AKAI

DVD RECEIVER
WITH TFT LCD MONITOR

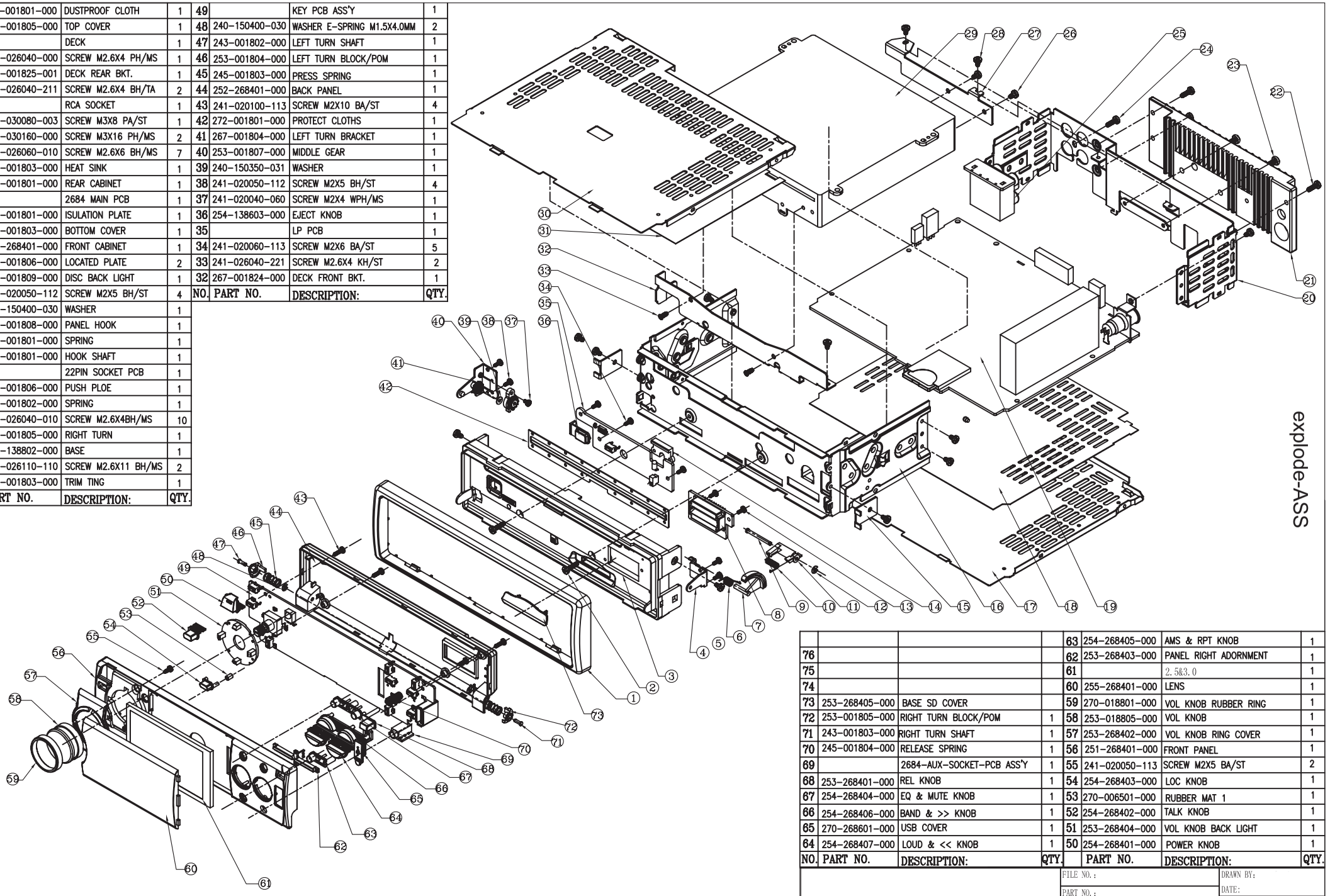
Model:
ADV-73DR

SERVICE MANUAL

www.akai.ru

NO.	PART NO.	DESCRIPTION:	QTY.
31	242-001801-000	DUSTPROOF CLOTH	1
30	262-001805-000	TOP COVER	1
29		DECK	1
28	241-026040-000	SCREW M2.6X4 PH/MS	1
27	267-001825-001	DECK REAR BKT.	1
26	241-026040-211	SCREW M2.6X4 BH/TA	2
25		RCA SOCKET	1
24	241-030080-003	SCREW M3X8 PA/ST	1
23	241-030160-000	SCREW M3X16 PH/MS	2
22	241-026060-010	SCREW M2.6X6 BH/MS	7
21	263-001803-000	HEAT SINK	1
20	260-001801-000	REAR CABINET	1
19		2684 MAIN PCB	1
18	271-001801-000	ISULATION PLATE	1
17	262-001803-000	BOTTOM COVER	1
16	260-268401-000	FRONT CABINET	1
15	267-001806-000	LOCATED PLATE	2
14	253-001809-000	DISC BACK LIGHT	1
13	241-020050-112	SCREW M2X5 BH/ST	4
12	240-150400-030	WASHER	1
11	253-001808-000	PANEL HOOK	1
10	245-001801-000	SPRING	1
9	243-001801-000	HOOK SHAFT	1
8		22PIN SOCKET PCB	1
7	253-001806-000	PUSH PLOE	1
6	245-001802-000	SPRING	1
5	241-026040-010	SCREW M2.6X4BH/MS	10
4	267-001805-000	RIGHT TURN	1
3	252-138802-000	BASE	1
2	241-026110-110	SCREW M2.6X11 BH/MS	2
1	252-001803-000	TRIM TING	1

NO.	PART NO.	DESCRIPTION:	QTY.
49		KEY PCB ASS'Y	1
48	240-150400-030	WASHER E-SPRING M1.5X4.0MM	2
47	243-001802-000	LEFT TURN SHAFT	1
46	253-001804-000	LEFT TURN BLOCK/POM	1
45	245-001803-000	PRESS SPRING	1
44	252-268401-000	BACK PANEL	1
43	241-020100-113	SCREW M2X10 BA/ST	4
42	272-001801-000	PROTECT CLOTHS	1
41	267-001804-000	LEFT TURN BRACKET	1
40	253-001807-000	MIDDLE GEAR	1
39	240-150350-031	WASHER	1
38	241-020050-112	SCREW M2X5 BH/ST	4
37	241-020040-060	SCREW M2X4 WPH/MS	1
36	254-138603-000	EJECT KNOB	1
35		LP PCB	1
34	241-020060-113	SCREW M2X6 BA/ST	5
33	241-026040-221	SCREW M2.6X4 KH/ST	2
32	267-001824-000	DECK FRONT BKT.	1

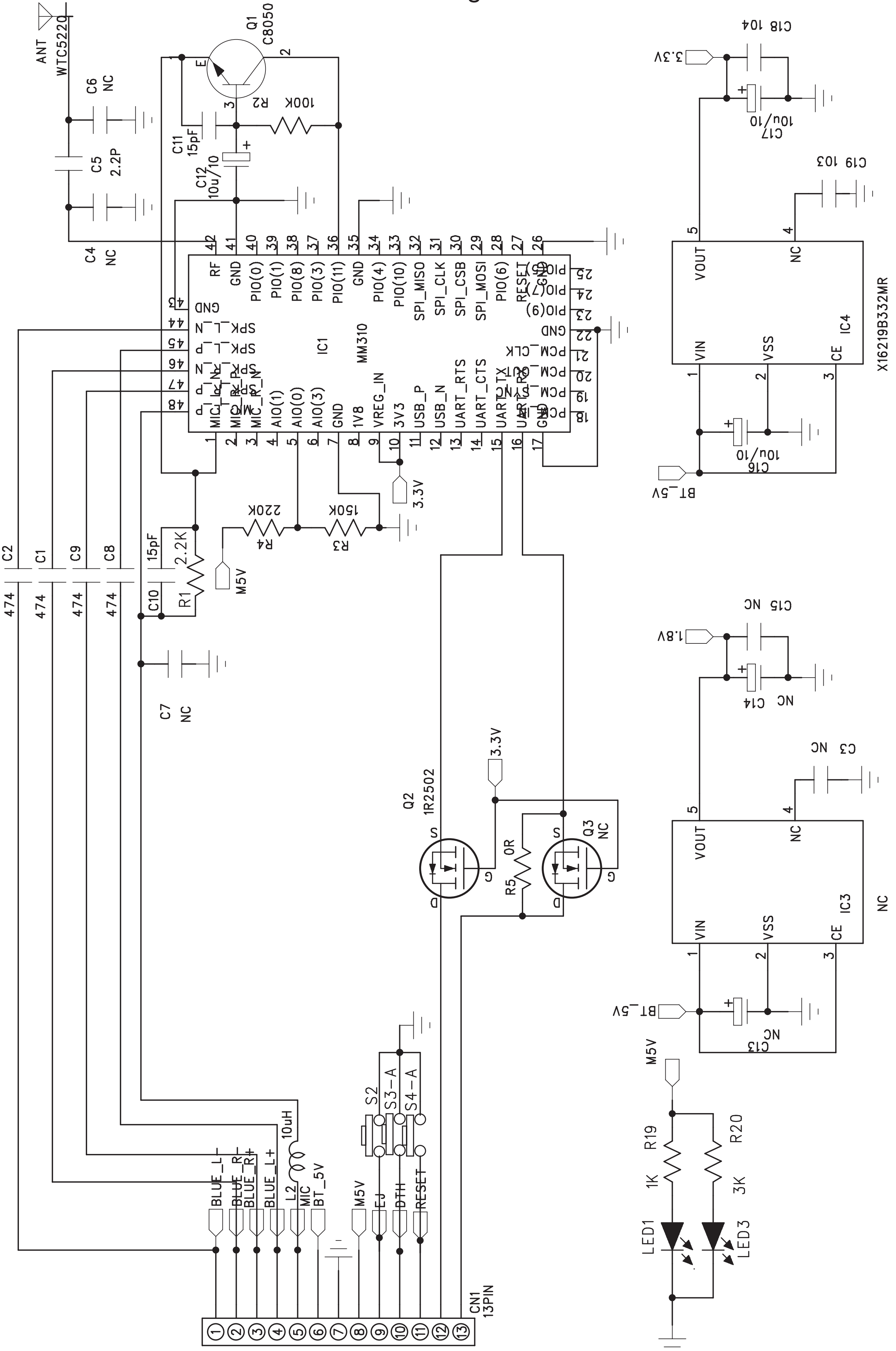


NO.	PART NO.	DESCRIPTION:	QTY.
76			
75			
74			
73	253-268405-000	BASE SD COVER	
72	253-001805-000	RIGHT TURN BLOCK/POM	1
71	243-001803-000	RIGHT TURN SHAFT	1
70	245-001804-000	RELEASE SPRING	1
69		2684-AUX-SOCKET-PCB ASS'Y	1
68	253-268401-000	REL KNOB	1
67	254-268404-000	EQ & MUTE KNOB	1
66	254-268406-000	BAND & >> KNOB	1
65	270-268601-000	USB COVER	1
64	254-268407-000	LOUD & << KNOB	1

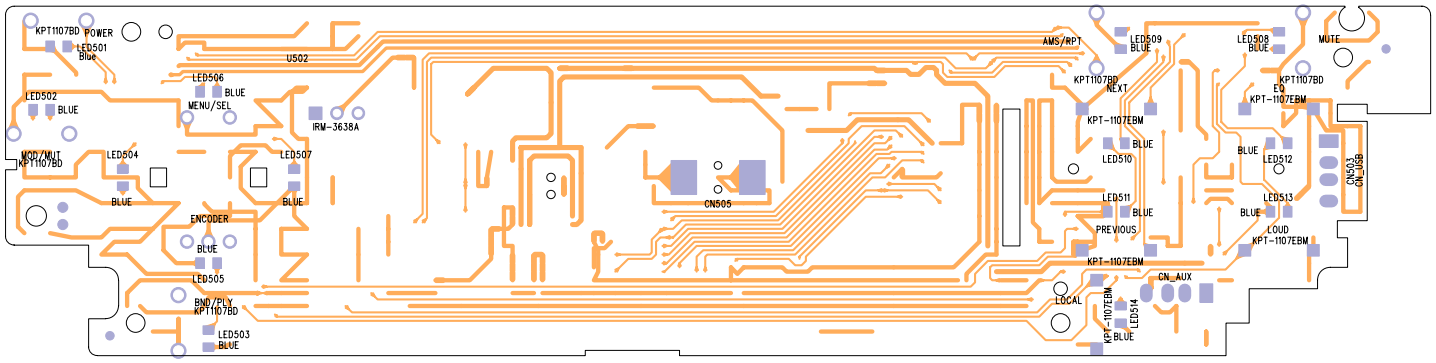
NO.	PART NO.	DESCRIPTION:	QTY.
63	254-268405-000	AMS & RPT KNOB	1
62	253-268403-000	PANEL RIGHT ADORNMENT	1
61		2.5&3.0	1
60	255-268401-000	LENS	1
59	270-018801-000	VOL KNOB RUBBER RING	1
58	253-018805-000	VOL KNOB	1
57	253-268402-000	VOL KNOB RING COVER	1
56	251-268401-000	FRONT PANEL	1
55	241-020050-113	SCREW M2X5 BA/ST	2
54	254-268403-000	LOC KNOB	1
53	270-006501-000	RUBBER MAT 1	1
52	254-268402-000	TALK KNOB	1
51	253-268404-000	VOL KNOB BACK LIGHT	1
50	254-268401-000	POWER KNOB	1

	FILE NO.:		DRAWN BY:
	PART NO.:		DATE:
	MATERIAL/COLOUR:		CHECK BY: DATE:
DESCRIPTION: 2684 ASS'Y EXPLODE	UNIT: mm	SCALE: 2 : 1	APPROVED: DATE:
MODEL: HD3000U	QTY.: 1	TORLANCE: ±0.10	A2
	PAGE: 1/1	CAD FILE: 2684 EXPLODE	

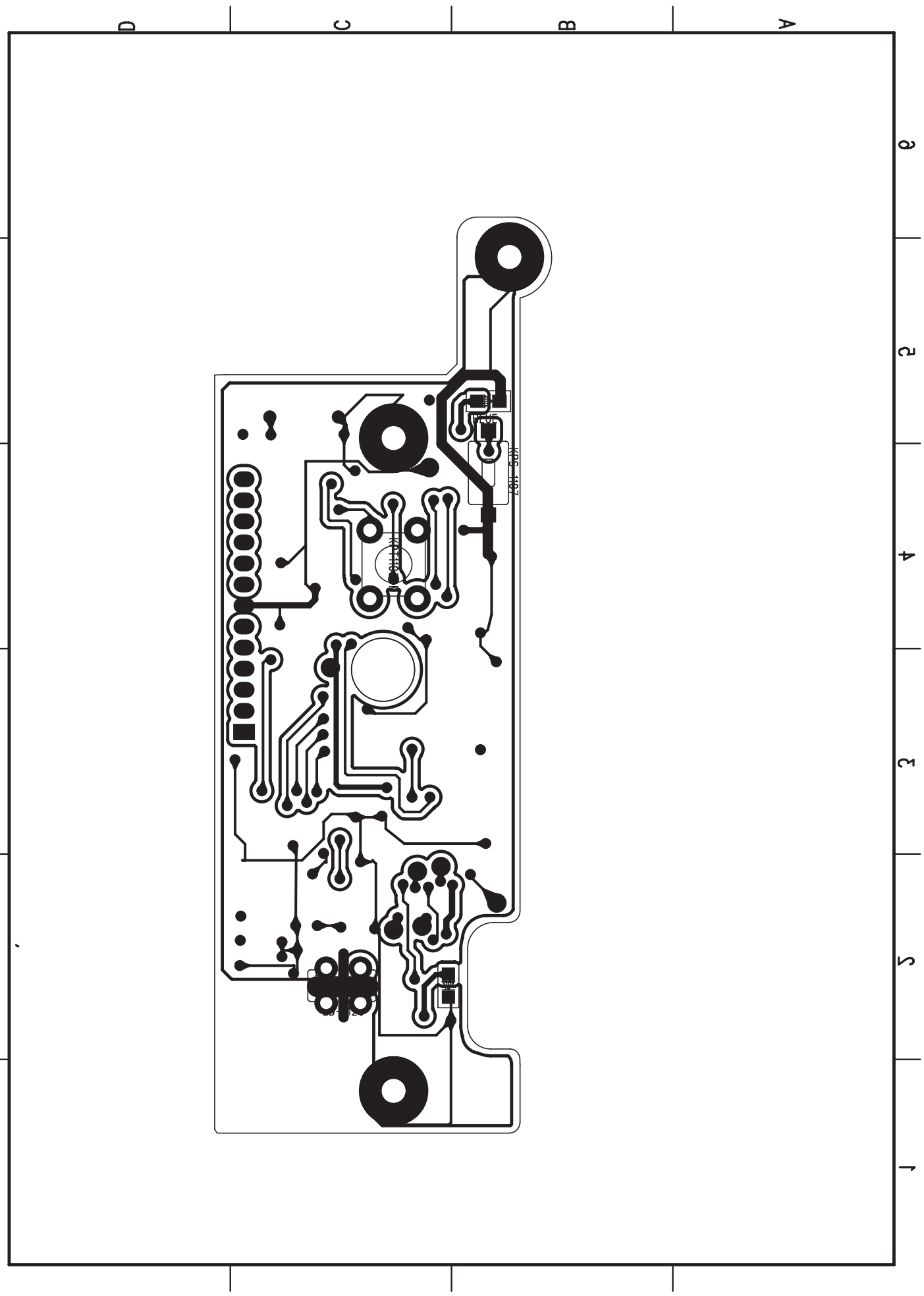
U

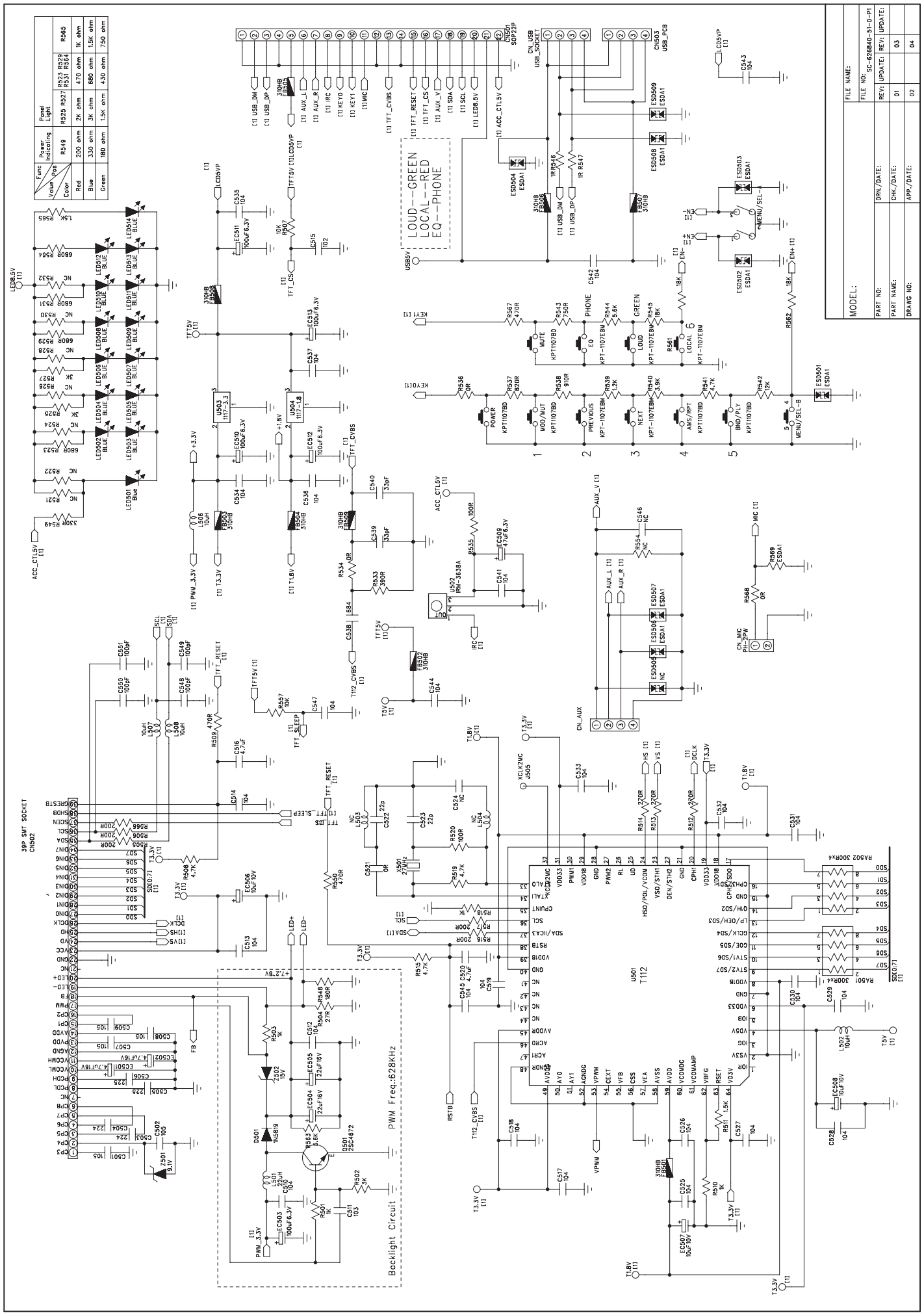


ANT
WTC5220
Q1
C8050
R2
100K
C11
15pF
C12
10u/10
C6
NC
C5
2.2P
C4
NC
IC1
MM310
RF
GND
PIO(0)
PIO(1)
PIO(8)
PIO(3)
PIO(11)
PIO(4)
PIO(10)
SPI_MISO
SPI_CLK
SPI_CSB
SPI_MOSI
PIO(6)
RESET
PIO(5)
PIO(7)
PIO(9)
PCM_CLK
PCM_OUT
PCM_SYNC
PCM_IN
SPK_L_N
SPK_L_P
SPK_R_N
SPK_R_P
MIC_L_N
MIC_L_P
MIC_R_N
MIC_R_P
AIO(1)
AIO(0)
AIO(3)
1V8
VREG_IN
3V3
USB_P
USB_N
UART_RTS
UART_CTS
UART_TX
UART_RX
R4
220K
R3
150K
R1
2.2K
C10
15pF
M5V
3.3V
C2
C1
C9
C8
474
C7
NC
Q2
1R2502
Q3
NC
R5
0R
L2
10uH
S2
S3-A
S4-A
BLUE_L-
BLUE_R-
BLUE_R+
BLUE_L+
L2
MIC
BT_5V
M5V
EJ
DTH
RESET
CN1
13PIN
C18 104
C17
10u/10
C19 103
IC4
X16219B332MR
VOUT
NC
VIN
VSS
CE
C16
10u/10
BT_5V
1.8V
C15 NC
C14 NC
C3 NC
IC3
NC
C13 NC
R19
1K
R20
3K
LED1
LED3


KPT1107BD
POWER
LED501
Blue
U502
LED506
BLUE
MENU/SEL
LED502
BLUE
IRM-3638A
MOD/MUT
KPT1107BD
LED504
BLUE
LED507
BLUE
ENCODER
BLUE
LED505
BND/PLY
KPT1107BD
LED503
BLUE
CN505
AMS/RPT
LED509
BLUE
KPT1107BD
NEXT
KPT-1107EBM
BLUE
LED510
LED511
BLUE
PREVIOUS
KPT-1107EBM
LOCAL
KPT-1107EBM
LED514
BLUE
LED508
BLUE
MUTE
KPT1107BD
EQ
KPT-1107EBM
BLUE
LED512
LED513
BLUE
LOUD
KPT-1107EBM
CN_AUX
CN503
CN_USB

BOTTOMCOPPER




Backlight Circuit
PWM Freq:628KHz
LOUD--GREEN
LOCAL--RED
EQ--PHONE
MODEL:
FILE NAME:
FILE NO: SC-626840-51-0-P1
PART NO:
PART NAME:
DRAWG NO:
DRN./DATE:
CHK./DATE:
APP./DATE:
REV: UPDATE: REV: UPDATE:
01
02
03
04
U501
T112
CN502
39P SMT SOCKET
CN501
CN_USB
CN505
USB_PCB
CN_AUX
CN_MIC
U502
IRM-3638A
U503
1117-3.3
U504
1117-1.8
L506
10uH
L507
10uH
L508
10uH
L503
L504
X501
27MHz
Q501
2SC4672
D501
1N5819
Z501
9.1V
Q502
2SC4672
L502
10uH
L505
220uH
KEY0[1]
KEY1[1]
MENU/SEL-A
MENU/SEL-B
POWER
MOD/MUT
PREVIOUS
NEXT
AMS/RPT
BND/PLY
MUTE
EQ
LOUD
LOCAL
PHONE
GREEN
IR R547
1R R546
ESD501
ESD502
ESD503
ESD504
ESD505
ESD506
ESD507
ESD508
ESD509
LED501
LED502
LED503
LED504
LED505
LED506
LED507
LED508
LED509
LED510
LED511
LED512
LED513
LED514
LED515
Panel Light
Power Indicating
Func
Volume
Key
Color
Red
Blue
Green
R565
R564
R563
R562
R561
R560
R559
R558
R557
R556
R555
R554
R553
R552
R551
R550
R549
R548
R547
R546
R545
R544
R543
R542
R541
R540
R539
R538
R537
R536
R535
R534
R533
R532
R531
R530
R529
R528
R527
R526
R525
R524
R523
R522
R521
1K
2K ohm
3K ohm
680 ohm
1.5K ohm
430 ohm
750 ohm
470 ohm
330 ohm
180 ohm
1.5K
680R
3K
330R
NC
BLUE
Blue
PWM_3.3V
T3.3V
T1.8V
T5V
TFT5V
CD5VP
ACC_CTL5V
USB5V
LED8.5V
TFT_CVBS
TFT_RESET
TFT_SLEEP
TFT_CS
TFT_SCL
TFT_SDA
AUX_L
AUX_R
AUX_V
IRC
KEY0
KEY1
MIC
USB_DM
USB_DP
SCL
SDA
HS
VS
DCLK
SD0:7
SD0:7]
SDA[1]
SCL[1]
T112_CVBS[1]
PWM_3.3V[1]
T3.3V[1]
T1.8V[1]
T5V[1]
TFT5V[1]
CD5VP[1]
ACC_CTL5V[1]
USB5V[1]
LED8.5V[1]
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TFT_RESET[1]
TFT_SLEEP[1]
TFT_CS[1]
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SDA[1]
SCL[1]
LED8.5V[1]
ACC_CTL5V[1]
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USB_DP[1]
AUX_L[1]
AUX_R[1]
IRC[1]
KEY0[1]
KEY1[1]
MIC[1]
HS[1]
VS[1]
DCLK[1]
SDA[1]
SCL[1]
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T3.3V[1]
T1.8V[1]
T5V[1]
TFT5V[1]
CD5VP[1]
ACC_CTL5V[1]
USB5V[1]
LED8.5V[1]
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TFT_RESET[1]
TFT_SLEEP[1]
TFT_CS[1]
AUX_V[1]
SDA[1]
SCL[1]
LED8.5V[1]
ACC_CTL5V[1]
USB_DM[1]
USB_DP[1]
AUX_L[1]
AUX_R[1]
IRC[1]
KEY0[1]
KEY1[1]
MIC[1]
HS[1]
VS[1]
DCLK[1]
SD0:7]
SD0:7[1]
SDA[1]
SCL[1]
T112_CVBS[1]
PWM_3.3V[1]
T3.3V[1]
T1.8V[1]
T5V[1]
TFT5V[1]
CD5VP[1]
ACC_CTL5V[1]
USB5V[1]
LED8.5V[1]
TFT_CVBS[1]
TFT_RESET[1]
TFT_SLEEP[1]
TFT_CS[1]
AUX_V[1]
SDA[1]
SCL[1]
LED8.5V[1]
ACC_CTL5V[1]
USB_DM[1]
USB_DP[1]
AUX_L[1]
AUX_R[1]
IRC[1]
KEY0[1]
KEY1[1]
MIC[1]
HS[1]
VS[1]
DCLK[1]
SD0:7]
SD0:7[1]

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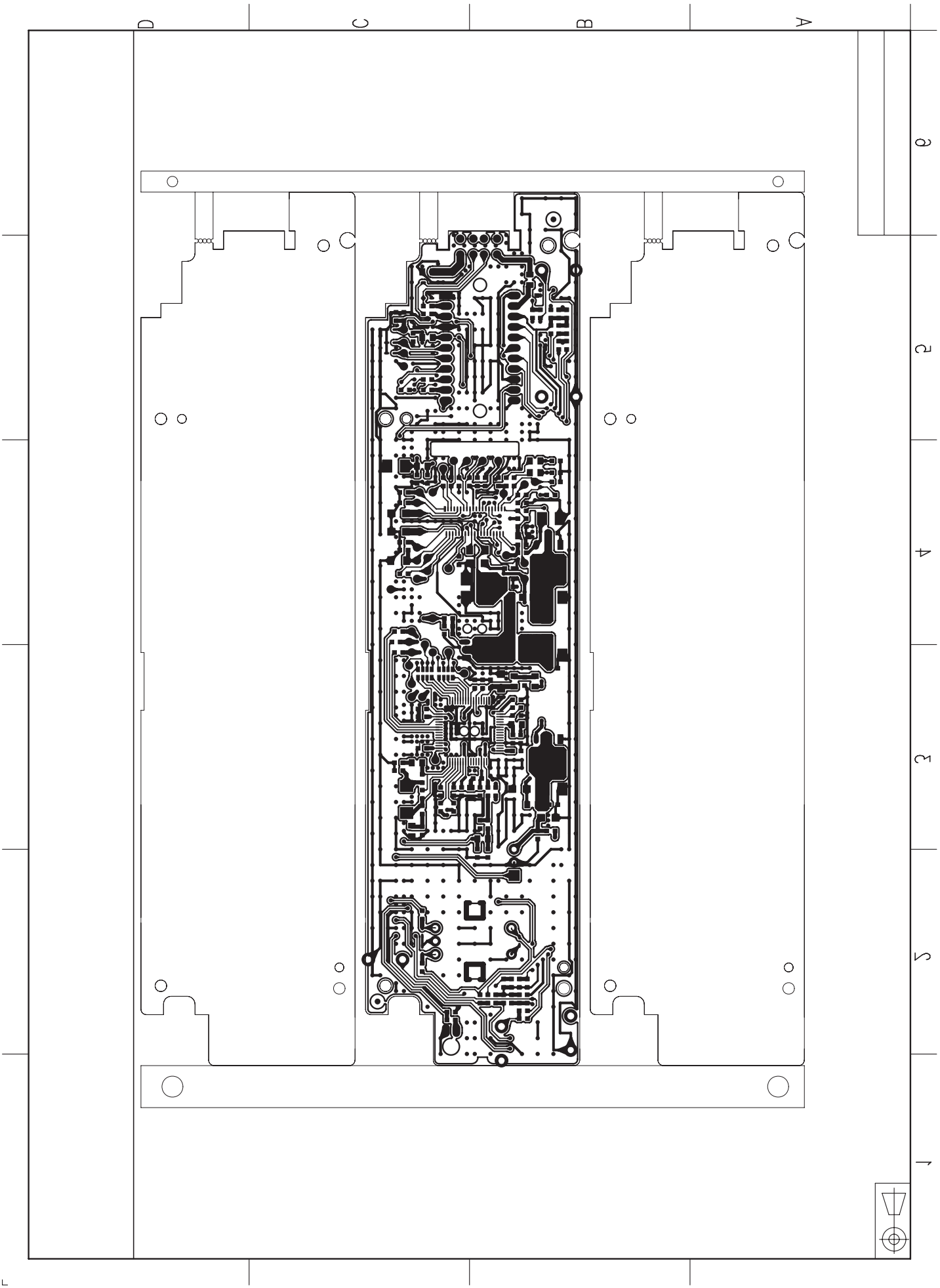

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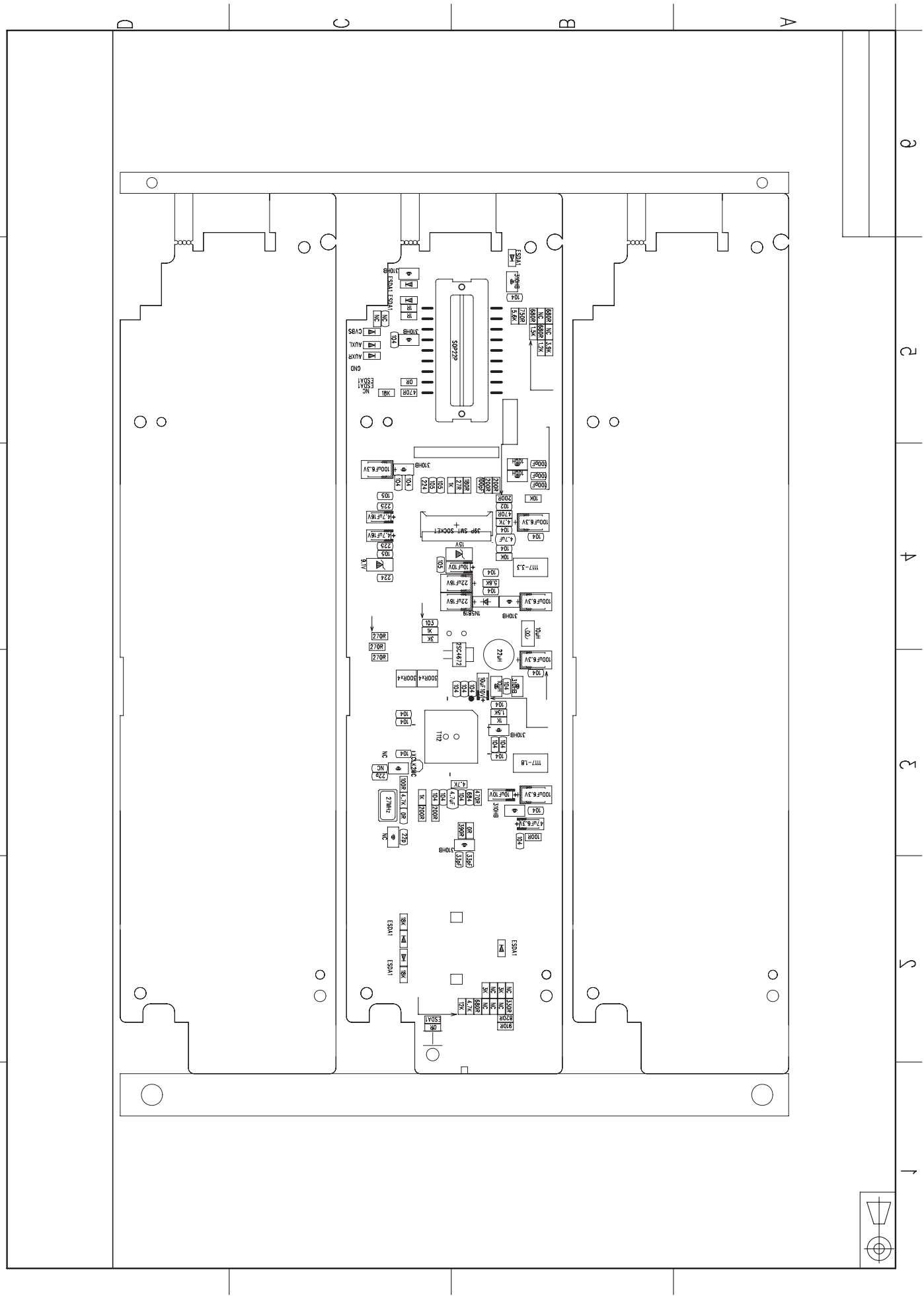

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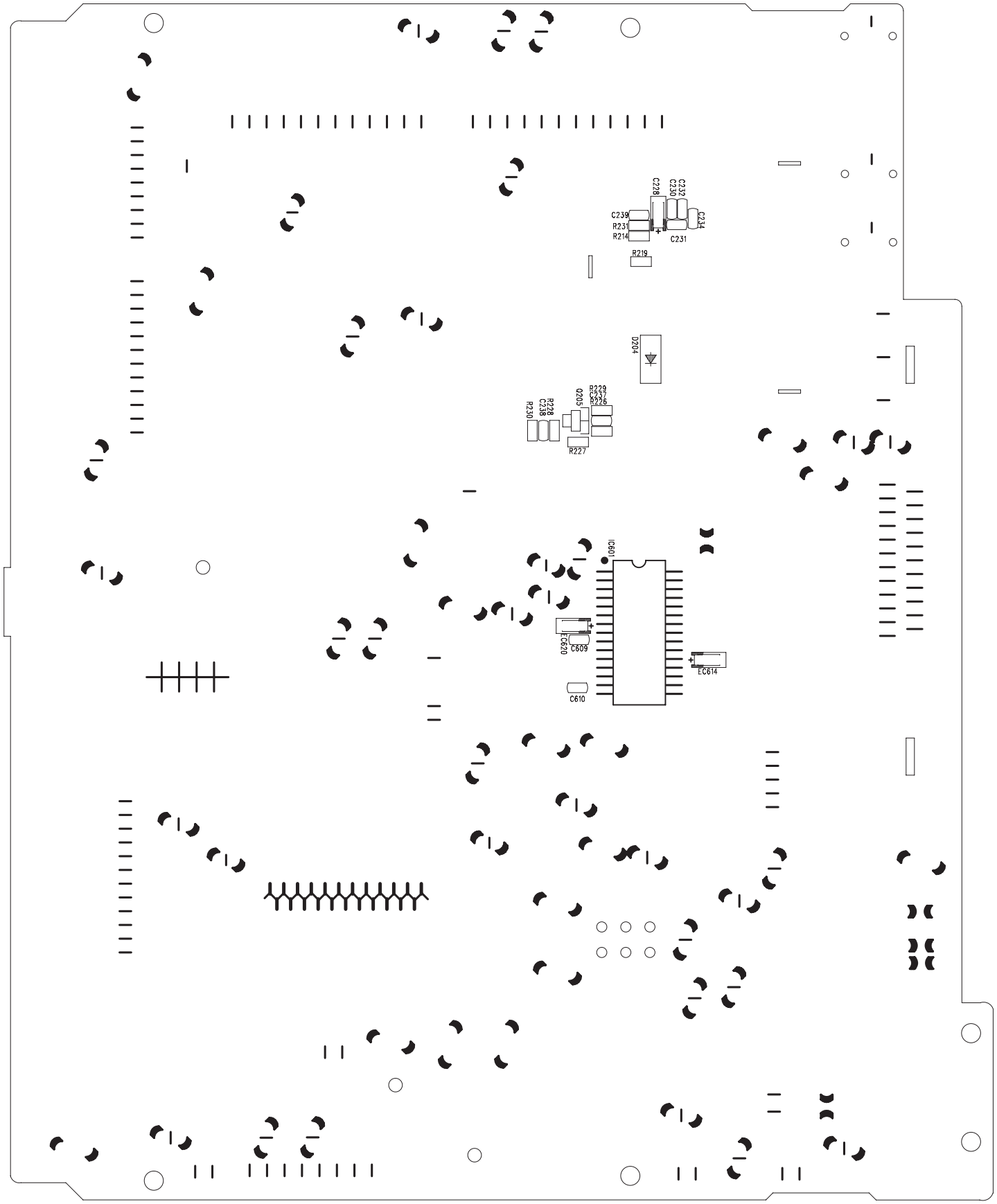

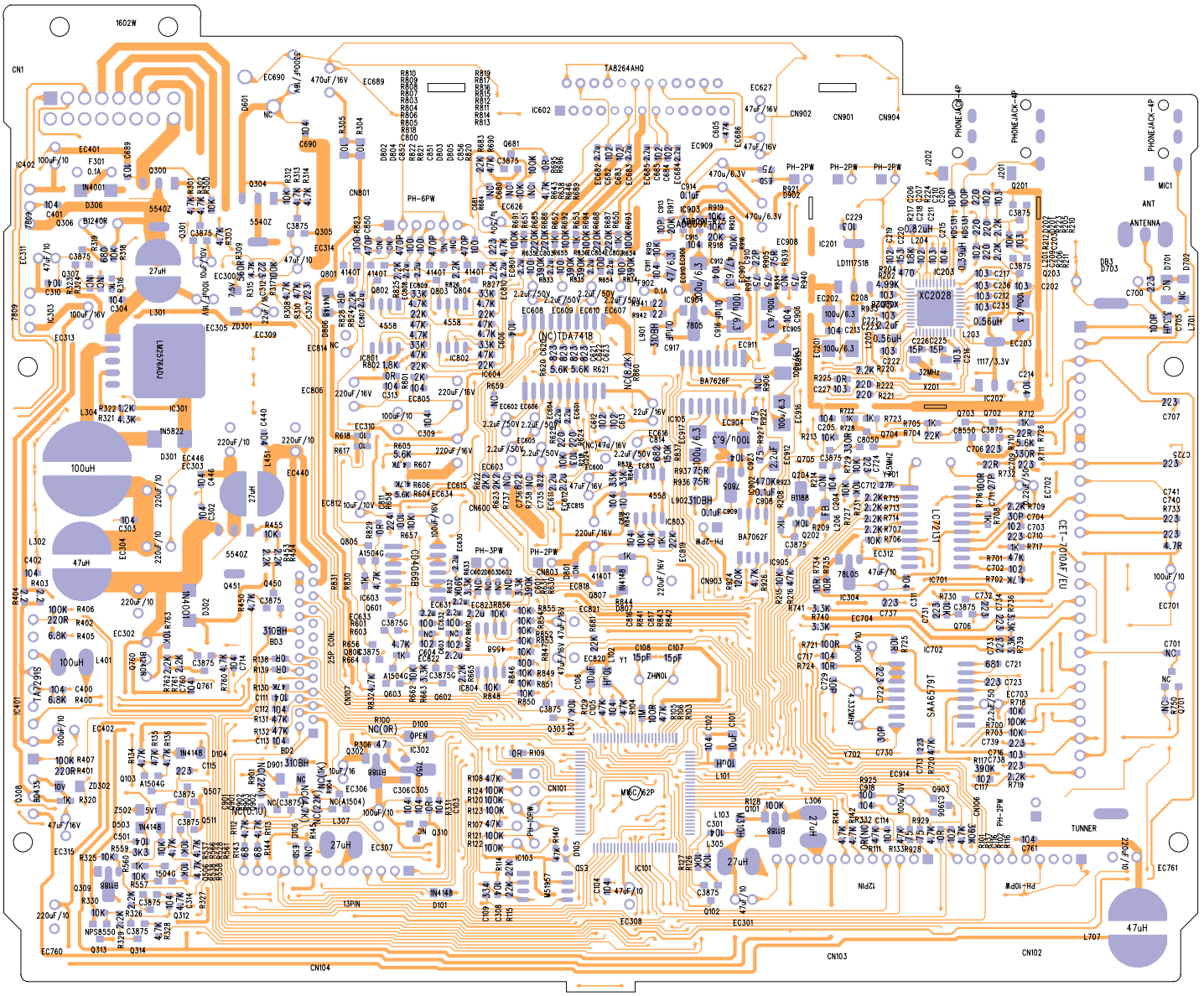

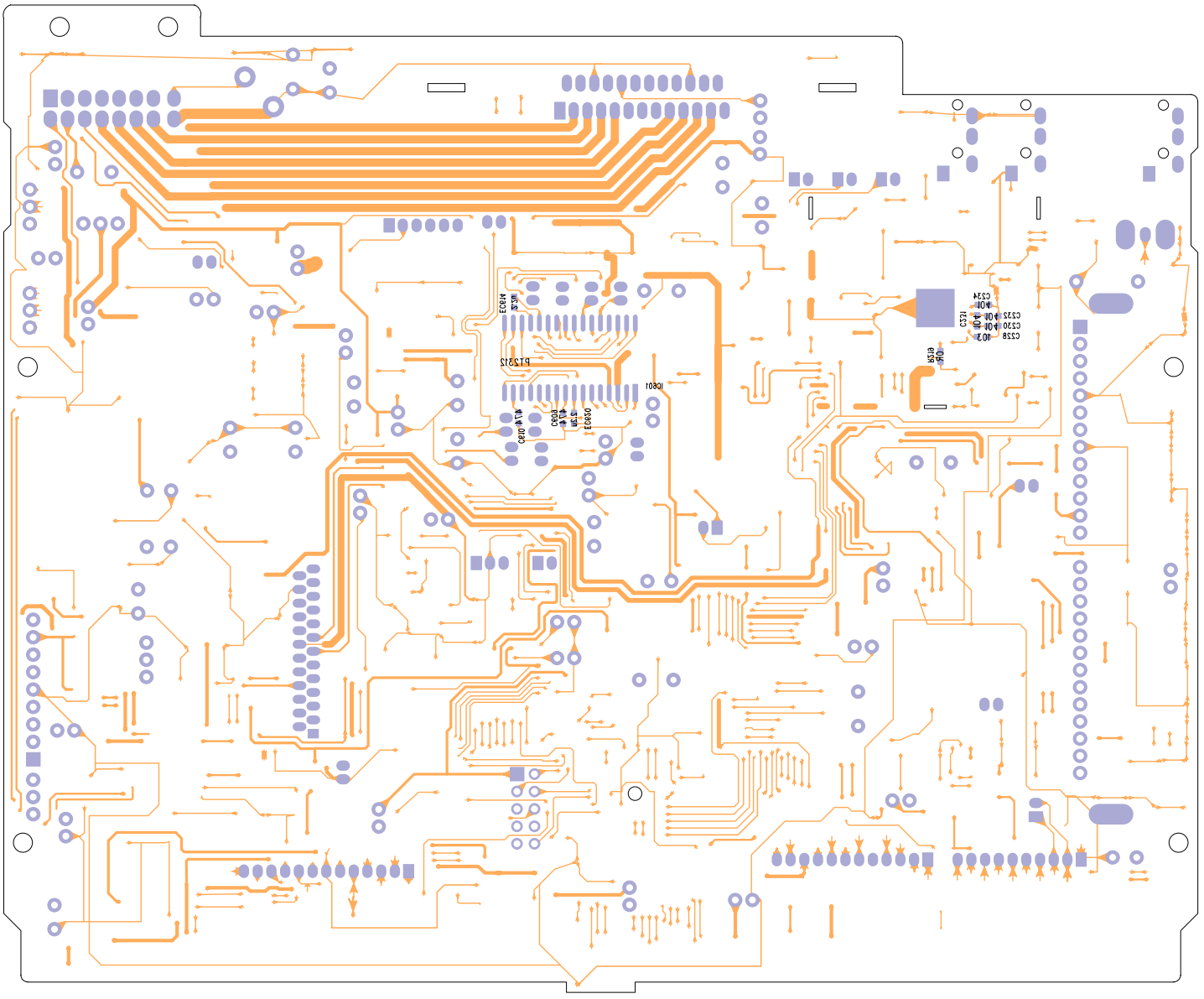

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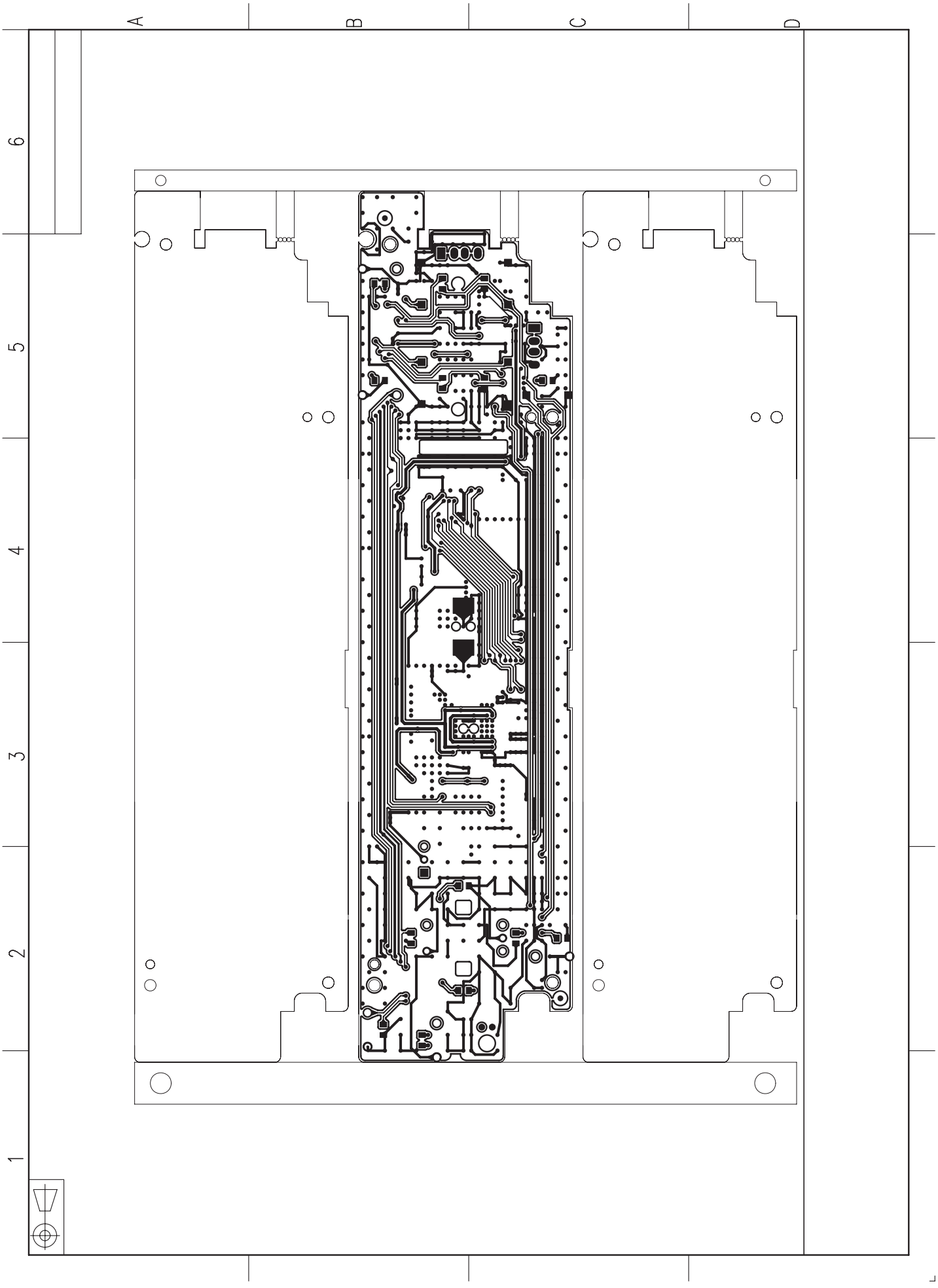

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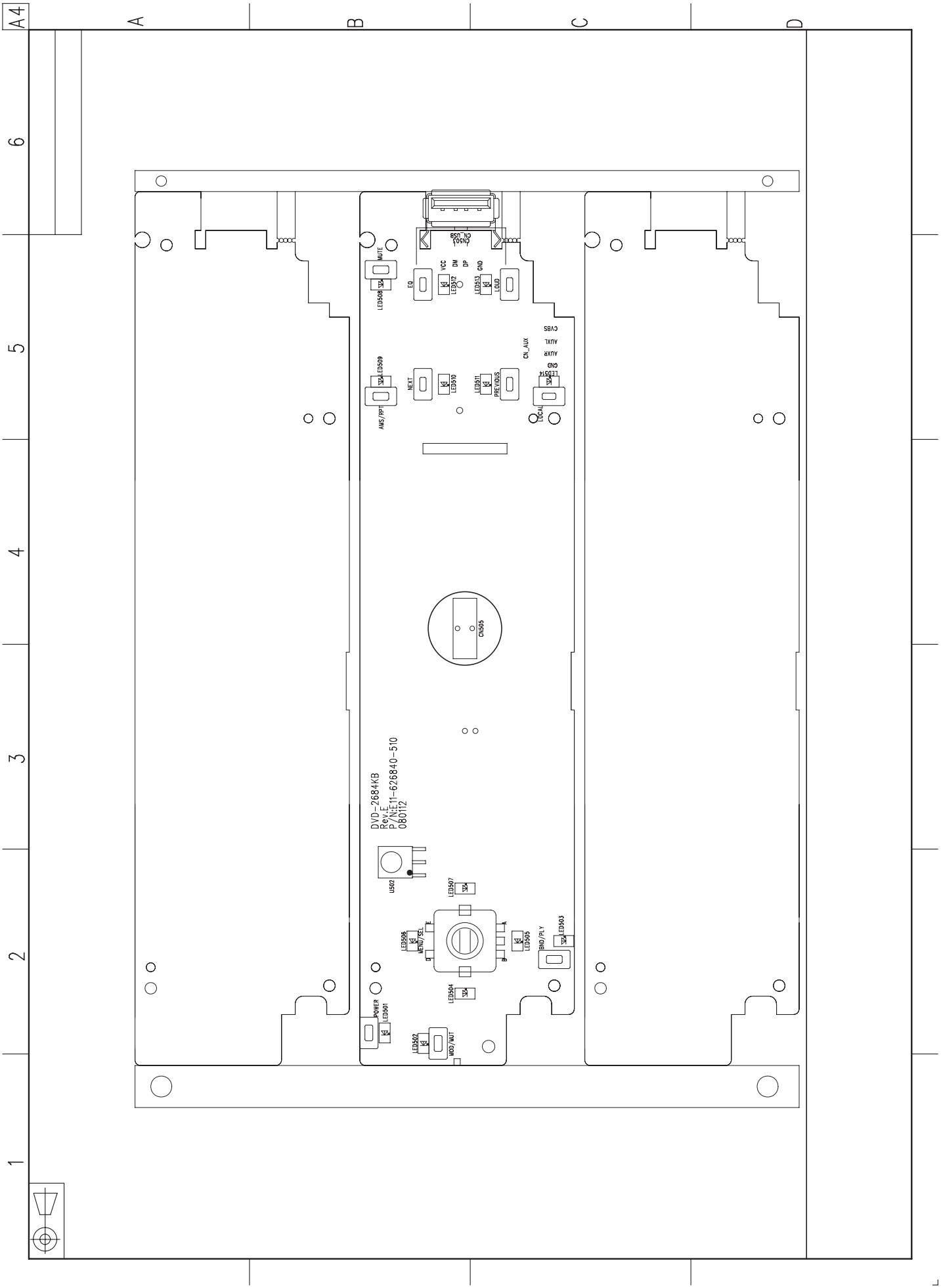
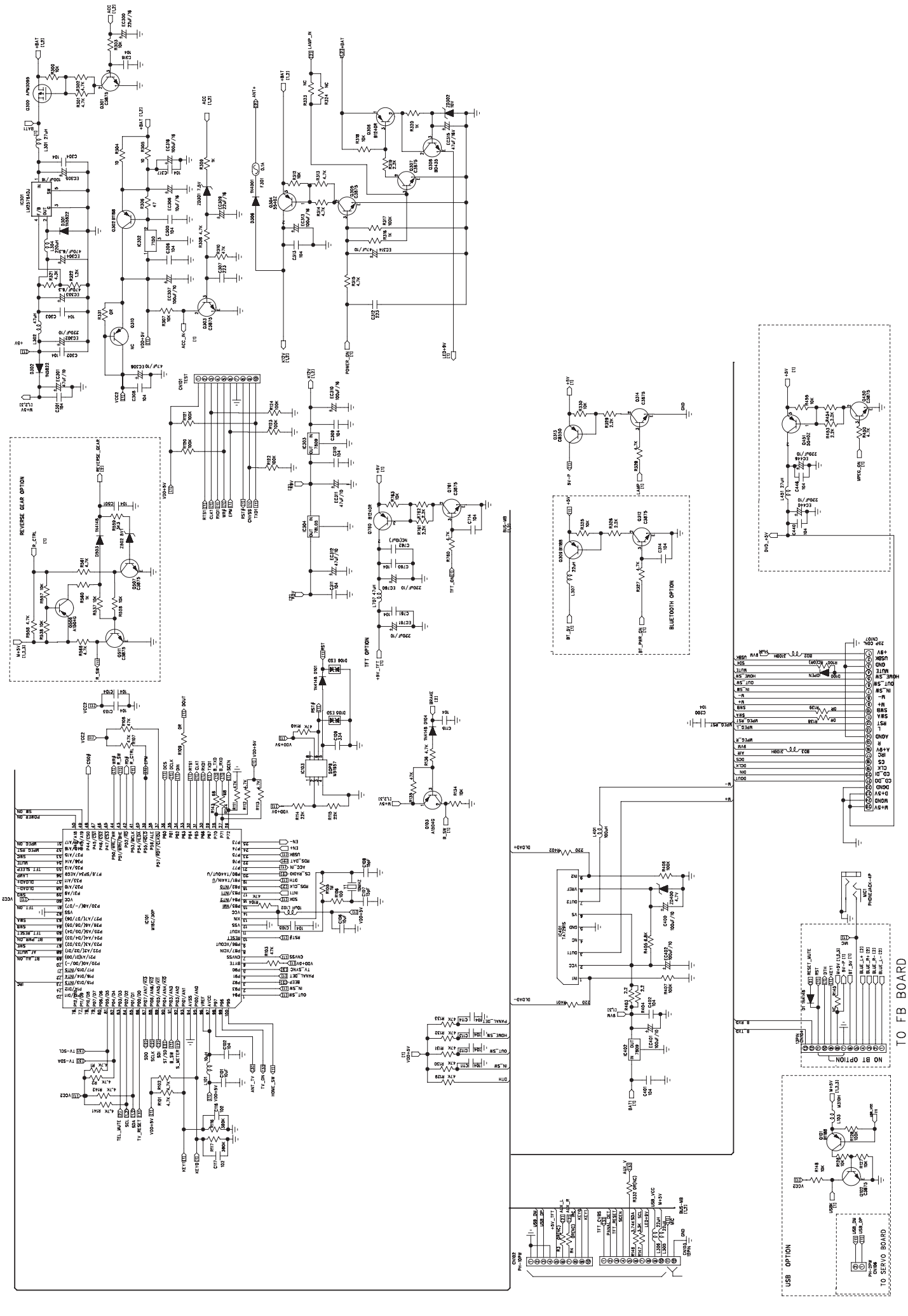
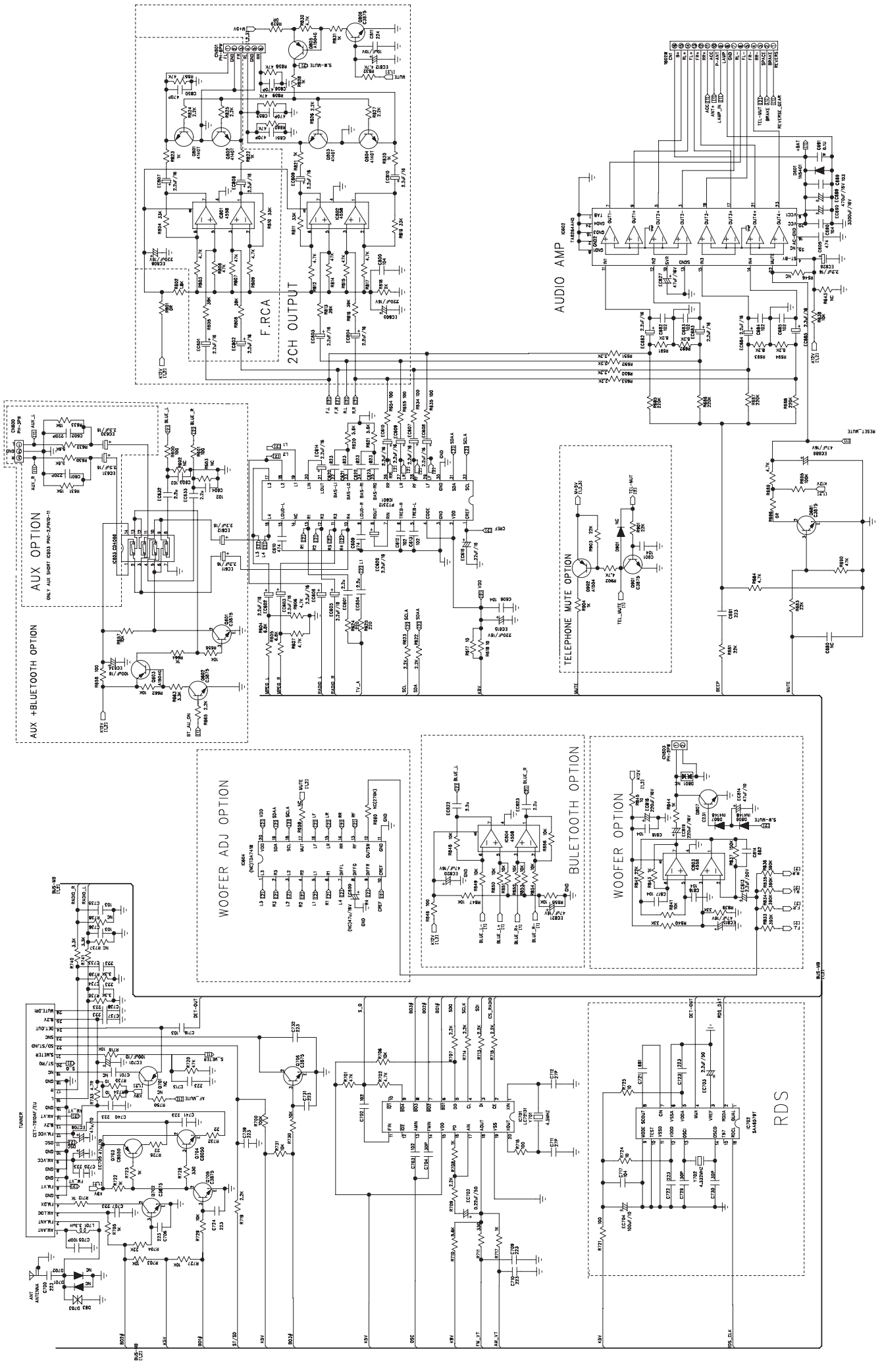
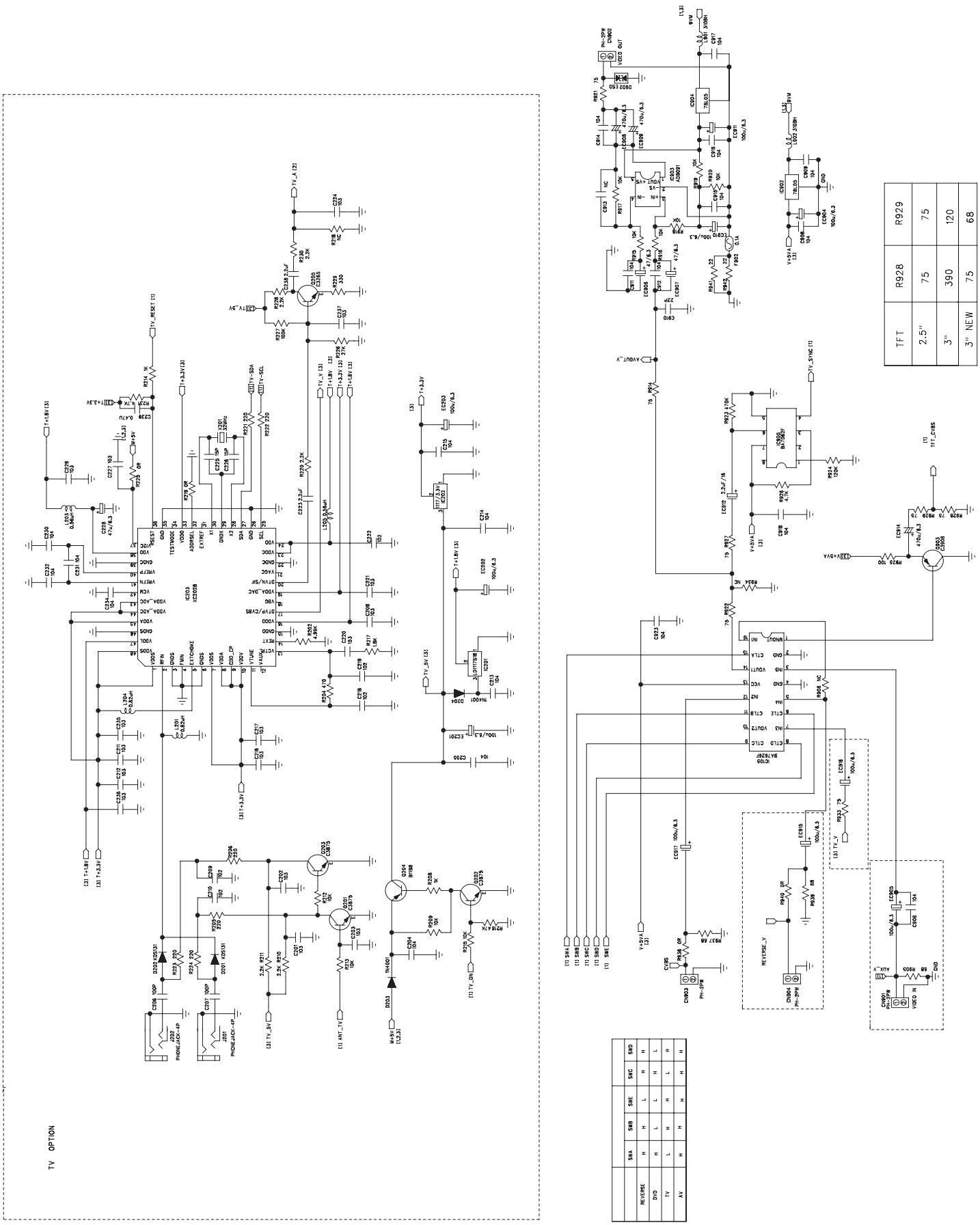
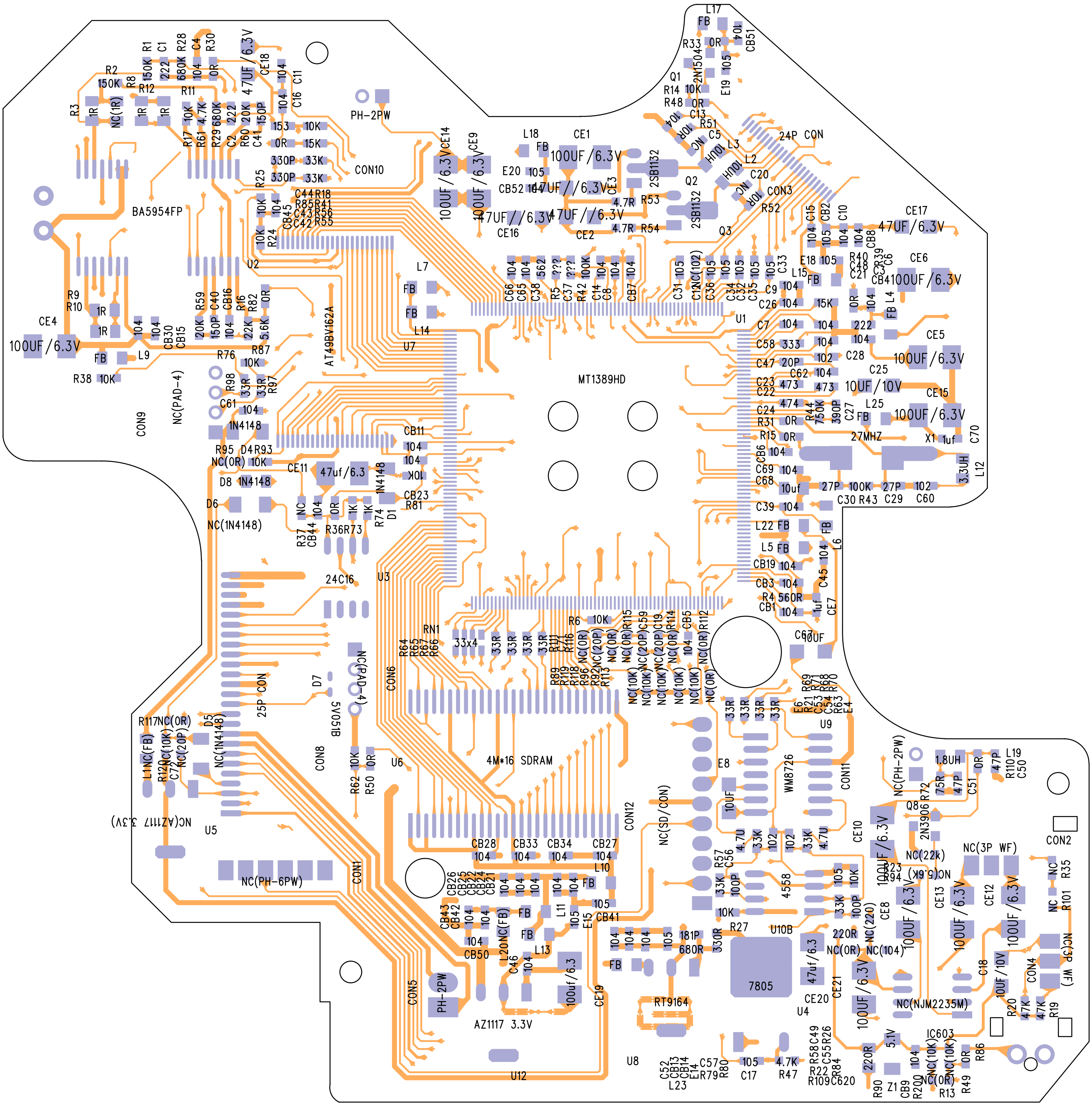

A4
A
B
C
D
1
2
3
4
5
6
CN601 USB
MUTE
LED508
EQ
VCC
DIM
DP
LED512
LED513
GND
LOUD
CN_AUX
CVBS
AUXL
AUXR
GND
LED514
LED509
A-M/S/RPT
NEXT
LED510
LED511
PREVIOUS
LOCAL
CN505
DVD-2684KB
Rev.E
P/N:E11-626840-510
080112
US02
LED507
LED506
MENU/SEL
LED505
LED503
BND/PLY
LED504
POWER
LED501
LED502
MOD/AUT

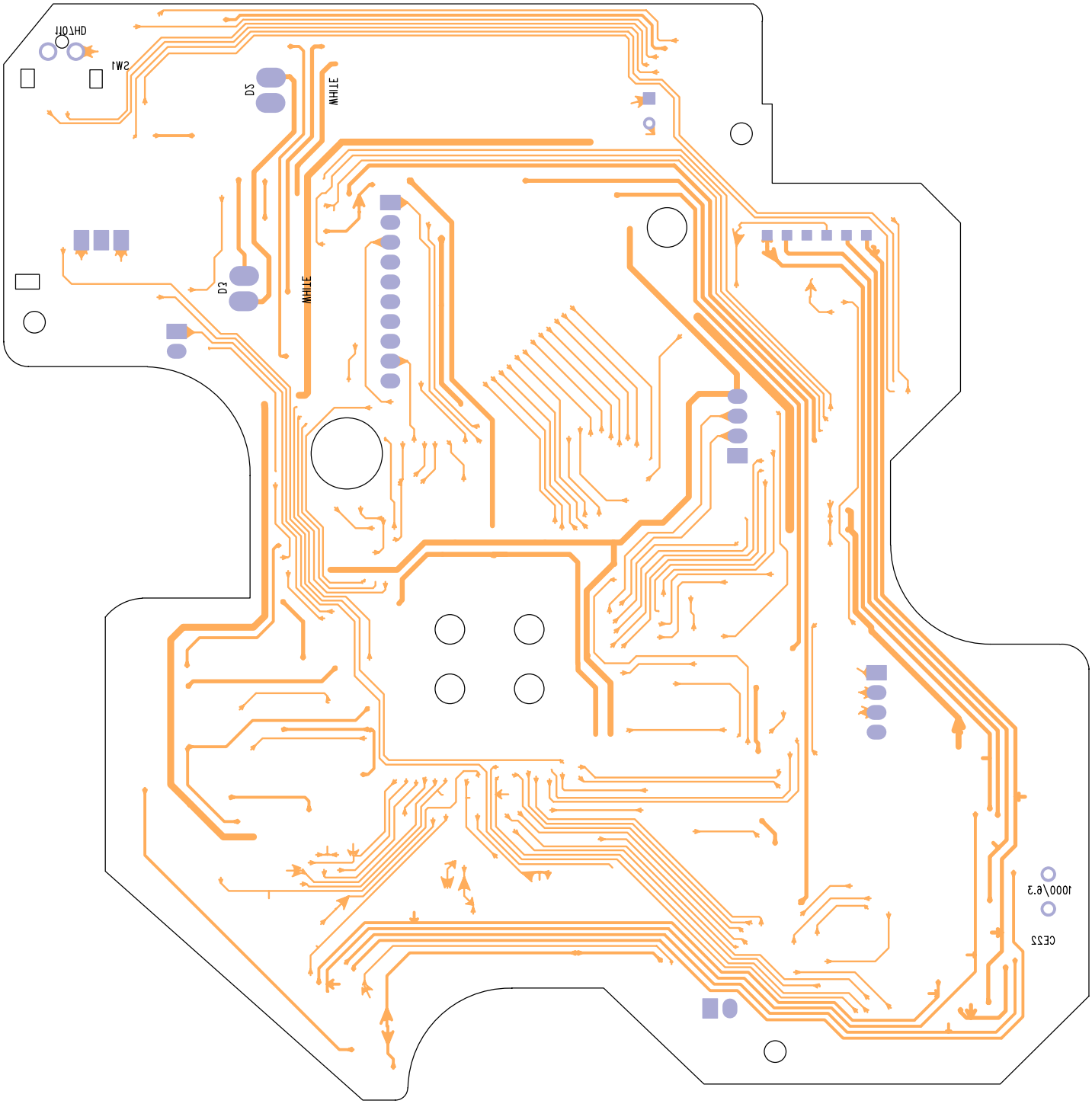

REVERSE GEAR OPTION
BLUETOOTH OPTION
TFT OPTION
NO BT OPTION
USB OPTION
TO FB BOARD
TO SERVO BOARD


AUDIO AMP
F.RCA
2CH OUTPUT
AUX OPTION
ONLY AUX SHORT CE03 PH1-2PHD-11
AUX +BLUETOOTH OPTION
TELEPHONE MUTE OPTION
WOOFER ADJ OPTION
BULETOOTH OPTION
WOOFER OPTION
RDS
TUNER

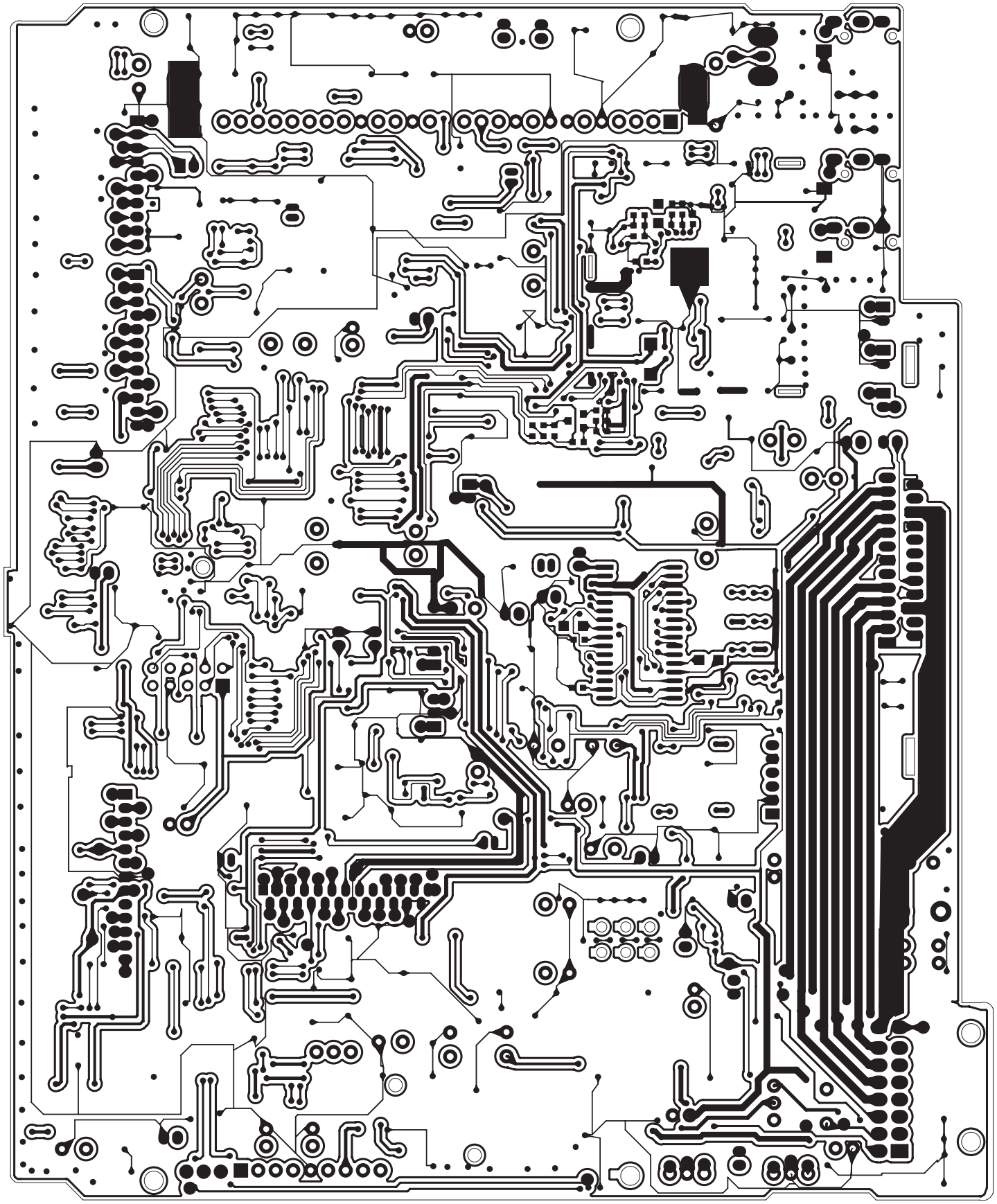

TV OPTION
REVERSE
DVD
TV
AV
SWA
SWB
SWE
SWC
SWD
TFT
2.5"
3"
3" NEW
R928
R929
75
120
390
68



MT1389HD
BA5954FP
AT49BV162A
4M*16 SDRAM
24P CON
WM8726
AZ1117 3.3V
RT9164
7805
24C16
NC(PH-6PW)
PH-2PW
27MHZ


CH2OUT
SW1
D3
WHITE
D2
WHITE
1000/6.3
CE22

MB-BOTTOMCOPPER



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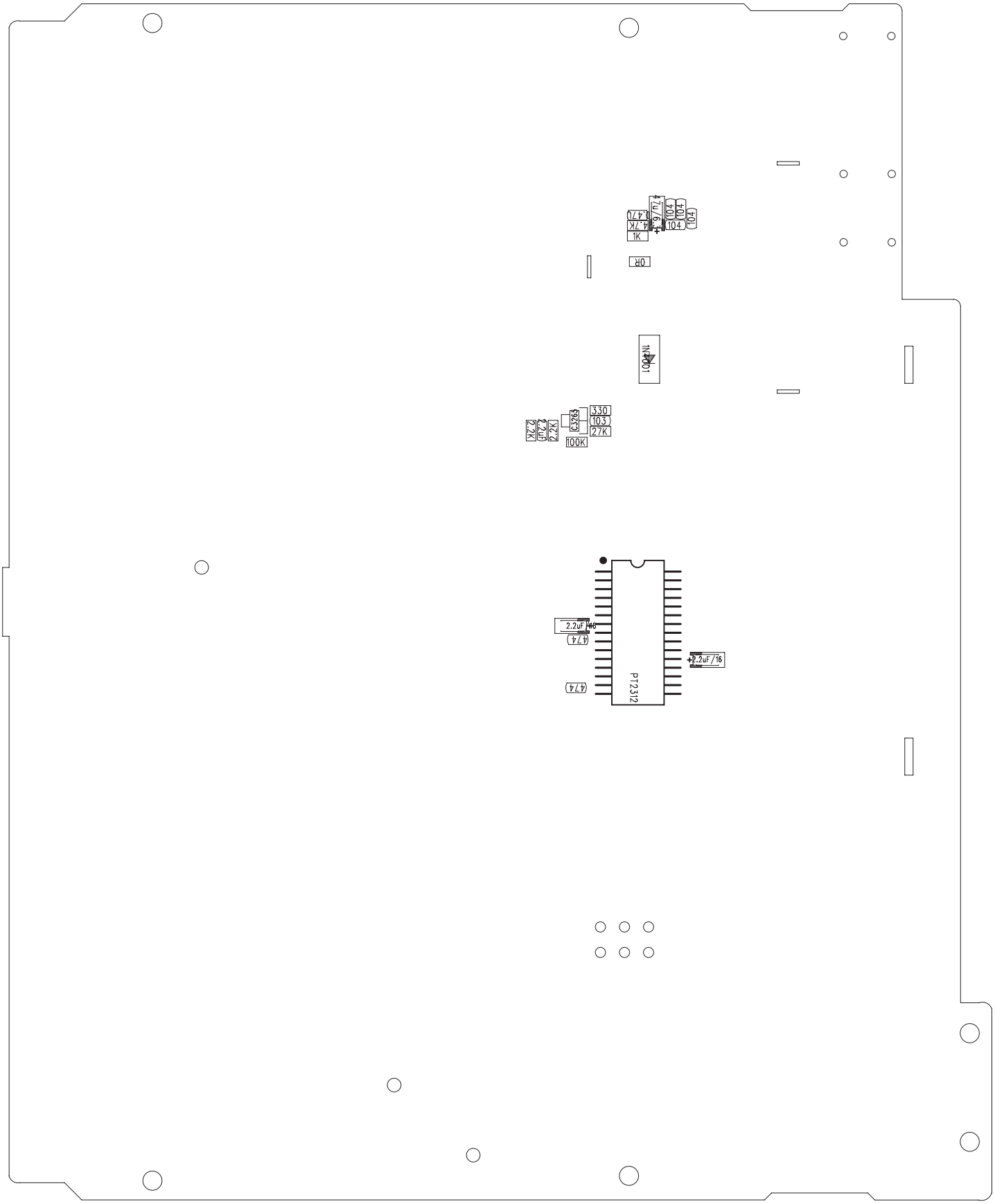

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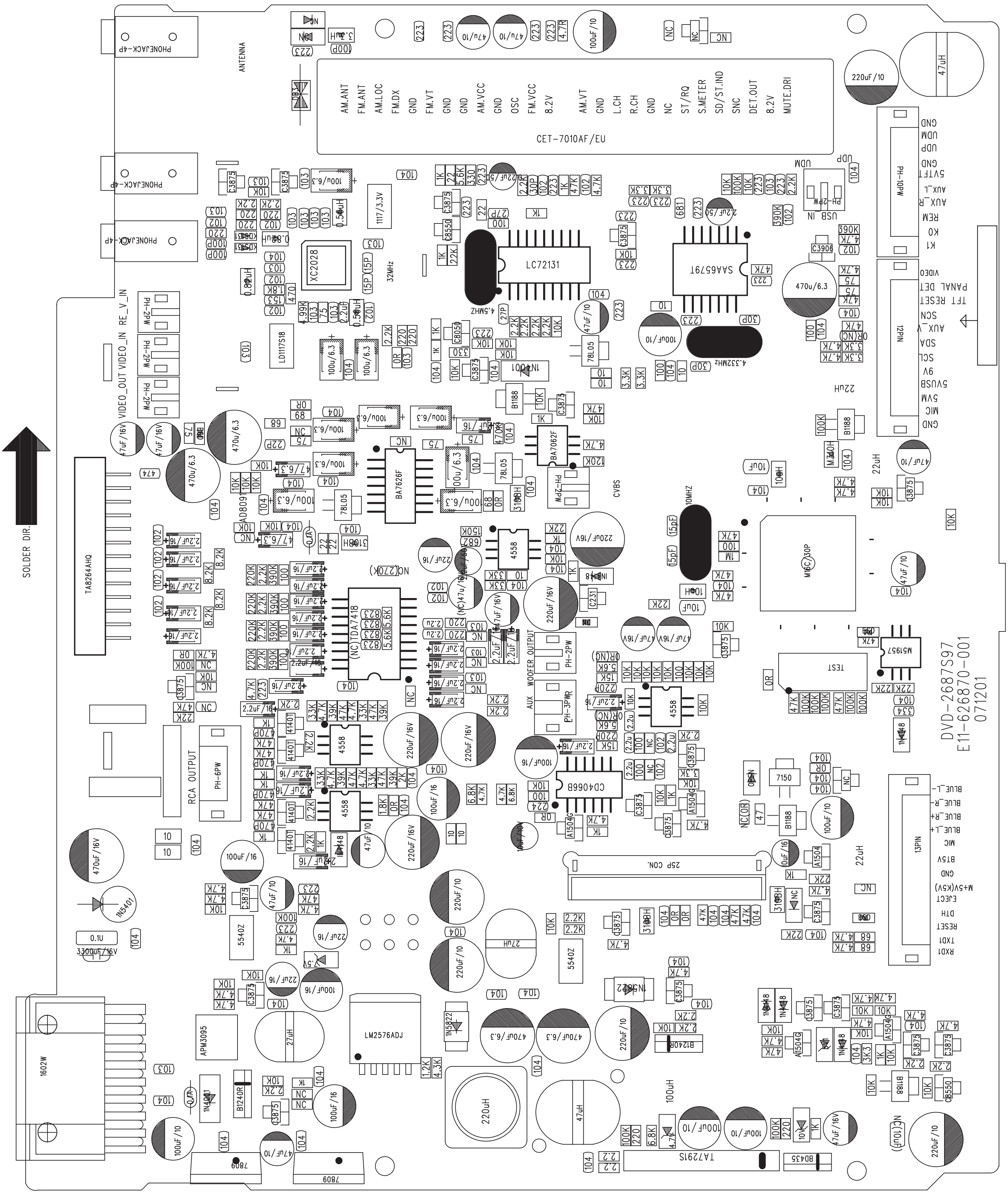
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LC72131
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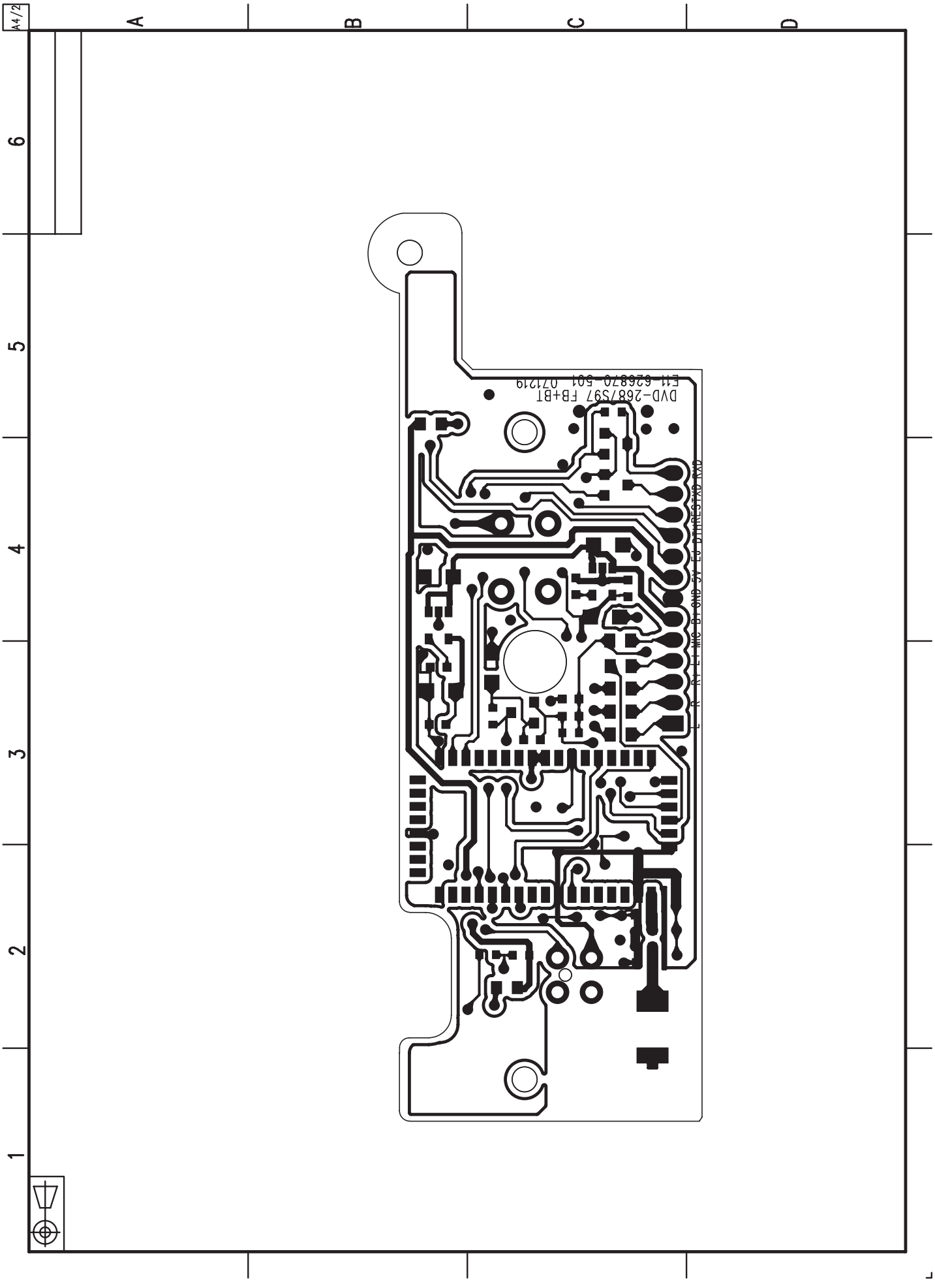
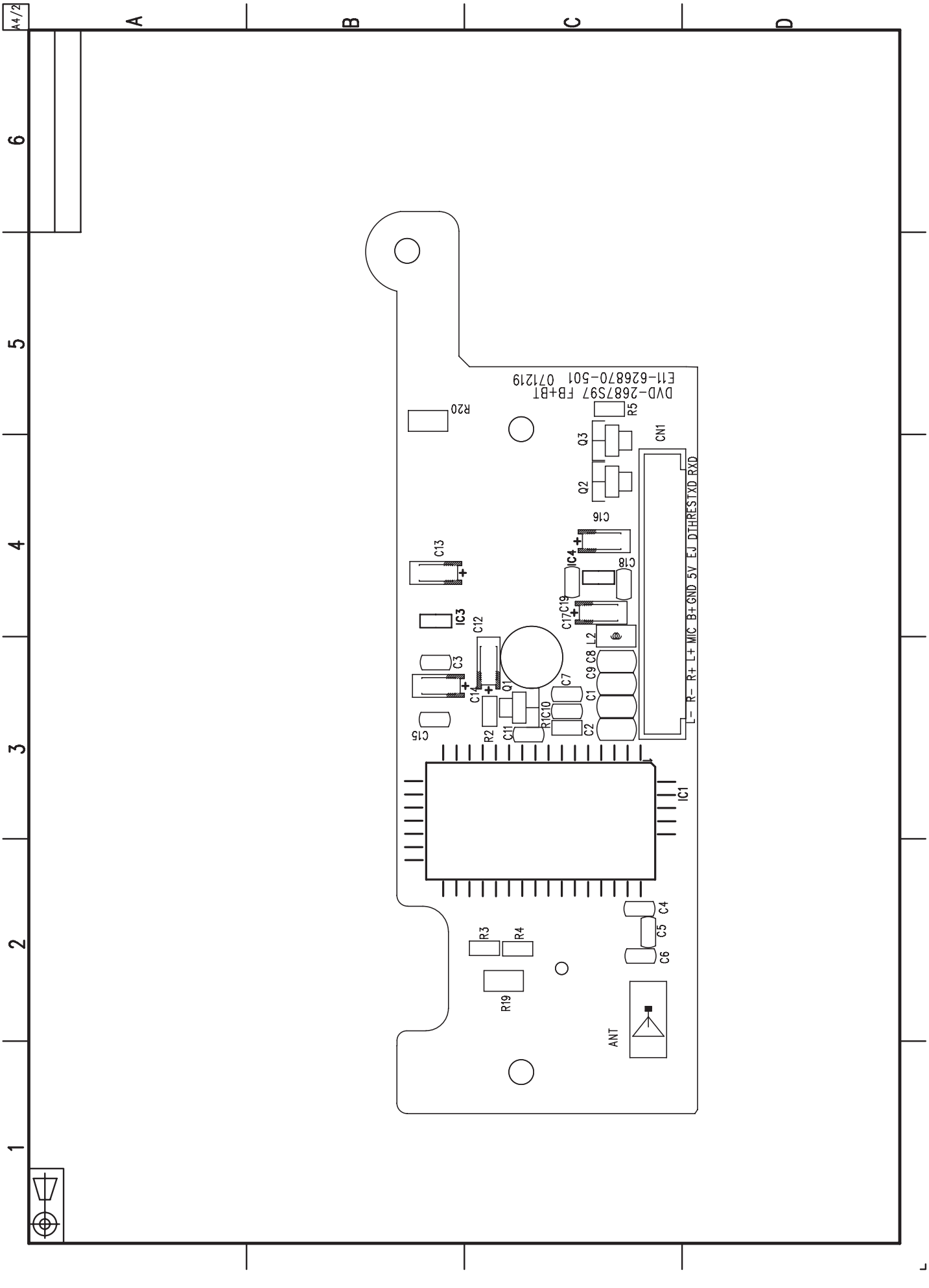
BA7626F
BA7062F
TA8264AHQ
TDA7418
CD4066B
LM2576ADJ
TA7291S
SOLDER DIR.
RCA OUTPUT
25P CON.
DVD-2687S97
E11-626870-001
071201

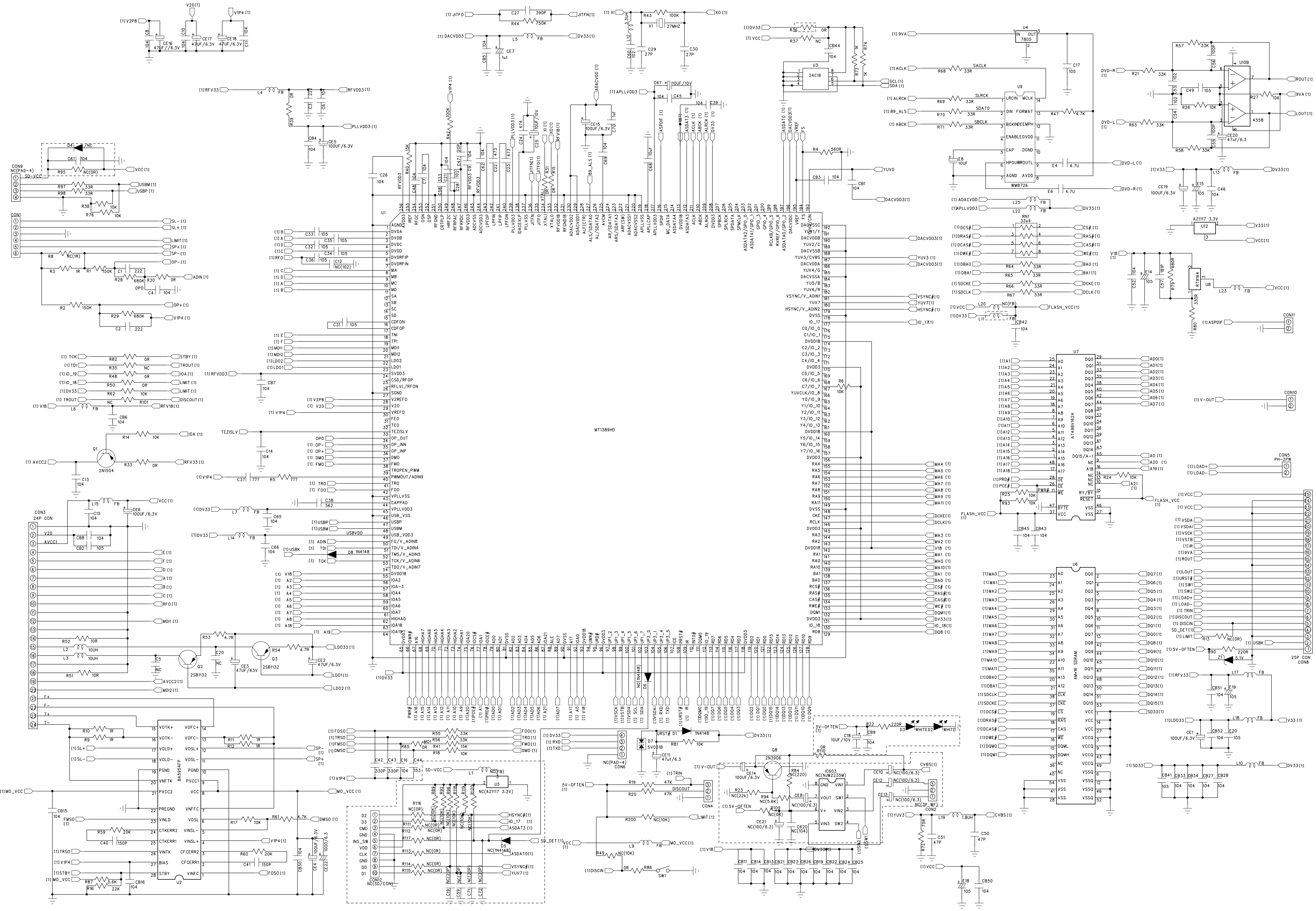
TOPCOPPER



TOPSILKSCREEN



DVD-018W13-U-SD-SB-070929.sch-1 - Wed Sep 10 17:22:30 2008



ITEM	SPEC
HD3000	AKAI – ADV-73
battery	CR2025 3V 20×2.5
remote control	DVD-2681W13 AKAI
remote control	DVD-2681W13 without RDS
semi-product	connector
diode	1N5401 DO-201AD SEMTECH
capacitor	0.1uF Z 50V Y 5V
capacitor	3300uF M 16V 105℃ 13×21
filt&fuse board	HCD-018S10 52×40.5×1.6
circle inductance	HRF-1808-400uH M
ISO	SCO1602H+SDC1602T 16P
glass fuse	250V 1A 6X30MM
glass fuse	250V 15A 6X30 MM
semi-product	main body
VOLTAGE REGULATORS IC	L7809CV TO-220 ST
RCA wire	PH 1CH rear video output G/S 250MM
RCA wire	6PH R/G/L/R/G/L 320MM
plug shield wire	#26 IC/TS PH-2Y*2 L=125
RCA output wire	1CH VIDEO OUT 280MM
RCA	RCA video wire L320
RCA output wire	PH 1 CH video in G/S 250MM
semi-product	panel
TACT switch	KPT1105DM 6×6×4.3 160g
detector switch	DS-1120
housing wire	PH-5Y/1571#30/L=30MM
connector board	FR-1 10Z 39.5×21.6×1.2MM
float socket	HD3000 SOCKET DLP 22PIN
housing wire	UL2651#28 TS/10C PH-10Y 65MM
housing wire	UL2651#28 TS/12C PH-12Y 65MM
semi-product	panel
diode	17-21/BHC-XL2M2TY/3T 0805
resistor	1KΩ J 0805
TACTswitch	KPS-1107 6×3.5×2.5MM 250G
FB	DVD-2681W12 FB 94V0 24×87×1.6MM
resistor	3KΩ J 0805
resistor	0Ω J 0805
semi-product	main board
BRIDGE DRIVER IC	TA7291S SIP-9
diode	DB3 DO-35 ST
rectifiersdiode	1N5401 DO-201AD SEMTECH
transistor	2SB1240R ATV ROHM
mylar capacitor	0.1UF capacitance
al-electrolytic capacitor	100uF M 10V 105℃ 6.3×5
al-electrolytic capacitor	220uF M 10V 105℃ 8×5
al-electrolytic capacitor	47uF M 10V 105℃ 5×5
al-electrolytic capacitor	10uF M 16V 105℃ 4×5
al-electrolytic capacitor	100uF M 16V 105℃ 6.3×5
al-electrolytic capacitor	22uF M 16V 105℃ 5×5

al-electrolytic capacitor	220uF M 16V 105℃ 8×5
al-electrolytic capacitor	3300uF TM 16V 105℃ 10×32
al-electrolytic capacitor	47uF M 16V 105℃ 5×5
al-electrolytic capacitor	470uF M 16V 105℃ 8×11.5
al-electrolytic capacitor	0.22uF M 50V 105℃ NP 4×5
quartz crystal	10MHz 16pF 10PPM HC-49U/S
connector	PH-2PW
connector	PH-10PW
connector	PH-12PW
connector	1.0 FPC 25P 90 (80-NFE2A-25-X)
socket	OUTPUT SOCKET 1602W
al-electrolytic capacitor	470uF M 6.3V 105℃ 8×5
FM/MW/LW tuner	CET-7020FW/E OIRT
al-electrolytic capacitor	2.2uF M 50V 105℃ 4×5
connector	PH-5PW
al-electrolytic capacitor	10uF M 10V 105℃ 4×5
connector	PH-6PW
transistor	BD435 TO-126
quartz crystal	4.5MHz 20pF 30ppm HC-49U/S
ANT CONNECTOR	170MM 75Ω SHIELD WIREΦ3.5MM
AUDIO AMPLIFIER IC	TA8264AH HZIP25-P TOSHIBA
PPTC fuse	0.1A 60V LP60-010
semi-product	main board
power module	HT7150 5.0V ±5% SOT89 HOLTEK
video switch	BA7626F SOP16 ROHM
PLL IC	LC72131 MFP20 SANYO
VOLTAGE REGULATORS IC	KIA78L05BF SOT-89 KEC
IC	ANALOG DEVICES AD8091 SOT23-5 (RT-5)
M51957A IC	M51957A IC SOP8-4.4-1.27
switch diode	PMLL4148L PHILIPS
zener diode	7.5V 0.5W LL-34 SEMTECH
rectifiers diode	1N4001 M1 DSMA/D0-214AC TK
diode	1N5822 SS34 SEMTECH
static resistance	0603 ESDA1
transistor	2SB1188 SC-62 ROHM
transistor	KTA1504S-GR-RTK/P SOT-23 KEC
transistor	APM3095PUC-TRL TO-252 ANPEC
transistor	KTC3875SG SOT-23 KEC
transistor	2N3906S-RTK/P SOT-23 KEC
transistor	PBSS 5540Z SOF223 PHILIPS
transistor	KTC8050S-C-RTK/P SOT-23 KEC
transistor	MPS8550S-D-RTK/P SOT-23 KEC
capacitor	100pF J NPO 0603
capacitor	15PF J NPO 0603
capacitor	22pF J NPO 0603
capacitor	27pF J NPO 0603
capacitor	30pF J NPO 0603
capacitor	
capacitor	0.01uF K X7R 0603
capacitor	X7R 0.022uF K 0603

capacitor	0.1uF M Y5V 0603
capacitor	10uF Z Y5V 10V 0805
capacitor	0.33uF M Y5V 0603
capacitor	0.47uF Z Y5V 0603
ta-electrolyticcapacitor	100uF M 6.3V 125℃ B2 3.5×2.8 AVX
ta-electrolyticcapacitor	47uF M 6.3V 125℃ A 3.2×1.6 AVX
ta-electrolyticcapacitor	2.2μF M16V 105℃ A 2 3.2×1.6AVX
resistor	0Ω J 0603
resistor	0603 1Ω ±5%
resistor	2.2Ω J 0603
resistor	4.7Ω J 0603
resistor	75Ω J 0603
resistor	10Ω J 0805
resistor	10Ω J 0603
resistor	100Ω J 0603
resistor	1KΩ J 0603
resistor	10KΩ J 0603
resistor	100KΩ J 0603
resistor	1 MΩ J 0603
resistor	56Ω J 0603
resistor	1.2KΩ J 0603
resistor	120KΩ J 0603
resistor	22Ω J 0603
resistor	220Ω J 0603
resistor	2.2KΩ J 0603
resistor	22KΩ J 0603
resistor	220KΩ J 0603
resistor	330Ω J 0603
resistor	3.3KΩ J 0603
resistor	33Ω J 0603
resistor	CHIP RES 39KΩ J 0603
resistor	390KΩ J 0603
resistor	330KΩ J 0603
resistor	4.3KΩ J 0603
resistor	47Ω J 0603
resistor	4.7KΩ J 0603
resistor	47KΩ J 0603
resistor	470KΩ J 0603
resistor	5.6KΩ J 0603
resistor	68Ω J 0603
resistor	6.8KΩ J 0603
inductance	3.3uH M 0805 TDK
inductance	10uH M 0805 TDK
inductance	100uH M CD52A
cirle chip inductance	22uH K CD52A
inductance	220uH M CD125
inductance	27uH K CD75
inductance	47uH K CD105
chip ferrite bead	310BH 0805
SYNC SEP. IC	BA7062F SOP-8 ROHM

IC	IC AMC2576-ADJ
capacitor	0.015uF K X7R 0603
DUAL OP. AMPLIFIER IC	NJM4558M SOP-8 JRC
transistor	KRC231S SOT-23 KEC
resistor	150KΩ J 0603
resistor	33KΩ J 0603
resistor	1.8KΩ J 0603
capacitor	220PF J NPO 0603
resistor	15KΩ J 0603
capacitor	470pF K X7R 0603
capacitor	0.22uF Z Y5V 0603
transistor	PBSS4140T SOT-23 PHILPS
resistor	2KΩ J 0603
zenerdiode	10V 0.5W SOD80C BZV55-C10 N×P
zenerdiode	5.1V 0.5W SOD80C BZV55-C5V1 N×P
zenerdiode	4.7V 0.5W LL-34 SEMTECH
resistor	8.2KΩ J 0603
MCU IC	HD3000W16(3 ")EUR+OIRT+AUX
MCU IC	M16C30P LQFP100-1414-0.5(M30302FCPGP-U3)
capacitor	6800pF K X7R 0603
capacitor	0.082uF K X7R 0603
semi-product	main board
MB	DVD-2687S97 MB FR4 174X155X1.2mm
capacitor	0.47uF Z Y5V 0603
AUDIO PROCESSOR IC	PT2312 SOP-32 PTC
ta-electrolyticcapacitor	2.2μF M16V 105℃ A 2 3.2×1.6AVX
switch diode	PMLL4148L PHILIPS
semi-product	SERVO BOARD
infrared diode	EIR9402 5.6×4.5×1.75
al-electrolytic capacitor	1000uF M 6.3V 105℃ 8×12
FFC cabel	D 1.0-25P 150mm 0.1×0.7
detector switch	KFC-V-111
detector switch	PH-2PW
DVD deck	DL-C28 D1 SHINWA HOP-1200W
housing wire	PH-2Y/2468 #26 L=120MM
LABEL	CAUTION
LABEL	
semi-product	servo BOARD
EPROM IC	DVD-2681W16 AKAI
16M FLASH	S29AL016D70TFI020 16M FLASH SPANSIDN 48PIN TSOP 3.3V
MTR DRIVER IC	BA5954FP ROHM
EPROM IC	AT24C16 AN-10SI-2.7 AIT 8-PIN SOIC
decode IC	MT1389DE-HES(0548) SOP256
SDRAM IC	K4S641632H-TC60 4×16M SAMSUNG
VOLTAGE REGULATORS IC	H7805AJ TO-252 HI-SINCERITY
VOLTAGE REGULATOR	AMS1117CD-3.3 SOT-223 AMS
VOLTAGE REGULATOR	1117ADJ SOT-233 AMS
DAC IC	WM8726GED SOP14 WOIFSON
DUAL OP. AMPLIFIER IC	NJM4558M SOP-8 JRC
switchdiode	1N4148 SOD-323 BAS316 N×P

switchdiode	PMLL4148L PHILIPS
tactic resistance	0603 ESDA1
zenerdiode	5.1V 0.5W SOD80C BZV55-C5V1 N×P
transistor	KTA1504S-GR-RTK/P SOT-23 KEC
transistor	2SB1132 SC-62
capacitor	100pF J NPO 0603
capacitor	1000pF K X7R 0603
capacitor	0.1uF Z Y5V 0603
capacitor	1uF Z Y5V 0603
capacitor	10uF Z Y5V 10V 0805
capacitor	150PF K X7R 0603
capacitor	0.015uF K X7R 0603
capacitor	15PF J NPO 0603
capacitor	180pF J X7R 0603
capacitor	20P 0603 ±5% NPO
capacitor	2200pF K X7R 0603
capacitor	330pF K X7R 0603
capacitor	0.033uF Z Y5V 0603
capacitor	390pF K X7R 0603
capacitor	4.7uF Z Y5V 10V 0603
capacitor	0.047uF M Y5V 0603
capacitor	0.47uF Z Y5V 0603
capacitor	47pF J NPO 0603
capacitor	5600 0603 ±10%
ta-electrolyticcapacitor	100uF M 6.3V 125℃ B2 3.5×2.8 NEC TOKIN
ta-electrolyticcapacitor	10uF M 10V 125℃ A 3.2×1.6 NEC/TOKIN
ta-electrolyticcapacitor	47uF M 6.3V 125°C A 3.2×1.6 NEC/TOKIN
ta-electrolyticcapacitor	47uF M 6.3V 105℃ B2 3.5×2.8 PANASONIC
resistor	0Ω J 0603
resistor	100KΩ J 0603
resistor	10KΩ J 0603
resistor	10Ω J 0603
resistor	150KΩ J 0603
resistor	15KΩ J 0603
resistor	1KΩ J 0603
resistor	1Ω J 0805
resistor	20KΩ J 0603
resistor	220Ω J 0603
resistor	220Ω J 0805
resistor	22KΩ J 0603
resistor	330Ω J 0603
resistor	33KΩ J 0603
resistor	33Ω J 0603
resistor	4.7KΩ J 0603
resistor	4.7Ω J 0603
resistor	47KΩ J 0603
resistor	5.6KΩ J 0603
resistor	560Ω J 0603
resistor	680KΩ J 0603
resistor	680Ω J 0603

resistor	750KΩ J 0603
resistor	75Ω J 0603
chip resistor	33Ω J 100V 1/16W RA03-4
quartz crystal	27MHz 16pF 10ppm -40+85℃ SMD HC-49U/S
SB	DVD-018W13-U-SD 109.9×110×1.2
inductance	2.2uH M 0805 MICROGATE
inductance	10uH M 0805 TDK
chip ferrite bead	310BH 0805
FFCconnector	0.5-24P 80-ZFA1-24-R
FFCconnector	1.0-25P 80-ZFB2-25-R
semi-product	panel
3"TFT LCD	3" TD030MHEA2 990000006 TOPPOLY
semi-product	key board
switch	EC110201M2D-HA2-001
TACT switch	KPT1107BD 6×3.5×4.3 200g KIE
floating socket	HD3000 PLUG SOP 22PIN
cable	1571 #30 red/black/white L=45MM
infrared module	*IRM-3638A*
USBsocket	USBAIF 4P DIP 90°ATOM
USB connecting board	TCD-097K16 USB 16.5×6.5×1.6
semi-product	key board
TACTswitch	KPT-1107EBM 6×3.5×4.3 180g
diode	17-21/BHC-XL2M2TY/3T 0805
semi-product	key board
VIDEO DISPLAY	CONTROLLER IC T112 64LQFP 10X10X1.0MM
VOLTAGE REGULATOR	AMS1117CD-3.3 SOT-223 AMS
zenerIC	AMS1117-1.8 SOT-223 AMS
zenerdiode	9.1V 0.5W LL-34 SEMTECH
15V zener tube	15V 0.5W LL-34 SEMTECH
diode	1N5819WB SOD-123 SEMTECH
tactic resistance	0603 ESDA1
transistor	NPN TR 2SC4672 SOT-89 ROHM
capacitor	47pF J NPO 0603
capacitor	22pF J NPO 0603
capacitor	33pF J NPO 0603
capacitor	1000pF K X7R 0603
capacitor	0.68uF Z Y5V 0603
capacitor	0.1uF M Y5V 0603
capacitor	1uF Z Y5V 0603
capacitor	0.22uF Z Y5V 0603
capacitor	2.2uF Z 10V Y5V 0603
capacitor	4.7uF Z 16V Y5V 0805
ta-electrolyticcapacitor	100uF M 6.3V 125℃ B2 3.5×2.8 AVX
ta-electrolyticcapacitor	47uF M 6.3V 125℃ A 3.2×1.6 AVX
ta-electrolyticcapacitor	10uF M 10V 125℃ A 3.2×1.6 AVX
ta-electrolyticcapacitor	22uF 16V 125℃ B2 3.5×2.8 AVX
ta-electrolyticcapacitor	4.7uF 16V 125℃ A 3.2×1.6 AVX
resistor	0Ω J 0603
resistor	100Ω J 0603
resistor	1KΩ J 0603

resistor	10KΩ J 0603
resistor	1.2KΩ J 0603
resistor	12KΩ J 0603
resistor	1.5KΩ J 0603
resistor	180Ω J 0603
resistor	18KΩ J 0603
resistor	200Ω J 0603
resistor	27Ω J 0603
resistor	270Ω J 0603
resistor	3KΩ J 0603
resistor	390Ω J 0603
resistor	3.9KΩ J 0603
resistor	470Ω J 0603
resistor	4.7KΩ J 0603
resistor	5.6KΩ J 0603
resistor	750Ω J 0603
resistor	820Ω J 0603
resistor	910Ω J 0603
chip resistor	300Ω J 100V 1/16W RA03-4
quartz crystal	27MHz ±10PPM CB
KB	FR-4 10Z 166.4*40.8*1.2mm HD3000 KB
inductance	10uH M 0805 TDK
inductance	10uH M 1206 TDK
chip ferrite bead	310BH 0805
39PIN FFCconnector	XF2B-3945-31A
resistor	330Ω J 0603
resistor	680Ω J 0603
resistor	0603 1Ω ±5%
inductance	22uH K CDD5730
AUX BOARD	semi-product
AUXsocket	6PIN black
AUX BOARD	FR-4 10Z 12*10.6*1.2mm AUX BOARD

LTPS LCD Specification

Table of Contents

Record of Revision

Rev	Issued Date	Description
0.00	Aug. 21, 2006	New create.

1. FEATURES

The 3.0” LCD module is the active matrix color TFT LCD module. LTPS (Low Temperature Poly Silicon) TFT technology is applied with vertical and horizontal drivers built on the panel.

Both of horizontal and vertical scan are reversible and controlled by the serial interface commands.

The product is designed for the requirement of the green product, and the specification complies with Toppoly’s “Green Product Chemical Substance Specification Standard Hand Book”.

2. GENERAL SPECIFICATIONS

Item	Description	Unit
Display Size (Diagonal)	3.0	Inch
Aspect ratio	16:9	-
Display Type	Transmissive	-
Active Area (HxV)	65.31 x 36.84	mm
Number of Dots (HxV)	960 x 240	Dot
Dot Pitch (HxV)	0.068 x 0.1535	mm
Color Arrangement	RGB Delta	-
Color Numbers	16Million	-
NTSC	40	%
Outline Dimension (HxVxT)	75.31x43.44x2.58*(Approx.)	mm
Weight	TBD	G
Panel surface treatment	Hard Coating (3H)	-

*Exclude FPC and protrusions.

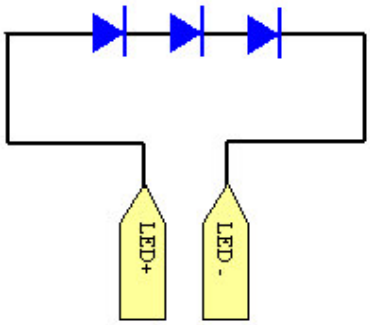
Recommend connector:

Compatible with JAE IL-FHJ-39S-HF-A1

Pin	Symbol	I/O	Description	Remark
1	CP3	C	Capacitor for charge pump	
2	CP4	C	Capacitor for charge pump	
3	CP5	C	Capacitor for charge pump	
4	CP6	C	Capacitor for charge pump	
5	CP7	C	Capacitor for charge pump	
6	CP8	C	Capacitor for charge pump	
7	NC	--	No connection	
8	PCDL	C	Capacitor for pre-charge data signal low	
9	PCDH	C	Capacitor for pre-charge data signal high	
10	VCOML	C	Capacitor for VCOM low	
11	VCOMH	C	Capacitor for VCOM high	
12	AGND	--	Analog ground	
13	PVDD	C	Regulation capacitor for charge pump	
14	AVDD	C	Regulation capacitor for analog voltage	
15	CP1	C	Capacitor for charge pump	
16	CP2	C	Capacitor for charge pump	
17	PWM	O	Power transistor gate signal for the boost converter	
18	FB	I	Main boost regulator feedback input	
19	LED-	--	LED power: cathode	Note 3-1
20	LED+	--	LED power: anode	
21	NC	--	No connection	
22	GND	--	Ground	
23	VCC	--	Power supply	
24	VD	I	Vertical sync input	
25	HD	I	Horizontal sync input	
26	DCLK	I	Clock signal, latch data onto line latches at the rising edge	
27	DIN0	I	Data input	
28	DIN1	I	Data input	
29	DIN2	I	Data input	
30	DIN3	I	Data input	
31	DIN4	I	Data input	

32	DIN5	I	Data input	
33	DIN6	I	Data input	
34	DIN7	I	Data input	
35	SDA	I/O	Serial interface data line	
36	SCL	I	Serial interface clock line	
37	SCEN	I	Serial interface chip enable line	
38	SHDB	I	Sleep mode setting pin	
39	GRESTB	I	Global reset pin	

Note 3-1: The figure below shows the connection of backlight LED.



Ta = 25℃

Item	Symbol	MIN	MAX	Unit	Remark
Logic Power Supply Voltage	V_{CC}	-0.5	4.5	V	
Input Signal Voltage	V_{IN1}	0	V_{CC}	V	VD, HD, DCLK, DIN[0:7], SDA, SCL, SCEN, SHDB, GRESTB
Back Light Forward Current	I_F	--	25	mA	
Operating Temperature	T_{OPR}	-10	+60	℃	
Storage Temperature	T_{STG}	-30	+80	℃	

GND=0V, Ta=25℃

Item		Symbol	MIN	TYP	MAX	Unit	Remark
Power Supply Voltage		V_{CC}	2.85	3.3	3.6	V	Note 5-1
Input Signal Voltage	Low Level	V_{IL}	GND	-	0.2x Vcc*	V	VD, HD, DCLK, DIN[0:7], SDA, SCL, SCEN, SHDB, GRESTB
	High Level	V_{IH}	0.8x Vcc*	-	Vcc*	V	
PWM Output Voltage		V_{PWM}	0	-	Vcc*	V	
Feedback Voltage		V_{FB}	0.55	0.6	0.65	V	Note 5-2
Panel Power Consumption		W_P	-	70		mW	

Vcc* =Vcc (TYP)

Note 5-1: The Vcc power is provided for overall panel module supply voltage.

Note 5-2: DC/DC feedback control voltage

5.2 Driving Backlight

Ta=25℃

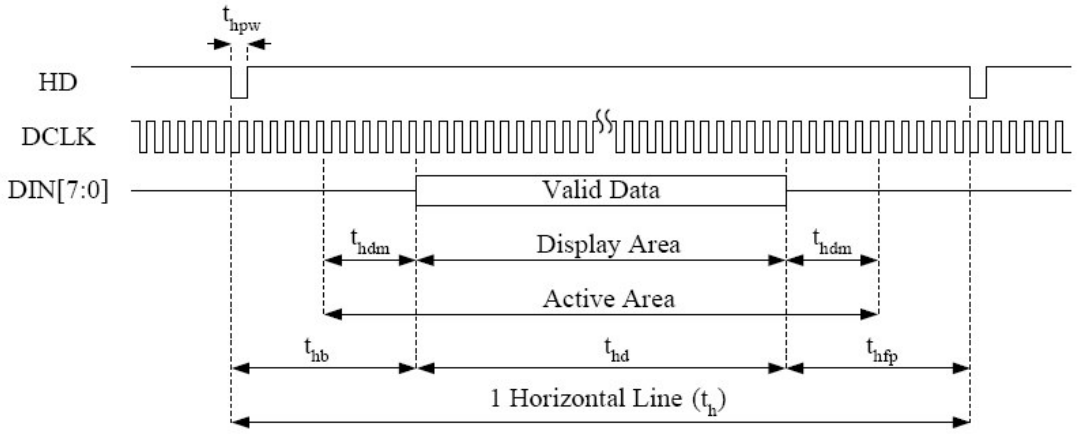
Item	Symbol	MIN	TYP	MAX	Unit	Remark
Forward Current	I_F	--	23	25	mA	Note 5-3
Forward Current Voltage	V_F	--	9.6	10.8	V	
Backlight Power Consumption	W_{BL}	--	221	270	mW	

Note 5-3: Backlight driving circuit is recommended as the fix current circuit.

6. TIMING CHART

<Input timing 1> Serial RGBDummy or Serial-YUV 4:2:2 mode

--Horizontal--



(1) NTSC Mode:

Parameter	Symbol	MIN	TYP	MAX	Unit
DCLK Frequency	F_{DCLK}	--	27	--	MHz
Horizontal valid data	t_{hd}	--	1440	--	DCLK
1 Horizontal Line	t_h	--	1716	--	DCLK
HSYNC Pulse Width	t_{hpw}	1	1	--	DCLK
Hsync blanking	t_{hp}	--	240	--	DCLK
Horizontal Front Porch	t_{hfp}	--	36	--	DCLK
Horizontal Dummy Time	t_{hdm}	--	0	--	DCLK

Parameter	Symbol	MIN	TYP	MAX	Unit
DCLK Frequency	F_{DCLK}	--	24.54	--	MHz
Horizontal valid data	t_{hd}	--	1280	--	DCLK
1 Horizontal Line	t_h	--	1560	--	DCLK
HSYNC Pulse Width	t_{hpw}	1	1	--	DCLK
Hsync blanking	t_{hp}	--	240	--	DCLK
Horizontal Front Porch	t_{hfp}	--	40	--	DCLK
Horizontal Dummy Time	t_{hdm}	--	0	--	DCLK

(2) PAL Mode:

Parameter	Symbol	MIN	TYP	MAX	Unit
DCLK Frequency	F_{DCLK}	--	27	--	MHz
Horizontal valid data	t_{hd}	--	1440	--	DCLK
1 Horizontal Line	t_h	--	1728	--	DCLK
HSYNC Pulse Width	t_{hpw}	1	1	--	DCLK
Hsync blanking	t_{hp}	--	240	--	DCLK
Horizontal Front Porch	t_{hfp}	--	48	--	DCLK
Horizontal Dummy Time	t_{hdm}	--	0	--	DCLK

Parameter	Symbol	MIN	TYP	MAX	Unit
DCLK Frequency	F_{DCLK}	--	24.38	--	MHz
Horizontal valid data	t_{hd}	--	1280	--	DCLK
1 Horizontal Line	t_h	--	1560	--	DCLK
HSYNC Pulse Width	t_{hpw}	1	1	--	DCLK
Hsync blanking	t_{hp}	--	240	--	DCLK
Horizontal Front Porch	t_{hfp}	--	40	--	DCLK
Horizontal Dummy Time	t_{hdm}	--	0	--	DCLK

(3) QVGA Mode:

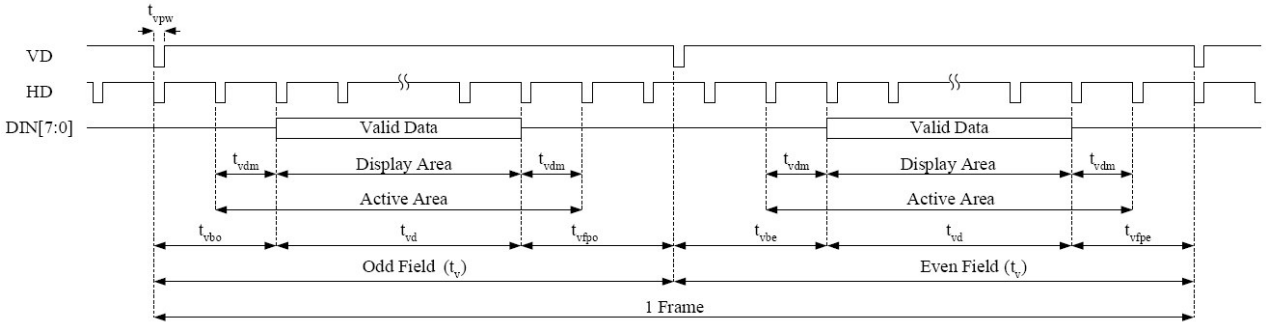
Parameter	Symbol	MIN	TYP	MAX	Unit
DCLK Frequency	F_{DCLK}	--	25	--	MHz
Horizontal valid data	t_{hd}	--	1280	--	DCLK
1 Horizontal Line	t_h	--	1560	--	DCLK
HSYNC Pulse Width	t_{hpw}	1	1	--	DCLK
Hsync blanking	t_{hp}	--	240	--	DCLK
Horizontal Front Porch	t_{hfp}	--	40	--	DCLK
Horizontal Dummy Time	t_{hdm}	--	0	--	DCLK

--Vertical--

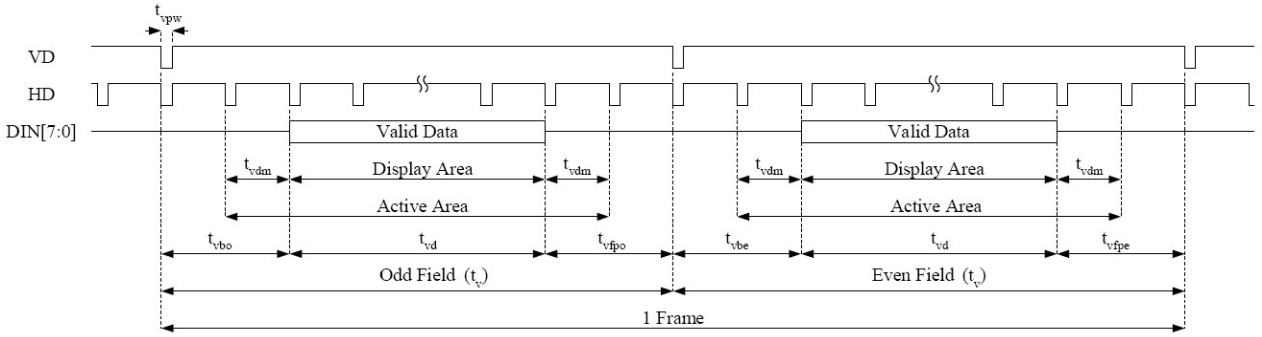
Interlace:

ODD Field: same phase VD and HD

EVEN Field: same phase VD and Half-HD



Non-interlace:



(1) Interlace Mode: NTSC/QVGA

Parameter		Symbol	MIN	TYP	MAX	Unit
Vertical valid data		t_{vd}	-	240	-	H
1 Vertical field		t_v	-	262.5	-	H
VSYNC Pulse Width		t_{vpw}	1	1	-	DCLK
Vsync blanking	Odd Field	t_{vbo}	-	21	-	H
	Even Field	t_{vbe}	-	21.5	-	H
Vertical Front Porch	Odd Field	t_{vfpo}	-	1.5	-	H
	Even Field	t_{vfpe}	-	1	-	H
Vertical dummy time		t_{vdm}	-	0	-	H

(2) Interlace Mode: PAL

Parameter		Symbol	MIN	TYP	MAX	Unit
Vertical valid data		t_{vd}	-	288	-	H
1 Vertical field		t_v	-	312.5	-	H
VSYNC Pulse Width		t_{vpw}	1	1	-	DCLK
Vsync blanking	Odd Field	t_{vbo}	-	24	-	H
	Even Field	t_{vbe}	-	24.5	-	H
Vertical Front Porch	Odd Field	t_{vfpo}	-	0.5	-	H
	Even Field	t_{vfpe}	-	0	-	H
Vertical dummy time		t_{vdm}	-	0	-	H

(3) Non-Interlace Mode: NTSC/QVGA

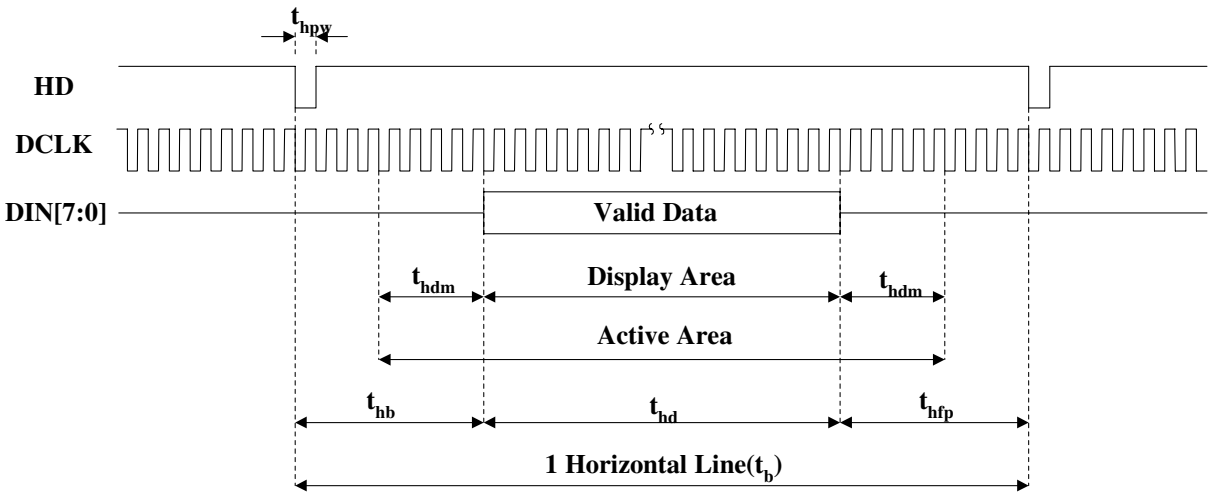
Parameter		Symbol	MIN	TYP	MAX	Unit
Vertical valid data		t_{vd}	-	240	-	H
1 Vertical field		t_v	-	262	-	H
VSYNC Pulse Width		t_{vpw}	1	1	-	DCLK
Vsync blanking	Odd Field	t_{vbo}	-	21	-	H
	Even Field	t_{vbe}	-	21	-	H
Vertical Front Porch	Odd Field	t_{vfpo}	-	1	-	H
	Even Field	t_{vfpe}	-	1	-	H
Vertical dummy time		t_{vdm}	-	0	-	H

(4) Non-Interlace Mode: PAL

Parameter		Symbol	MIN	TYP	MAX	Unit
Vertical valid data		t_{vd}	-	288	-	H
1 Vertical field		t_v	-	312	-	H
VSYNC Pulse Width		t_{vpw}	1	1	-	DCLK
Vsync blanking	Odd Field	t_{vbo}	-	24	-	H
	Even Field	t_{vbe}	-	24	-	H
Vertical Front Porch	Odd Field	t_{vfpo}	-	0	-	H
	Even Field	t_{vfpe}	-	0	-	H
Vertical dummy time		t_{vdm}	-	0	-	H

<Input timing 2> Through mode

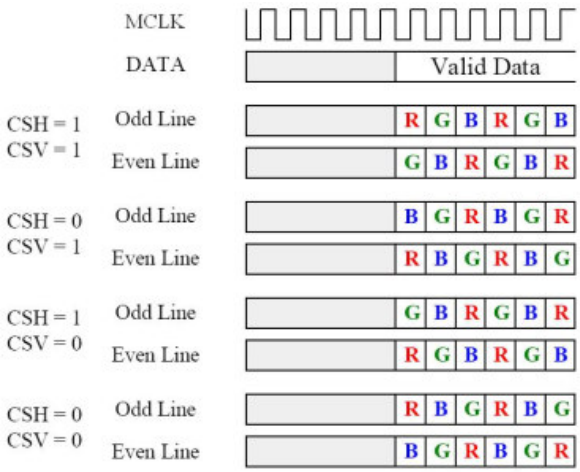
--Horizontal-



Parameter	Symbol	MIN	TYP	MAX	Unit
DCLK Frequency	F_{DCLK}	--	18.42	--	MHz
Horizontal valid data	t_{hd}	--	960	--	DCLK
1 Horizontal Line	t_h	--	1171	--	DCLK
HSYNC Pulse Width	t_{hpw}	1	1	--	DCLK
Hsync blanking	t_{hp}	--	152	--	DCLK
Hsync front porch	t_{hfp}	--	59	--	DCLK
Horizontal dummy time	t_{hdm}	--	0	--	DCLK

(1) Input RGB Sequence

Resolution (960 x 240)

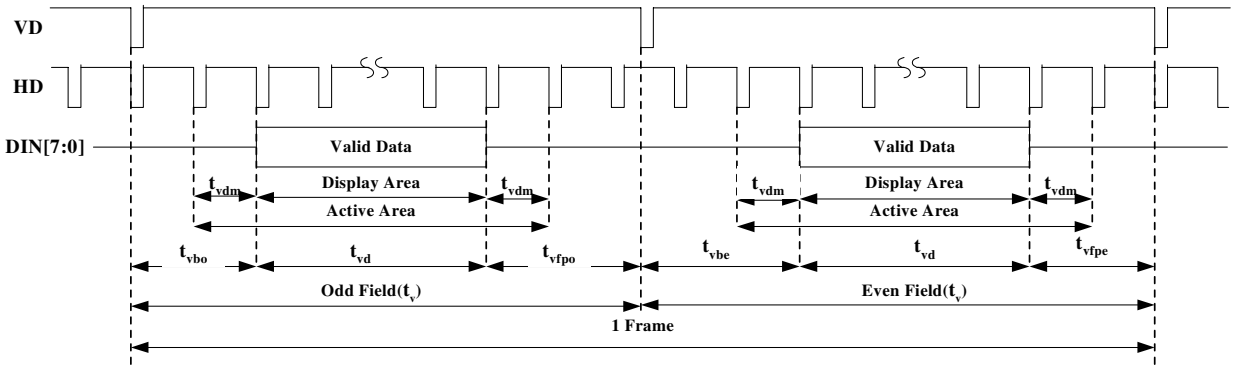


--Vertical--

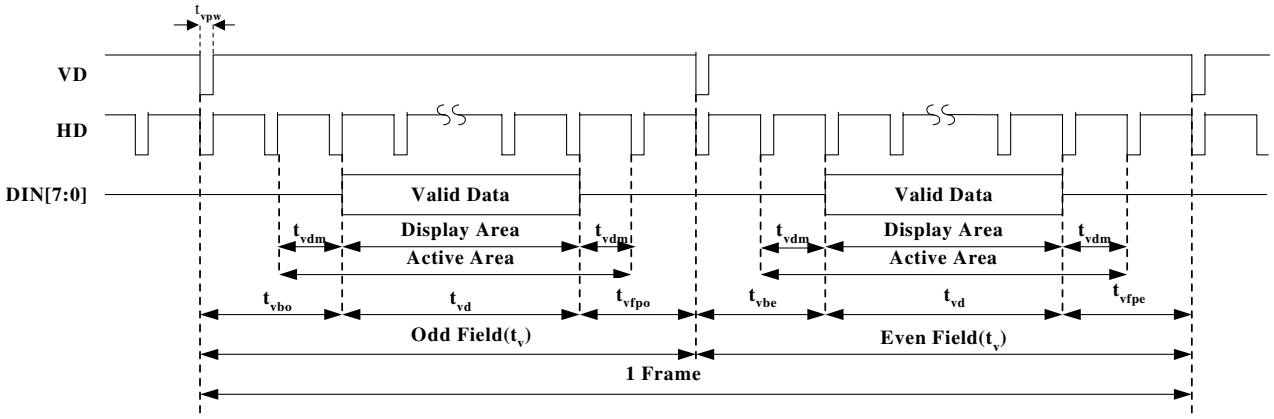
Interlace:

ODD Field: same phase VD and HD

EVEN Field: same phase VD and Half-HD



Non-interlace:



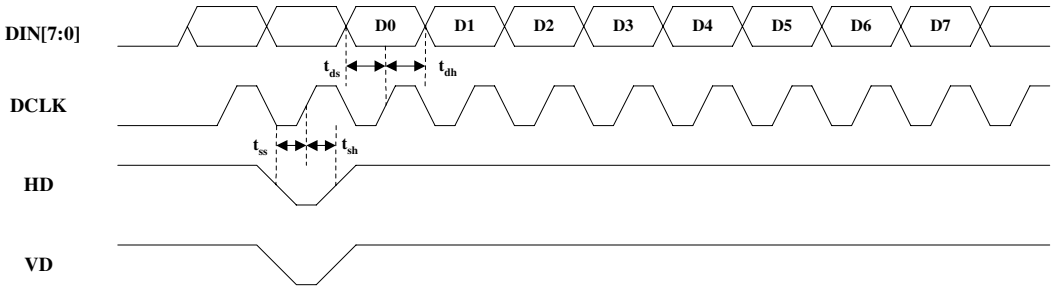
(1) Interlace Mode

Parameter		Symbol	MIN	TYP	MAX	Unit
Vertical valid data		t_{vd}	-	240	-	H
1 Vertical field		t_v	-	262.5	-	H
Vsync pulse width		t_{vpw}	1	1	-	DCLK
Vsync blanking	Odd Field	t_{vbo}	-	14	-	H
	Even Field	t_{vbe}	-	14.5	-	H
Vsync front porch	Odd Field	t_{vfpo}	-	8.5	-	H
	Even Field	t_{vfpe}	-	8		H
Vertical dummy time		t_{vdm}	-	0	-	H

(2) Non-Interlace Mode

Parameter		Symbol	MIN	TYP	MAX	Unit
Vertical valid data		t_{vd}	-	240	-	H
1 Vertical field		t_{v}	-	262	-	H
Vsync pulse width		t_{vpw}	1	1	-	DCLK
Vsync blanking	Odd Field	t_{vbo}	-	14	-	H
	Even Field	t_{vbe}	-	14	-	H
Vsync front porch	Odd Field	t_{vfpo}	-	8	-	H
	Even Field	t_{vfpe}	-	8	-	H
Vertical dummy time		t_{vdm}	-	0	-	H

<Input timing 3> Timing Diagram



Item	Symbol	MIN	TYP	MAX	Unit
DCLK Duty Ratio	Duty	40	-	60	%
Data Setup Time	t_{ds}	12	-	-	ns
Data Hold Time	t_{dh}	12	-	-	ns
Control Signal Setup Time	t_{ss}	12	-	-	ns
Control Signal Hold Time	t_{sh}	12	-	-	ns

7. OPTICAL CHARACTERISTICS

7.1 Optical Specification

Ta=25℃

Item		Symbol	Condition	MIN	TYP	MAX	Unit	Remarks
Viewing Angles		θ11	CR ≥ 10	TBD	80	-	Degree	Note 7-1
		θ12		TBD	80	-		
		θ21		TBD	80	-		
		θ22		TBD	80	-		
Contrast Ratio		CR	θ=0°	TBD	450	-		Note 7-2
Response Time	Rising	Tr		-	30	TBD	ms	Note 7-3
	Falling	Tf		-	10	TBD		
Luminance (I_F=23mA)		L		200	250	-	cd/m^2	Note 7-4
Chromaticity	White	x_W		0.26	0.31	0.36		Note 7-5
		y_W		0.28	0.33	0.38		

7.2 Basic Measure Conditions

(1) Driving voltage

Vcc= 3 V

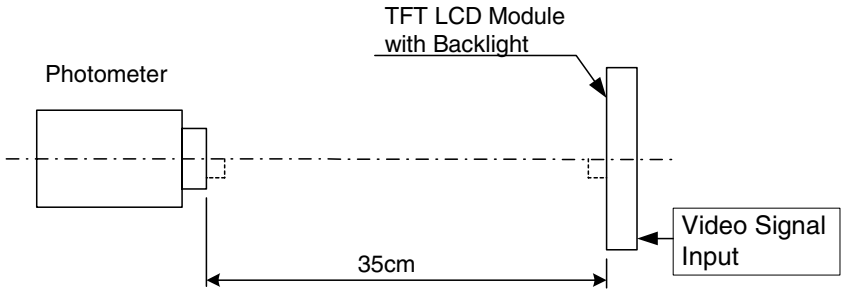
(2) Ambient Temperature: Ta=25℃

(3) Testing Point: Measure in the display center point and the test angle θ=0°

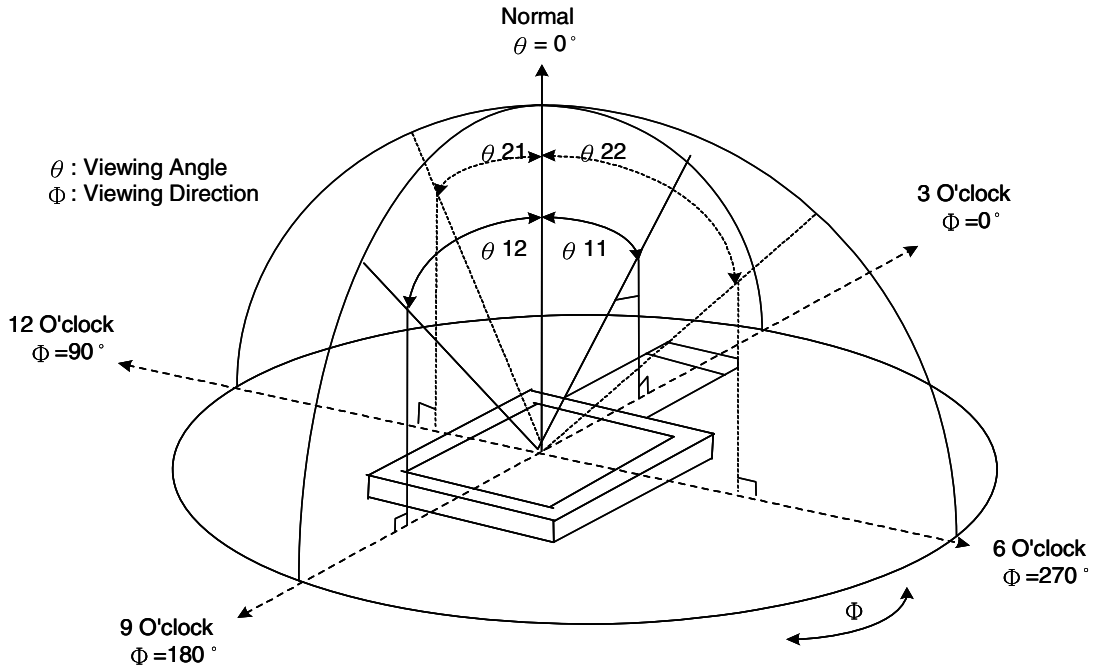
(4) LED Current: I_F=23mA.

(5) Testing Facility

Environmental illumination: ≥ 1 Lux



Note 7-1: Viewing angle diagrams:

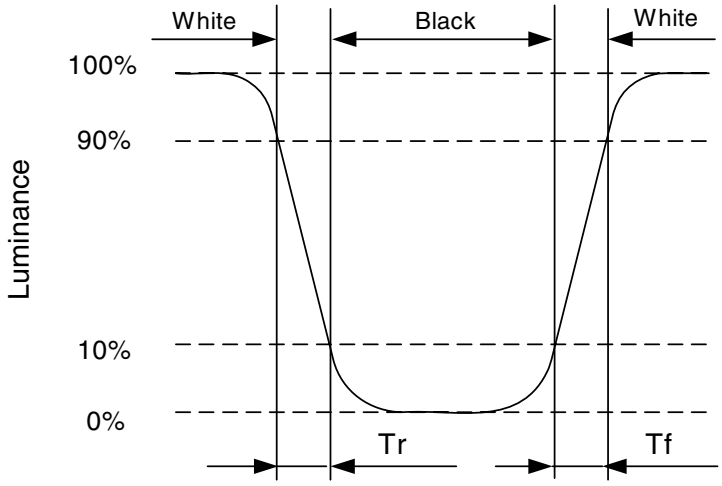


Note 7-2: Contrast Ratio:

Contrast ratio is measured in optimum common electrode voltage.

$$CR = \frac{\text{Luminance with white image}}{\text{Luminance with black image}}$$

Note 7-3: Definition of response time:



Note 7-4: Luminance:

Test Point: Display Center

Note 7-5: Chromaticity: The same test condition as Note 7-4.

8 REILIABILITY

No	Test Item	Condition
1	High Temperature Operation	Ta=+60℃, 240hrs
2	High Temperature & High Humidity Operation	Ta=+40℃, 95% RH, 240hrs
3	Low Temperature Operation	Ta=-10℃, 240hrs
4	High Temperature Storage (non-operation)	Ta=+80℃, 240hrs
5	Low Temperature Storage (non-operation)	Ta=-30℃, 240hrs
6	Thermal Shock (non-operation)	-30℃←→80℃, 50 cycles 30 min 30 min
7	Surface Discharge (non-operation)	C=150pF, R=330Ω; Discharge: Air: ±15kV; Contact: ±8kV 5 times / Point; 5 Points / Panel
8	Vibration (non-operation)	Frequency: 10~55Hz; Amplitude: 1.5mm Sweep Time: 11min Test Time: 2 hrs for each direction of X, Y, Z
9	Shock (non-operation)	Acceleration: 100G; Period: 6ms Directions: ±X, ±Y, ±Z; Cycles: Twice

Ta: Ambient Temperature

9 HANDLING CAUTIONS

9.1 ESD (Electrical Static Discharge) Strategy

ESD will cause serious damage of the panel, ESD strategy is very important in handling. Following items are the recommend ESD strategy

(1) In handling LCD panel, please wear non-charged material gloves. And the conduction ring connect wrist to the earth and the conducting shoes to the earth is necessary.

(2) The machine and working table for the panel should have ESD prohibition strategy.

(3) In handling the panel, ionize flowing decrease the charge in the environment is necessary.

(4) In the process of assembly the module, shield case should connect to the ground.

9.2 Environment

(1) Working environment of the panel should in the clean room.

(2) The front polarizer is easy damaged, handle it carefully and do not scratch it by sharp material.

(3) Panel has polarizer protective film in the surface please remove the protection film of polarizer slowly with ionized air to prevent the electrostatic discharge.

9.3 Others

(1) Turn off the power supply before connecting and disconnecting signal input cable.

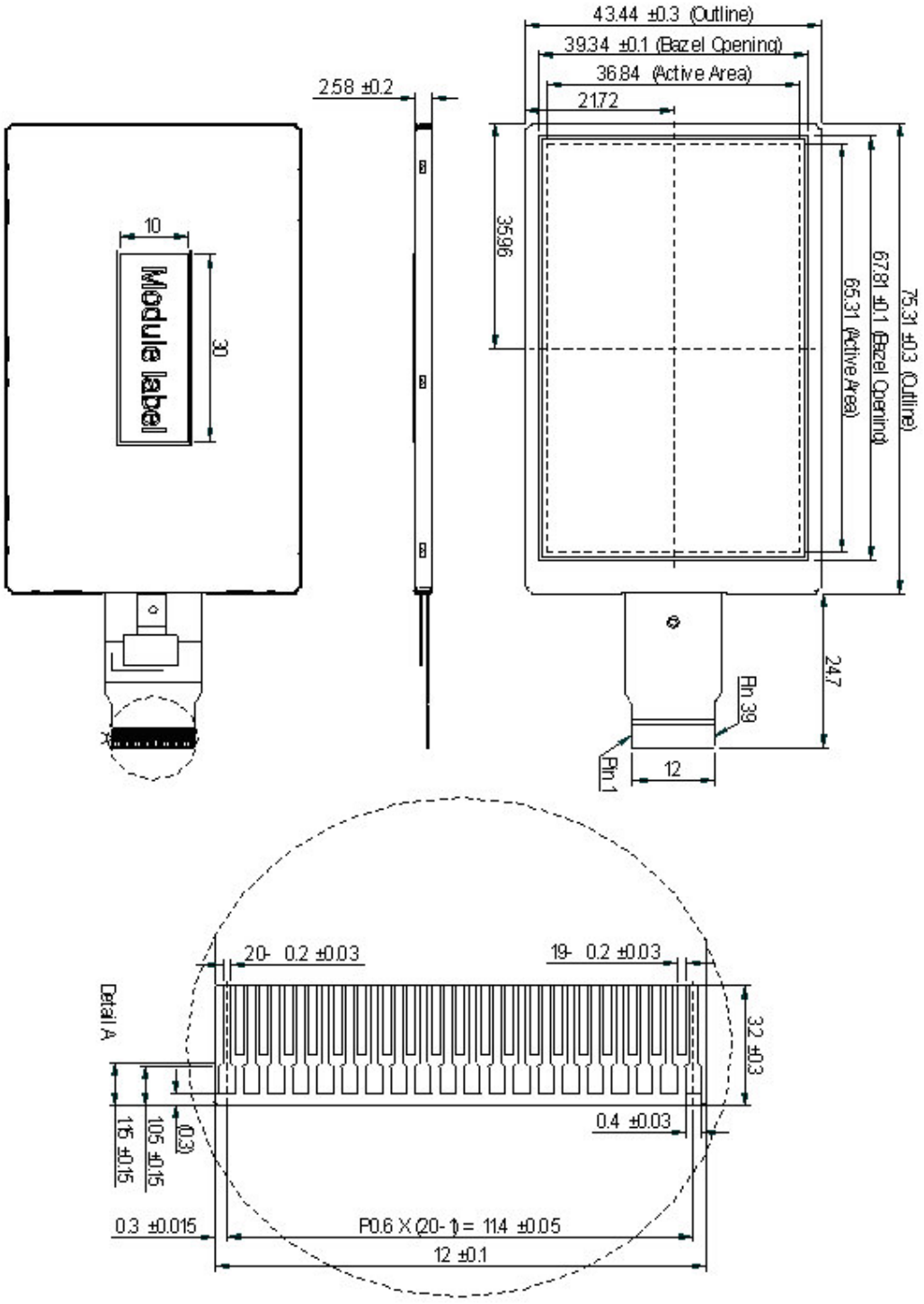
(2) The connection area of FPC and panel is very weak, do not handle panel only by FPC or bend FPC.

(3) Water drop on the surface or condensation as panel power on will corrode panel electrode.

(4) As the packing bag open, watch out the environment of the panel storage. High temperature and high humidity environment is prohibited.

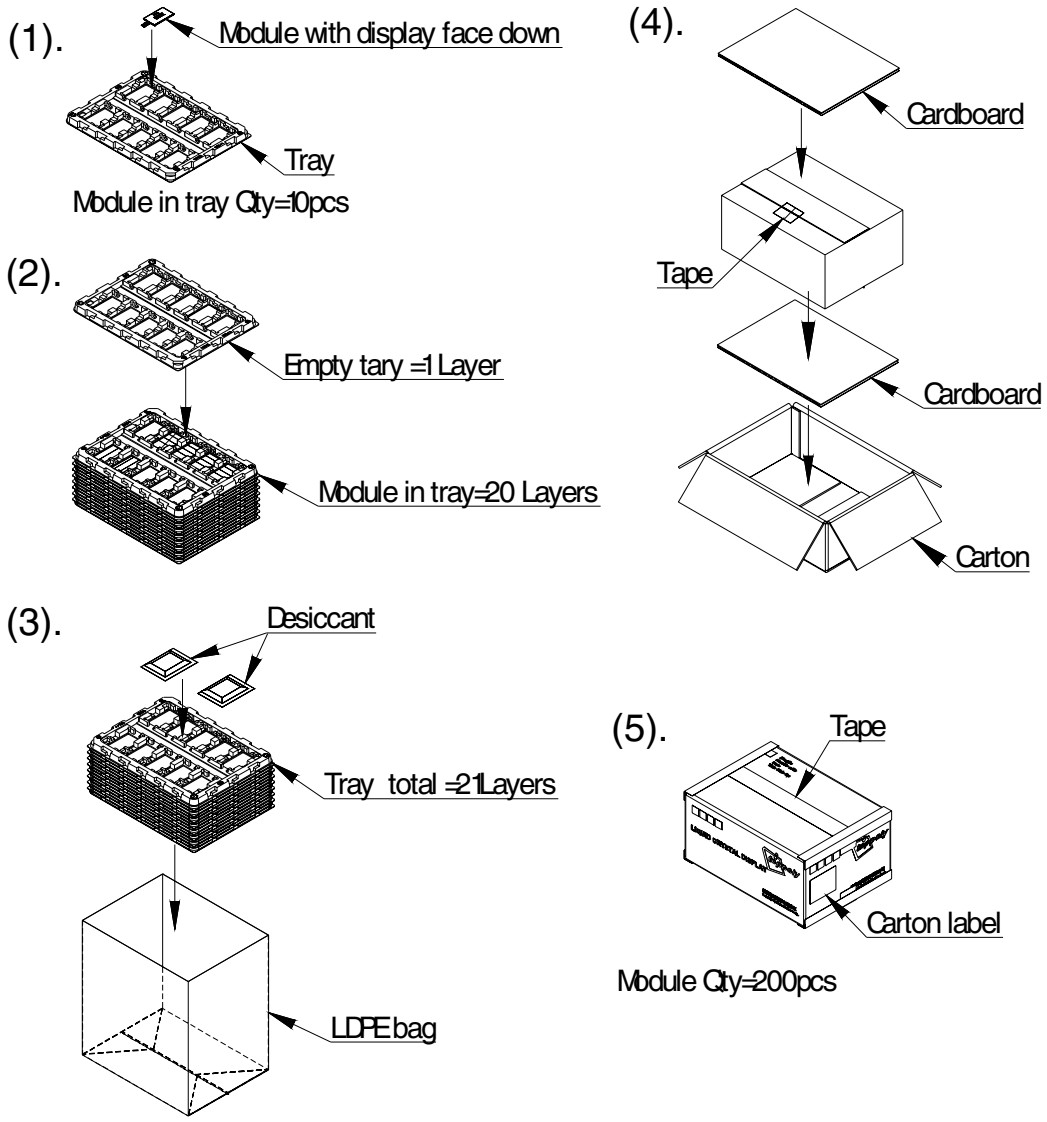
(5) When the TFT LCD module is broken, please watch out whether liquid crystal leaks out or not. If your hand touches liquid crystal, wash your hand cleanly by water and soap as soon as possible.

10 MECHANICAL DRAWING



Note:
Unspecified tolerance is = +/- 0.2 mm

11 Packing Drawing



3.0" module (TD030MHEA2) delivery packing method

11.1 Module packed into tray cavity (with Module display face down).

11.2 Tray stacking with 20 layers and with 1 empty tray above the stacking tray unit.
2pcs desiccant put above the empty tray

11.3 Stacking tray unit put into the LDPE bag and fix by adhesive tape.

11.4 Put 1pc cardboard inside the carton bottom, and then pack the package unit into the carton.
Put 1pc cardboard above the package unit.

11.5 Carton tapping with adhesive tape.