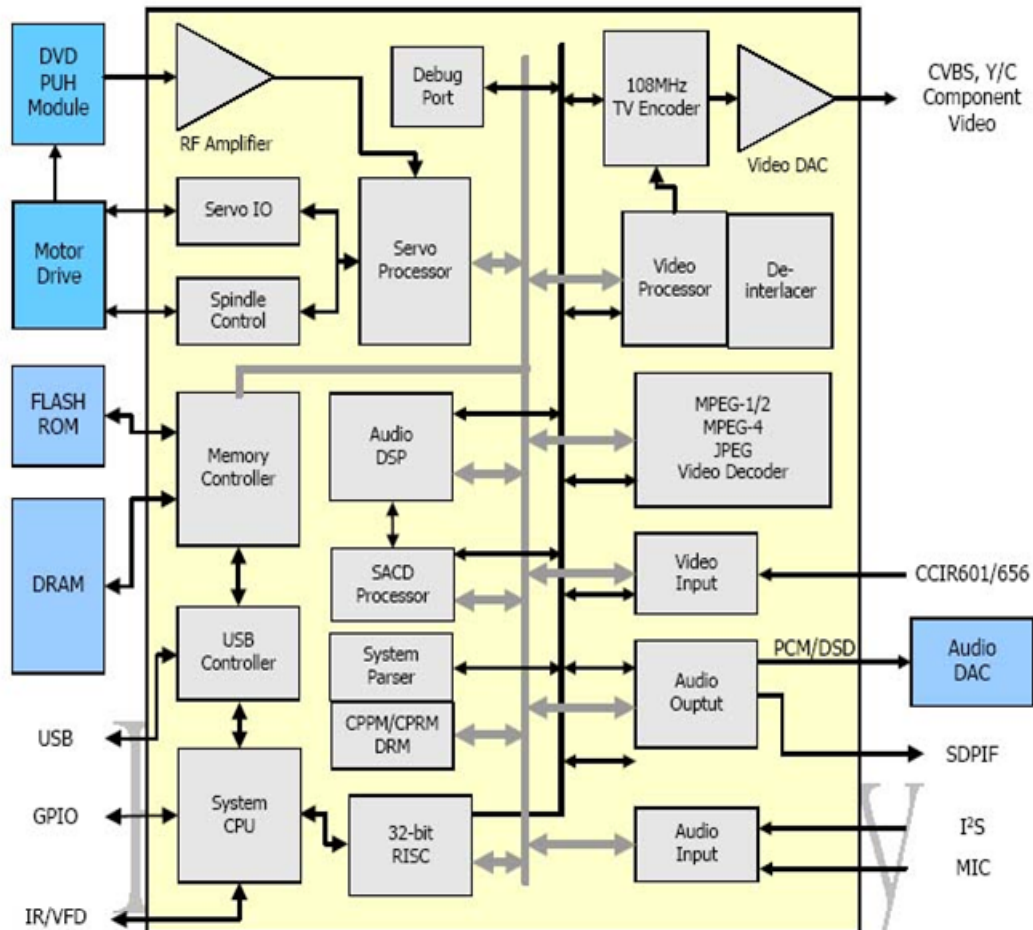
4-2. BLOCK도



5. 중요 IC 내부 BLOCK 및 PIN 사양

5-1. MT1389C (RF, SERVO, DSP, MPEG DECODER)

5-1-1. FUNCTION BLOCK



5-1-2. General Feature

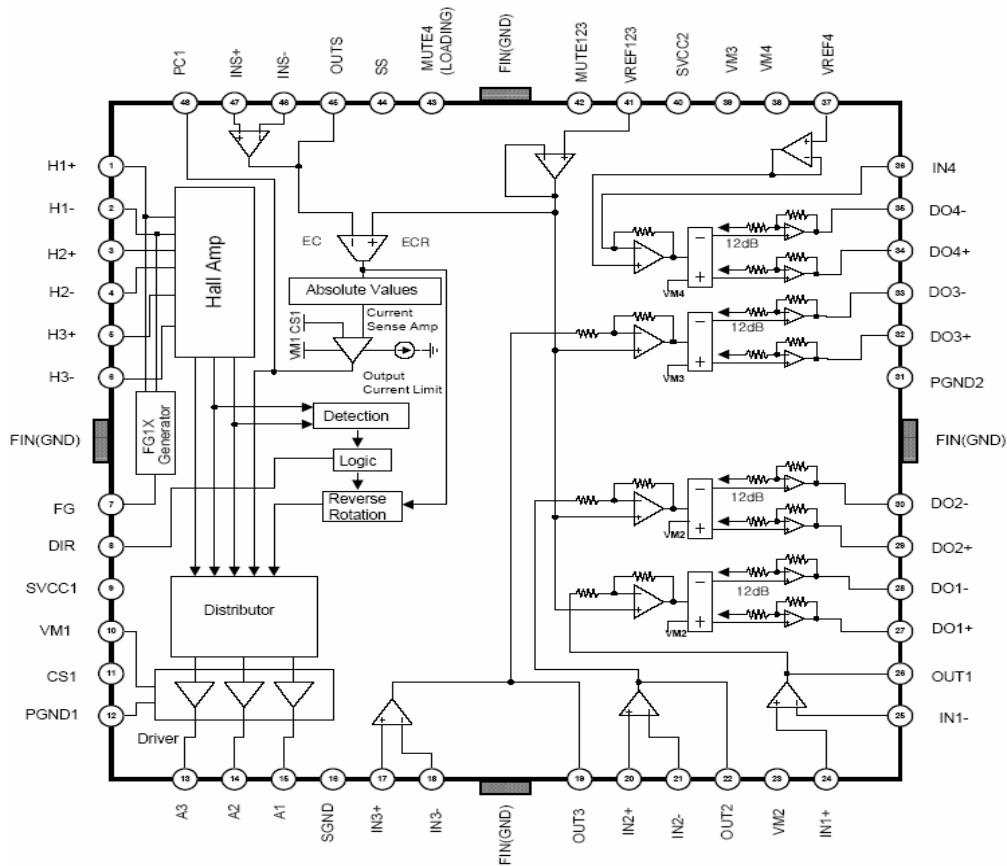
- Super Integration DVD player single chip
- High Performance Analog RF Amplifier
- Speed Performance on Servo/Channel Decoding
- Channel Data Processor
- Servo Control and Spindle Motor Control
- Embedded Micro controller
- DVD-ROM/CD-ROM Decoding Logic
- Buffer Memory Controller
- Video Decode
- Video/OSD/SPU/HLI Processor
- 2-D Graphic Engine
- Audio Effect Processing
- TV Encoder

- Progressive Output
- Audio/Video Input

5-2. FAN8728 (DIRVE IC): Spindle + 4-ch Input PWM Motor Drive IC

The FAN8728 is monolithic integrated circuit for a 4-ch motor driver which drives the tracking actuator, focus actuator, sled motor, loading motor and 3-phase BLDC spindle motor of the MDP/CAR-MD/CAR-NAVIGATION system.

5-2-1. FUNCTION BLOCK

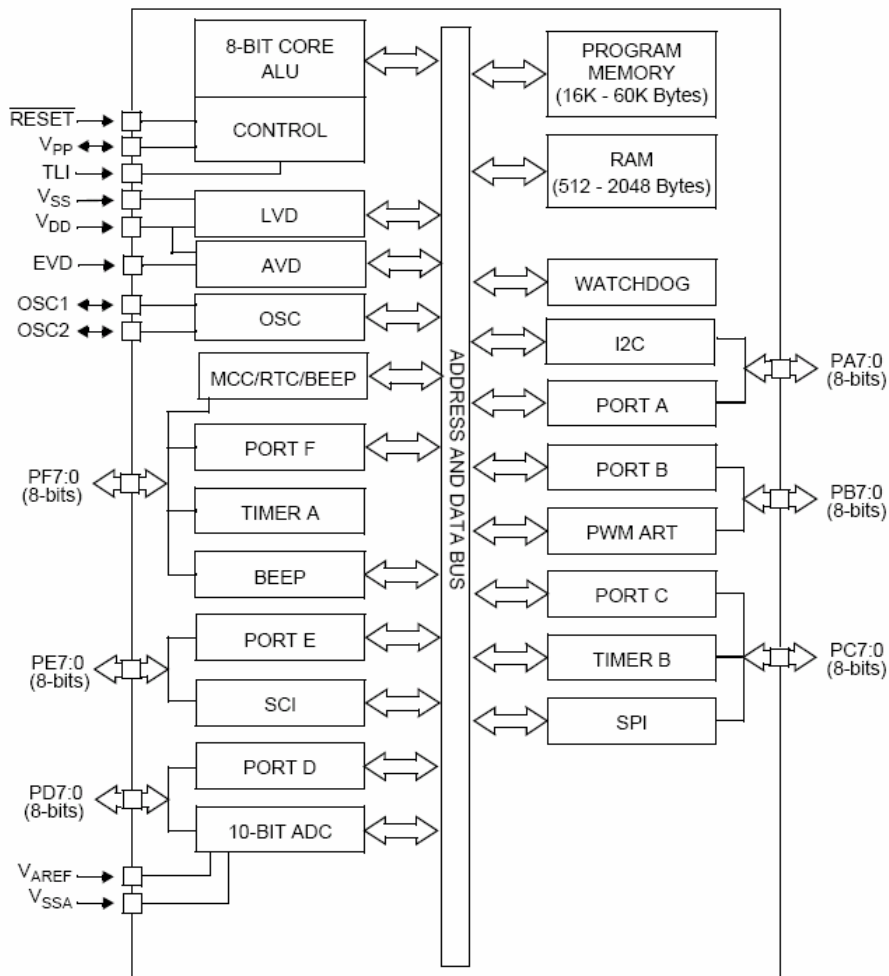


5-3-2. Pin Description

No	Name	Description	No	Name	Description
1	F0+	Focus +	2	TR+	Tracking +
3	TR-	Tracking -	4	F0-	focus -
5	HFM	High frequency module (3.3V)	6	LDG(DVD)	Dvd laser diode GND
7	LD+(DVD)	Dvd laser diode +	8	SW(DVD)	DVD switch H/L
9	F2(DVD)	Dvd focus signal 2	10	F1(DVD)	Dvd focus signal 1
11	RFN(DVD)	Radio frequency -	12	RFP(DVD)	Radio frequency +
13	GND(DVD)	GND for dvd	14	Vref(DVD)	Dvd reference voltage
15	VCC(DVD)	Dvd VCC (5v)	16	IMON(DVD)	Dvd monitor
17	TD(DVD)	Dvd tracking signal D	18	TC(DVD)	Dvd tracking signal C
19	TB(DVD)	Dvd tracking signal B	20	TA(DVD)	Dvd tracking signal A
21	IMON(CD)	Cd monitor	22	F2(CD)	Cd focus signal 2
23	Vref(CD)	Cd reference voltage	24	E(CD)	Cd tracking signal E
25	GND(CD)	Cd GND	26	F(CD)	Cd tracking signal F
27	VCC(CD)	Cd VCC(5v)	28	F1(CD)	Cd focus signal 1
29	LD+(CD)	Cd laser diode +	30	LDG(CD)	Cd laser diode GND

5-4. Micom (ST72321)

5-4-1. Block



5-4-2. Pin description

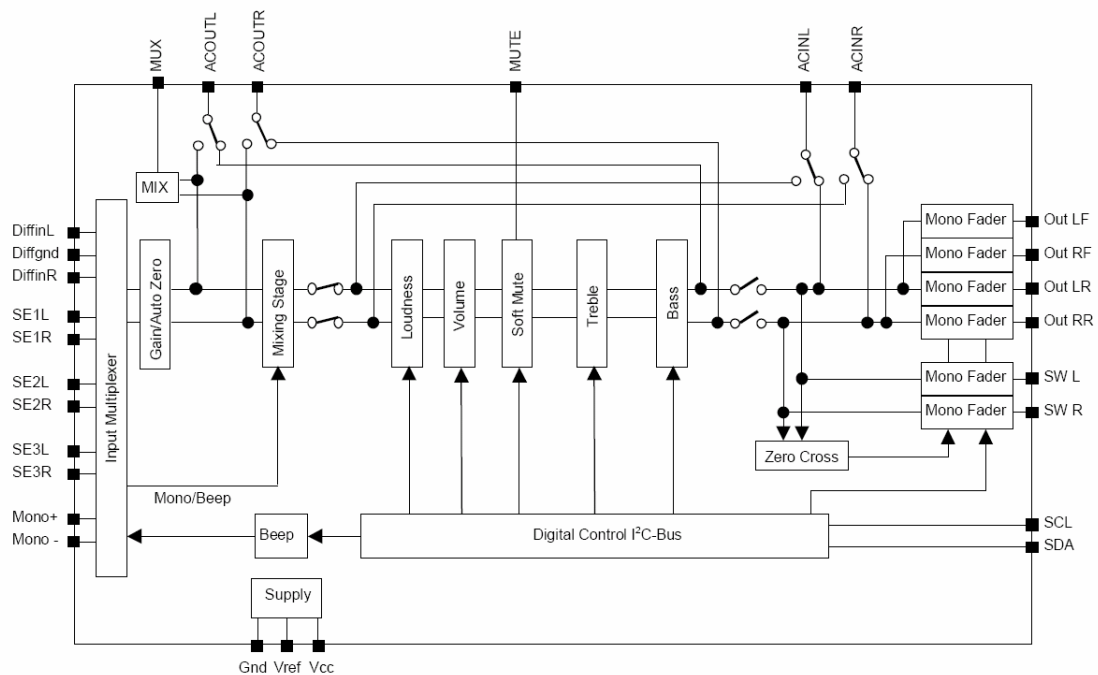
NO	NAME	I/O	STATUS		DISCRIPTION	PORT NAME
1	R-ON	O		OR1 PUSH PULL	RADIO ON/OFF COTROL	PE4(HS)
2	STBY	O		OR1 PUSH PULL	POWER IC STBY PIN CONTROL	PE5(HS)
3	AMP-ON	O		OR1 PUSH PULL	POWER IC AMP-ON CONTROL	PE6(HS)
4	SYS-ON	O		OR1 PUSH PULL	SYS+ 5V 전원 ON/OFF CONTROL	PE7(HS)
5	DISC-IN	I	INT	OR1 PULL UP	DISC INSERT SWITCH INPUT	PB0/PWM3
6	EJECT	I	INT	OR1 PULL UP	EJECT KEY INPUT	PB1/PWM2
7	ACC-IN	I	INT	OR1 PULL UP	ACC-IN	PB2/PWM1
8	PLII-ON	I	INT**	OR1 PULL UP	PLII ON/OFF CONTROL	PB3/PWM0
9	CDC-TXD	I	INT	OR1 PULL UP	CDC TXD	PB4/ARTCLK(HS)
10	V-UP	I	INT	OR1 PULL UP	VOLUME UP	PB5/ARTIC1
11	V-DN	I	INT	OR1 PULL UP	VOLUME DOWN	PB6/ARTIC2
12	CDC-DATA	I/O	INT**	OR1 FLATING	CDC DATA IN/OUT	PB7
13	DUAL	O		OR1 PUSH PULL	DUAL MODE CONTROL	PD0/AIN0
14	EQ-CH			-	EQ CHANGE	PD1/AIN1
15	SMETER	I	ADC	OR0 FLATING	FM FIELD STRENGTH METER PIN	PD2/AIN2
16	ST-INDI	O		OR1 PUSH PULL	STEREO INDICATION	PD3/AIN3
17	SREQ	O		OR1 PUSH PULL	SREQ	PD4/AIN4
18	SDA			-	TDA7404 DATA	PD5/AIN5
19	QUAL	O		-	QUAL DATA	PD6/AIN6
20	ENABLE			-	FRONT STATUS/FAN CONTROL	PD7/AIN7
21	VDDA			-	ANALOG POWER SUPPLY	-
22	VSSA			-	ANALOG GROUND	-
23	VDD2			-	VDD	-
24	VSS2			-	GROUND	-
25	SCL	O	INT	OR1 PUSH PULL	TDA7404 CLOCK	PF0/ANI8/MCO
26	BEEP	O	INT	OR1 PUSH PULL	BEEP SIGNAL OUT	PF1(HS)/BEEP
27	IR	I	INT**	OR1 PUSH PULL	FRONT REMOTE CONTROL INPUT	PF2(HS)
28	AV-SEL			-	AV1/2 SELECT	PF3/AIN9/OCMP2_A
29	V-CTL2	O		OR1 PUSH PULL	AV CONTROL 2	PF4/AIN10/OCMP1_A
30	V-CTL3	O		OR1 PUSH PULL	AV CONTORL 3	PF5/AIN11/ICAP2_A
31	V-CTL4	O		OR1 PUSH PULL	AV CONTORL 4	PF6(HS)/ICAP1_A
32	DETECT	I		OR1 FLATING	FRONT DETECTION	PF7(HS)/EXTCLK_A
33	VDD3			-	VDD	-
34	VSS3			-	GROUND	-
35	DB0	I		OR0 FLATING	LCD DATA	PC0/OCMP2_B/AIN12
36	INH	I		OR0 FLATING	LCD INH	PC1/OCMP1_B/AIN13
37	CS2	I		OR0 FLATING	VFD CHIP SELECT	PC2(HS)/ICAP2_B
38	WR2	O		OR1 PUSH PULL	VFD CLOCK	PC3(HS)/ICAP1_B
39	PARKING	I		OR0 FLATING	PARKING (H:ACTIVE)	PC4/MISO/ICCDATA
40	CS1	O		OR1 PUSH PULL	LCD CHIP SELECT	PC5/MOSI/AIN14
41	WR1	O		OR1 PUSH PULL	LCD CLOCK	PC6/SCK/ICCCCLK
42	DOUT	I		OR0 FLATING	VFD OUTPUT	PC7//SS/AIN15
43	RDS-CLK	I	INT	OR0 FLATING	RDS CLOCK INPUT	PA0
44	RDS-DATA	I	INT	OR0 FLATING	PDS DATA INPUT	PA1
45	MUTE	O	INT	OR1 PULL UP	MUTE OUTPUT SIGNAL	PA2
46	FAN_CNT	I	INT**	-	FAN ON/OFF CONTROL	PA3(HS)
47	VDD4			-	VDD	-
48	VSS4			-	GROUND	-
49	PWR-ON	O		OR1 PUSH PULL	POWER ON/OFF CONTROL	PA4(HS)
50	MICOM-ON	O		OR1 PUSH PULL	MICOM D/L CONTORL	PA5(HS)

51	I2C-SDA			OR1 FLATING	I2C DATA LINE	PA6(HS)/SDAI
52	I2C-SCL			OR1 FLATING	I2C CLOCK LINE	PA7(HS)/SCLI
53	VPP/TEST			-	RESERVED(MUST TIED TO VSS)	VPP/SEL
54	RESET		ACTIL	-	RESET INPUT	/RESET
55	EVD			-	EXTERNAL VOLTAGE DETECTOR	-
56	TLI			-	NC	-
57	VSS5			-	GROUND	-
58	OSCOUT			-	8M X-TAL OUTPUT PIN	-
59	OSCIN			-	8M X-TAL INPUT PIN	-
60	VDD5			-	VDD	-
61	TXD			OR1 FLATING	DSV-810 I/F RXD	PE0/TDO
62	RXD			OR1 FLATING	DSV-810 I/F TXD	PE1/RDI
63	SSTOP	I		OR1 PULL UP	IF COUNTER MEASUREMENT(H: OK)	PE2
64	TUNE-SD	I	ACT-H	OR0 FLATING	STOP DETECTION PIN	PE3

5-5. TDA7404

- 4 Stereo Inputs
- 1 Mono Input
- SoftStep-Volume
- Bass, Treble and Loudness Control
- Direct Mute and Soft Mute
- Internal Beep
- Four Independent Speaker Outputs
- Subwoofer stereo Output
- Digital Control

5-5-1. Block

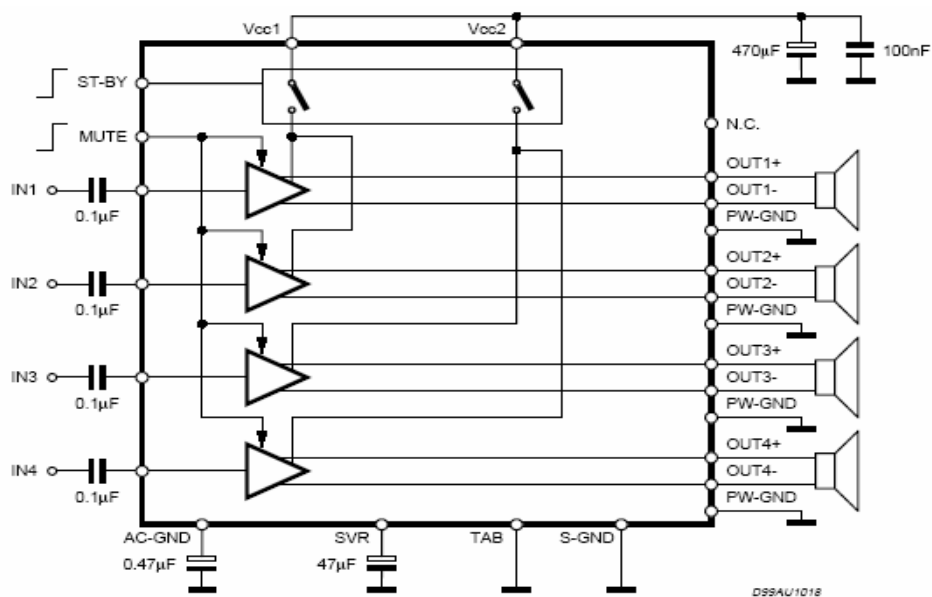


5-5-2. Pin description

No	name	Description
1	SE1L	Single-end stereo 1 left input
2	SE1R	Single-end stereo 1 right input
3	SE2L	Single-end stereo 2 left input
4	SE2R	Single-end stereo 2 right input
5	SE3L	Single-end stereo 3 left input
6	SE3R	Single-end stereo 3 right input
7	Mono+	Mono input +
8	Mono-	Mono input -
9	DiffnR	Differential Stereo Right Input
10	Diffgnd	Differential GND
11	DiffnL	Differential Stereo Left Input
12	ACINR	AC Input Right
13	ACINL	AC Input Left
14	CREF	CREF
15	GND	GROUND
16	SWR	Stereo Subwoofer Right Output
17	SWL	Stereo Subwoofer Left Output
18	OUTRF	Front Right Output
19	OUTRR	Rear Right Output
20	OUTLR	Rear Left Output
21	OUTLF	Front Left Output
22	MUX	N.C
23	MUTE	Mute Function
24	SCL	Serial Clock
25	SDA	Serial Data
26	VDD	VDD
27	ACOUTR	AC Output Right
28	ACOUTL	AC Output Left

5-6. TDA7386

5-6-1. BLOCK

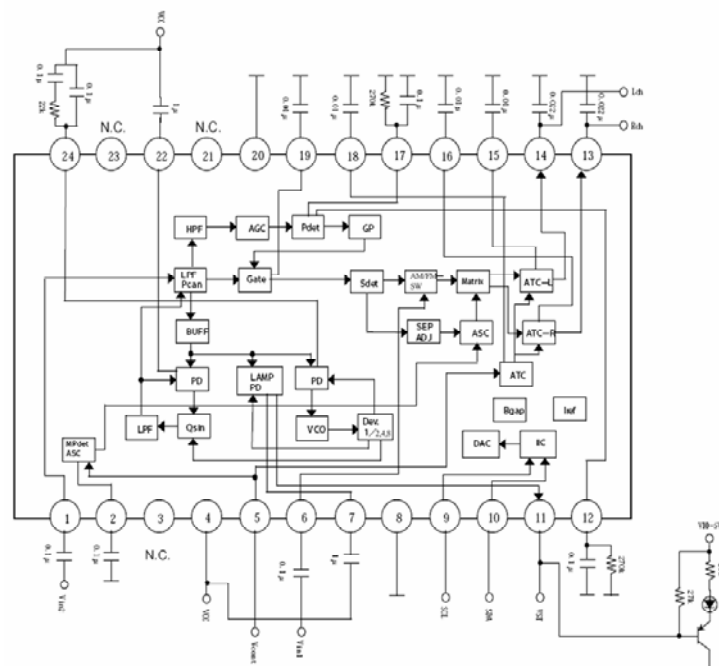


5-6-2. Pin Description

NO	NAME	Description
1	TAB	GROUND CONNECTION
2	PW-GND2	GND
3	OUT2(-)	OUT2(-) SIGNAL
4	STBY	With STBY set to high, Power is turned ON.
5	OUT2(+)	OUT2(+) SIGNAL
6	VCC	VCC
7	OUT1(-)	OUT1(-) SIGNAL
8	PW-GND1	GND
9	OUT1(+)	OUT1(+) SIGNAL
10	SVR	GROUND CONNECTION
11	IN1	SIGNAL INPUT1
12	IN2	SIGNAL INPUT2
13	S-GND	GROUND
14	IN4	SIGNAL INPUT4
15	IN3	SIGNAL INPUT3
16	AC-GND	GROUND
17	OUT3(+)	OUT3(+) SIGNAL
18	PW-GND3	GROUND
19	OUT3(-)	OUT3(-) SIGNAL
20	VCC	VCC
21	OUT4(+)	OUT4(+) SIGNAL
22	MUTE	MUTE COTROL
23	OUT4(-)	OUT4(-) SIGNAL
24	PW-GND4	GROUND
25	HSD	OPEN CONNECTION

5-7 MPX IC (AN18161A)

5-7-1. FUCTION BLOCK

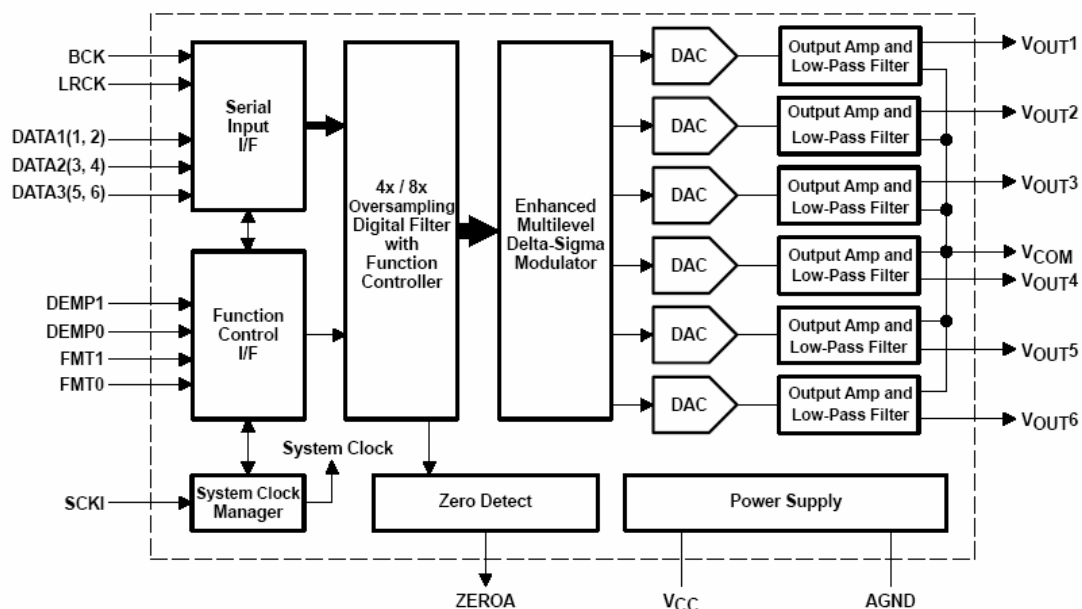


5-7-2. PIN Description

NO	NAME	FUNCTION
1	FM-IN	FM INPUT
2	ASC	ASC TIME CONSTANT
3	N.C	N.C
4	VCC	VCC
5	FMC	FM CONTROL VOLTAGE INPUT
6	AM-IN	AM INPUT
7	PILOT	PILOT DETECTION LOW-PASS FILTER
8	VSS	VSS(LOGIC-GND)
9	SCL	SCL
10	SDA	SDA
11	ST-I	STEREO INDICATOR, ACTIVE: LOW
12	PNL1	PNL AGC(2)
13	ROUT	R-ch OUTPUT
14	LOUT	L-ch OUTPUT
15	L-LPF	L-ch FM-ATC LOW-PASS FILTER
16	R-LPF	R-ch FM-ATC LOW-PASS FILTER
17	PNL2	PNL AGC(1)
18	FMA	FM-ATC TIME CONSTANT
19	PNLO	PNL OUTPUT HOLD
20	GND	GND
21	N.C	N.C
22	P-LPF	PILOT CANCELLATION CONTROL LOW-PASS FILTER
23	N.C	N.C
24	PLL	PLL LOW-PASS FILTER

5-8. PCM1606 (DAC)

5-8-1. FUNCTION BLOCK DIAGRAM



<PCM1606 BLOCK DIAGRAM>

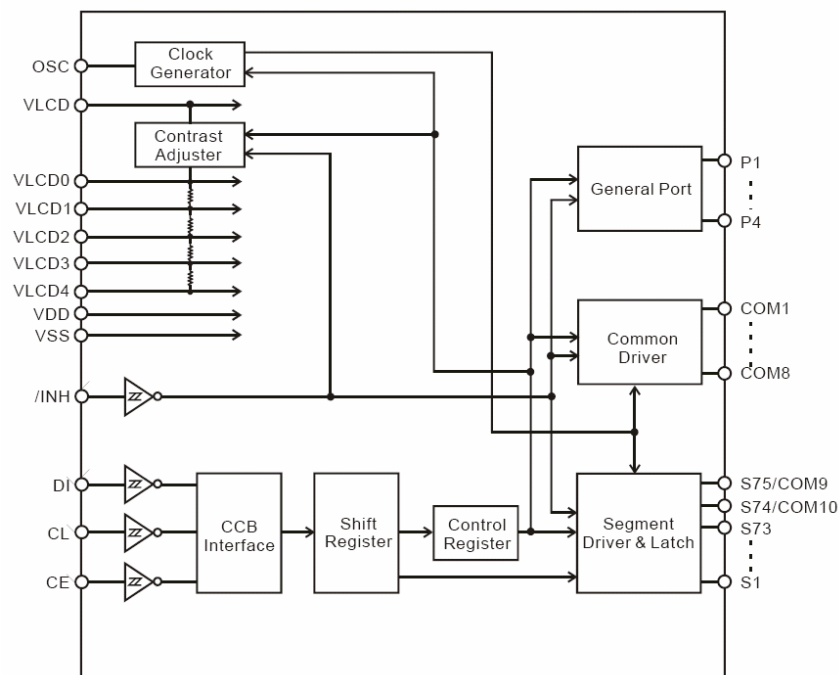
5-8-2. PIN Description

NO	NAME	FUNCTION
1	DATA1	Serial audio data input for VOUT1 and VOUT2
2	DATA2	Serial audio data input for VOUT3 and VOUT4
3	DATA3	Serial audio data input for VOUT5 and VOUT6
4	FMT1	Format select control
5	FMT0	Format select control
6	ZEROA	Zero-data flag, Logical AND of ZERO1 through ZERO6
7	AGND	Analog and digital ground
8	VOUT5	Voltage output for audio signal corresponding to L-ch on DATA3
9	VOUT6	Voltage output for audio signal corresponding to R-ch on DATA3
10	VOUT1	Voltage output for audio signal corresponding to L-ch on DATA1
11	VOUT2	Voltage output for audio signal corresponding to R-ch on DATA1
12	VOUT3	Voltage output for audio signal corresponding to L-ch on DATA2
13	VOUT4	Voltage output for audio signal corresponding to R-ch on DATA2
14	VCOM	Common voltage output
15	VCC	Analog and digital power supply. 5V
16	DEMP0	De-emphasis control
17	DEMP1	De-emphasis control
18	LRCK	Left and right clock input. This clock is equal to the sampling rate
19	BCK	Shift clock input for serial audio data
20	SCKI	System clock in. Input frequency is 128fs, 192fs, 256fs, 384fs, 512fs or 768fs

5-9. PT6578

PT6578 is a general purpose LCD Driver IC utilizing CMOS technology specially designed with character and graphical displays. It provides 1/8 to 1/10 duty and can drive up to a maximum of 730segment drivers and control up to 4 general purpose ports.

5-9-1. FUNCTION BLOCKS DIAGRAM



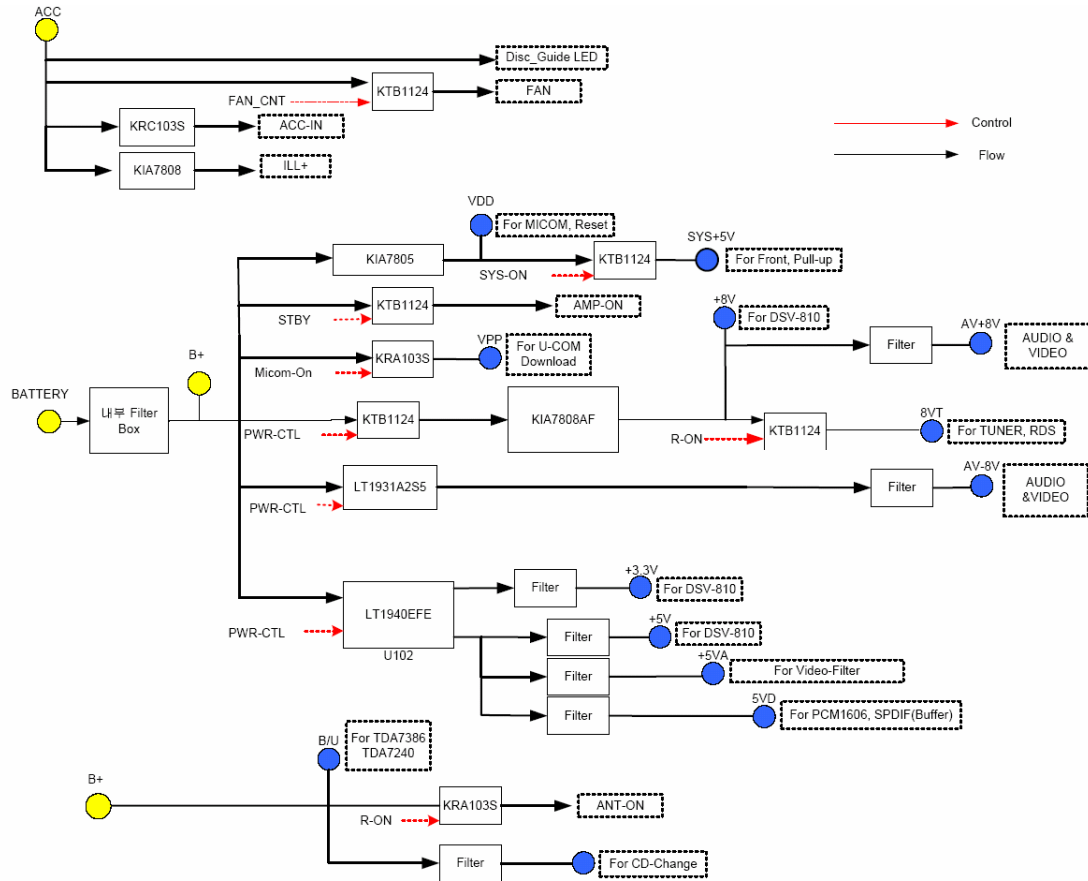
<PT6578 BLOCK DIAGRAM>

5-9-2. PIN Description

Pin NAME	I/O	Description	Pin No.
SG1 to SG73	O	Segment Driver Output Pin	1 ~ 73
SG74/COM10 to SG75/COM9	O	Segment/Common Driver Output Pin	74 ~ 75
COM1 to COM8	O	Common Driver Output Pin	83 ~ 76
P1 to P4	O	General Purpose Output Port	84 ~ 87
VDD		Logic Power Supply	88
VLCD		LCD Driver Block Power Supply	89
VLCD0		LCD Drive 4/4 Bias Voltage Power Supply	90
VLCD1		LCD Drive 3/4 Bias Voltage Power Supply	91
VLCD2		LCD Drive 2/4 Bias Voltage Power Supply	92
VLCD3		LCD Drive 1/4 Bias Voltage Power Supply	93
VLCD4		LCD Drive 0/4 Bias Voltage Power Supply	94
VSS		GROUND PIN	95
OSC	I/O	Oscillator Input/Output Pin	96
/INH	I	Display Off Control Input Pin	97
CE	I	Chip Enable Input Pin	98
CLK	I	Clock Input Pin	99
DI	I	Data Input Pin	100

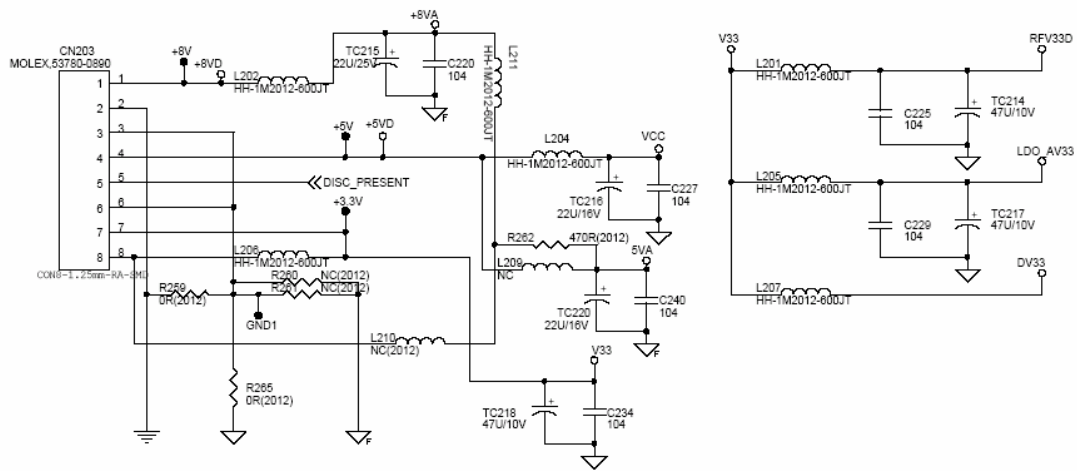
6. 회로 설명

6-1. MAIN POWER



<fig. 6-1>

6-1-2. DSV-830 전원부(LOADER)

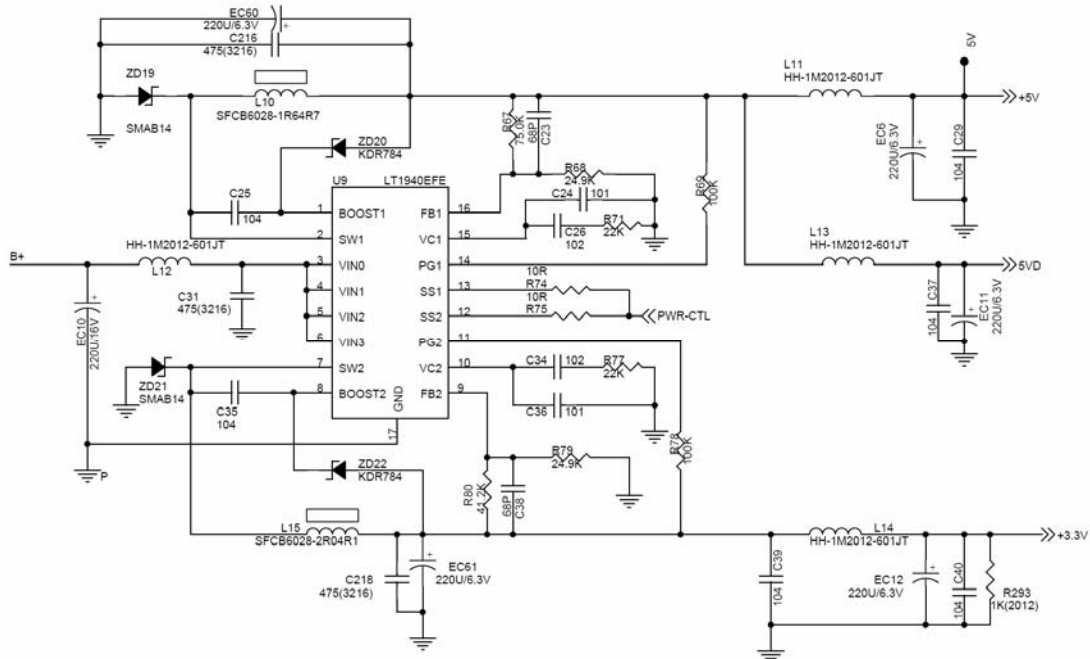


<Fig6-2. DSV-830 POWER>

- * DSV-830은 DC 8V, 5V, 3.3V를 입력 받고, 3.3V에서 1.8V를 만든다. 각 전압 별 사용 용도는
- 8V : Spindle, Loading 구동 및 Analog 2CH 출력을 얻기 위한 OP Amp IC의 공급용으로 사용
 - 5V : Sled & Actuator 구동 및 Audio DAC(1748) 전원
 - 3.3V : 1.8V(MPEG 1389내부전원)Regulation, MPEG , SDRAM, FLASH, Audio DAC등의 공급 전원으로 사용

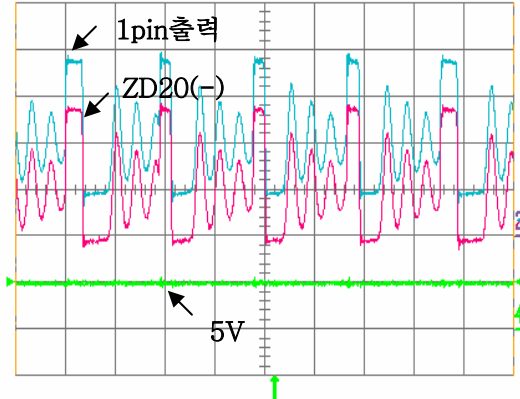
6-1-3. VXD-2310 MAIN 전원부(SET)

6-1-3-1. 5V, 3.3V전원



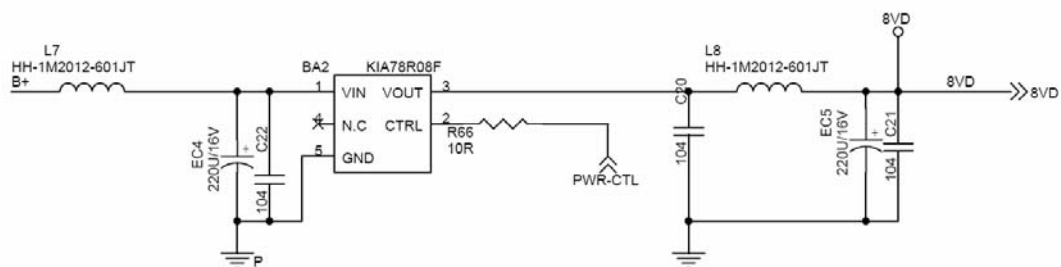
<Fig6-3. LT1940>

1) U9(LT1940EFE)는 5V, 3.3V 전원을 공급한다. U11-49(PWR-CTL)에서 HIGH로 동작시키면 U9이 동작한다. 5V 전원은 DSV-830과 MAIN B/D에 주요 IC에 사용된다. 3.3V 전원은 DSV-830에 MT1389 IC를 구동시키는데 사용된다.



- 2) RUN/SS1, RUN/SS2에 연결되어 있는 PWR-CTL신호가 HIGH이면 동작.
- 3) 5V전압과 3.3V전압 출력
- 4) FB1,FB2 단에 저항 값으로 출력 전압 조절가능.
- 5) 그림은 SWITCHING하는 파형과 REGULATION된 파형을 나타냄. Switching 주파수는 1.1Mhz이며, 각각의 최대 전류 치는 1A이다.
- 6) 불량 확인
 - VIN0~3에 입력전원이 제대로 들어오는지 확인.
 - IC Bottom면에 Power GND가 위치함 - 냉땀 인지 확인. 냉땀 시 동작 불
 - SW1에서 Switching이 발생 해야 함.
 - FB에 걸리는 전압에 의해 출력 전압이 조절된다.
 - Vc 약2.6V, PG: out전압 걸림.
 - RUN/SS: LOW시 LT1940 shut down시킴.

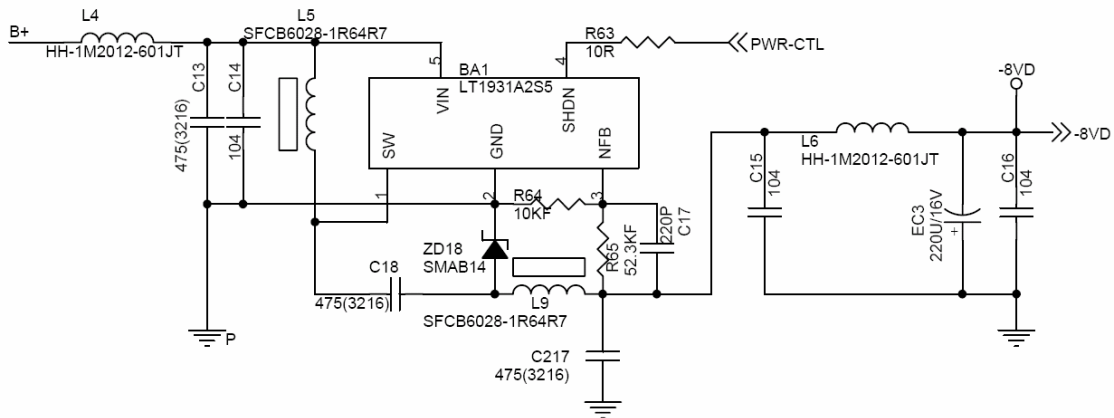
6-1-3-2. 8V전원



<Fig6-4. KIA78R08F>

- 1) BA2(KIA78R08F)는 +8V 전원을 공급한다. U11-49(PWR-CTL)에서 HIGH로 동작시키면 BA2가 동작한다. 8V전원은 DSV-830과 MAIN에 AUDIO, VIDEO IC에 사용된다.
- 2) BA2의 출력이 8V가 안 나올 경우
 - BA2-2번 PIN에 CONTROL단자가 HIGH(3V이상)인지 확인.
 - L8을 제거 후 OUTPUT을 측정한다. 제거 후 정상 동작하면, IC에는 이상무.
 - BA2-1번의 입력이 정상적으로 입력되는지 확인.

6-1-3-3. -8V전원



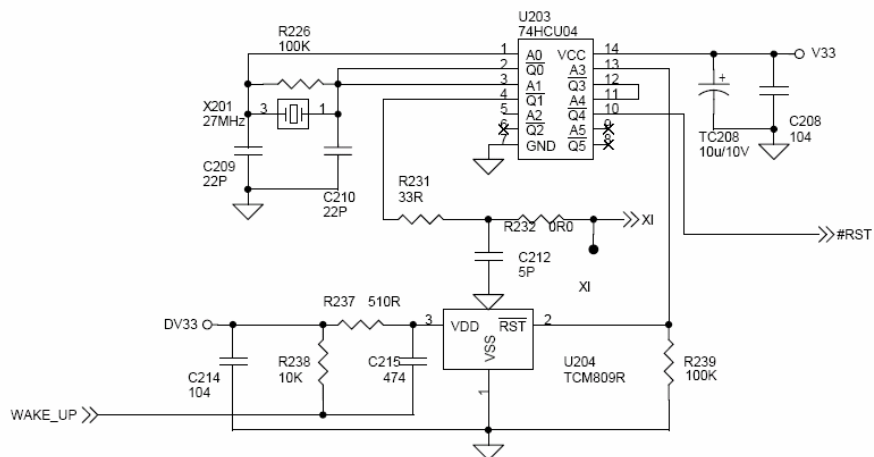
<Fig6-5. LT1931>

1) BA1(LT1931)는 -8V 전원을 공급한다. U11-49(PWR-CTL)에서 HIGH로 동작시키면 BA1가 동작한다. -8V전원은 MAIN에 AUDIO IC에 사용된다.

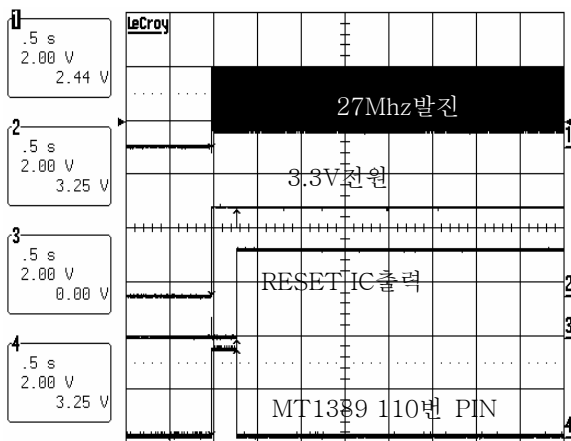
2) -8V가 안 나올 경우

- BA1-5 Vin의 입력이 제대로 들어가는지 확인
- BA1-4 Power on시 항상 5V유지(Shut down control pin - Low동작불)
- ZD18 DEAD확인 - 양단 Short시 diode dead임
- BA1-3에 일정 전압 걸림

6-1-4. RESET 및 X-TAL(27MHz): 발진부(DSV-830 LOADER)



<fig6-6. DSV-830 RESET 회로도>



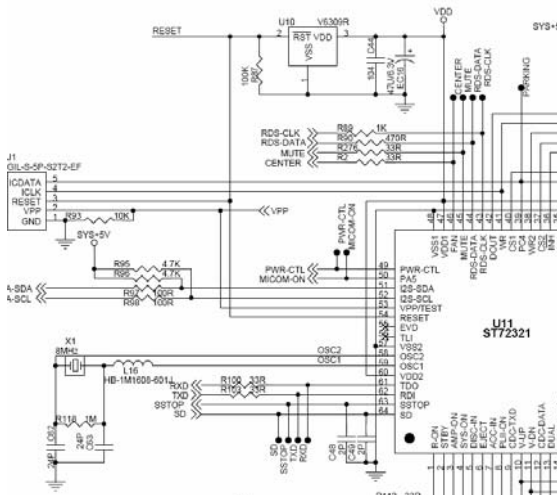
1) RESET부

전원(3.3V)가 입력되면, U204(RESET IC)의 출력이 200~300msec Delay후에 3.3v가 된다. 이 출력이 Inverter IC(74HCU04)을 거치면 High Active reset 파형이 MT1389의 110번 PIN에 입력된다. RESET IC가 제대로 동작하지 않으면, SET가 초기화 되지 않기 때문에 동작을 하지 않는다.

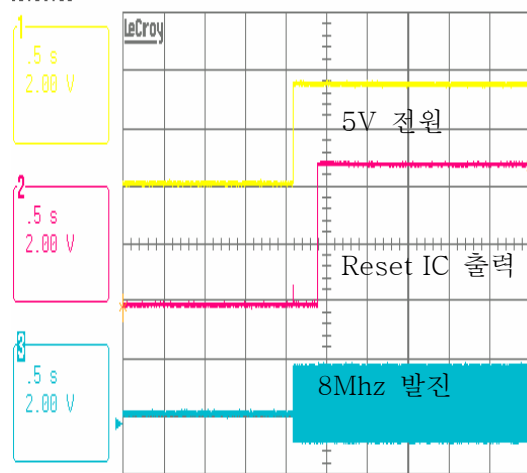
2) X-TAL(27MHz) 발진부

X-TAL 발진부는 Crystal의 양단에 Inverter IC(74HCU04)의 입출력에 연결되면 27MHz의 발진이 되며, 27MHz의 주파수가 MT1389 Pin229번에 입력된다.

6-1-4. RESET 및 X-TAL(8MHz): 발진부 (Main)



<fig.6-7>



<fig.6-8>

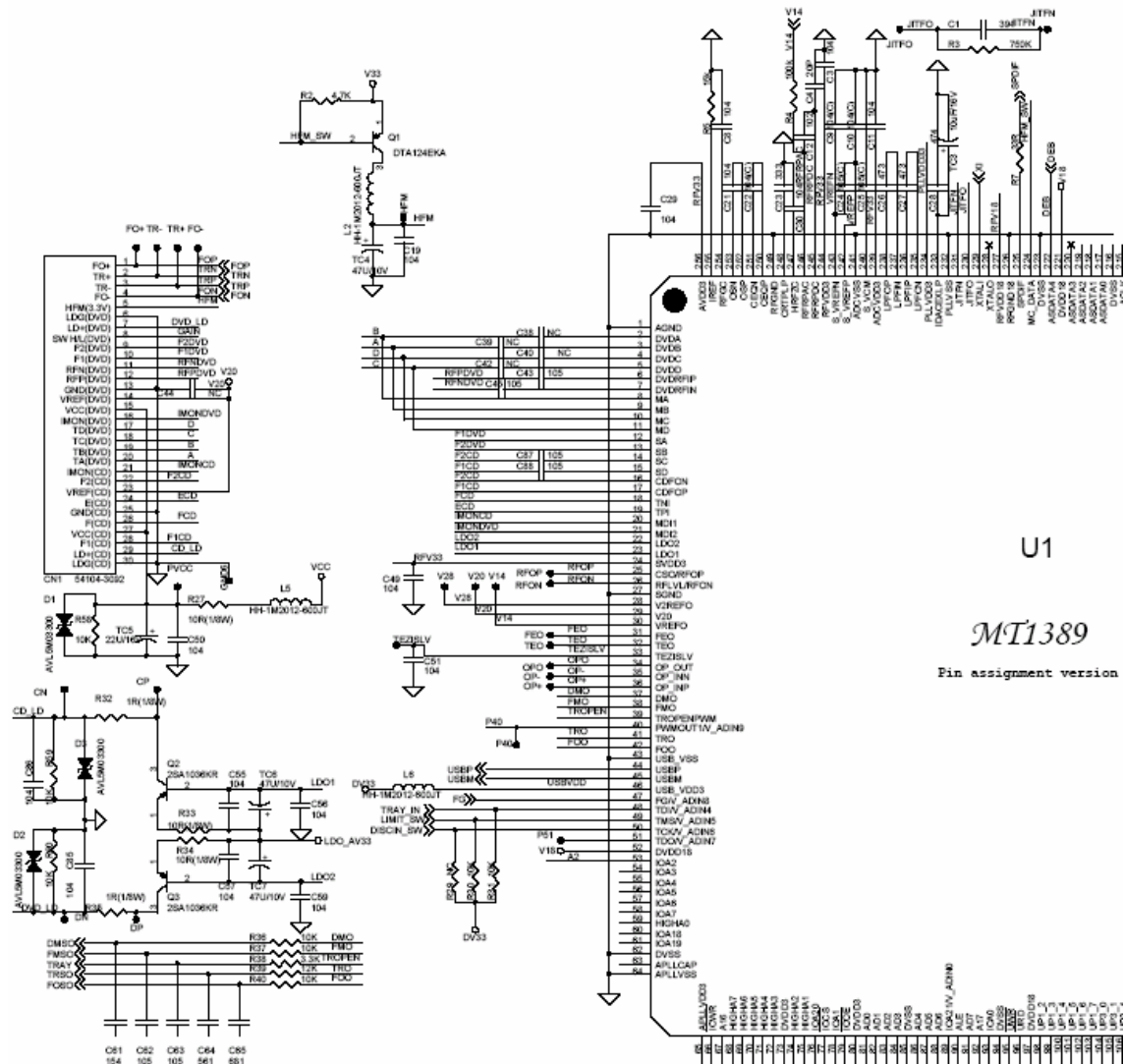
1) RESET부

MAIN부분은 DSV-830 부분과 달리 전원(5V)가 입력되면, U10(RESET IC)의 출력이 200~300msec Delay후에 5V가 된다. (fig.2) 또한 외부의 강제 Reset버튼과 연결되어 있다. SET의 문제 발생시 외부의 RESET버튼을 눌러 주면, SYSTEM은 초기화 된다.

2)X-TAL(8MHz) 발진부

X-TAL 발진부는 8MHz(X1)로 발진이 되며, U11(ST72321)의 Pin58,59번으로 직접 연결되어 있다.

6-2-2.RF부 (MT1386)



<Fig. 6-9. RF CIRCUIT>

DISC가 입력되면 READING동작을 하기위하여 LASER DIODE를 동작시키는 FLOW를 시작한다

각 MEDIA별 HFM,GAIN,LD+ (DVD),LD+ (CD)의 ON/OFF는 아래의표와같이 진행된다
정상적인 PICK-UP인 경우

CD 재생시:R32양단 전압-->300mV(500mV이상인 경우는 PICK-UP 불량)

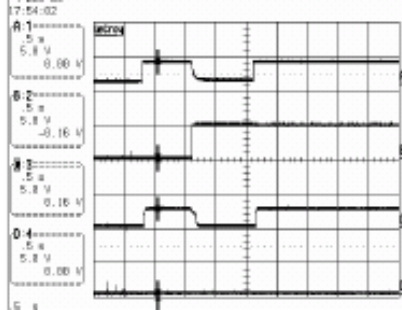
DVD9(Dual) 재생시 DVD 재생시:R35양단 전압-->350mV(600mV이상인 경우는 PICK-UP불량)

각 MEDIA 재생시 CONTROL 단자

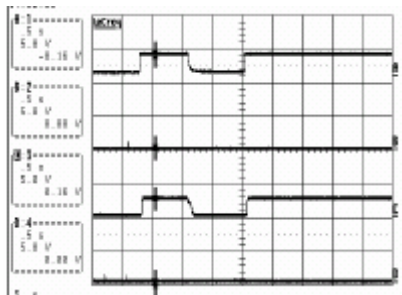
	HFM MT1389 224	GAIN MT1389 114	LD+ (DVD) CN1-7	LD+ (CD) CN1- 29
DVD5	H(3.3V)	L(0V)	H(2.3V)	L(0V)
CD	H(0V)	L(0V)	L(0V)	H(2.3V)

DVD9	L(3.3V)	H(5V)	H(2.3V)	L(0V)
------	---------	-------	---------	-------

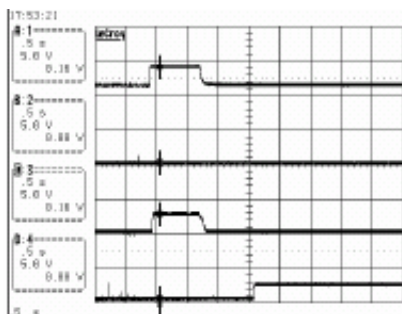
- DVD5(Single) 재생시(ch1 : HFM, ch2 : GAIN, ch3 : DP, ch4 : CP)



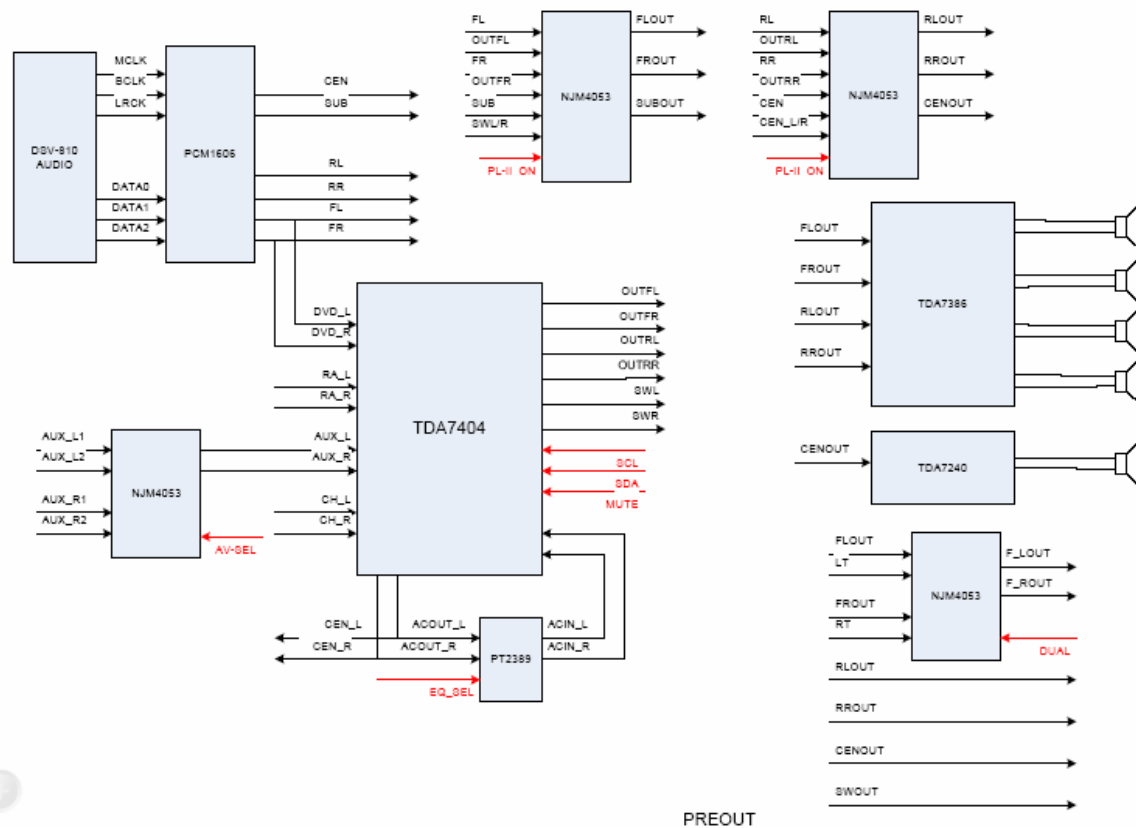
-DVD9(Dual) 재생시



- CD 계열 재생시



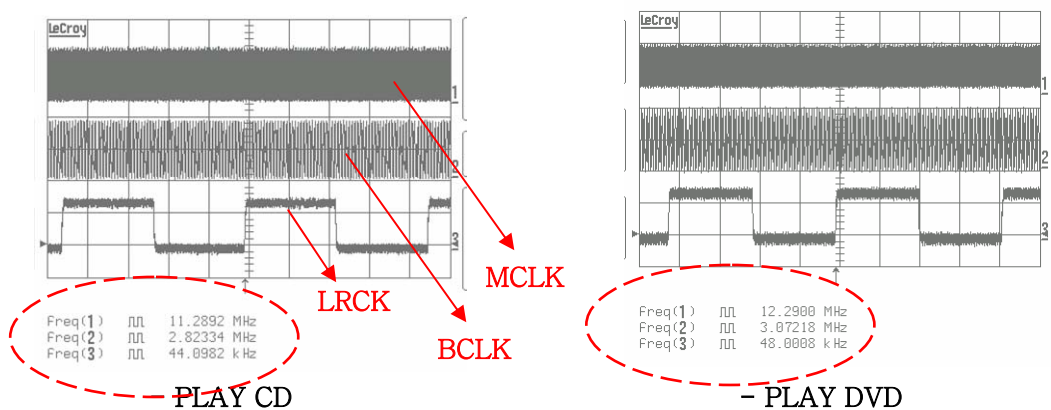
6-2-3 Audio부

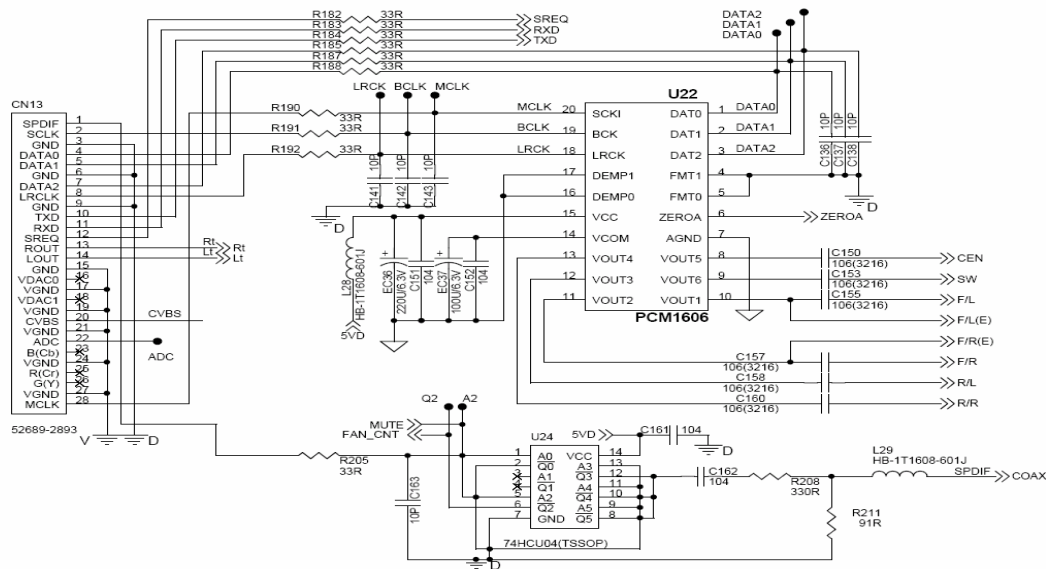


<Fig.6-10 VXD-2310 AUDIO BLOCK>

- VXD-2310은 DSV-830으로부터 DATA0, DATA1, DATA2, MCLK, BCLK, LRCK의 신호를 U22에 입력되면, U22에서 5.1CH로 ANALOG AUDIO 출력된다. DATA0의 경우 FRONT L&R의 DATA를 가지고 있으며, DATA1은 REAR L&R, DATA3는 CENTER와 SUB WOOFER의 DATA를 가지고 있다.

	CD	DVD
LRCK	44.1Khz	48Khz





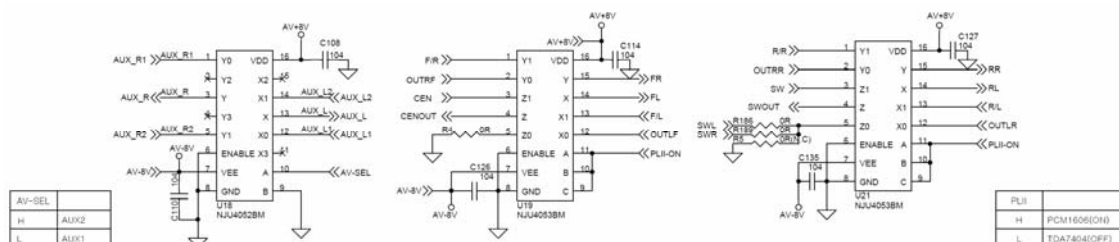
<Fig.6-11 PCM1606 CIRCUIT>

1) U22의 5.1CH출력과 U20의 4CH출력은 MUX(U19, U21)로 입력된다. 입력된 오디오 출력은 U11-8(PLII)의 의해서 출력이 결정된다. DVD(CD)가 아닌 외부입력이나 TUNER출력은 항상 U11-8 출력이 LOW(0V)이다.

	PLII ON(H)		PLII OFF(L)	
	2CH	5.1CH	2CH	5.1CH
Down Mix on	TDA7404	TDA7404	TDA7404	TDA7404
Down Mix off	PCM1606	PCM1606	TDA7404	PCM1606

2) U20(TDA7404)는 3개의 STEREO입력과 1개의 DIFFERENT INPUT을 가지고 있다. 각각의 입력은 다음과 같다. 외부입력은 별도의 MUX(U18)를 이용하여 2개 입력중에 한가지만 선택하여 U20으로 입력된다.

SOURCE	INPUT	PIN NO
DVD(CD)	Different input	9,10
TUNER	SE2	3,4
AV(외부입력)	SE3	5,6
CD-CHANGER	SE1	1,2



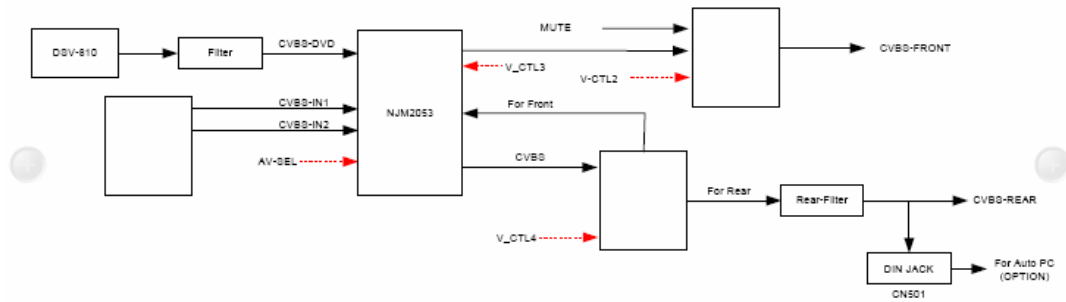
<Fig. 6-12 AUDIO MUX CIRCUIT >

3) U23(PT2389)는 외부입력, TUNER MODE일 때 사용되는 EQ IC이다. FRONT에서 EQ 버튼을 누를 때 마다, U23-11번 PIN으로 CONTROL SIGNAL이 올 때 마다, EQ MODE를 변화시킨다. CONTROL SIGNAL은 $V_{cc} * 0.7V$ 이상이 되어야 하기 때문에, 5.6V이상 입력이 되어야 EQ IC가 동작한다. 각 MODE일 때 각각의 출력(U23-15,16,17,18,19)은 HIGH가 된다.

F

6-3-2. VIDEO

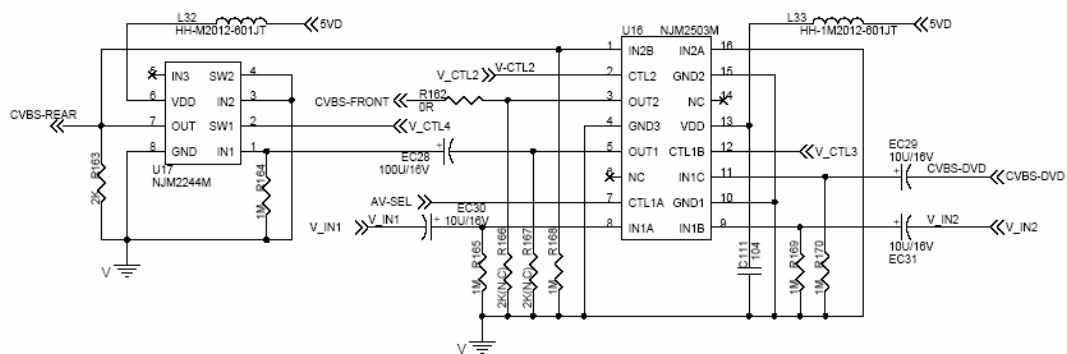
- VXD-2310은 기본적으로 2개의 비디오 출력(Front-CVBS, Rear-CVBS)을 가지고 있다. Rear-Video는 항상 출력이 되며, Front-Video는 아래의 두 가지 조건에서는 출력되지 않는다.



<Fig. 6-14 VXD-2310 VIDEO BLOCK>

- 1) Parking단자가 GND에 묶여있지 않고 High로 되어 있을 때
- 2) Dual-Mode일 때

CVBS의 Source(DSV-830에서 넘어오는 CVBS신호와 외부 입력 CVBS신호)신호는 기본적으로 VIDEO MUX IC(U16, U17)를 통하여 Rear-Monitor로 출력된다. 이 Rear Video 신호를 가지고 다시 Front-Video 신호를 뽑아낸다.

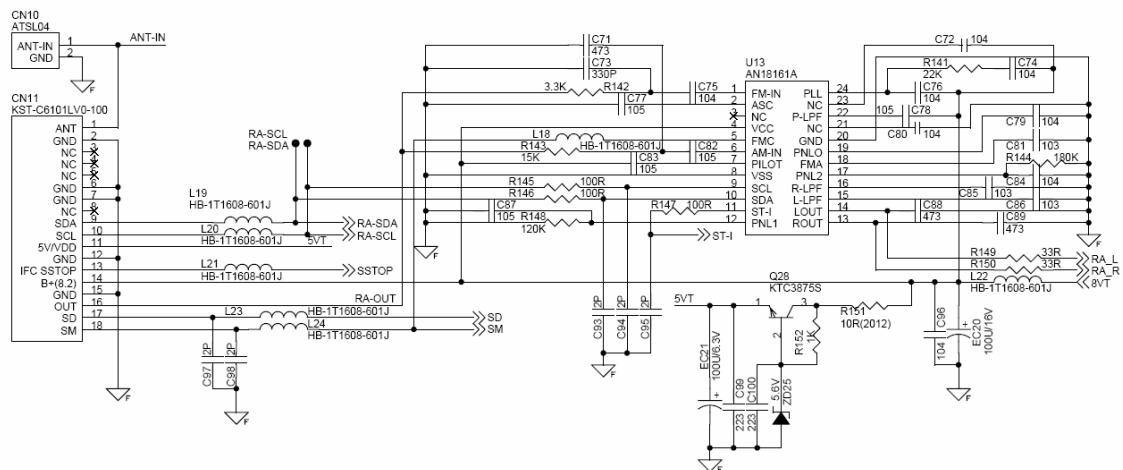


VIDEO CONTROL					
FRONT	REAR	AV-SEL	VCTL-3	VCTL4	VCTL2
AV1		L	L	L	H
AV2		H	L	L	H
DVD		X	H	L	H
MUTE		X	X	H	X
MUTE	AV1	L	L	L	L
MUTE	AV2	H	L	L	L
MUTE	DVD	X	H	L	L

< Fig. 6-16 VXD-2310 VIDEO MUX CONTROL >

6-4. TUNER부

TUNER 부분은 크게 두 부분으로 이루어져 있다. TUNER PACK 부분과 TUNER PACK의 출력을 받아서 STEREO로 출력을 내보내 주는 MPX회로 부분이 있다. VXD-2310의 TUNER의 특징은 TUNER의 PARAMETER값을 IIS로 CONTROL이 가능한 AUTO TRACKING방식이다.



< Fig. 6-16. TUNER CIRCUIT >

1) TUNER에서 신호를 받아서 TUNER 16번PIN으로 AUDIO DATA출력. 출력된 DATA는 MPX(AN18161A)에 1번PIN (FM시), 6번PIN (AM시)으로 입력.

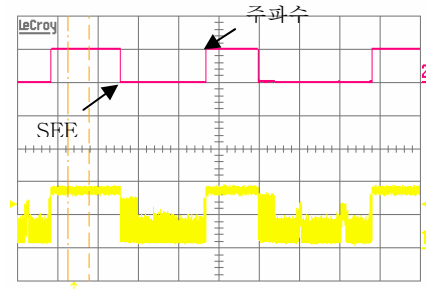
2) 입력된 DATA는 13번, 14번 PIN으로 출력. 15번, 16번에 C값으로 인해 출력 DATA에 주파수 특성 결정. HIGH성 NOISE가 강할 경우 C의 값을 크게 하면, 고주파수쪽을 감소시킬 수 있다. 고주파부분을 감소시키면 NOISE가 감소하나 소리가 웅웅되는 단점이 있다.

3) SEEK동작

1번 SD(TUNER 17번PIN), 2번 SM(TUNER 18번 PIN).

	SD	SM
SEEK 시	0V(LOW)	
주파수 선택	5V(HIGH)	일정 LEVEL 이상(1.7~)

S-meter값은 전계 강도의 세기에 따라 LEVEL이 상승
일정 LEVEL이 되면 SD가 HIGH로 되면서 주파수가
멈춘다. SEEK동작이 안 되는 SET는 SD와 SM을 확인을
해야 된다.



4) STEREO INDICATOR동작

U13(AN18161A) 11번 PIN 동작 확인

	ST	정상시
STEREO 입력	Low	High

AN18161A에 11번PIN이 STEREO시 LOW로 되고, MICOM은 이것을 인식하여, LCD정보에 나타나게 해 준다.

5) TUNER가 정상 동작을 하지 않을 때

- 실용감도

a) ANTENA가 GROUND와 Short되지 않았는지 check한다.

b) TUNER PACK의 17,18번 PIN이 U11과 이상 없이 연결 되어 있는지 확인.

c) TUNER PACK의 16번 PIN(OUTPUT) 이상 없이 출력되는지 확인. TUNER 출력이 U13-13,14에서 정상적으로 출력되는지 확인.

d) F/W가 정상적인지 확인.

- STEREO INDICATOR 불량

a) TUNER TEST 장비의 ST 설정이 이상 없는지 확인.

b) U13-11이 U11-16번 PIN과 연결이 이상 없는지 확인.

- 기타 불량

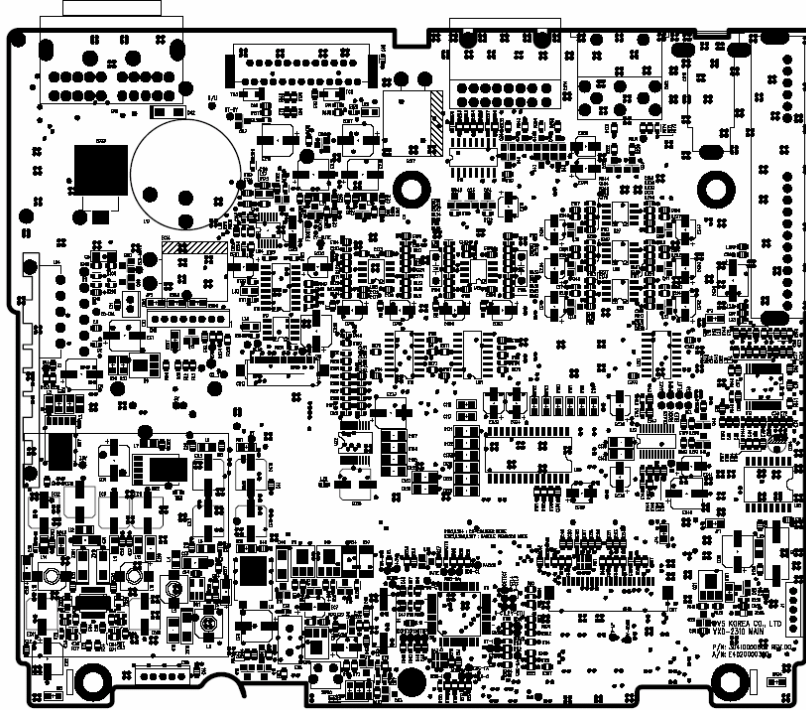
a) 실용감도와 ST불량일 때와 동일하게 확인한다.

b) 국간NOISE, 3dB Limiting은 F/W로 결정되기 때문에 F/W확인

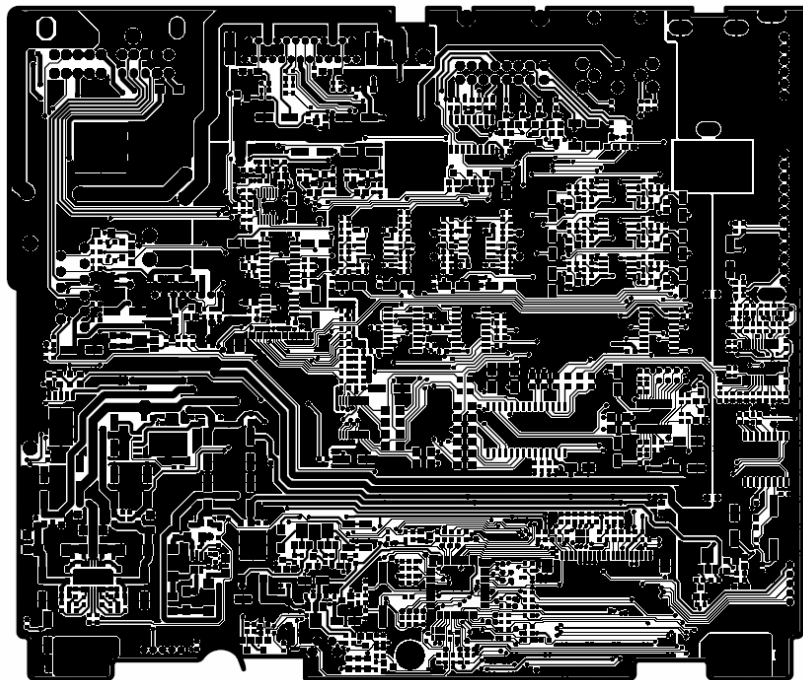
7. PCB 도면

7-1. Main PCB 도면

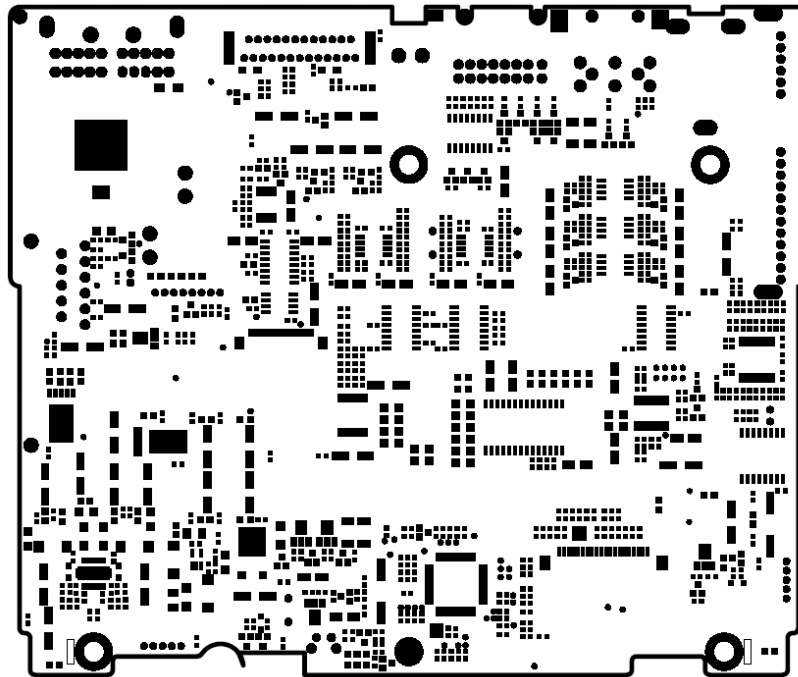
1) TOP-SILK



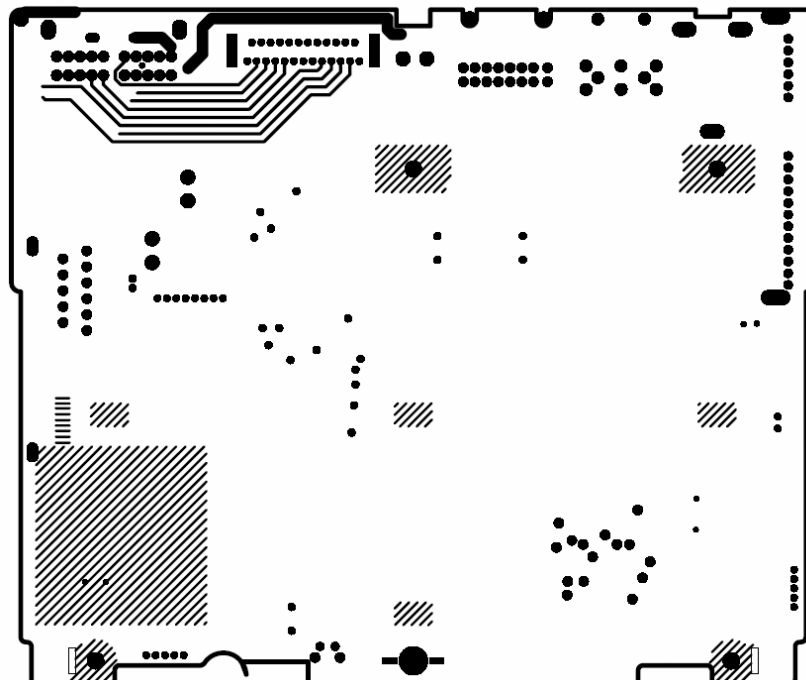
2) TOP-PATTERN



3) TOP-SOLDER

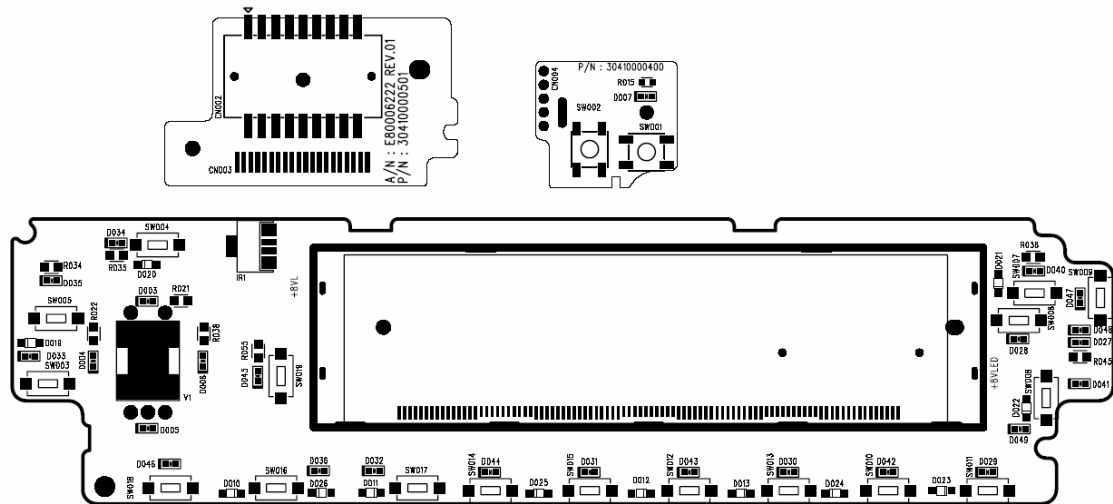


4) BOTTOM SOLDER



7-2 FRONT & SUB PCB 도면

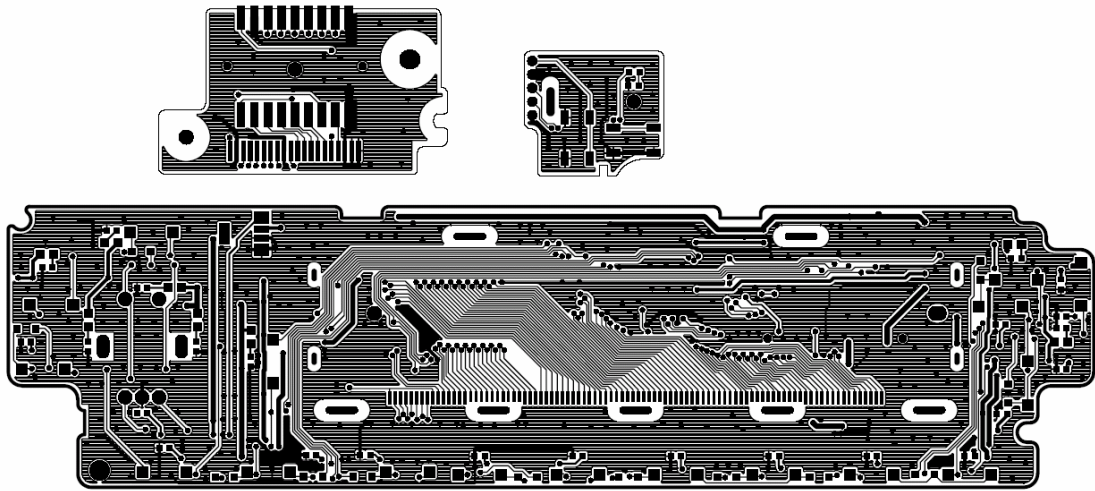
1) TOP SILK



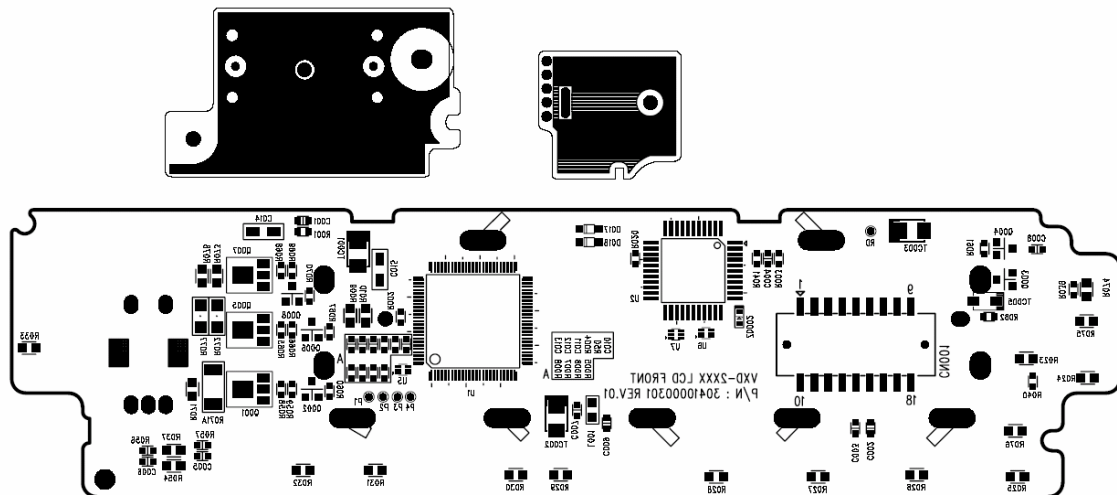
2) TOP SOLDER



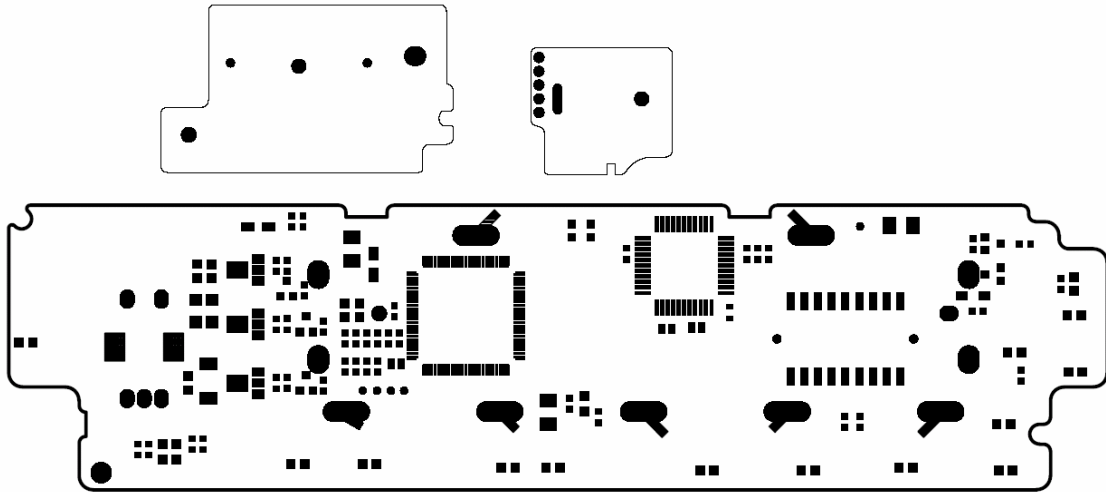
3)TOP PATTERN



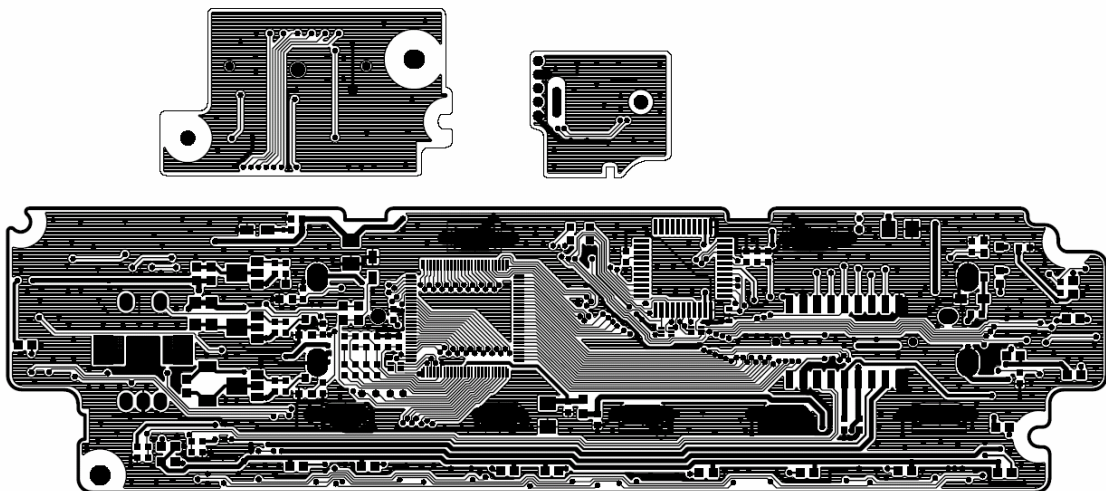
4)BOTTOM SILK



5)BOTTOM SOLDER



6)BOTTOM PATTERN



8. 기구 & 회로 BOM

8-1. 회로 BOM

NO	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
1	1	E8000622410	AY VXD-2310 SUB PCB(FRONT+ EJECT+ DETHACHABLE)	2	1	AY		
2	2	30610011001	PCB-D-ARR,VXD-2100FRT+ EJT+ DET,3연1조,2L,1.6t,REV01	3	1	EA		

A. SUB-S/W

NO	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
1	2	E8000622110	ASS'Y SUB-PCB FOR EJECT S/W REV1.0	2	1	AY		
2	3	30410000400	PCB-DOUBLE,VXD-2100,EJECT,FR4-2L,1.6t, REV00	3	1	EA		
3	3	37250005017	CONN-A,5P-5P-60mm,board-in type,2mm pitch	3	1	EA	CN004	
4	3	26022011601	1608,J,1/16W,2.2K	3	1	EA	R015	
5	3	33306000017	LED,KBC-BW201C,WHITE,1608,SMD	3	1	EA	D007	
6	3	37012000014	SW-SENSTL,SKQGACE010,12V,50mA,2.55N,SMD	3	2	EA	SW001,002	

B. SUB-DETACHABLE

	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
1	2	E8000622210	ASS'Y SUB-PCB FOR DETACHABLE CONNECTOR REV1.0	2	1	AY		
2	3	30410000501	PCB-DOUBLE,VXD-2100,DETACHABLE,FR4-2L,1.6t, REV01	3	1	EA		
3	3	37211018009	CONN-F,DTC-R1802,18PIN DETACHABLE	3	1	EA	CN002	
4	3	37590000033	20PIN,60mm, 0.35T,1mm PITCH, SMD	3	1	EA	CN003	

C. FRONT

NO	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
1	2	E8000622310	ASS'Y VXD-2310 FRONT PCB	2	1	AY		
2	3	30410000301	PCB-DOUBLE,VXD-2100 FRONT,FR4,2L,1.6t, REV01	3	1	EA		
3	3	37201018001	CONN-M,DTC-P1802,18PIN,DETACHABLE	3	1	EA	CN001	
4	3	21210174002	1608,COG,100PF,J,50V	3	2	EA	C005,006	
5	3	21268174002	1608,COG,680PF,J,50V	3	1	EA	C010	
6	3	21210375002	1608,X7R,0.01U,K,50V	3	1	EA	C008	
7	3	21268375002	1608,X7R,0.068U,K,16V	3	3	EA	C011-013	
8	3	21210457002	1608,Y5V,0.1U,Z,25V	3	6	EA	C001-004,007,009	
9	3	21247545001	3216,X7R,4.7UF,K,16V	3	1	EA	C014	
10	3	21210635001	3216,X7R,10uF,K,10V	3	1	EA	C015	
11	3	31005000001	1SS355TE, UMD2	3	11	EA	D012,017-026	
12	3	33306000011	1608, LED, SMD, BLUE	3	9	EA	D027,033-035,041,045,046,047,049	
13	3	33306000017	LED,KBC-BW201C,WHITE,1608,SMD	3	10	EA	D028-032,036,040,042-044	
14	3	20347036001	10V,47UF,M,TLM1A476TSSR,TCFGB1A476M8R	3	3	EA	TC001-003	
15	3	20310046001	16V,10UF,M,TSM1C106ASSR,TCFGA1C106M8R	3	1	EA	TC005	
16	3	35402000004	HIGH Current,3A,HH-1M2012-600JT	3	1	EA	L001	
17	3	26000001601	1608,J,1/16W,0Ω	3	2	EA	R003,020	
18	3	26010001601	1608,J,1/16W,100Ω	3	1	EA	R001	
19	3	26018003601	2012,J,1/8W,180Ω	3	2	EA	R073,078	
20	3	26027003601	2012,J,1/8W,270Ω	3	23	EA	R021-038,045,054,055,074,076	
21	3	26047001601	1608,J,1/16W,470Ω	3	1	EA	R062	
22	3	26000003601	2012,J,1/8W,0Ω	3	1	EA	R009	
23	3	26022011601	1608,J,1/16W,2.2K	3	3	EA	R059,066,069	
24	3	26033011601	1608,J,1/16W,3.3K	3	1	EA	R004	
25	3	26010021601	1608,J,1/16W,10K	3	11	EA	R002,005-008,039,040,060,061,067,070	
26	3	26022021601	1608,J,1/16W,22K	3	3	EA	R058,065,068	
27	3	26039021601	1608,J,1/16W,39K	3	1	EA	R50	
28	3	26047021601	1608,J,1/16W,47K	3	2	EA	R056,057	
29	3	26082021601	1608,J,1/16W,82K	3	1	EA	R041	
30	3	26010004601	3216, J, 1/4W, 100Ω	3	2	EA	R072,077	
31	3	26010095601	5025,J,1/2W,10Ω	3	1	EA	R071A	
32	3	31042000002	TVS-Diode, 1-line ESD Protection, SMD	3	1	EA	ZD002	
33	3	31042000003	VS-Diode, 5-line ESD Protection Array, SMD	3	3	EA	U5-7	
34	3	31101000024	KTBI124,SOT-89,BCE	3	3	EA	Q001,005,007	
35	3	31160000005	KRC103S, SOT-23, NPN	3	4	EA	Q002,004,006,008	
36	3	31160000004	CHIP DIGITAL TR KRA103S	3	1	EA	Q003	
37	3	33309000007	IR-RECEIVER MODULE, TSOP6238-TT,SMD	3	1	EA	IR1	

NO	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
38	3	37012000015	SW-SENSTLSKQYABE010,12V,50mA,2.55N,SMD	3	17	EA	SW003-019	
39	3	32000000085	VFD DRIVER IC AD6315, LQFP,44PIN	3	1	EA	U2	
40	3	34101000002	VR-ROTARY,EC11B15C2,15oulses	3	1	EA	V1	
41	3	32006000003	PT6578,LQFP-100,1/8 to 1/10 Duty,LCD DRIVER IC	3	1	EA	U1	
42	3	E8000000202	VXD FRONT LCD Backlight Module ASS'Y, BLUE	3	1	EA		
43	4	33305000004	TN TYPE, 1/8 DUTY, 1/4 BIAS, TTR9234-C4,BLUE	3	1	EA		
44	4	33306000019	VXD-2100 Backlight LED, E1S35-AW1C7-01,WHITE	3	4	EA		
45	4	62007003400	VXD-2100	3	1	EA		
46	4	61002004200	VXD-2100	3	1	EA		
47	4	62028000600	VXD-2100	3	1	EA		
48	3	37290000002	CONN-DV,ZEBRA,88(L)*2(W)*5.75(H),0.1mm PITCH	3	1	EA		

D. COMON PART(MAIN)

NO	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
1	2	E4020000400	AY VXD-2310 MAIN PCB FOR RDS	2	1	AY		
2	3	30410000800	PCB-DOUBLE,VXD-2310 MAIN,FR4,2L,1.6t,REV00	2	1	EA		
3	3	21220971002	1608,COG,2PF,C,50V	3	7	EA	C48,49,93-95,97,98	
4	3	21210074002	1608,COG,10PF,J,50V	3	7	EA	C136-138,141-143,163	
5	3	21218074002	1608,COG,18PF,J,50V	3	11	EA	C45,50-58,61	
6	3	21224074002	1608,COG,24PF,J,50V	3	2	EA	C62,63	
7	3	21222074002	1608,COG,22PF,J,50V	3	2	EA	C46,47	
8	3	21247074002	1608,COG,47PF,J,50V	3	2	EA	C198,200	
9	3	21268074002	1608,COG,68PF,J,50V	3	2	EA	C23,38	
10	3	21210174002	1608,COG,100PF,J,50V	3	4	EA	C24,36,190,192	
11	3	21215174002	1608,COG,150PF,J,50V	3	3	EA	C123,212,215	
12	3	21218174002	1608,COG,180PF,J,50V	3	6	EA	C165,173,178,184,191,197	
13	3	21222174002	1608,COG,220PF,J,50V	3	5	EA	C17,164,168,181,182	
14	3	21227174002	1608,COG,270PF,J,50V	3	1	EA	C104	
15	3	21233174002	1608,COG,330PF,J,50V	3	5	EA	C73,170,171,176,177	
16	3	21256174002	1608,COG,560PF,J,50V	3	2	EA	C69,70	
17	3	21210275002	1608,X7R,1000P,K,50V	3	2	EA	C26,34	
18	3	21215275002	1608,X7R,1500P,K,50V	3	4	EA	C146-149	
19	3	21233275002	1608,X7R,3300P,K,50V	3	6	EA	C167,174,180,187,194,201	
20	3	21210375002	1608,X7R,0.01U,K,50V	3	3	EA	C81,85,86	
21	3	21222375002	1608,X7R,0.022U,K,50V	3	2	EA	C99,100	
22	3	21247375002	1608,X7R,0.047U,K,50V	3	3	EA	C71,88,89	
23	3	21268375002	1608,X7R,0.068U,K,16V	3	2	EA	C144,145	
24	3	21210457002	1608,Y5V,0.1UF,Z,25V	3	70	EA	C3,11,12,14-16,20-22,25,27,29,30,32,33,35,37,39-44,59,60,64-68,72,74-76,79,80,84,92,96,108-111,114,124,126,127,134,135,151,152,154,156,159,161,162,166,169,172,175,179,183,193,	
25	3	21222475002	1608,X7R,0.22UF,K,25V	3	2	EA	C1,2	
26	3	21210545002	1608,X7R,1UF,K,16V	3	7	EA	C6,77,78,82,83,87,90	
27	3	21222545002	1608,X7R,2.2UF,K,16V	3	4	EA	C203-206	
28	3	21247545001	3216,X7R,4.7UF,K,16V	3	9	EA	C13,18,31,128-133	
29	3	21210635001	3216,X7R,10uF,K,10V	3	12	EA	C5,139,140,150,153,155,157,158,160,216-218	
30	3	21210555001	2012,X7R,1UF,K,25V	3	8	EA	C112,113,115-118,120,121	
31	3	21722405001	PLASTIC FILM CAP, 0.22U, K, 63V, 85℃	3	2	EA	C185,186	
32	3	20110976001	50V, 1UF, M, 85℃	3	3	EA	EC34,38,39	
33	3	20110046001	16V,10UF,M,85℃	3	17	EA	EC29-31,33,35,42,45-48,51-55,63,64	
34	3	20147026001	6.3V,47UF,M,85℃	3	4	EA	EC7,16,18,41	
35	3	20147046001	16V,47UF,M,85℃	3	2	EA	EC1,9	
36	3	20110126001	6.3V,100UF,M,85℃	3	3	EA	EC21,37,40	
37	3	20110146001	16V,100UF,M,85℃	3	5	EA	EC13,15,19,20,28	
38	3	20122126001	6.3V,220UF,M,85℃	3	8	EA	EC6,11,12,36,58,59,60,61	
39	3	20122146003	16V,220UF, M, 105℃,MVY	3	7	EA	EC2-5,10,27,C4	
40	3	20022246001	16V, 2200UF, M, 85℃, Lead 5.0mm, SHL	3	2	EA	EC14,17	
41	3	20347946001	16V, 4.7UF,M,16MCM475MATER	3	1	EA	TC6	
42	3	31041000005	SS14, 40V, 1A	3	1	EA	D42	
43	3	33306000017	LED,KBC-BW201C,WHITE,1608,SMD	3	1	EA	D41	
44	3	31001000003	KDS181-RTK	3	3	EA	D45-47	
45	3	35001472401	B6028,4.7uH,SFCB6028-1R64R7,SMD	3	3	EA	L5,9,10	
46	3	35001412401	B6028,4.1uH,SFCB6028-2R04R1,SMD	3	1	EA	L15	
47	3	35402000020	HIGH Current,3A,HH-1M2012-601JT	3	13	EA	L2-4,6-8,11-14,26,32,33	
48	3	35402000021	HB-1T1608-601J	3	10	EA	L16,18-24,28,29	
49	3	35401000009	CHIP COIL 2012 1.8UH	3	3	EA	L27,30,31	
50	3	35001703001	IND-FIX, CCOR2100H-02070, 70UH	3	1	EA	L17	

NO	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
51	3	31101000024	KTBI124,SOT-89,BCE	3	5	EA	Q9-11,16,21	
52	3	31101000007	KTC3875S-Y, SOT23	3	1	EA	Q28	
53	3	31101000008	CHIP TR 2N3906	3	3	EA	Q30,46,47	
54	3	31160000005	KRC103S, SOT-23, NPN	3	15	EA	Q12-15,17,19,20,22,23,25-27,31,49,50	
55	3	31160000004	CHIP DIGITAL TR KRA103S	3	3	EA	Q18,24,48	
56	3	31160000009	CHIP DIGITAL TR DTC323TKA	3	12	EA	Q32-43	
57	3	25933091601	1608,J,1/16W,33Ω×4	3	2	EA	RA1,2	
58	3	26000001601	1608,J,1/16W,0Ω	3	11	EA	R4,72,162,171,186,189,195,301,303,306,309	
59	3	26010091601	1608,J,1/16W,10Ω	3	5	EA	R3,63,66,74,75	
60	3	26033091601	1608,J,1/16W,33Ω	3	34	EA	R2,10,12,83,91,94,99,100,102,103,105,108,112,113,116,124,149,150,179,180,182-185,187,188,190-192,203,205,210,276,305	
61	3	26075091601	1608,J,1/16W,75Ω	3	2	EA	R284,285	
62	3	26091091601	1608,J,1/16W,91Ω	3	3	EA	R211,289,290	
63	3	26010001601	1608,J,1/16W,100Ω	3	5	EA	R97,98,145-147	
64	3	26015001601	1608,J,1,16W,150Ω	3	1	EA	R175	
65	3	26022001601	1608,J,1/16W,220Ω	3	8	EA	R109,110,212,226,235,243,250,264	
66	3	26033001601	1608,J,1/16W,330Ω	3	2	EA	R14,208	
67	3	26047001601	1608,J,1/16W,470Ω	3	3	EA	R90,92,106	
68	3	26082001601	1608,J,1/16W,820Ω	3	6	EA	R216,227,239,244,255,265	
69	3	26010011601	1608,J,1/16W,1K	3	4	EA	R89,152,221,222	
70	3	26020011601	1608,J,1/16W,2K	3	1	EA	R163	
71	3	26022011601	1608,J,1/16W,2.2K	3	5	EA	R59,60,61,73,131	
72	3	26027011601	1608,J,1/16W,2.7K	3	2	EA	R253,R254	
73	3	26039011601	1608,J,1/16W,3.9K	3	2	EA	R215,217	
74	3	26040211401	1608,F,1/16W,4.02K	3	6	EA	R214,228,237,245,252,266	
75	3	26033011601	1608,J,1/16W,3.3K	3	1	EA	R142	
76	3	26047011601	1608,J,1/16W,4.7K	3	20	EA	R84,86,95,96,115,117,119,127,128,132,134-138,206,292,299,300,307	
77	3	26056011601	1608,J,1/16W,5.6K	3	2	EA	R193,194	
78	3	26062011601	1608,J,1/16W,6.2K	3	2	EA	R241,242	
79	3	26068011601	1608,J,1/16W,6.8K	3	2	EA	R246,247	
80	3	26082011601	1608,J,1/16W,8.2K	3	2	EA	R218,219	
81	3	26010021601	1608,J,1/16W,10K	3	10	EA	R76,88,93,114,223,224,225,238,257,269	
82	3	26010021401	1608,F,1/16W,10K	3	1	EA	R64	
83	3	26012021601	1608,J,1/16W,12K	3	8	EA	R85,156,213,230,236,249,251,268	
84	3	26015021601	1608,J,1/16W,15K	3	1	EA	R143	
85	3	26018021601	1608,J,1/16W,18K	3	3	EA	R133,256,258	
86	3	26024021601	1608,J,1/16W,24K	3	2	EA	R260,263	
87	3	26022021601	1608,J,1/16W,22K	3	9	EA	R55,56,58,70,71,77,129,141,155	
88	3	26024921401	1608,F,1/16W,24.9K	3	2	EA	R68,79	
89	3	26027021601	1608,J,1/16W,27K	3	2	EA	R261,R262	
90	3	26033021601	1608,J,1/16W,33K	3	3	EA	R232,234,302	
91	3	26039021601	1608,J,1/16W,39K	3	2	EA	R231,233	
92	3	26041221401	1608,F,1/16W,41.2K	3	1	EA	R80	
93	3	26047021601	1608,J,1/16W,47K	3	4	EA	R62,107,126,130	
94	3	26051021601	1608,J,1/16W,51K	3	1	EA	R11	
95	3	26052321401	1608,F,1/16W,52.3K	3	1	EA	R65	
96	3	26075021401	1608,F,1/16W,75K	3	1	EA	R67	
97	3	26010031601	1608,J,1/16W,100K	3	23	EA	R6-9,69,78,87,172,173,220,229,240,248,259,267,270-273,282,283,286,287	
98	3	26012031601	1608,J,1/16W,120K	3	1	EA	R148	
99	3	26018031601	1608,J,1/16W,180K	3	1	EA	R144	
100	3	26010041601	1608,J,1/16W,1M	3	8	EA	R118,139,140,164,165,168,169,170	
101	3	26000003601	2012,J,1/8W,0Ω	3	4	EA	R1,296-298	
102	3	26010093601	2012,J,1/8W,10Ω	3	1	EA	R151	
103	3	26022093601	2012,J,1/8W,22Ω	3	2	EA	R81,82	
104	3	26022003601	2012,J,1/8W,220Ω	3	2	EA	R52,53	
105	3	26010013601	2012,J,1/8W,1K	3	1	EA	R293	
106	3	26010095601	5025,J,1/2W,10Ω	3	2	EA	R54,57	
107	3	37201002001	CW,2Pin,2mm	3	1	EA	CN5	
108	3	37250008002	2mm pitch 8pin board-in type, POWER	3	1	EA	CN6	
109	3	37201020001	CONN-M,POR-C2013,20pin,2.5mm,DIP,15A Fuse	3	1	EA	CN9	
110	3	37270000002	JACK,ATSL-04, Board-in, Antenna	3	1	EA	CN10	
111	3	30105000005	KST-C6101LV0-100, FM & AM TUNER	3	1	EA	CN11	
112	3	37211020004	20Pin, 1mm,RA,SMD,ZIF, BOTTOM	3	1	EA	CN7	
113	3	37201005002	CW,5Pin,DIP,STR,2mm, 440054-5	3	2	EA	J1,CN8	
114	3	37211028003	CF,28Pin,0.5mm,SMD,RA,52689-2893	3	1	EA	CN13	
115	3	37201016003	CONN-M,POR-C1603,16Pin,3mm Pitch,DIP	3	1	EA	CN14	
116	3	37270000001	JACK,DIN-804,8Pin,DIP	3	1	EA	CN12	
117	3	32000000079	LT1940EFE,TSSOP,16P,0.65mm,Dual Monolithic 1.4A	3	1	EA	U9	
118	3	32000000057	TCM809RENB713,RESET CIRCUIT, SOT-23	3	1	EA	U10	

NO	Level	Parts No.	Specification	I/T	Q'ty	U/M	Location No.	REMARK
119	3	32050000013	8-BIT MCU, ST72321	3	1	EA	U11	
120	3	32000000021	IC-OP AMP NJM4560M	3	5	EA	U25-29	
121	3	32080000019	PCM1606E, SSOP, 20P	3	1	EA	U22	
122	3	32000000115	KIA78DL05F, 250mA, DPAK	3	1	EA	U8	
123	3	32000000080	TDA7386, 4X40w CAR AUDIO AMPLIFIER	3	1	EA	U12	
124	3	32000000091	AN18161A, SSONF-24D,FM-PNL/MPX	3	1	EA	U13	
125	3	32004000003	TDA7404D, SO-28, CARRANDIO-SIGNAL-PROCESSOR	3	1	EA	U20	
126	3	32002000003	TDA7396, 45W/22 BRIDGE CAR RADIO AMPLIFIER	3	1	EA	U14	
127	3	32004000004	PT2389-SN, SO-24(150mil), 5-MODE PRESET EQ IC	3	1	EA	U23	
128	3	32003000001	IC-SW.NJM2503M,DMP16,3-IN/2-IN VIDEO S/W	3	1	EA	U16	
129	3	32000000112	NJM2244M, 3-INPUT VIDEO SWITCH	3	1	EA	U17	
130	3	32000000046	TRIPPLE 2-CH MUX,SOT109-1	3	2	EA	U19,21	
131	3	32000000045	DUAL 4-CH MUX, SOT109-1, HEF4052B	3	2	EA	U18,30	
132	3	32000000094	LT1931A, DC/DC Converter	3	1	EA	BA1	
133	3	32000000114	KIA78R08F, DPAK-5	3	2	EA	BA2,7	
134	3	32020000004	74HCU04, TSSOP, 14P, 0.65mm	3	1	EA	U24	
135	3	35302800032	8MHz, 18P, SMD, $\pm 20\text{ppm}$ at $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$	3	1	EA	X1	
136	3	31010000007	DIODE ZN 12V,150mW,USC	3	1	EA	ZD24	
137	3	31010000009	Z5W27V,SURGE ABSORBER	3	1	EA	ZD23	
138	3	31010000005	DIODE ZN 5.6V	3	1	EA	ZD25	
139	3	31020000002	GS1G, 1A, 2P	3	1	EA	D40	
140	3	31041000003	SCHOTTKY DIODE KDR784,1A,30V,USC	3	2	EA	ZD20,22	
141	3	31041000009	DI-SCHOT,SMAB14,SMA,1A,40V	3	3	EA	ZD18,19,21	
142	3	37016000002	SW-TUCH,SPPB620100,DIP,Detector S/W	3	1	EA	SW20	
143	3	37590000034	28Pin, 0.5mm Pitch,90mm(TL)×C(3/3/5)	3	1	EA		
144	3	61009002000	SPC 1.0T(석도급)	3	1	EA		
145	3	63003000300	AL(50×25)	3	1	EA		
146	3	52001002501	PH M3.0×5.0×5.5H×1.5t	3	1	EA		
147	3	70501000005	G-600	3	300	mg		
148	3	37530000002	0.6 ϕ , 52mm	3	0.5	EA		
149	3	V4010000300	VXD-2310 RDS PARTS	2	1	EA		
150	4	21218074002	1608,COG,18PF,J,50V	3	2	EA	C105,106	
151	4	21256174002	1608,COG,560PF,J,50V	3	1	EA	C107	
152	4	20047876002	50V, 0.47UF M, 85 $^{\circ}\text{C}$,Lead 2.5mm, SRA, PCB TAPPING	3	1	EA	EC24	
153	4	35402000004	HIGH Current,3A,HH-1M2012-600JT	3	1	EA	L25	
154	4	26010041601	1608,J,1/16W,1M	3	1	EA	R159	
155	4	32000000132	Single Chip RDS Demodulator, TDA-7478	3	1	EA	U15	
156	4	35202433231	4.332MHz, 18P, SMD	3	1	EA	X2	

E. Accessory Part (기구BOM에 포함되어 있음)

146	3	37250020002	CONN-A, 5CH AMP-OUT & CVBS,2.5mm Pitch,20pin	3	1	EA		
147	3	37250016001	CONN-A,AUX-IN & PRE-OUT3mm Pitch,16pin	3	1	EA		
148	3	37585000005	A/V CABLE, 3m, 3구(빨, 흰, 노)	3	1	EA		
149	3	66010000111	48*145*22, 리모콘, VXD2000	3	1	EA		

8-2. 기구 BOM

NO	Level	Parts No.	Parts name	Specification	I/T	Q'ty	U/M	Location No. & Application
0	0	VXD-2310-100P-K0	VXD-2310 RDS(PIT) CH-7000		1	1	ST	
1	1	M2D23102003	HEADUNIT, CH-7000 PIT	PIT CH-7000	2	1	AY	
2	2	M6200300097	PANEL, ASSY FRONT PIT	PIT CH-7000	2	1	AY	
3	3	M6200300096	PANEL, SUB ASSY FRONT PIT	PIT CH-7000	2	1	AY	
4	4	62003001101	PANEL, FRONT (EU)	ABS XR-401 VXD-2100	3	1	EA	
5	4	62032000400	DECO, VOLUME	ABS XR-401 CR도금 VXD-2100	3	1	EA	
6	4	62032000500	DECO, PRESET	ABS XR-401 CR도금 VXD-2100	3	1	EA	
7	4	62032000600	DECO, SCAN	ABS XR-401 CR도금 VXD-2100	3	1	EA	
8	4	62006001705	WINDOW, LCD VXD-2310 (PIT)	ACRYL(IH-830) VXD-2310 (PIT)	3	1	EA	
9	3	62005002500	BUTTON, PRESET	PC VXD-2100	3	1	EA	
10	3	62005002800	BUTTON, TUNE	PC VXD-2100	3	1	EA	
11	3	62005003000	BUTTON, DISP	PC VXD-2100	3	1	EA	
12	3	62005002900	BUTTON, MENU	PC VXD-2100	3	1	EA	
13	3	62005004001	BUTTON, FUNCTION	PC VXD-2100 Gray	3	1	EA	
14	3	M6200700003	BUTTON, ASS'Y MULTI (EU)	VXD-2100 (EU)	2	1	AY	
15	4	62007002000	REFLECTOR, MULTI	PC VXD-2100	3	1	EA	
16	4	62005003201	BUTTON, PTY	ACRYL VXD-2100	3	1	EA	
17	4	62005003301	BUTTON, AF/SRC	ACRYL VXD-2100	3	1	EA	
18	4	62005003401	BUTTON, TA	ACRYL VXD-2100	3	1	EA	
19	3	M6200700002	BUTTON, ASS'Y SCAN	VXD-2100	2	1	AY	
20	4	62005003100	BUTTON, SCAN	ACRYL VXD-2100	3	1	EA	
21	4	62007002100	REFLECTOR, SCAN	PC VXD-2100	3	1	EA	
22	3	62007002300	REFLECTOR, VOLUME	PC VXD-2100	3	1	EA	
23	3	E8000622310	FRONT PCBA	ASS'Y VXD-2310 FRONT PCB	3	1	EA	
24	3	62005002600	BUTTON, FLIP	PC BK VXD-2100	3	1	EA	
25	3	52007003400	SPRING, OPEN	SUS304WPB ϕ 0.2	3	1	EA	
26	3	M6200300071	PANEL, ASS'Y REAR	VXD-2100	2	1	AY	
27	4	62003001200	PANEL, REAR	ABS XR-401 VXD-2100	3	1	EA	
28	4	62024000400	PUSHER, HINGE (L)	PC VXD-2100	3	1	EA	
29	4	52007003501	SPRING, HINGE (L)	SUS304WPB ϕ 0.4	3	2	EA	
30	4	62024000500	PUSHER, HINGE (R)	PC VXD-2100	3	1	EA	
31	4	52007003500	SPRING, HINGE (R)	SUS304WPB ϕ 0.4	3	2	EA	
32	4	52011001100	SPACER, CONNECTOR	PC 0.3t BLACK	3	1	EA	
33	3	M6202600001	KNOB, ASS'Y VOLUME	VXD-2100	2	1	AY	
34	4	62026004200	KNOB, VOLUME	ABS XR-401 CR도금 VXD-2100	3	1	EA	
35	4	52007003600	SPRING, VOLUME	SUS304WPB ϕ 0.8	3	1	EA	
36	3	52002002100	SCREW, TTB 2.0*8.0	PH TTB2.0*8.0*3.5H*1.0t	3	4	EA	
37	2	61012000700	CHASSIS, MAIN	SECC 1.0t	3	1	EA	
38	2	M6101200015	CHASSIS, ASSY FRONT	VXD-2310	2	1	AY	
39	3	M6101200008	CHASSIS, SUB ASS'Y FRONT	VXD-2100	2	1	AY	
40	4	61012000800	CHASSIS, FRONT	SECC 1.0t	3	1	EA	
41	4	51008002300	PIN, LEVER SW	SUS303	3	1	EA	
42	3	52007004100	SPRING, SWITCH	SUS304WPB ϕ 0.3	3	1	EA	

43	3	62008001700	LEVER, SWITCH	PC BK VXD-2100	3	1	EA	
44	3	E8000622110	PCBA FOR S/W	ASS'Y SUB-PCB FOR EJECT S/W REV1.0	2	1	AY	
45	2	52011001600	SPACER, MAIN PCB	PET, 173X48	3	1	EA	
46	2	E4020000400	PCBA FOR VXD-2310 MAIN	AY VXD-2310 MAIN PCB FOR RDS	2	1	AY	
47	2	70501000005	GREASE	G-600	3	250	mg	
48	2	52001002501	SCREW, MC M3.0*5.0	PH M3.0X5.0X5.5HX1.5	3	4	EA	
49	2	61009001500	BRK, FAN	SECC 1.0t	3	1	EA	
50	2	30113000001	FAN	COOLING FAN DF251R-12LC-04	3	1	EA	
51	2	52001004000	SCREW, MC M2.6*14.0	FH M2.6*14.0 BLK	3	2	EA	
52	2	63003000200	HEATSINK, REAR	AL	3	1	EA	
53	2	52001003900	SCREW, MC M3.0X7.0	PH M3.0X7.0 Ni	3	6	EA	
54	2	M6201200008	COVER, ASSY TRIM	VXD-2310	2	1	AY	
55	3	62012000400	COVER, TRIM	ABS XR-401 VXD-2100	3	1	EA	
56	3	62007002200	REFLECTOR, DISC	ACRYL VXD-2100	3	1	EA	
57	3	62005002700	BUTTON, EJECT	PC VXD-2100	3	1	EA	
58	3	52011001500	SPACER, G/DISC	VXD-2100 FELT	3	1	EA	
59	3	M6100900015	BRACKET, ASS'Y FLIP(R)	VXD-2100	2	1	AY	
60	4	61009002500	BRACKET, FLIP (R)	SPC 1.0t (BLACK)	3	1	EA	
61	4	51008001800	PIN, FLIP	SUS303	3	1	EA	
62	3	52001004200	SCREW, MC M2.0*5.0	PH M2.0*5.0*4.0H*0.5	3	1	EA	
63	3	M6100900016	BRACKET, ASS'Y FLIP(L)	VXD-2100	2	1	AY	
64	4	M6100900017	BRACKET, SUB FLIP(L)	VXD-2100	2	1	EA	
65	5	61009002400	BRACKET, FLIP (L)	SPC 1.0t (BLACK)	3	1	EA	
66	5	51008001800	PIN, FLIP	SUS303	3	1	EA	
67	5	51008002000	PIN, GEAR	SUS303	3	1	EA	
68	4	52010000400	DAMPER, GEAR		3	1	EA	
69	4	52001000400	SCREW, MC	M1PH M2.0X3.0LX3.0H MSBC	3	1	EA	
70	4	62019004900	GEAR, IDLER	POM	3	1	EA	
71	4	52008001000	WASHER	φ4.0Xφ1.6X0.25T (CUT)	3	1	EA	
72	3	52001004200	SCREW, MC M2.0*5.0	PH M2.0*5.0*4.0H*0.5	3	1	EA	
73	3	E8000622210	PCBA FOR CONN	ASS'Y SUB-PCB FOR DETACHABLE CONNECTOR REV1.0	3	1	EA	
74	3	M6100900018	BRACKET, ASS'Y DETACHABLE	VXD-2100	2	1	AY	
75	4	61009002300	BRACKET, DETACHABLE	SPC 0.8t (BLACK)	3	1	EA	
76	4	62011000100	HOOK, LOCK	PC VXD-2100	3	1	EA	
77	4	52007003800	SPRING, HOOK	SUS304WPB φ0.5	3	1	EA	
78	4	62008001800	LEVER, FLIP	PC VXD-2100	3	1	EA	
79	4	52007004200	SPRING, LEVER FLIP	SWPB	3	1	EA	
80	4	51008001900	PIN, LOCK	SUS303	3	2	EA	
81	4	52021000100	RING, E-1.2	E-RING φ1.2	3	2	EA	
82	3	52001004200	SCREW, MC M2.0*5.0	PH M2.0*5.0*4.0H*0.5	3	2	EA	
83	2	52001004100	SCREW, MC M3.0*5.0	FH M3.0*5.0 BLK	3	2	EA	
84	2	52001004300	SCREW, MC M2.6*8.0	PH M2.6*8.0*4.5H*1.7T BLK	3	2	EA	
85	2	DSV-830-MAA-CDE25	DSV-830		1	1	ST	
86	2	61009002200	BRACKET, DECK	SECC 1.0t	3	1	EA	
87	2	52001004001	SCREW, MC M2.6*4.0	FH M2.6*4.0 BLK	3	3	EA	
88	2	52001002501	SCREW, MC M3.0*5.0	PH M3.0X5.0X5.5HX1.5t	3	2	EA	
89	2	52001004300	SCREW, MC M2.6*8.0	PH M2.6*8.0*4.5H*1.7T BLK	3	2	EA	

90	2	61002003700	CASE, TOP	SECC 0.8t	3	1	EA	
91	2	52013000700	FELT, DUST VXD-2100	FELT 40 * 170	3	1	EA	
92	2	52013000800	FELT, DUST VXD-2100	FELT 20 * 10	3	2	EA	
93	2	52001003900	SCREW, MC M3.0X7.0	PH M3.0X7.0 Ni	3	1	EA	
94	2	73001024006	LABEL, PRODUCT CH-7000	PIT CH-7000	3	1	EA	
95	2	73001024005	LABEL, COVER VXD-2310 RDS	VXD-2310 RDS	3	1	EA	
96	2	73001015000	LABEL, SIGNAL	아트지 45 x 70	3	1	EA	
97	2	63140000301	LABEL, VOID		3	1	EA	
98	1	P2D23102003	PACKING, ASSY CH-7000	PIT CH-7000	2	1	AY	
99	2	M6100200050	AY CASE, FRAME		2	1	AY	
100	3	61002003400	CASE, FRAME	SECC 0.6T	3	2	EA	
101	2	71003002000	BAG, VXD-2100	VXD-2100 FRONT	3	1	EA	
102	2	62034000200	RING, TRIM	ABS XR-401 VXD-2100	3	1	EA	
103	2	71003001100	BAG, MAIN	PE 400 x 300	3	1	EA	
104	2	71003001200	BAG, TRIM RING	PE 240 x 90	3	1	EA	
105	2	61009001800	BRK, UNINSTALLER	SECC 0.8T	3	2	EA	
106	2	52001003400	SCREW, MC	접시머리 M5.0 x 6.0	3	6	EA	
107	2	52001003500	SCREW, MC	접시머리 M4.0 x 6.0	3	6	EA	
108	2	71003001300	BAG, UNINST.	PE 160 x 80	3	1	EA	
109	2	66010000111	REMOCON	48*145*22, 리모콘, VXD2000	3	1	EA	
110	2	72001000001	BATTERY	AAA Type	3	2	EA	
111	2	37250020002	CONN-A	CONN-A, 5CH AMP-OUT & CVBS,2.5mm Pitch,20pin	3	1	EA	
112	2	37250016001	CONN-A	CONN-A,AUX-IN & PRE-OUT3mm Pitch,16pin	3	1	EA	
113	2	37585000005	CABLE SIGNAL	A/V CABLE, 3m, 3구(빨, 흰, 노)	3	1	EA	
114	2	72001020804	MANUAL, CH-7000	VXD-2310 PIT (CH-7000)	3	1	EA	
115	2	72002007600	CARD, WARRANTY(PIT)	VXM-2100, VXD-2310(PIT)	3	1	EA	
116	2	71003001400	BAG, MANUAL	PE 250 x 180	3	1	EA	
117	2	71001016901	BOX, ACCESSORY VXD-2000	293 x 237 x 51	3	1	EA	
118	2	71004002800	CUSHION VXD-2100		3	2	EA	
119	2	71001020004	BOX, GIFT CH-7000	VXD-2310 PIT (300*250*170) OUTSIDE SW	3	1	EA	
120	2	71001020104	BOX, CARTON CH-7000	VXD-2310 PIT (530*320*270) OUTSIDE DW	3	1/3	EA	
121	2	71005000800	PALLET,PAPER 1100*1100	PAPER PALLET 1100 x 1100 x 130 2WAY	3	1/144	EA	