

SERVICE MANUAL



C515BEE
Compact Disc Player

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SECTION 1

SUMMARY

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PRODUCT SAFETY SERVICING GUIDELINES

CAUTION : DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY. NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANY RESULTING PROPERTY DAMAGE OR USER INJURY.

SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER.

WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM AC LINE SHOCK.

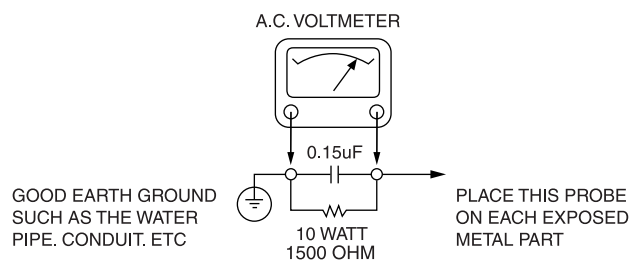
SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED. A CHECK SHOULD BE MADE OF THE FOLLOWING.

SUBJECT : FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OR SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS. FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING AC CORD). AND REPLACE IF NECESSARY FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTORS, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES, DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN AC LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET, (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS. HANDLE AND SCREWS) TO BE SURE THE SET IS SAFET TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN AC VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER; CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD, 150V AC TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER PIPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME.
MEASURE THE AC VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR.
REVERSE THE AC PLUG AND REPEAT AC VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART.

VOLTAGE MEASURE MUST NOT EXCEED 75 VOLTS R.M.S. THIS CORRESPONDS TO 0.5 MILLIAMPS AC ANY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



SUBJECT : GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

SUBJECT : TIPS ON PROPER INSTALLATION

1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE. OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERIES MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM, BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.'S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

SERVICING PRECAUTIONS

CAUTION : Before servicing the A/V Receiver covered by this service data and its supplements and addends, read and follow the **SAFETY PRECAUTIONS**. **NOTE** : if unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions in this publication, always follow the safety precautions.

Remember Safety First:

General Servicing Precautions

1. Always unplug the A/V Receiver AC power cord from the AC power source before:
 - (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
 - (2) Disconnecting or reconnecting any internal electrical plug or other electrical connection.
 - (3) Connecting a test substitute in parallel with an electrolytic capacitor.

Caution : A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do not spray chemicals on or near this A/V Receiver or any of its assemblies.
3. Unless specified otherwise in this service data, clean electrical contacts by applying an appropriate contact cleaning solution to the contacts with a pipe cleaner, cottontipped swab, or comparable soft applicator.
Unless specified otherwise in this service data, lubrication of contacts is not required.
4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
5. Do not apply AC power to this A/V Receiver and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
6. Always connect test instrument ground lead to the appropriate ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power on. Connect an insulation resistance meter(500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (Note 1) should be more than 1M-ohm.

Note 1 : Accessible Conductive Parts including Metal panels, Input terminals, Earphone jacks, etc.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical Es devices are integrated circuits and some field effect transistors and semiconductor chip components.

The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified a "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freonpropelled chemicals. These can generate electrical charge sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil, or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Normally harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

SPECIFICATIONS

SYSTEM

Output level	2.2V
Frequency response (ref. 0dB 20Hz-20kHz)	+ 0.5dB
Total harmonic distortion (ref. 1kHz)	<0.003%
Signal/Noise ratio (A-weighted, ref. 1kHz)	110dB
Channel balance (ref. 0dB 1kHz)	+ 0.5dB
Dynamic range	95dB
Channel separation	95dB (1kHz)
	95dB (10kHz)
De-emphasis (ref. 0dB)	-4.53 + 0.5dB (5kHz)
	-9.04 + 0.5dB (16kHz)
Linearity (ref. 0dB)	+ 0.01dB (0 to -60dB)

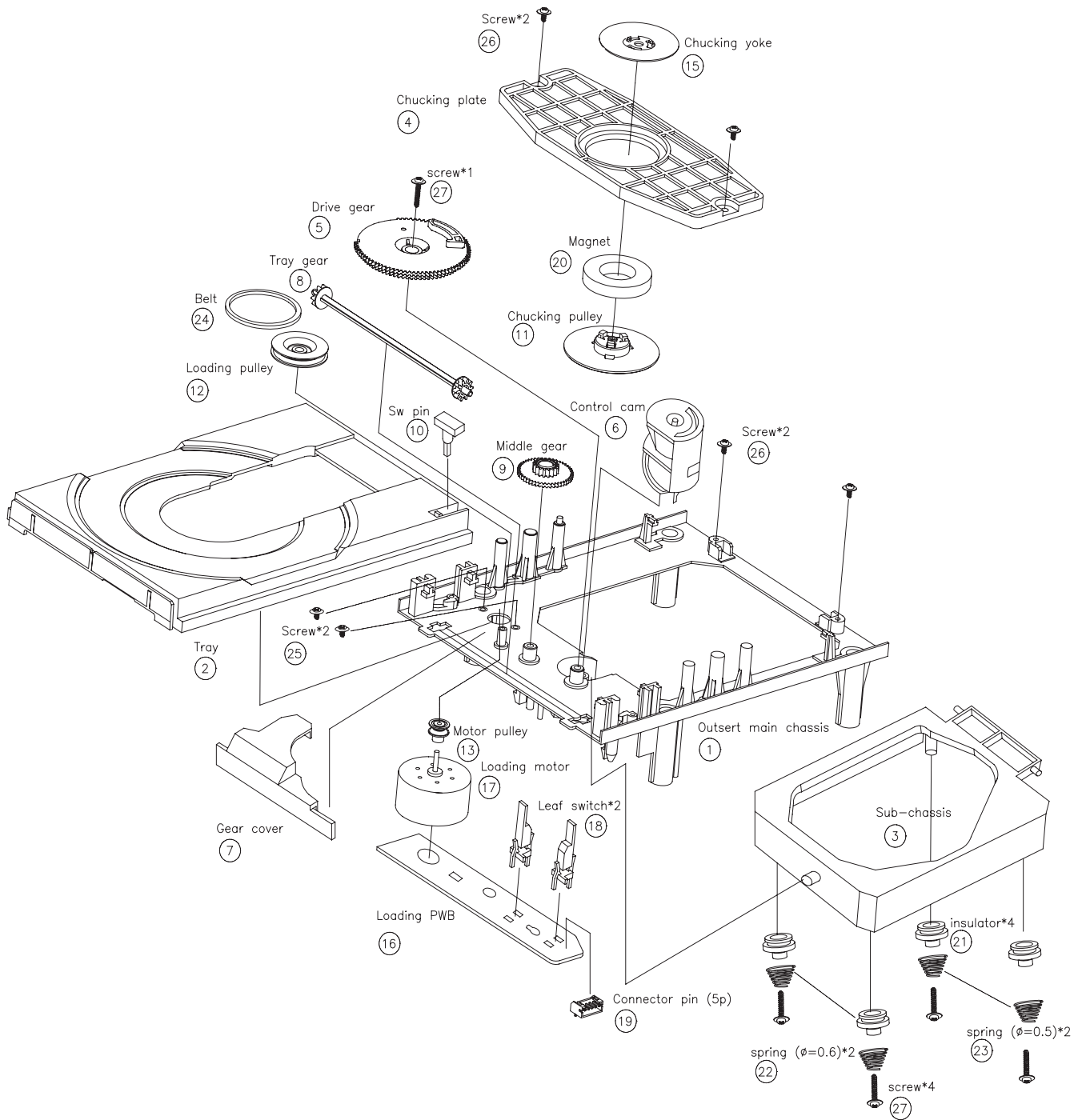
PHYSICAL SPECIFICATIONS

Dimensions (W x H x D)	435x60x241mm (Net)
	435x65x249mm (Gross)
Net weight	3.52kg
Shipping weight	4.7kg

Note: Gross dimensions include feet, extended buttons and rear panel terminals.

Specifications are subject to change without notice. For updated documentation and features, please log onto www.NADelectronics.com for the latest information about C 515BEE.

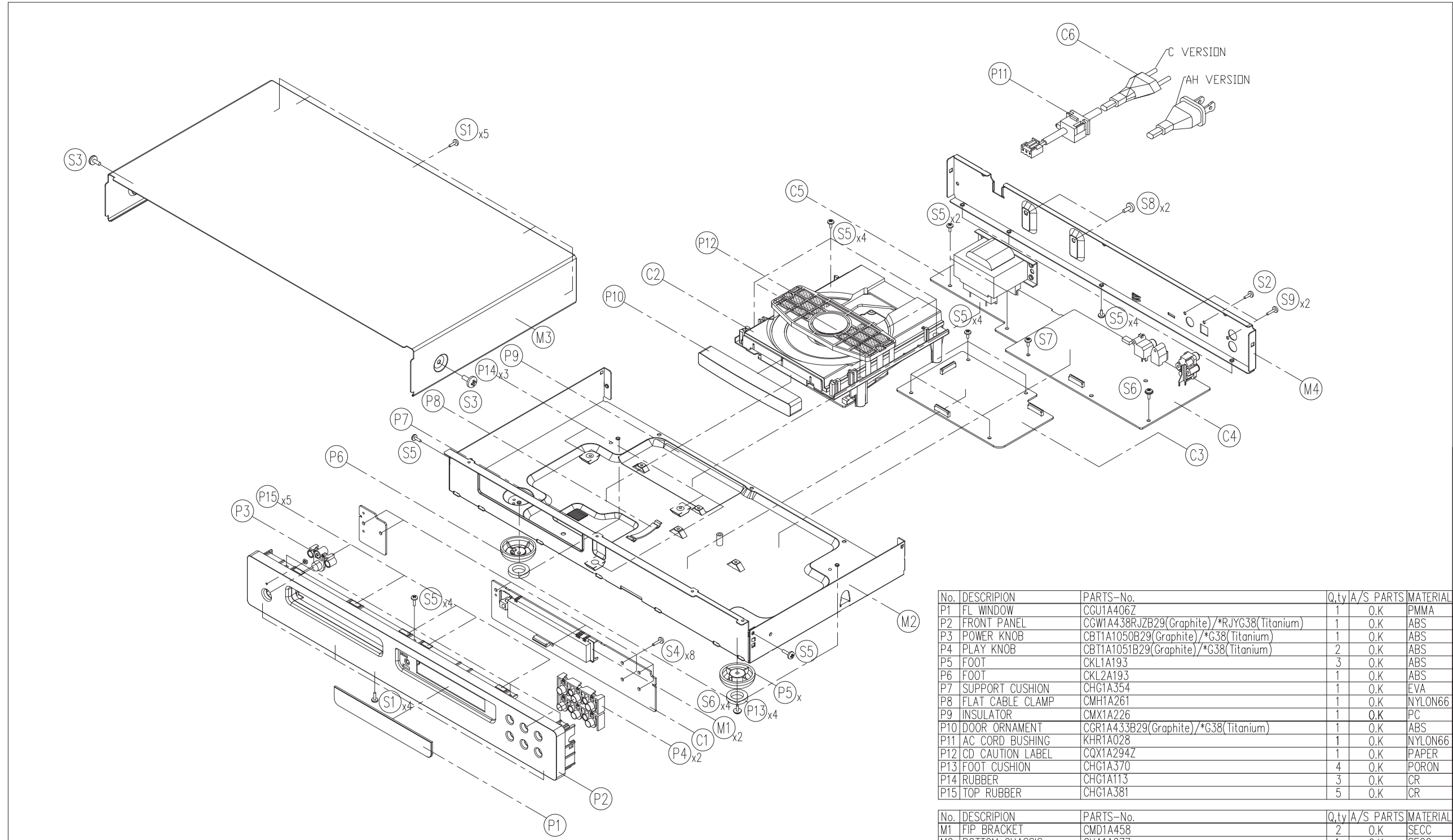
CJDKSL2130CCMZ



Exploded View Parts List (NSP)

No.	Part Name	Part NO.	PART NO None Serviceable Parts (reference only)	Grade	Generic name	Type No.	ID Mark
1	OUTSERT CHASSIS (C)	WUR00-1001-000	9A07980600	94HB	POM	M90S	
2	TRAY (S)	WUR00-1002-00	9A07979600	94HB	ABS	PA-300	
3	SUB CHASSIS	WUR00-1003-00	9107979900	94HB	ABS	G+10%	
4	CHUCKING PLATE (C)	WUR00-1004-00	9A07268900	94HB	ABS	G+10%	
5	DRIVE GEAR (C)	WUR00-1005-00	9A07980700	94HB	POM	M90S	
6	CONTROL CAM (C)	WUR00-1006-00	9A07269000	94HB	POM	M90S	
7	GEAR COVER (C)	WUR00-1007-00	9A07979700	94HB	ABS	T700	
8	TRAY GEAR (C)	WUR00-1008-00	9A07268500	94HB	POM	KT-5M	
9	MIDDLE GEAR	WUR00-1009-00	9A07980800	94HB	POM	TD-20	
10	SW PIN	WUR00-1010-00		94HB	POM	M90S	
11	CHUCKING PULLEY (C)	WUR00-1011-00	9A07979800	94HB	POM	M90S	
12	LOADING PULLEY (C)	WUR00-1012-00	9A07268600	94HB	POM	M90S	
13	MOTOR PULLEY (C)	WUR00-1013-00		94HB	POM	M90S	
16	LOADING MOTOR PCB	WUR00-3005-00	9A06966700	94HB		FR-1	
17	LOADING MOTOR		9A06966800				
18	LEAF SW		9A07268000				
20	MAGNET		9A06965400				
21	INSULATOR		9A07980400				
22	COIL SPRING (FRONT)		9A07980000				
23	COIL SPRING (FRONT)		9A07980100				
24	BELT		9A07980900				
25	MD ASS'Y		9A07980500				

EXPLODED VIEW (C515BEE)



Software Chart for Mechanism Change ***

Pickup & Mechanism Type	Software
Sony Mechanism NLA	C515/C715 FIRMWARE LOADER
Sanyo Pickup and Mechanism	C515/C715 FIRMWARE LOADER
TO PROGRAM SERVO:	Select Sony or Sanyo from software menu

No.	DESCRIPTION	PARTS-No.	Q.ty	A/S	PARTS	MATERIAL
S1	SCREW	CTB3+8JFC(Titanium)/*8JFZR(Graphite)	10	O.K	SW	
S2	SCREW	CTB3+8JFZR	1	O.K	SW	
S3	SCREW	CTB4+6FFC(Titanium)/*6FFZR(Graphite)	2	O.K	SW	
S4	SCREW	CTB3+10JR	8	O.K	SW	
S5	SCREW	CTB3+6JR	20	O.K	SW	
S6	SCREW	CTW3+8JR	5	O.K	SW	
S7	SCREW	CTB3+6FFZR	1	O.K	SW	
S8	SCREW	CTB4+6FFZR	2	O.K	SW	
S9	SCREW	CTB3+10JFZR	2	O.K	SW	

No.	DESCRIPTION	PARTS-No.	Q.ty	A/S	PARTS	MATERIAL
P1	FL WINDOW	CGU1A406Z	1	O.K		PMMA
P2	FRONT PANEL	CGW1A438RJZB29(Graphite)/*RJYG38(Titanium)	1	O.K		ABS
P3	POWER KNOB	CBT1A1050B29(Graphite)/*G38(Titanium)	1	O.K		ABS
P4	PLAY KNOB	CBT1A1051B29(Graphite)/*G38(Titanium)	2	O.K		ABS
P5	FOOT	CKL1A193	3	O.K		ABS
P6	FOOT	CKL2A193	1	O.K		ABS
P7	SUPPORT CUSHION	CHG1A354	1	O.K		EVA
P8	FLAT CABLE CLAMP	CMH1A261	1	O.K		NYLON66
P9	INSULATOR	CMX1A226	1	O.K		PC
P10	DOOR ORNAMENT	CGR1A433B29(Graphite)/*G38(Titanium)	1	O.K		ABS
P11	AC CORD BUSHING	KHR1A028	1	O.K		NYLON66
P12	CD CAUTION LABEL	CQX1A294Z	1	O.K		PAPER
P13	FOOT CUSHION	CHG1A370	4	O.K		PORON
P14	RUBBER	CHG1A113	3	O.K		CR
P15	TOP RUBBER	CHG1A381	5	O.K		CR

No.	DESCRIPTION	PARTS-No.	Q.ty	A/S	PARTS	MATERIAL
M1	FIP BRACKET	CMD1A458	2	O.K		SECC
M2	BOTTOM CHASSIS	CUA1A277	1	O.K		SECC
M3	TOP CABINET	CKC1A181B22(Graphite)/*G39(Titanium)	1	O.K		SECC
M4	REAR PANEL	CKF1A336ZK1(C),YK1(AH)	1	O.K		SECC

No.	DESCRIPTION	PARTS-No.	Q.ty	A/S	PARTS	MATERIAL
C1	FRONT PCB ASS'Y	COP12013B (Nested with Audio PCB ASS'Y)	1	O.K		COMPLEX
C2	CD MECHANISM***	Sony is NLA, CJDWSL11VF Sanyo***	1	O.K		COMPLEX
C3	MAIN PCB ASS'Y	COP12012B(C), C(AH) (Nested with PWR PCB ASS'Y)	1	O.K		COMPLEX
C4	AUDIO PCB ASS'Y	COP12013B (Nested with both Front PCB ASS'Y)	1	O.K		COMPLEX
C5	PWR PCB ASS'Y	COP12012B(C), C(AH) (Nested with MAIN PCB ASS'Y)	1	O.K		COMPLEX
C6	AC CORD	CJA2B043ZA(C version) CJA523F-BYA(AH version)	1	O.K		COMPLEX

(B for C-version) (C for AH-version)

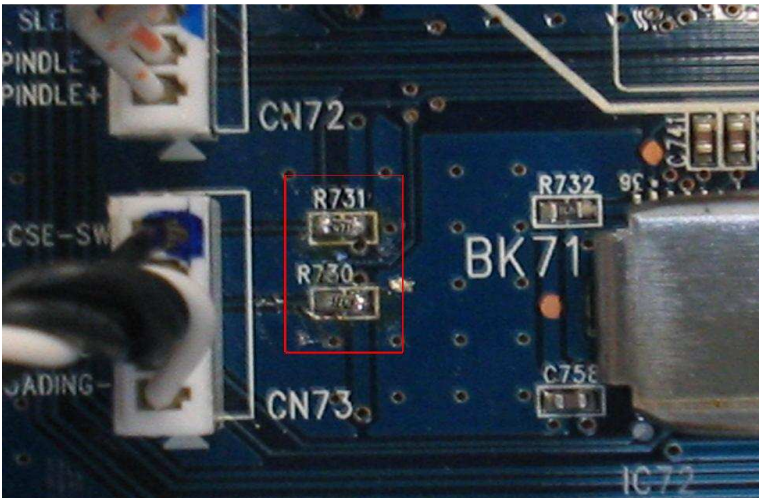
NOTES

DESCRIPTION: CD tray may not open or close.

REASON: The tray sense switches can grow tiny conductive "whiskers" across the contact pads shorting the switches and preventing the tray from opening/closing.

SOLUTION: Change the value of R730 and R731 from 18K to 470 ohm to increase the current flow across each contact switches' pads eliminating the "WHISKERS".

Resistor: 470R 1/8w SMD 0805



SECTION 2

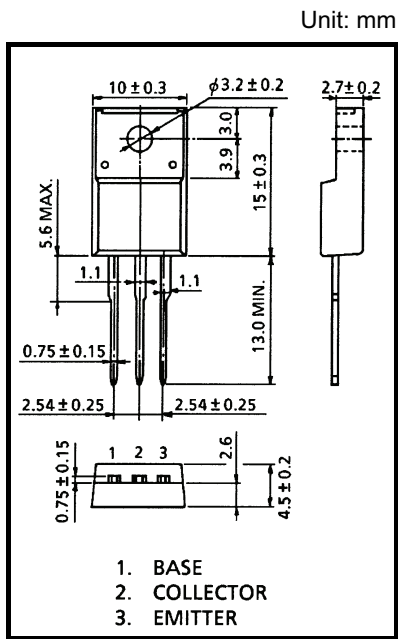
ELECTRICAL CONTENTS

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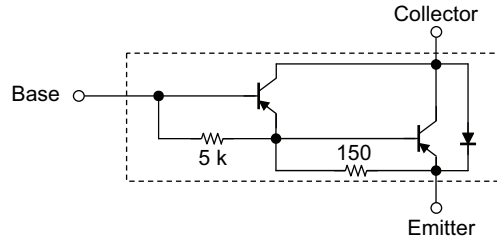
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IC BLOCK DIAGRAMS & PIN DESCRIPTION

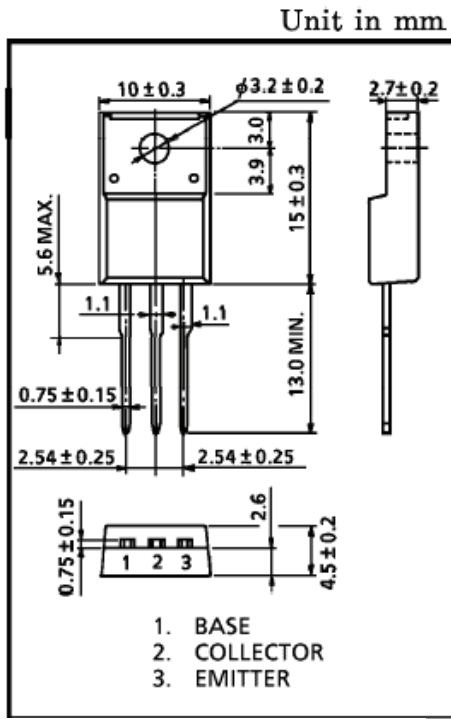
2SB1020A



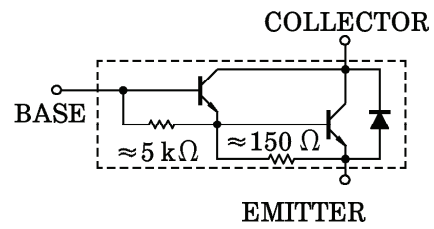
Equivalent Circuit



2SD1415A

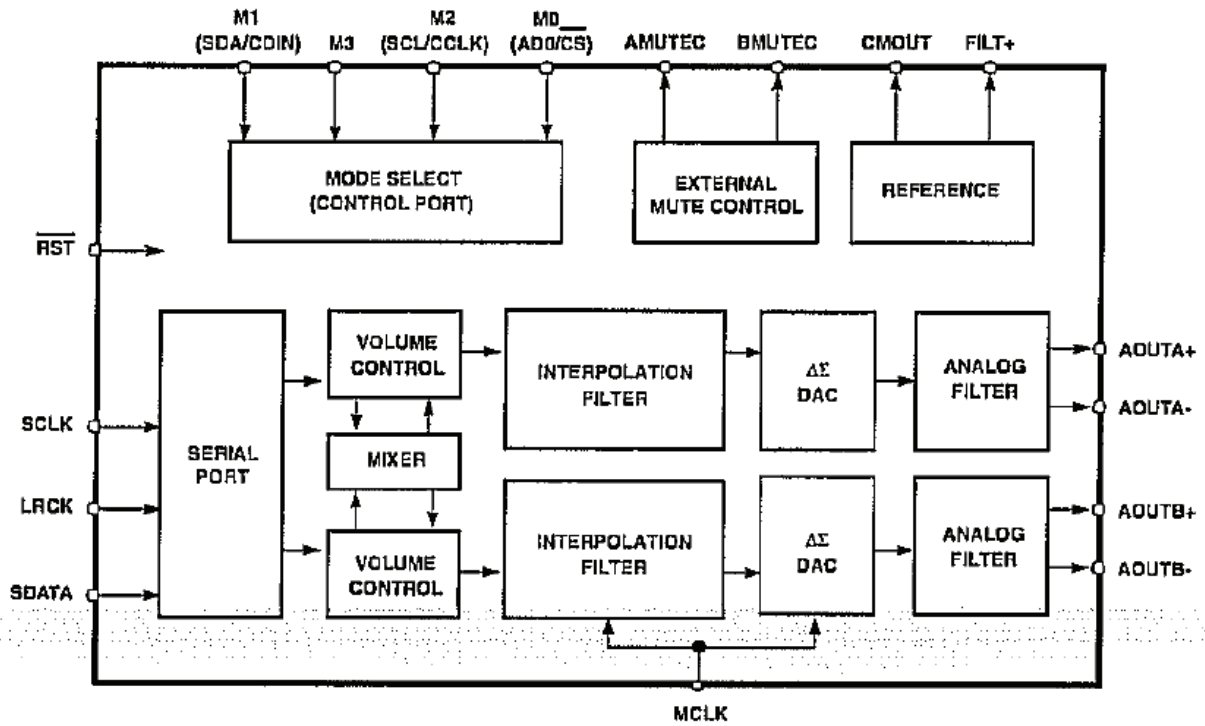


Equivalent Circuit

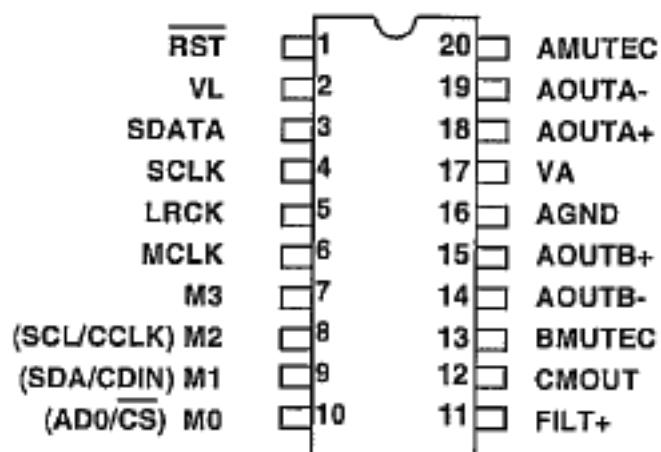


CS4392KZZ

BLOCK DIAGRAM



PIN DESCRIPTION - PCM DATA MODE



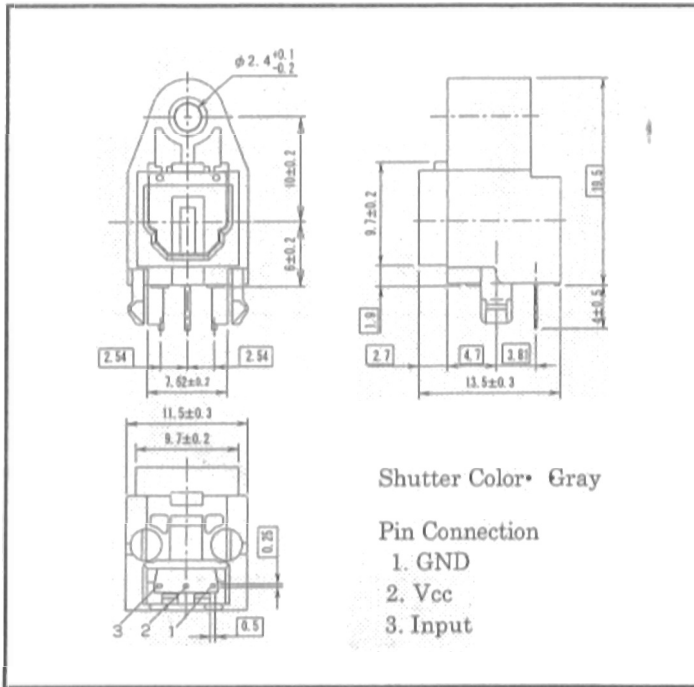
$\overline{\text{RST}}$	1	Reset (<i>Input</i>) - Powers down device and resets all internal registers to their default settings.
VL	2	Logic Power (<i>Input</i>) - Positive power for the digital input/output.
SDATA	3	Serial Audio Data (<i>Input</i>) - Input for two's complement serial audio data.
SCLK	4	Serial Clock (<i>Input/Output</i>) - Serial clock for the serial audio interface.
LRCK	5	Left Right Clock (<i>Input/Output</i>) - Determines which channel, Left or Right, is currently active on the serial audio data line.
MCLK	6	Master Clock (<i>Input</i>) - Clock source for the delta-sigma modulator and digital filters.
FILT+	11	Positive Voltage Reference (<i>Output</i>) - Positive reference voltage for the internal sampling circuits.
CMOUT	12	Common Mode Voltage (<i>Output</i>) - Filter connection for internal quiescent voltage.
AMUTE $\overline{\text{C}}$	20	Mute Control (<i>Output</i>) - The Mute Control pin goes high during power-up initialization, reset, muting, power-down or if the master clock to left/right clock frequency ratio is incorrect.
BMUTE $\overline{\text{C}}$	13	
AOUTB-	14	Differential Analog Output (<i>Outputs</i>) - The full scale differential analog output level is specified in the Analog Characteristics specification table.
AOUTB+	15	
AOUTA+	18	
AOUTA-	19	
AGND	16	Ground (<i>Input</i>)
VA	17	Analog Power (<i>Input</i>) - Positive power for the analog section.

Control Port Mode Definitions

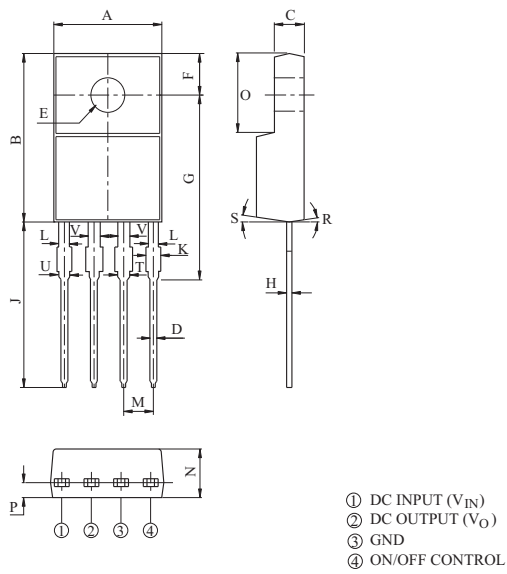
M3	7	Mode Selection (<i>Input</i>) - This pins should be tied to GND level during control port mode.
SCL/CCLK	8	Serial Control Port Clock (<i>Input</i>) - Serial clock for the serial control port.
SDA/CDIN	9	Serial Control Data (<i>Input/Output</i>) - SDA is a data I/O line in I ² C mode. CDIN is the input data line for the control port interface in SPI mode.
AD0/ $\overline{\text{CS}}$	10	Address Bit 0 (I ² C) / Control Port Chip Select (SPI) (<i>Input/Output</i>) - AD0 is a chip address pin in I ² C mode; $\overline{\text{CS}}$ is the chip select signal for SPI format.

TOTX177L(F, T)

Unit: mm

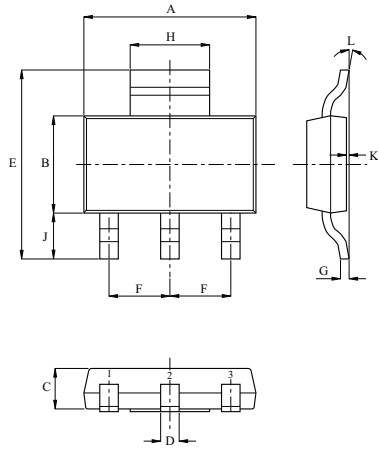


KIA78R08PI



KIA1117S15, 33, 50

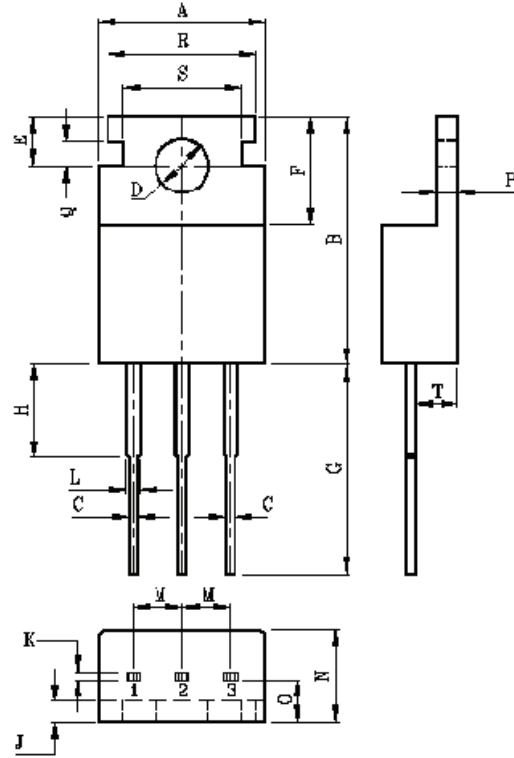
KIA1117S/F00~KIA1117S/F50
 BIPOLAR LINEAR INTEGRATED CIRCUIT



- 1. COMMON (ADJ.)
- 2. OUTPUT
- 3. INPUT

KIA7805API

BIPOLAR LINEAR INTEGRATED CIRCUIT

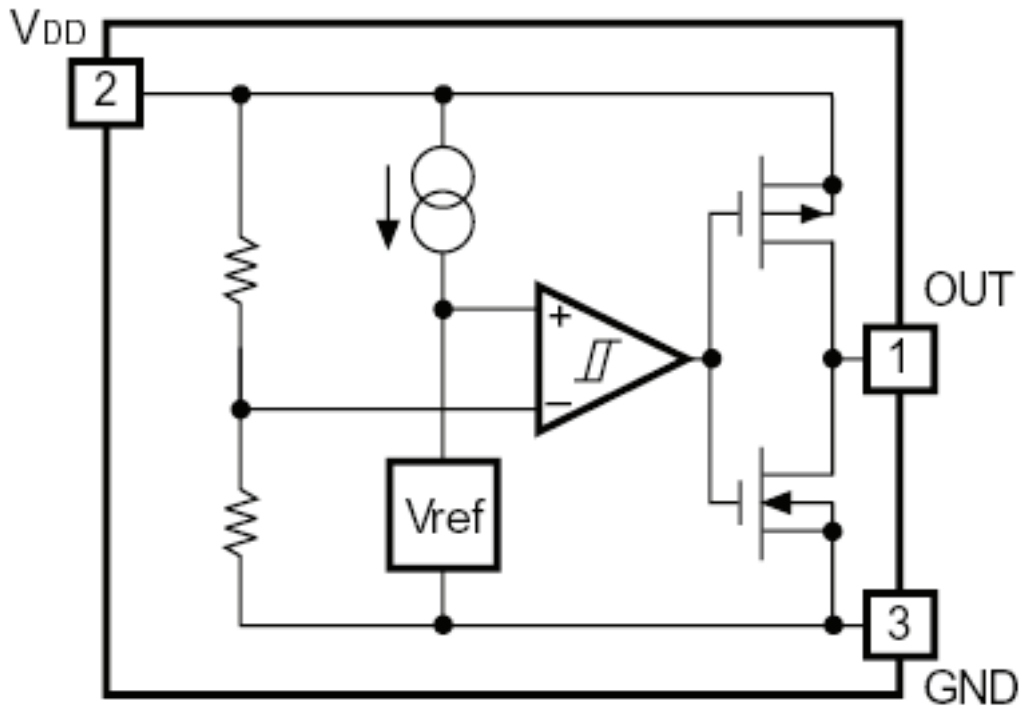


- 1. INPUT
- 2. COMMON(CASE)
- 3. OUTPUT

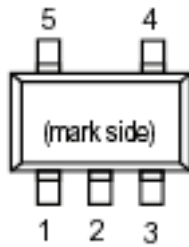
RH5VT28C

BLOCK DIAGRAMS

• CMOS Output (R×5VT×C)



PIN CONFIGURATION

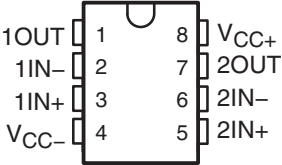


• SOT-23-5

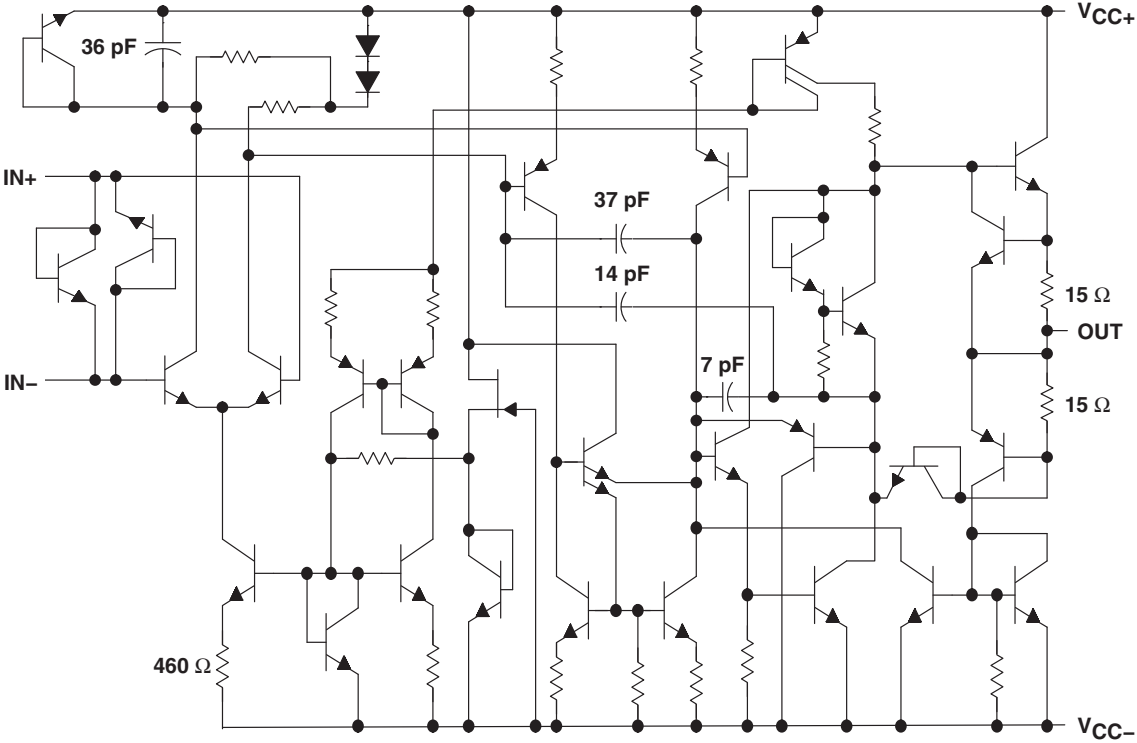
Pin No.	Symbol
1	OUT
2	VDD
3	GND
4	NC
5	NC

SA5532DR

DUAL LOW-NOISE OPERATIONAL AMPLIFIERS

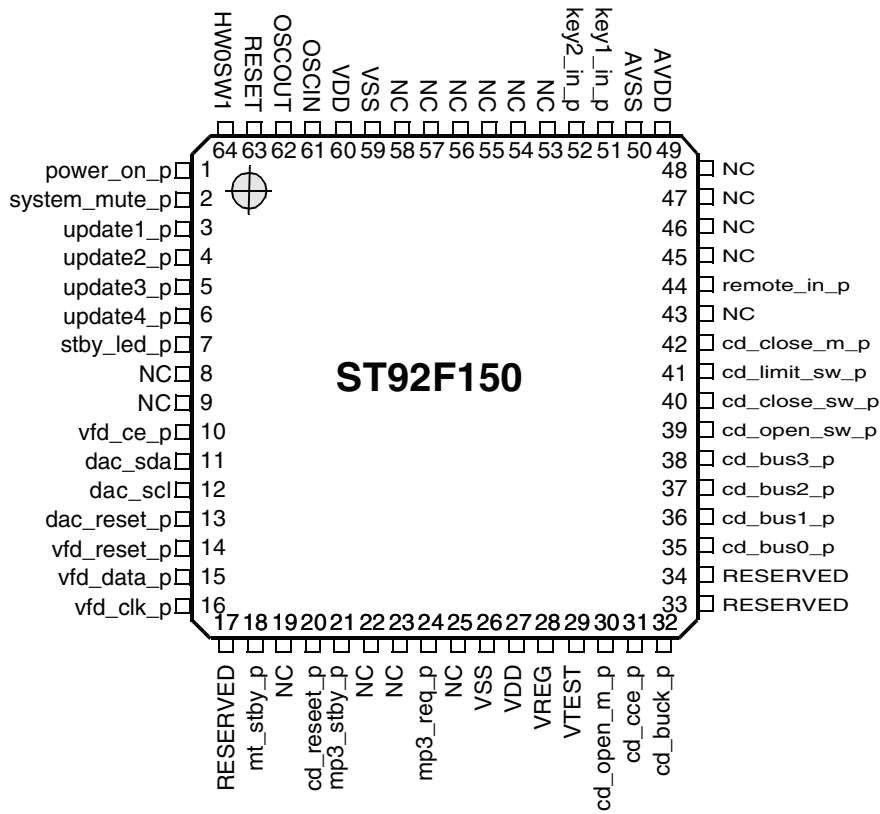


SCHEMATIC (each amplifier)

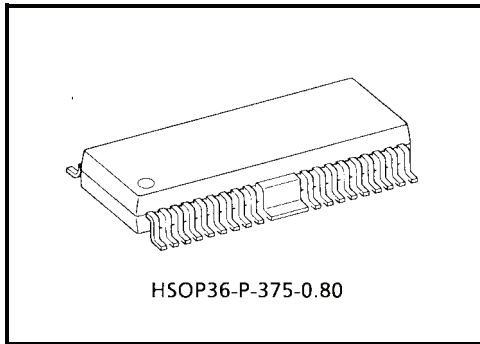


ST92F150CR1T

ST92F150: Pin Configuration (Top-view TQFP64)

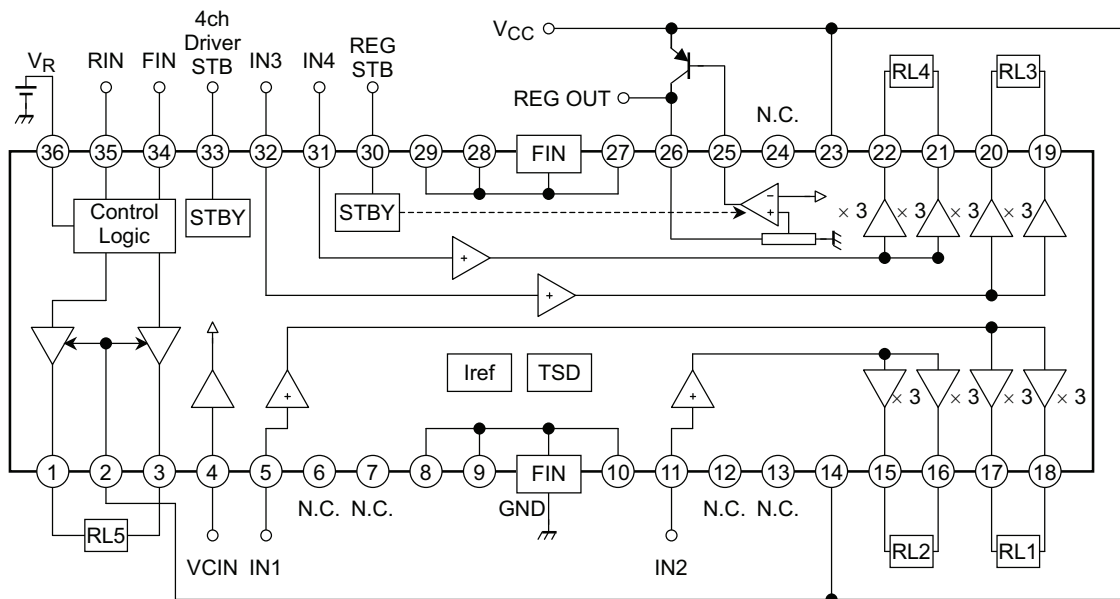


TA2125AFG



Weight: g (typ.)

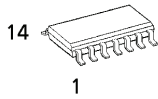
BLOCK DIAGRAM



Terminal Explanation

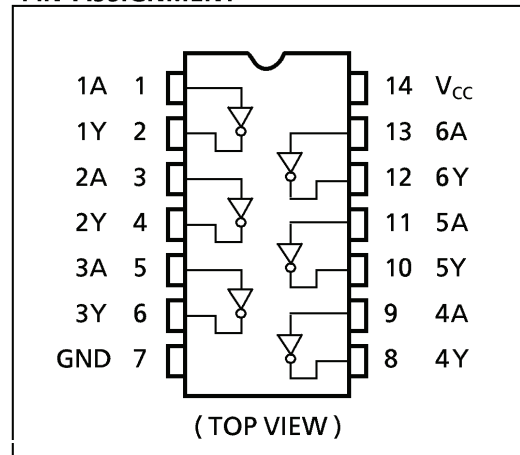
No.	Symbol	Function	
1	OUT5A	Output terminal	H-bridge
2	V _M	Supply voltage terminal for Logic	H-bridge
3	OUT5B	Output terminal	H-bridge
4	V _{CIN}	Input reference voltage	4ch BTL
5	IN1	Input for ch1	4ch BTL
6	N.C.	Open	—
7	N.C.	Open	—
8	N.C.	8, 9, 10, 27, 28, 29 are connected to PW GND (FIN)	—
9	N.C.	8, 9, 10, 27, 28, 29 are connected to PW GND (FIN)	—
10	N.C.	8, 9, 10, 27, 28, 29 are connected to PW GND (FIN)	—
11	IN2	Input for ch2	4ch BTL
12	N.C.	Open	—
13	N.C.	Open	—
14	V _{CC1}	Supply voltage terminal for ch1/ch2	4ch BTL
15	OUT2M	Inverted output for ch2	4ch BTL
16	OUT2P	Non-inverted output for ch2	4ch BTL
17	OUT1M	Inverted output for ch1	4ch BTL
18	OUT1P	Non-inverted output for ch1	4ch BTL
19	OUT3P	Non-inverted output for ch3	4ch BTL
20	OUT3M	Inverted output for ch3	4ch BTL
21	OUT4P	Non-inverted output for ch4	4ch BTL
22	OUT4M	Inverted output for ch4	4ch BTL
23	V _{CC2}	Supply voltage terminal for ch3/ch4	4ch BTL
24	N.C.	Open	—
25	REG	Connection with BASE of PNP Tr	Regulator
26	REG OUT	Output for regulator (5 V)	Regulator
27	N.C.	8, 9, 10, 27, 28, 29 are connected to PW GND (FIN)	—
28	N.C.	8, 9, 10, 27, 28, 29 are connected to PW GND (FIN)	—
29	N.C.	8, 9, 10, 27, 28, 29 are connected to PW GND (FIN)	—
30	REG STBY	Standby control for regulator	Regulator
31	IN4	Input for ch4	4ch BTL
32	IN3	Input for ch3	4ch BTL
33	STBY	Standby control for 4ch BTL	4ch BTL
34	FIN	Logic control input	H-bridge
35	RIN	Logic control input	H-bridge
36	VR	Supply voltage terminal for motor driver	H-bridge

TC74HCU04AFN



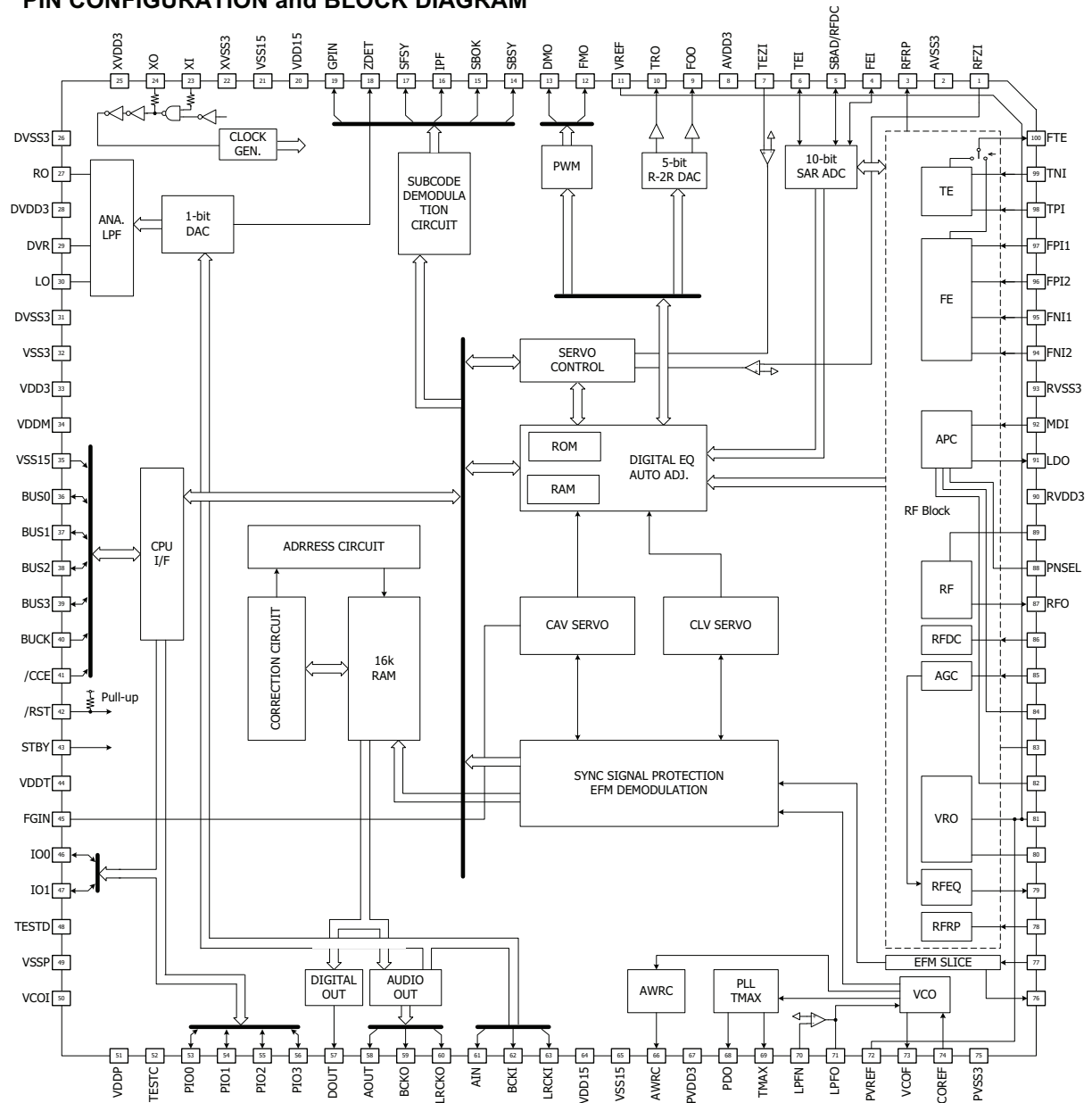
FN (SOL14-P-150-1.27)
Weight : 0.12g (Typ.)

PIN ASSIGNMENT



TC94A54MFG01

PIN CONFIGURATION and BLOCK DIAGRAM



3I/F : 3 V circuit digital input/output pin

1.5AI/F : 1.5 V circuit analog input/output pin

Pin No.	Pin name	I/O	Description	Remark
1	RFZI	I 3AI/F	Input pin for the RF ripple zero-cross signal.	To be connected to the RFRP via 0.033 uF.
2	AVSS3	—	Grounding pin for 3.3 V analog circuits.	—
3	RFRP	O 3AI/F	RF ripple signal output pin.	—
4	FEI	O 3AI/F	Focus error signal input pin.	Monitor pin for various signals.
5	SBAD/RFDC	O 3AI/F	Subbeam addition signal input pin.	
6	TEI	O 3AI/F	Tracking error signal input pin.	
7	TEZI	I 3AI/F	Input pin for tracking error signal zero-cross.	To be connected to the TEI via 0.033 uF.
8	AVDD3	—	Supply voltage pin for 3.3 V analog circuit.	—
9	FOO	O 3AI/F	Focus equalizer output pin.	—
10	TRO	O 3AI/F	Tracking equalizer output pin.	—
11	VREF	O 3AI/F	Analog reference supply voltage pin.	Connected to the VRO and PVREF within the IC. To be connected to 0.1 uF.
12	FMO	O 3AI/F	Speed error/feed equalizer output pin.	PWM ternary output (AVDD3, GND, and VREF).
13	DMO	O 3AI/F	Disc equalizer output pin.	
14	SBSY (SPCK)	O 3I/F	Pin for outputting the subcode block sync signal. It is "H" at position S1 when the subcode sync signal is detected. (CD Processor Status Read Clock(176.4KHz) output)	"H" at S1 when Subcode Sync is detected.
15	SBOK (FOK) (CLCK) (MBOV)	O 3I/F	Pin for outputting the CRCC check result of a subcode Q data check. It is "H" when the check result is OK. (Focus OK signal) (Input/output pin for the clock used in reading the subcode P to W data.) (CD Buffer memory overflow output)	—
16	IPF (SPDA)	O 3I/F	Correction flag output pin. "H" if the AOUT pin outputs an uncorrectable symbol in C2 correction. (CD Processor Status signal output)	—

Pin No.	Pin name	I/O	Description	Remark
17	SFSY (EMPH) (LOCK) (MONIT)	O 3I/F	Pin for outputting the playback frame sync signal. (Emphasis flag output pin. ENPH on: "H". EMPH off: "L". The output polarity can be switched, using a command.) (LOCK signal) (Pin for monitoring signals in the DSP.)	7.35kHz (At this pin, flags in the DSP and PLL-circuit clock can be monitored, using microcontroller commands. The pin also outputs text data serially.)
18	ZDET (DATA) (COFS)	O 3I/F	Output pin for zero detection flag for the 1-bit DAC. (Pin for outputting subcode P to W data) (Error Correction Frame Clock 7.35kHz output)	Valid also for 1-bit DAC external inputs.
19	GPIN	I/O 3I/F	General-purpose I/O (DSP)	General-purpose I/O (input after a reset).
20	VSS1	—	1.5V grounding pin dedicated to the Digital circuit.	—
21	VDD1	—	1.5 V supply voltage pin dedicated to the Digital circuit.	—
22	XVSS3	—	Grounding pin for the system clock oscillation circuit.	—
23	XI	I 3AI/F	Input pin for the system clock oscillation circuit.	—
24	XO	O 3AI/F	Output pin for the system clock oscillation circuit.	Input to the internal MCK.
25	XVDD3	—	3.3 V supply voltage pin for the system clock oscillation circuit.	—
26	DVSS3	—	Grounding pin for the 1-bit DAC.	—
27	RO	O 3AI/F	Output pin for normal R-channel data for the 1-bit DAC.	No capacitor is required at the DVR pin unless the built-in 1-bit DAC is used. 3.3 V must be applied across the DVDD3 and DVSS3 pins, however.
28	DVDD3	—	3.3 V supply voltage pin for the 1-bit DAC.	
29	DVR	O	Reference voltage pin for the 1-bit DAC.	
30	LO	O 3AI/F	Output pin for normal L-channel data for the 1-bit DAC.	—
31	DVSS3	—	Grounding pin for the 1-bit DAC.	
32	VSS3	—	3.3 V grounding pin dedicated to the I/F circuit.	—
33	VDD3	—	3.3 V supply voltage pin dedicated to the I/F circuit.	—
34	VDDM	—	1.5 V supply voltage pin dedicated to the DSP/1Mbit SRAM circuit.	—
35	VSS1	—	1.5V grounding pin dedicated to the DSP/1Mbit SRAM circuit.	—

Pin No.	Pin name	I/O	Description	Remark												
36	BUS0	I/O 3I/F	Data input/output pin for the microcontroller interface.	To be fixed at "H" or "L" when communication is not in progress, so that the pin will not become HiZ.												
37	BUS1	I/O 3I/F														
38	BUS2	I/O 3I/F														
39	BUS3	I/O 3I/F														
40	BUCK	I 3I/F	Clock input pin for the microcontroller interface.	To be fixed at "H" when communication is not in progress, so that the pin will not become HiZ.												
41	/CCE	I 3I/F	Chip enable signal input pin for the microcontroller interface. BUS3 to BUS0 are active if this pin is "L".													
42	/RST	I 3I/F	Reset signal input pin. The internal registers and servo section registers are reset, respectively, when the reset signal is "L" and on the positive-going edge of the reset signal.	To be connected to 0.1 uF.												
43	STBY	I 3I/F	STANBY control pin dedicated to the DSP/1Mbit SRAM circuit.	—												
44	VDDT	—	3.3 V supply voltage pin dedicated to the Digital I/O circuit.	—												
45	FGIN	I 3AI/F	FG signal input pin for CAV. CLV: "L". CAV: FG input.	—												
46	IO0A (/HSO)	I/O 3I/F	General-purpose input/output pins. (Pin for outputting the playback speed mode flag.)	General-purpose I/O (input after a reset). The playback speed mode flag output can be switched, using command bits.												
47	IO1A (/UHSO)	I/O 3I/F														
			<table border="1"> <thead> <tr> <th>/UHSO</th> <th>/HSO</th> <th>Playback speed</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>H</td> <td>Normal speed</td> </tr> <tr> <td>H</td> <td>L</td> <td>2 times</td> </tr> <tr> <td>L</td> <td>H</td> <td>4 times</td> </tr> </tbody> </table>	/UHSO	/HSO	Playback speed	H	H	Normal speed	H	L	2 times	L	H	4 times	
/UHSO	/HSO	Playback speed														
H	H	Normal speed														
H	L	2 times														
L	H	4 times														
48	TESTD	I 3I/F	DSP/Test input pin. Usually fixed at "L".	—												
48	VSSP	—	1.5 V grounding pin dedicated to the DSP/VCO circuit.	—												
50	VCOI	O 1.5AI/F	PD output pin dedicated to the DSP/VCO circuit.	—												
51	VDDP	—	1.5 V supply voltage pin dedicated to the DSP/VCO circuit.	—												
52	TESTC	I 3I/F	CD/ Test input pin. Usually fixed at "L".	—												
53	PIO0	I/O 3I/F	General-purpose I/O (CD/DSP)	General-purpose I/O (input after a reset).												
54	PIO1	I/O 3I/F	General-purpose I/O (CD/DSP)													
55	PIO2	I/O 3I/F	General-purpose I/O (DSP)													
56	PIO3	I/O 3I/F	General-purpose I/O (DSP)													

Pin No.	Pin name	I/O	Description	Remark
57	DOUT	O 3I/F	Digital-out output pin. Digital data for up to double speed can be output when a frequency of 16.9344 MHz is used.	As per CP-1201
58	AOUT	O 3I/F	Audio data output pin. Which bit is first (MSB first or LSB first) can be selected, using a command.	—
59	BCK	O 3I/F	Bit clock output pin. 32fs, 48fs, and 64fs can be selected, using a command.	Normal speed : 32fs = 1.4112 MHz
60	LRCK	O 3I/F	LR channel clock output pin. "L" for the L-channel and "H" for the R-channel. The output polarity can be inverted, using a command.	Normal speed: 44.1 kHz
61	AIN	I 3I/F	1-bit DAC external input: AIN	1-bit DAC external input
62	BCKI	I 3I/F	1-bit DAC external input: BCKI	
63	LRCKI	I 3I/F	1-bit DAC external input: LRCKI	
64	VDD1	—	1.5 V supply voltage pin dedicated to the DSP circuit.	
65	VSS1	—	1.5 V grounding pin dedicated to the DSP circuit.	
66	AWRC	O 3AI/F	VCO control pin for active wide range.	Controllable in CLV/CAV.
67	PVDD3	—	3.3 V supply voltage pin dedicated to the PLL circuit.	—
68	PDO	O 3AI/F	Pin for outputting a phase difference signal between the EFM signal and PLCK signal.	Quaternary output (PVDD3, HiZ, VSS, and PVREF).
69	TMAX	O 3AI/F	Pin for outputting the result of TMAX detection. The TMAX pin output the same signal.	Ternary output (PVDD3, VSS, and Hiz).
70	LPFN	I 3AI/F	Pin for receiving an inverted output of the PLL-circuit low-pass filter amp.	The resistance side is connected. See an applicable circuit diagram.
71	LPFO	O 3AI/F	Pin for the PLL-circuit low-pass filter amp output.	The capacitor side is connected. See an applicable circuit diagram.
72	PVREF	—	1.65 V reference supply voltage pin dedicated to the PLL circuit.	Connected to the VREF and PVREF within the IC. A 0.1 uF capacitor is connected.
73	VCOF	O 3AI/F	VCO filter pin.	—
74	VCOREF	I 3AI/F	Input pin for the VCO center frequency reference level.	To be connected to the PVREF if the AWRC is not used.

Pin No.	Pin name	I/O	Description	Remark
75	PVSS3	—	3.3 V grounding pin dedicated to the PLL circuit.	—
76	SLCO	O 3AI/F	EFM slice level output pin. For both analog and digital slice modes, the output impedance $\cong 2.5 \text{ k}\Omega$.	A capacitor to be connected is selected according to the servo operation band.
77	RFI	I 3AI/F	RF signal input pin. The input resistance can be selected, using a command.	Zin: 20k Ω , 10k Ω , 5k Ω
78	RFRPI	I 3AI/F	RF ripple signal input pin.	—
79	RFEQO	O 3AI/F	RF equalizer circuit output pin.	To be connected to the RFRPI via 0.1 μF and to the RFI via 4700 pF or higher.
80	RESIN	I 3AI/F	Pin for connecting a reference current generating resistance.	To be connected to 22 k Ω and 680 pF in parallel.
81	VRO	O 3AI/F	1.65 V reference voltage output pin.	Connected to the V _{REF} and PV _{REF} within the IC. To be connected to 0.1 μF and 100 μF .
82	VMDIR	—	Reference voltage output pin for the APC circuit.	To be connected to 0.1 μF .
83	TESTR	O 3AI/F	LPF pin for RFEQO offset correction.	To be connected to 0.015 μF or higher.
84	INVSEL	I 3AI/F	Test pin, usually fixed at "L".	—
85	AGCI	I 3AI/F	Pin for RF signal amplitude adjustment amp input.	—
86	RFDCI	I 3AI/F	RF signal peak detection input pin.	—
87	RFO	O 3AI/F	RF signal generation amp output pin.	To be connected directly to the RFDCI. To be connected to the AGCI via 0.1 μF .
88	PNSEL	I 3AI/F	Test pin, usually fixed at "H".	—
89	EQSET	O 3AI/F	External connection pin for the RF signal equalizer.	To be kept open when the RFEQ is used.
90	RVDD3	—	3.3V Supply voltage pin for the RFamp core section	—
91	LDO	O 3AI/F	Laser diode amp output pin.	—
92	MDI	I 3AI/F	Monitor photodiode amp input pin.	Reference to 178 mV (typ.)
93	RVSS3	—	3.3 V grounding pin for the RF amp core section.	—

Pin No.	Pin name	I/O	Description	Remark
94	FNI2	I 3AI/F	Main beam input pin. Connected to PIN diode C.	—
95	FNI1	I 3AI/F	Main beam input pin. Connected to PIN diode A.	—
96	FPI2	I 3AI/F	Main beam input pin. Connected to PIN diode D.	—
97	FPI1	I 3AI/F	Main beam input pin. Connected to PIN diode B.	—
98	TPI	I 3AI/F	Subbeam amp input pin. Connected to PIN diode F.	—
99	TNI	I 3AI/F	Subbeam amp input pin. Connected to PIN diode E.	—
100	FTE	O 3AI/F	Focus/tracking signal output. (Test pin for servo characteristic measurement.)	Switchable using a command.

ELECTRICAL TROUBLESHOOTING GUIDE

1. POWER CHECK

NO STBY LED

Check F801 fuse

Is 5V applied to BN63 pin ⑤?

YES

Check the Front Circuit

NO

Check Q105, C122

Is 0V applied to CN81 pin ①, ②?

YES

Check BN81, T802

NO

Check D118 ~ D121

NO ± AMP POWER (VCC)

2. No FLD

NO FLD

Check F801 fuse

Is -28V applied to BN63 pin ⑦?

YES

Check the Front Circuit

NO

Check Q101 & D102, D101

Is AC4V applied to BN63 pin ⑧ ~ ⑨?

YES

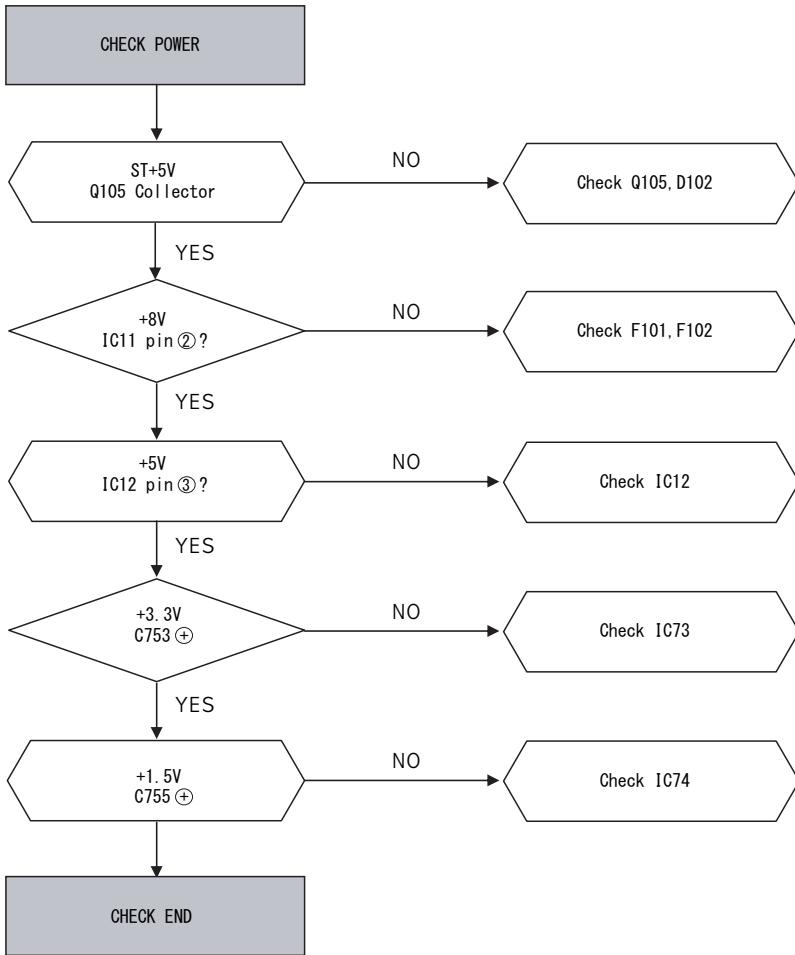
Check R106, R107, D103

NO

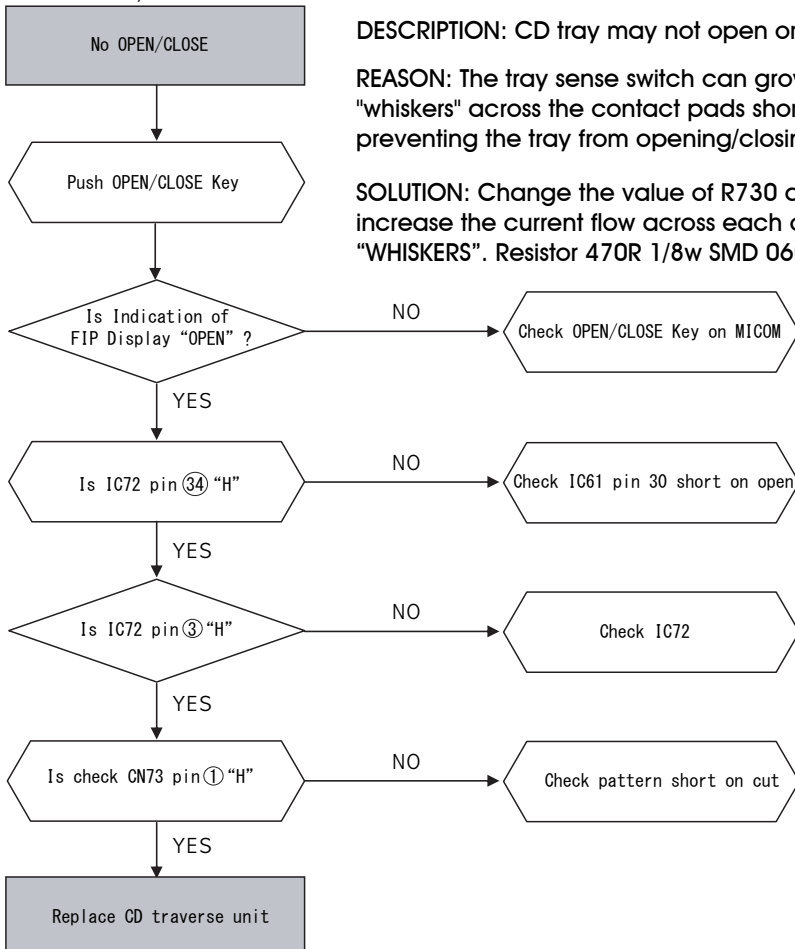
Check BN81 & T801

***FOR ALL POWER IS ON , RELAY RY81 MUST BE ON---
(AT FIRST, PLEASE CHECK RY91 & FUSE F801)**

3. No POWER



4. No OPEN/CLOSE



DESCRIPTION: CD tray may not open or close.

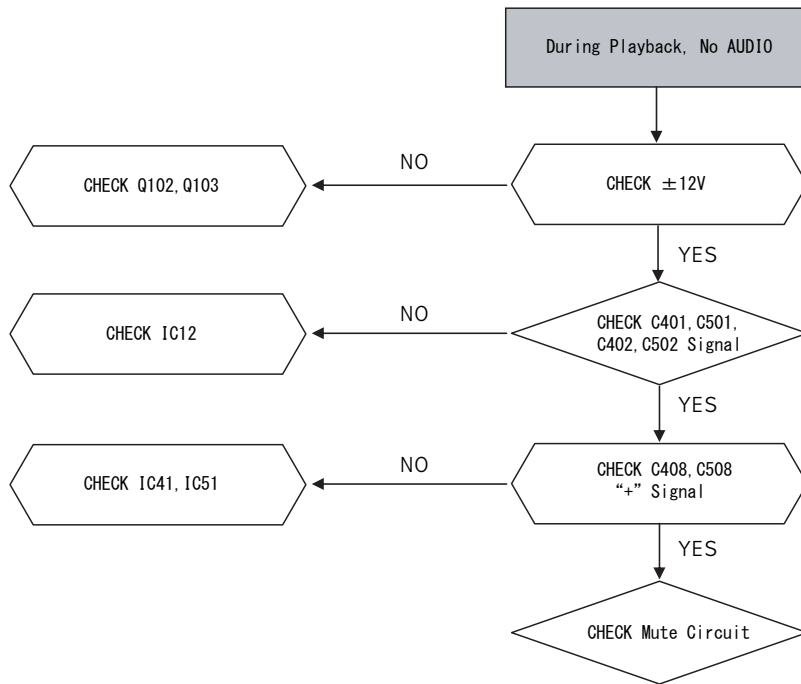
REASON: The tray sense switch can grow tiny conductive "whiskers" across the contact pads shorting the switch and preventing the tray from opening/closing.

SOLUTION: Change the value of R730 and R731 from 18K to 470 ohm to increase the current flow across each contact switch pads eliminating the "WHISKERS". Resistor 470R 1/8w SMD 0605

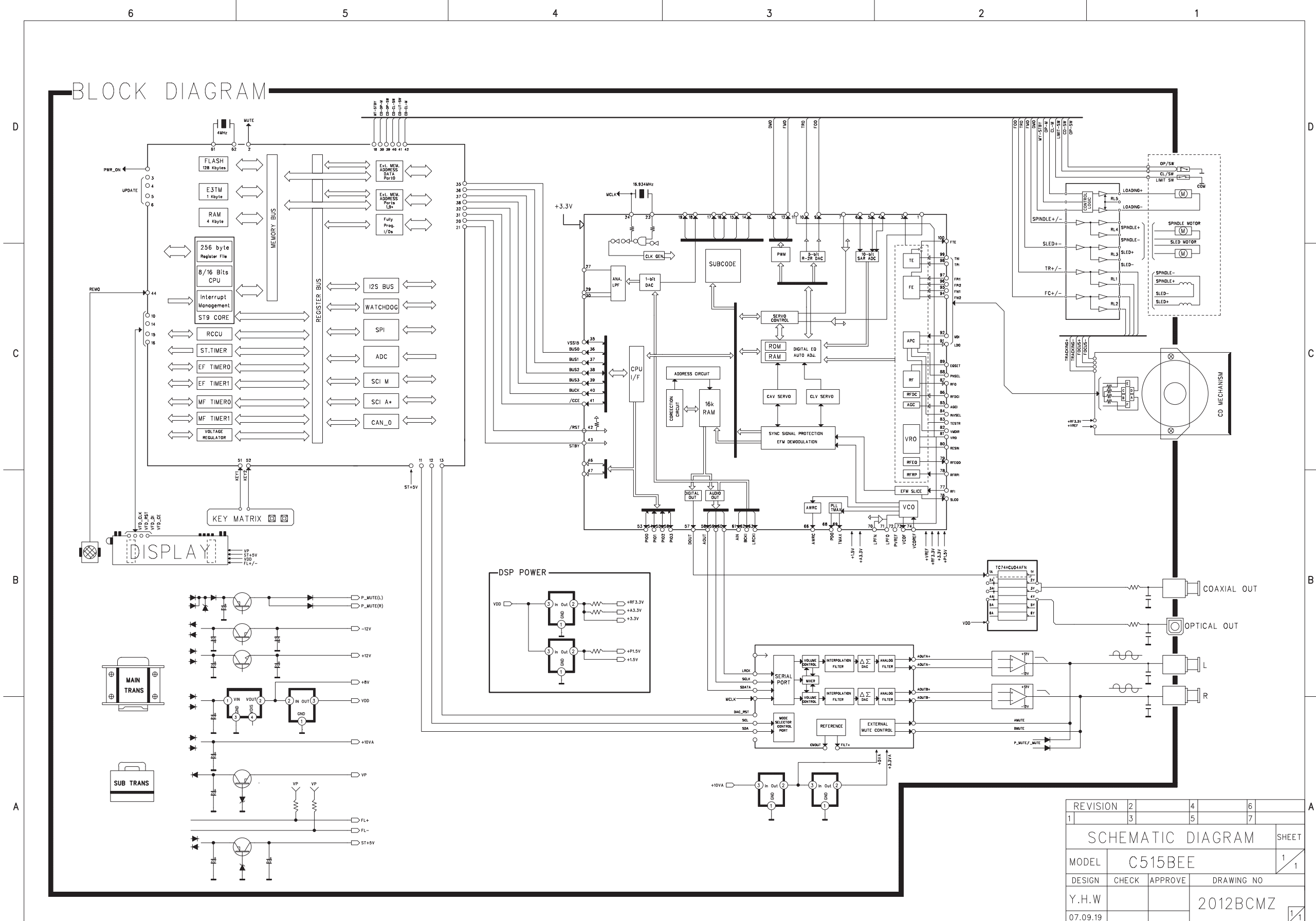
5. No PLAYBACK



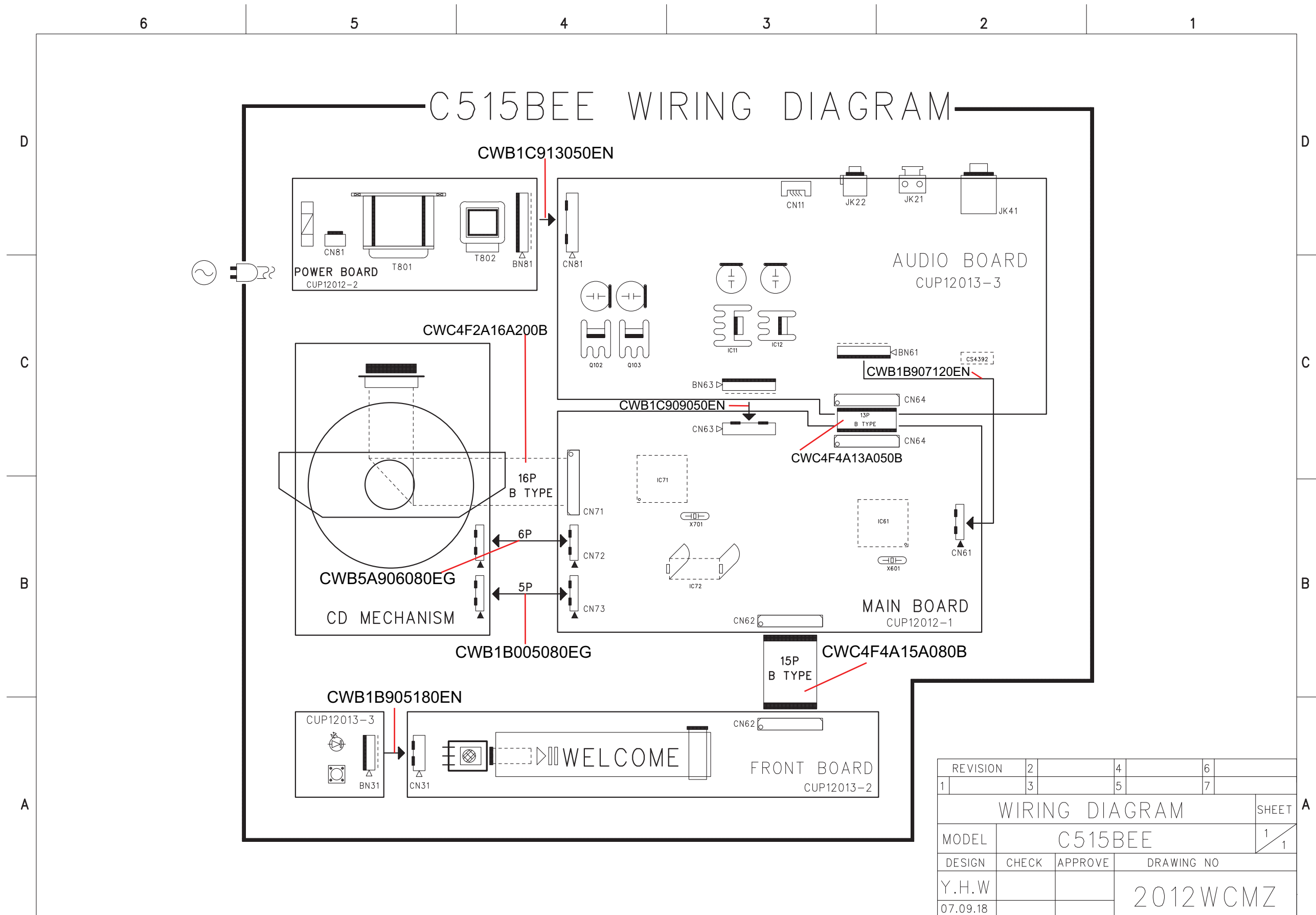
6. No AUDIO



1. BLOCK DIAGRAM



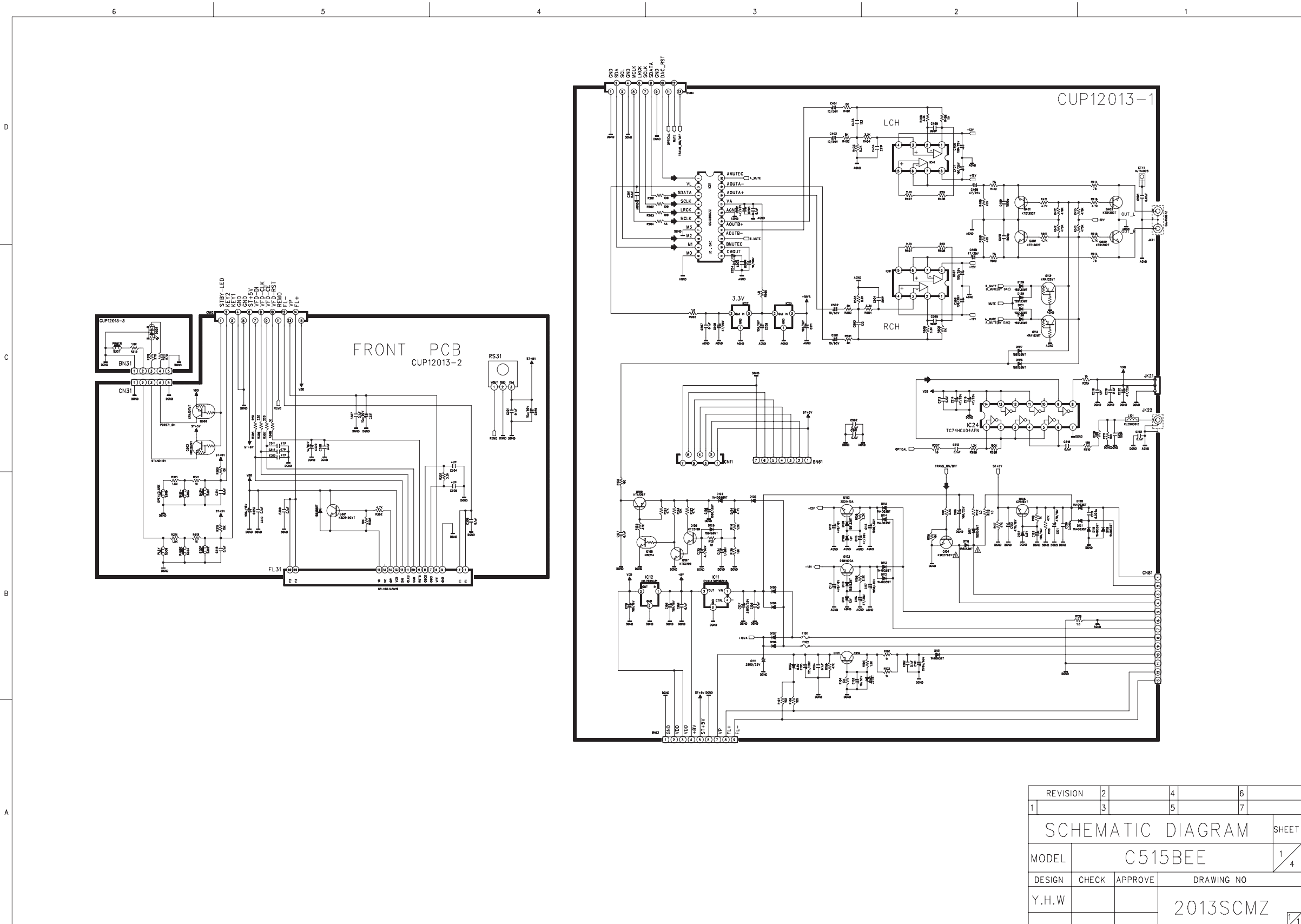
2. WIRING DIAGRAM



REVISION	2	4	6
1	3	5	7
WIRING DIAGRAM			SHEET
MODEL	C515BEE		1/1
DESIGN	CHECK	APPROVE	DRAWING NO
Y.H.W			2012WCMZ
07.09.18			

3. SCHEMATIC DIAGRAM

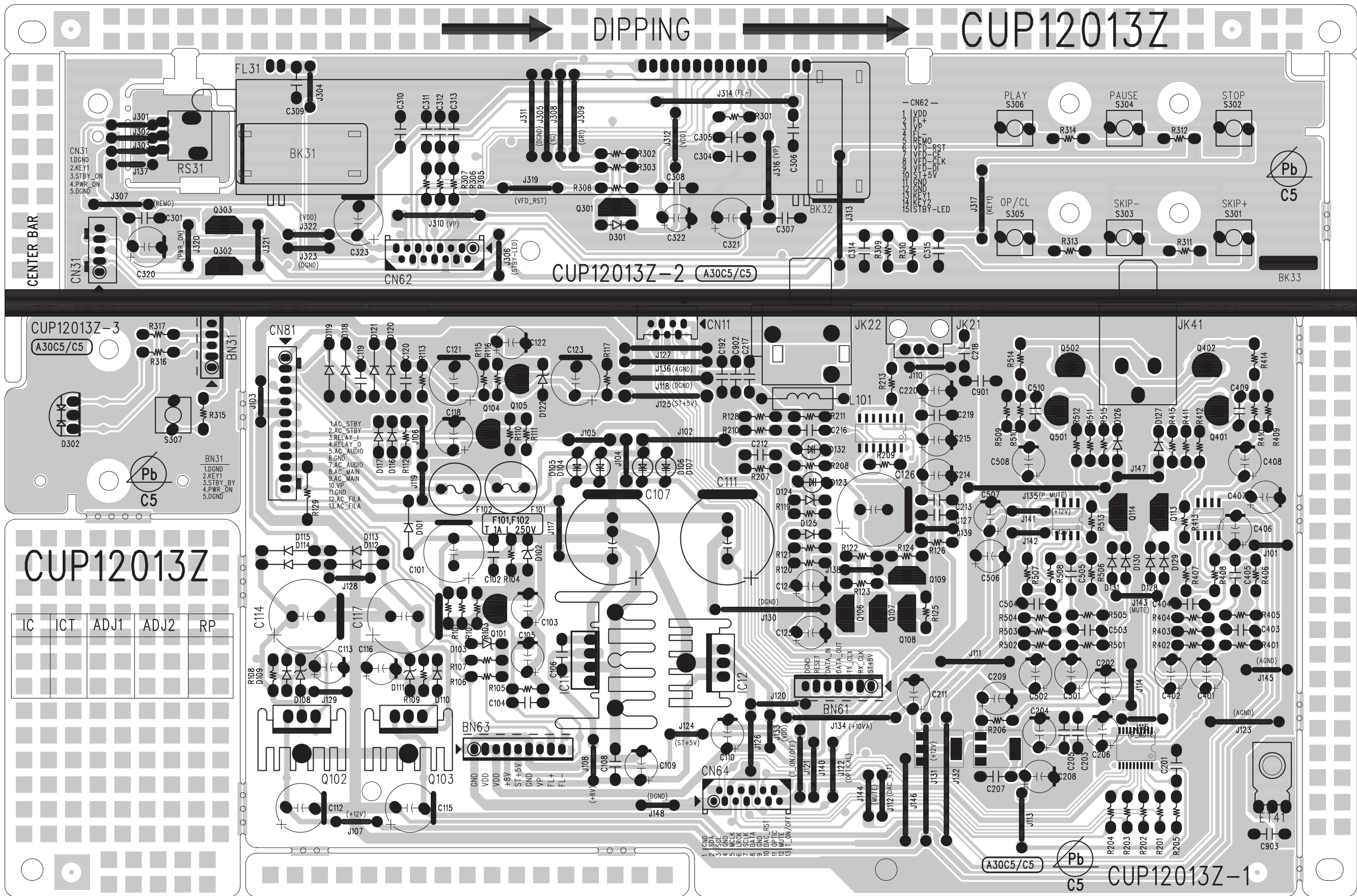
FRONT + AUDIO PART



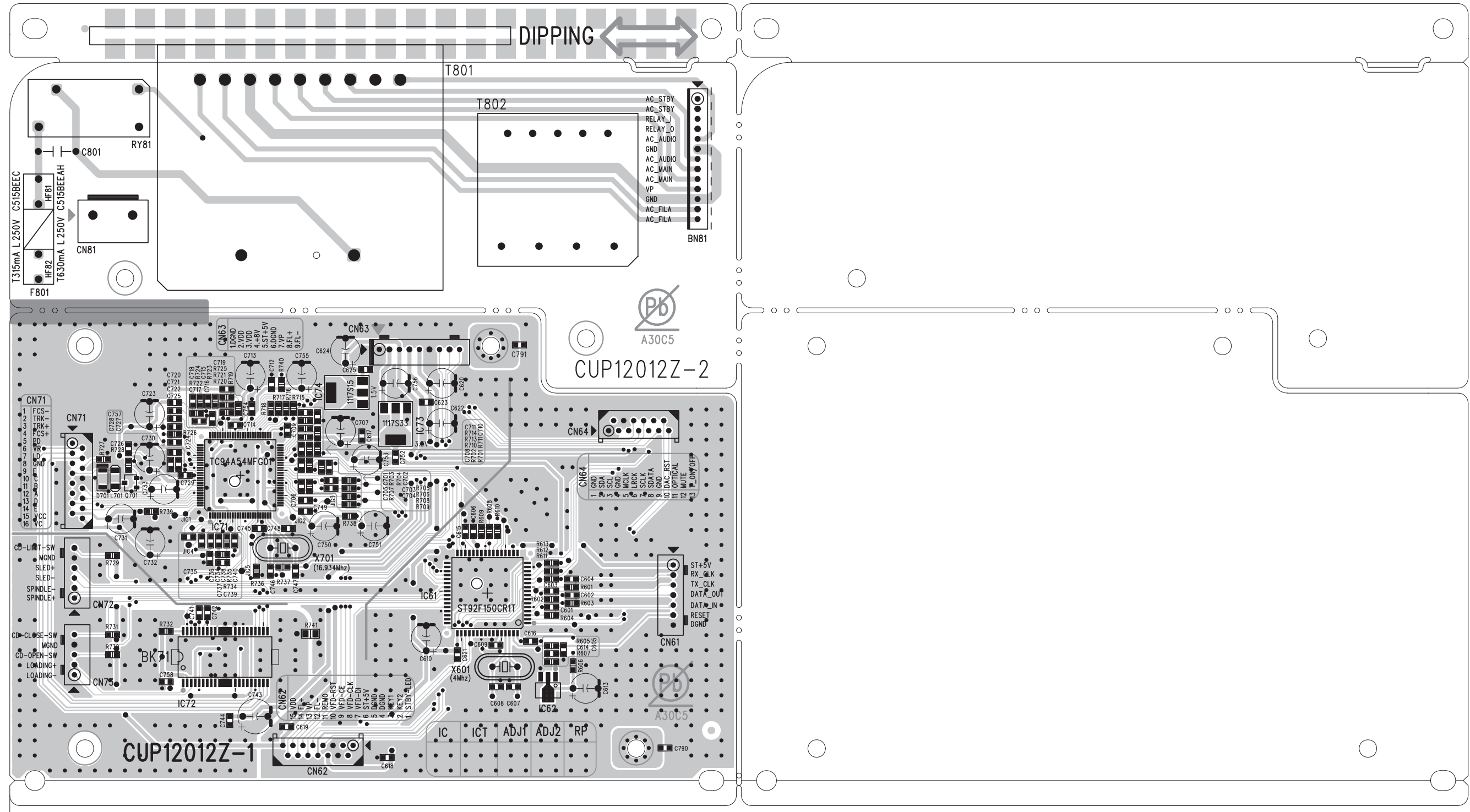
REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			SHEET
MODEL	C515BEE		1/4
DESIGN	CHECK	APPROVE	DRAWING NO
Y.H.W			2013SCMZ

4. PRINTED CIRCUIT BOARDS

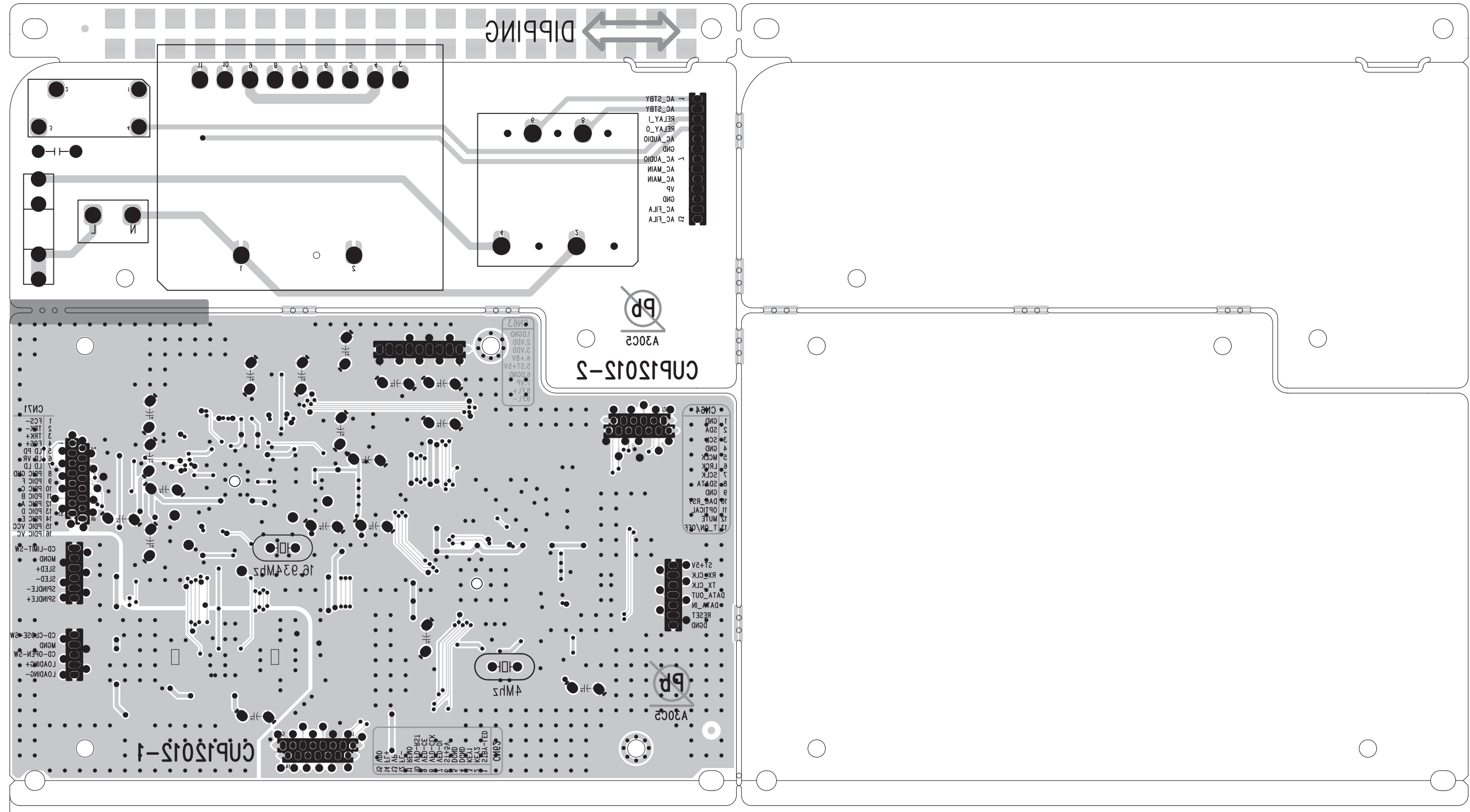
FRONT PCB DATA VIEW



MAIN + POWER PCB DATA VIEW (TOP)



MAIN + POWER PCB DATA VIEW (BOTTOM)



SECTION 3

ELECTRICAL PARTS LIST

MAIN/PWR PCB ASS'Y COP12012B/C (B-->C515BEEC, C-->C515BEEAH)
CUP12012Z

Ref NO	PART NUMBER	Description	Drawing No	REMARK
C601	CCUS1H101JA	CAP , CHIP	100PF 50V J	
C602	CCUS1H101JA	CAP , CHIP	100PF 50V J	
C603	CCUS1H101JA	CAP , CHIP	100PF 50V J	
C604	CCUS1H101JA	CAP , CHIP	100PF 50V J	
C605	CCUS1H101JA	CAP , CHIP	100PF 50V J	
C606	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C607	CCUS1H150JA	CAP , CHIP(15PF/50V)	15PF 50V J	
C608	CCUS1H150JA	CAP , CHIP(15PF/50V)	15PF 50V J	
C609	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C614	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C615	CCUS1H561JA	CAP , CHIP	560PF 50V J	
C616	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C617	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C618	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C619	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C621	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C623	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C625	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C701	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C702	CCUS1H120JA	CAP , CHIP(12PF/50V/COG/1608)	12PF 50V J	
C703	CCUS1H120JA	CAP , CHIP(12PF/50V/COG/1608)	12PF 50V J	
C704	CCUS1H120JA	CAP , CHIP(12PF/50V/COG/1608)	12PF 50V J	
C705	CCUS1H120JA	CAP , CHIP(12PF/50V/COG/1608)	12PF 50V J	
C706	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C708	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C709	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C710	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C711	CCUS1H222KC	CAP , CHIP	2200PF 50V K	
C712	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C714	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C715	CCUS1H153KC	CAP , CHIP	0.015UF 50V K	
C716	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C717	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C718	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C719	CCUS1H470JA	CAP , CHIP	47PF 50V J	
C720	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C721	CCUS1H472KC	CAP , CHIP	4700PF 50V K	
C722	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C724	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C725	CCUS1H681JA	CAP , CHIP	680PF 50V J	
C726	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C727	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C728	CCUS1H680JA	CAP , CHIP	68PF 50V J	
C729	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C734	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C735	CCUS1H333KC	CAP , CHIP	0.033UF 50V K	
C736	CCUS1H333KC	CAP , CHIP	0.033UF 50V K	
C737	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C738	CCUS1H471JA	CAP , CHIP	470PF 50V J	
C739	CCUS1H471JA	CAP , CHIP	470PF 50V J	
C740	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C741	CCUS1H473KC	CAP , CHIP	0.047UF 50V K	
C742	CCUS1H473KC	CAP , CHIP	0.047UF 50V K	
C744	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C745	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C746	CCUS1H120JA	CAP , CHIP(12PF/50V/COG/1608)	12PF 50V J	
C747	CCUS1H120JA	CAP , CHIP(12PF/50V/COG/1608)	12PF 50V J	
C748	CCUS1H103KC	CAP , CHIP	0.01UF 50V K	
C749	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C752	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C754	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C757	CCUS1H153KC	CAP , CHIP	0.015UF 50V K	
C758	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C790	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
C791	CCUS1H104KC	CAP , CHIP	0.1UF 50V K	
D701	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	RLS4148 TE-11	
IC61	CVIST92F150CR1T	I.C , MCU(FLASH 128K, TQFP64)		
IC62	HVIRH5VT28C	I.C , RESET		
IC71	HVITC94A54MFG01	I.C , DIGITAL SERVO(CD/MP3/WMA)		
IC72	HVITA2125AFG	I.C , MOTOR DRIVER (Pb Free)		
IC73	CVIKIA1117S33	I.C , REGULATOR(SOT-223)	KIA1117S/F33, SOT-223	
IC74	CVIKIA1117S15	I.C , REGULATOR(SOT-223)	LM1117S15	
L701	HLQ09E100KRZ	CHIP , COIL		
Q701	HVTKTA1504SYRTK	T.R , CHIP	KTA1504S Y RTK	
R601	CRJ10DJ470T	RES , CHIP	1608 SIZE	
R602	CRJ10DJ470T	RES , CHIP	1608 SIZE	

Ref NO	PART NUMBER	Description	Drawing No	REMARK
R603	CRJ10DJ470T	RES , CHIP	1608 SIZE	
R604	CRJ10DJ470T	RES , CHIP	1608 SIZE	
R605	CRJ10DJ470T	RES , CHIP	1608 SIZE	
R606	CRJ10DJ103T	RES , CHIP	1608 SIZE	
R607	CRJ10DJ100T	RES , CHIP	1608 SIZE	
R608	CRJ10DJ223T	RES , CHIP	1608 SIZE	
R609	CRJ10DJ103T	RES , CHIP	1608 SIZE	
R610	CRJ10DJ682T	RES , CHIP	1608 SIZE	
R611	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R612	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R613	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R701	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R702	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R703	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R704	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R705	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R706	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R707	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R708	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R709	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R710	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R711	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R713	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R714	CRJ10DJ221T	RES , CHIP	1608 SIZE	
R715	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R716	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R717	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R718	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R719	CRJ10DJ562T	RES , CHIP	1608 SIZE	
R720	CRJ10DJ154T	RES , CHIP	1605 SIZE	
R721	CRJ10DJ1R0T	RES , CHIP	1608 SIZE	
R722	CRJ10DJ223T	RES , CHIP	1608 SIZE	
R723	CRJ10DJ153T	RES , CHIP		
R724	CRJ10DJ683T	RES , CHIP	1608 SIZE	
R725	CRJ10DJ473T	RES , CHIP	1608 SIZE	
R726	CRJ10DJ223T	RES , CHIP	1608 SIZE	
R727	CRJ10DJ0R0T	RES , CHIP	1608 SIZE	
R728	CRJ10DJ100T	RES , CHIP	1608 SIZE	
R729	CRJ10DJ183T	RES , CHIP	1608 SIZE	
R730	CRJ10DJ471T	RES , CHIP	1608 SIZE NEW VALUE	
R731	CRJ10DJ471T	RES , CHIP	1608 SIZE NEW VALUE	
R732	CRJ10DJ471T	RES , CHIP	1608 SIZE	
R734	CRJ10DJ332T	RES , CHIP	1608 SIZE	
R735	CRJ10DJ682T	RES , CHIP	1608 SIZE	
R736	CRJ10DJ104T	RES , CHIP	1608 SIZE	
R737	CRJ10DJ105T	RES , CHIP	1608 SIZE	
R738	CRJ10DJ1R0T	RES , CHIP	1608 SIZE	
R739	CRJ10DJ1R0T	RES , CHIP	1608 SIZE	
R740	CRJ10DJ1R0T	RES , CHIP	1608 SIZE	
R741	CRJ10DJ0R0T	RES , CHIP	1608 SIZE	
	CUP12012Z	PCB , MAIN/POWER C515(291X160 FR-4)		
C610	CCEA1CH101T	CAP , ELECT	100UF 16V	
C613	CCEA1HH100T	CAP , ELECT	10UF 50V	
C620	CCEA1CH101T	CAP , ELECT	100UF 16V	
C622	CCEA1CH101T	CAP , ELECT	100UF 16V	
C624	CCEA1CH101T	CAP , ELECT	100UF 16V	
C707	CCEA1CH470T	CAP , ELECT	47UF 16V	
C713	CCEA1CH470T	CAP , ELECT	47UF 16V	
C723	CCEA1CH470T	CAP , ELECT	47UF 16V	
C730	CCEA1CH470T	CAP , ELECT	47UF 16V	
C731	CCEA1CH101T	CAP , ELECT	100UF 16V	
C732	CCEA1CH101T	CAP , ELECT	100UF 16V	
C733	CCEA1CH101T	CAP , ELECT	100UF 16V	
C743	CCEA1CH221T	CAP , ELECT	220UF 16V	
C750	CCEA1CH470T	CAP , ELECT	47UF 16V	
C751	CCEA1HH220T	CAP , ELECT	22UF 50V	
C753	CCEA1CH470T	CAP , ELECT	47UF 16V	
C755	CCEA1CH470T	CAP , ELECT	47UF 16V	
C756	CCEA1CH101T	CAP , ELECT	100UF 16V	
HF81	KJFC5S	HOLDER , FUSE		
HF82	KJFC5S	HOLDER , FUSE		
BK71	CMY1A267	HEAT SINK , IC		
CN61	CJP07GA19ZY	WAFER , STRAIGHT(7PIN)		
CN62	CJP15GA117ZY	WAFER , CARD CABLE		
CN63	CJP09GA19ZY	WAFER , STRAIGHT, 9PIN		
CN64	CJP13GA117ZY	WAFER , CARD CABLE		
CN71	CJP16GA117ZY	WAFER		
CN72	CJP06GA19ZY	WAFER , STRAIGHT(DVD LOADER)		

Ref NO	PART NUMBER	Description	Drawing No	REMARK
CN73	CJP05GA19ZY	WAFER , STRAIGHT		
X601	HOX04000E150C	CRYSTAL , 4MHZ		
X701	HOX16934A120C	CRYSTAL		

CUP12012-1

Ref NO	PART NUMBER	Description	Drawing No	REMARK
BN81	CWB1C913050EN	WIRE ASS'Y(13P, 50MM, #24)		
C801	KCKDKS472ME	CAP , CERAMIC(X1/Y2/SC)	0.0047UF/2.5KV	
CN81	CJP02KA060ZY	WAFER		
HF81	KJCF5S	HOLDER , FUSE		
HF82	KJCF5S	HOLDER , FUSE		
RY81	CSL1E002ZE	RELAY , POWER	G5PA-1 (DC 6V)	
T801	CLT5M028ZES	TRANS , POWER(EUR/UK)		C VERSION
T802	CLT5I009ZE	TRANS , SUB CD6002/N		C VERSION
	CJA2B043ZA	CORD , POWER		C VERSION
F801	KBA2C0315TLEY	FUSE		C VERSION
T801	CLT5M028ZUS	TRANS , POWER C515		AH VERSION
T802	CLT5I009ZU	TRANS , SUB C515		AH VERSION
	CJA523FBYA	CORD , POWER		AH VERSION
F801	KBA2C0630TLEY	FUSE		AH VERSION

FRONT/AUDIO PCB ASS'Y COP12013B (C515BEEAH, C515BEEC)

CUP12013-1

Ref NO	Component	Description	Drawing No	REMARK
	CUP12013Z	PCB , FRONT/AUDIO C515(247X163 FR-1)		
C102	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C103	CCEA1HH100T	CAP , ELECT	10UF 50V	
C104	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C105	CCEA1HH220T	CAP , ELECT	22UF 50V	
C106	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C108	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C109	CCEA1CH101T	CAP , ELECT	100UF 16V	
C110	CCEA1CH101T	CAP , ELECT	100UF 16V	
C112	CCEA1CH471T	CAP , ELECT	470UF 16V	
C113	CCEA1EH470T	CAP , ELECT	47UF 25V	
C115	CCEA1CH471T	CAP , ELECT	470UF 16V	
C116	CCEA1EH470T	CAP , ELECT	47UF 25V	
C118	CCEA1EH101T	CAP , ELECT	100UF 25V	
C119	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z	
C120	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z	
C121	CCEA1CH471T	CAP , ELECT	470UF 16V	
C122	CCEA1CH101T	CAP , ELECT	100UF 16V	
C123	CCEA1CH471T	CAP , ELECT	470UF 16V	
C124	CCEA1HH1R0T	CAP , ELECT	1UF 50V	
C125	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V	
C127	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C192	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C201	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C202	CCEA1ERA470T	CAP , ELECT(16V/47UF, 5X11, ELNA/RA-2)	16V/47UF, 5X11, ELNA/RA-2	
C203	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C204	CCEA1HH1R0T	CAP , ELECT	1UF 50V	
C205	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C206	CCEA1HH100T	CAP , ELECT	10UF 50V	
C207	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C208	CCEA1EH470T	CAP , ELECT	47UF 25V	
C209	CCEA1CH101T	CAP , ELECT	100UF 16V	
C211	CCEA1CH101T	CAP , ELECT	100UF 16V	
C212	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C213	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C214	CCEA1EH470T	CAP , ELECT	47UF 25V	
C215	CCEA1EH470T	CAP , ELECT	47UF 25V	
C216	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C217	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K	
C218	HCBS1H120JCT	CAP , CERAMIC	12PF 50V J	
C219	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C220	CCEA1EH470T	CAP , ELECT	47UF 25V	
C401	HCEA1HRA100T	ELECT , CAP(ELNA/RA-2)		
C402	HCEA1HRA100T	ELECT , CAP(ELNA/RA-2)		
C403	HCQI1H122JZT	CAP , MYLAR	1200PF 50V J	
C404	CCME2A221JR11T	CAP , POLYESTER FILM(100V/220PF, J)		
C405	HCBS1H391KBT	CAP , CERAMIC	390PF 50V K	
C406	HCEA1ERA101T	ELECT , CAP (ELNA/RA-2)		
C407	HCEA1ERA101T	ELECT , CAP (ELNA/RA-2)		
C408	CCEA1ERA470T	CAP , ELECT(16V/47UF, 5X11, ELNA/RA-2)	16V/47UF, 5X11, ELNA/RA-2	
C409	HCQI1H182JZT	CAP , MYLAR	1800PF 50V J	
C501	HCEA1HRA100T	ELECT , CAP(ELNA/RA-2)		
C502	HCEA1HRA100T	ELECT , CAP(ELNA/RA-2)		
C503	HCQI1H122JZT	CAP , MYLAR	1200PF 50V J	
C504	CCME2A221JR11T	CAP , POLYESTER FILM(100V/220PF, J)		
C505	HCBS1H391KBT	CAP , CERAMIC	390PF 50V K	
C506	HCEA1ERA101T	ELECT , CAP (ELNA/RA-2)		
C507	HCEA1ERA101T	ELECT , CAP (ELNA/RA-2)		
C508	CCEA1ERA470T	CAP , ELECT(16V/47UF, 5X11, ELNA/RA-2)	16V/47UF, 5X11, ELNA/RA-2	
C510	HCQI1H182JZT	CAP , MYLAR	1800PF 50V J	
C901	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C902	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C903	HCBS1H103ZFT	CAP , CERAMIC	0.01UF 50V Z	
D101	CVD1N4003ST	DIODE , RECT	1N4003	
D102	CVDZJ27BT	DIODE , ZENER	ZJ27B 1/2W	
D103	CVDZJ6.8BT	DIODE , ZENER	ZJ6.8B 1/2W	
D104	CVD1N4003SRT	DIODE , RECT	1N4003	

Ref NO	Component	Description	Drawing No	REMARK
D105	CVD1N4003SRT	DIODE , RECT	1N4003	
D106	CVD1N4003SRT	DIODE , RECT	1N4003	
D107	CVD1N4003SRT	DIODE , RECT	1N4003	
D108	CVDZJ13BT	DIODE , ZENER	ZJ13B 1/2W	
D109	CVD1SS133MT	DIODE	1SS133	
D110	CVD1SS133MT	DIODE	1SS133	
D111	CVDZJ13BT	DIODE , ZENER	ZJ13B 1/2W	
D112	CVD1N4003ST	DIODE , RECT	1N4003	
D113	CVD1N4003ST	DIODE , RECT	1N4003	
D114	CVD1N4003ST	DIODE , RECT	1N4003	
D115	CVD1N4003ST	DIODE , RECT	1N4003	
D116	CVD1SS133MT	DIODE	1SS133	
D117	CVD1SS133MT	DIODE	1SS133	
D118	CVD1N4003ST	DIODE , RECT	1N4003	
D119	CVD1N4003ST	DIODE , RECT	1N4003	
D120	CVD1N4003ST	DIODE , RECT	1N4003	
D121	CVD1N4003ST	DIODE , RECT	1N4003	
D122	CVDZJ5.6BT	DIODE , ZENER	ZJ5.6B 1/2W	
D123	CVD1N4003SRT	DIODE , RECT	1N4003	
D124	CVDZJ4.7BT	DIODE , ZENER	ZJ4.7B 1/2W	
D125	CVD1SS133MT	DIODE	1SS133	
D126	CVD1SS133MT	DIODE	1SS133	
D127	CVD1SS133MT	DIODE	1SS133	
D128	CVD1SS133MT	DIODE	1SS133	
D129	CVD1SS133MT	DIODE	1SS133	
D130	CVD1SS133MT	DIODE	1SS133	
D131	CVD1SS133MT	DIODE	1SS133	
D132	CVD1N4003SRT	DIODE , RECT	1N4003	
ET41	HJT1A025	PALTE , EARTH	MET37-0002	
F101	KBA2D1000A3EYT	FUSE(1A, 372 SERIES/TR5)	1A, 372 SERIES/TR5	
F102	KBA2D1000A3EYT	FUSE(1A, 372 SERIES/TR5)	1A, 372 SERIES/TR5	
Q101	HVTKSA916YT	T.R		
Q104	HVTKSC2785YT	T.R	KSC2785Y	
Q105	HVTKSC2316YT	T.R	KSC2316Y	
Q106	HVTKTC3199YT	T.R	KTC3199Y	
Q107	HVTKTC3199YT	T.R	KTC3199Y	
Q108	HVTKRC114MT	T.R	KTC114M	
Q109	HVTKTA1267YT	T.R	KTA1267Y	
Q113	HVTKRA102MT	T.R	KRA102M	
Q114	HVTKRA102MT	T.R	KRA102M	
Q401	HVTKTD1302T	T.R	KTD1302	
Q402	HVTKTD1302T	T.R	KTD1302	
Q501	HVTKTD1302T	T.R	KTD1302	
Q502	HVTKTD1302T	T.R	KTD1302	
R101	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J	
R102	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J	
R103	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J	
R104	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J	
R105	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R106	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J	
R107	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J	
R108	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J	
R109	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J	
R110	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J	
R111	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J	
R112	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J	
R113	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J	
R115	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R116	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J	
R117	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R119	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J	
R120	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J	
R121	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J	
R122	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R123	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J	
R124	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R125	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R126	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J	
R128	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J	
R201	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J	

Ref NO	Component	Description	Drawing No	REMARK
R202	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J	
R203	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J	
R204	CRD20TJ330T	RES , CARBON	33 OHM 1/5W J	
R205	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J	
R206	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J	
R207	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J	
R208	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J	
R209	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J	
R210	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J	
R211	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J	
R213	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J	
R401	CRD20TF8001T	RES , CARBON		
R402	CRD20TF8001T	RES , CARBON		
R403	CRD20TJ822T	RES , CARBON	8.2K OHM 1/5W J	
R404	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J	
R405	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J	
R406	CRD20TJ113T	RES , CARBON		
R407	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J	
R408	CRD20TJ821T	RES , CARBON	820 OHM 1/5W J	
R409	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R410	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J	
R411	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J	
R412	CRD20TJ474T	RES , CARBON		
R413	CRD20TJ474T	RES , CARBON		
R414	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J	
R415	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J	
R501	CRD20TF8001T	RES , CARBON		
R502	CRD20TF8001T	RES , CARBON		
R503	CRD20TJ822T	RES , CARBON	8.2K OHM 1/5W J	
R504	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J	
R505	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J	
R506	CRD20TJ113T	RES , CARBON		
R507	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J	
R508	CRD20TJ821T	RES , CARBON	820 OHM 1/5W J	
R509	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J	
R510	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J	
R511	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J	
R512	CRD20TJ474T	RES , CARBON		
R513	CRD20TJ474T	RES , CARBON		
R514	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J	
R515	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J	
BN61	CWB1B907120EN	WIRE ASS'Y		
BN63	CWB1C909050EN	WIRE ASS'Y(9P, 50MM, #24)		
CN11	CJP07GB113ZY	WAFER , CARD CABLE		
CN64	CJP13GA117ZY	WAFER , CARD CABLE		
CN81	CJP13GA19ZY	WAFER, STRAIGHT, 13PIN		
C101	CCEA1JH221E	CAP , ELECT	220UF 63V	
C107	CCEA1EH332E	CAP , ELECT		
C111	CCEA1EH332E	CAP , ELECT		
C114	CCEA1VH102E	CAP , ELECT		
C117	CCEA1VH102E	CAP , ELECT		
C126	CCEA1VH102E	CAP , ELECT		
IC11	CVIKIA78R08PIBA	I.C HEAT SINK ASS'Y(CMY3A222)		
	CMY3A222	HEAT SINK		
	CTB3+8JR	SCREW		
	CVIKIA78R08PI	I.C , REGULATOR(TO220IS-4)		
	K8AYG6260	COMPOUND , SILICONE		
IC12	CVIKIA7805APIJA	I.C HEAT SINK ASS'Y (CMY2A223)	CVIKIA7805API/CMY2A223	
	CMY2A223	HEAT SINK		
	CTB3+8JR	SCREW		
	HVIKIA7805API	REGULATOR, +5V	7805API (KEC)	
	K8AYG6260	COMPOUND , SILICONE		
IC21	HVICS4392KZZ	I.C , DAC		
IC22	CVIKIA1117S33	I.C , REGULATOR(SOT-223)	KIA1117S/F33, SOT-223	
IC23	CVIKIA1117S50	I.C , REGULATOR(SOT-223)	KIA1117S50-RTK/P	
IC24	HVI74HCU04AFNG	I.C , INVERTER	TC74HCU04AFNG(TOSHIBA)	
IC41	CVISA5532DR	I.C , OP AMP	SA5532DR	
IC51	CVISA5532DR	I.C , OP AMP	SA5532DR	
JK21	HJSTOTX177L	MODULE , OPTICAL(TX)	TOTX177L	
JK22	CJJ4M045Z	JACK , BOARD	1P (GOLD)	

Ref NO	Component	Description	Drawing No	REMARK
JK41	CJJ4N067Z	JACK , 2P	RCA-201DAG-01	
L101	KLZ9H001Z	BEAD , CORE		
Q102	CVT2SD1415AJA	T.R HEAT SINK ASS'Y (CMY2A223)	CVT2SD1415A/CMY2A223	
	CMY2A223	HEAT SINK		
	CTB3+8JR	SCREW		
	CVT2SD1415A	T.R , DARLINGTON		
	K8AYG6260	COMPOUND , SILICONE		
Q103	CVT2SB1020AJA	T.R HEAT SINK ASS'Y (CMY2A223)	CVT2SB1020A/CMY2A223	
	CMY2A223	HEAT SINK		
	CTB3+8JR	SCREW		
	CVT2SB1020A	T.R , DARLINGTON		
	K8AYG6260	COMPOUND , SILICONE		

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BK31	CMD1A458	BRACKET , FIP		
BK32	CMD1A458	BRACKET , FIP		
C301	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C304	HCBS1H470JT	CAP , CERAMIC	47PF 50V J	
C305	HCBS1H470JT	CAP , CERAMIC	47PF 50V J	
C306	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C307	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C308	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C309	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C310	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C311	HCBS1H470JT	CAP , CERAMIC	47PF 50V J	
C312	HCBS1H470JT	CAP , CERAMIC	47PF 50V J	
C313	HCBS1H470JT	CAP , CERAMIC	47PF 50V J	
C314	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C315	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z	
C320	CCEA1HKS100T	CAP , ELECT	10UF 50V SMALL SIZE	
C321	CCEA1HKS100T	CAP , ELECT	10UF 50V SMALL SIZE	
C322	CCEA1HKS1R0T	CAP , ELECT	1UF 50V SMALL SIZE	
C323	CCEA1CKS101T	CAP , ELECT	100UF 16V	
CN31	CJP05GA19ZY	WAFER , STRAIGHT		
CN62	CJP15GA117ZY	WAFER , CARD CABLE		
D301	CVD1SS133MT	DIODE	1SS133	
FL31	CFLHCA14SM19	F.I.P , CD	HCA14SM-19	
Q301	HVTKSC945CYT	T.R	KSC945CY	
Q302	HVTKRC107MT	T.R	KRC107M	
Q303	HVTKRA107MT	T.R	KRA107M	
RS31	CRVKSM603TH2E	SENSOR , REMOCON	KSM603TH2E	
R301	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J	
R302	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J	
R303	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J	
R305	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J	
R306	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J	
R307	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J	
R308	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J	
R309	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J	
R310	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J	
R311	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J	
R312	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J	
R313	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J	
R314	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J	
S301	CST1A012ZT	SW , TACT	SKHV10910G	
S302	CST1A012ZT	SW , TACT	SKHV10910G	
S303	CST1A012ZT	SW , TACT	SKHV10910G	
S304	CST1A012ZT	SW , TACT	SKHV10910G	
S305	CST1A012ZT	SW , TACT	SKHV10910G	
S306	CST1A012ZT	SW , TACT	SKHV10910G	

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BN31	CWB1B905180EN	WIRE ASS'Y		
D302	CVD50BOBBWGA	L.E.D , 2 COLOR (ORG , BLUE)	TOL-50BOBBWGA	
R315	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J	
R316	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J	
R317	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J	
S307	CST1A012ZT	SW , TACT	SKHV10910G	

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