SERVICE MANUAL

6M83B-24E391

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1. 6M83B SPECIFICATION
2. LIST OF KEY PARTS
3. IC SPECIFICATION
4. BLOCK DIAGRAM
5. CIRCUIT DIAGRAM
6. MAIN PCB DRAWING
7. INSTRUCTION MANUAL

1	**Outlook**		
	Please refer to the picture		
2	**Brief Information**		
2.1		Product Name	24E391
2.2		Chassis Name	6M83B
2.3		Solution	MSD6308RTC
2.4		Key functions	ISDB-T/PAL M,N
2.5		Target Market	Argentina
2.6		Product Category	
2.7		Product Positioning	LOW END DTV
2.8		Product size	\
3	**Panel Specification**		
3.1	**Model Number**	**Model Number**	
3.1.1		Panel Manufacturer	**SKYWORTH**
3.1.2		Model Number	SEL240HY(QD0-210)
3.2	**Mechanical**	**Mechanical**	
3.2.1		Panel Size	24"
3.2.2		Dimension	TBD
3.2.3		Visible Area (mm) : H x V	TBD
3.2.4		Pixel Format (H × V)	TBD
3.2.5		Backlight Type	LED
3.2.6		Diagonal Screen Size	\
3.2.7		Pixel Pitch (mm)	TBD
3.3	**Electronic Parameter**	**Electronic Parameter**	
3.3.1		Power consuption	\
3.3.2		Brightness (cd/m^2)	\
3.3.3		Contrast Ratio	\
3.3.4		Dynamic Contrast Ratio	\
3.3.5		Veiwing Angle	\
3.3.6		Response Time (ms)	\
3.3.7		Back light Time (Hours)	\
3.3.8		120Hz(100Hz)/240Hz(200Hz)	\
3.3.9		3D No/PR/SG	\
4	**Signal Receiving System**		
4.1	**ATV Receiving System**	**ATV Receiving System**	
4.1.1		PAL BG/I/DK/NTSC-M	No
4..1.2		PAL/SECAM BG/DK/I SECAM L/L"	No
4.1.3		PAL M/N NTSC-M	Yes
4.2	**DTV Receiving System**	**DTV Receiving System**	
4.2.1		ATSC	No
4.2.2		DVB-T	No
4.2.3		DVB-T with CI	No
4.2.4		DVB-T2	No
4.2.5		DVB-T2 with CI+	No
4.2.6		ISDB-T/SBTVD-T	Yes
4.2.7		DTMB	No
4.2.8		DVB-C with CA	No
4.2.9		DVB-S	No
4.2.10		DVB-S2	No
4.3	**Antenna input**	**Antenna input**	
4.3.1		Antenna Input port: 1 (1 for analogue)	No

4.3.2		Antenna Input port: 1 (1 for both analogue and digit	No
4.3.3		Antenna Input port: 2 (1 air + 1 Cable)	Yes
4.3.4		Type of Antenna Input Port	IEC169-2 Female
4.3.5		Receiving Frequency range (ATV)	54MHz～864MHz
4.3.6		Receiving Frequency range (DTV)	VHF 177-213 MHZ, UHF 473-803 MHZ
4.4	**External Signal Receiving System**		
4.4.1	Composite Input	PAL 50Hz/60Hz	Yes
4.4.2		SECAM	Yes
4.4.3		NTSC 3.58	Yes
4.4.4		NTSC4.43	Yes
4.4.5	Component Input	480i /480p/720p/1080i (60Hz)	Yes
4.4.6		576i /576p/720p/1080i (50Hz)	Yes
4.4.7		1080P 24Hz/25Hz/30Hz/50Hz/60Hz	Yes
4.4.8	PC Input	VGA (640 x 480)	Yes
4.4.9		S-VGA (800 x 600)	Yes
4.4.10		XGA (1024 x 768)	Yes
4.4.11		W-XGA (1280 x 768)	Yes
4.4.12		W-XGA（1360×768）	Yes
4.4.13		S-XGA (1280 x 1024)	Yes
4.4.14	HDMI Input	480i /480p/720p/1080i (60Hz) (Video Format)	Yes/Yes/Yes/Yes
4.4.15		576i /576p/720p/1080i (50Hz) (Video Format)	Yes/Yes/Yes/Yes
4.4.16		1080P 24Hz/25Hz/30Hz/50Hz/60Hz (Video Format)	Yes/Yes/Yes/Yes/Yes
4.4.17		VGA (640 x 480) (PC Format)	Yes
4.4.18		S-VGA (800 x 600) (PC Format)	Yes
4.4.19		XGA (1024 x 768) (PC Format)	Yes
4.4.20		W-XGA (1280 x 768) (PC Format)	Yes
4.4.21		W-XGA（1360×768）(PC Format)	Yes
4.4.22		S-XGA (1280 x 1024) (PC Format)	Yes
4.4.23	USB	Media player formats	Please see attached
5	**Features**		
5.1	**Picture**	**Picture**	
5.1.1		Picture Mode	Normal/ Movie / Sports / User
5.1.2		Picture Display Size	4:3/16:9/Panorama/Subtitle/Movie/Native
5.1.3		Picture Freeze	Yes
5.1.4		Backlight Adjust	No
5.1.5		Auto Format	No
5.1.6		3:2 Pull Down	No
5.1.7		4:3 Stretch	No
5.1.8		Comfilter	3D
5.1.9		PIP(Single tuner)	No
5.1.10		Noise Reduction	Off/Low/Middle/High
5.1.11		MPEG Reduction	Off/Low/Middle/High
5.1.12		3D	No
5.1.13		Color temperature	Cool/ Normal/Warm/ User
5.2	**Sound**	**Sound**	
5.2.1		Sound Mode	Standard / Music / Film /News/ User
5.2.2		For personal mode:Treble/Bass/Balance	No
5.2.3		Surround	Yes
5.2.4		Sound Mode	Standard / Music / Film / News/ User
5.2.5		Equalizer	Yes
5.2.6		Audio Output Power	2 X 3W
5.2.7		NICAM	No
5.2.8		A2	No
5.2.9		BTSC(MTS)	Yes
5.3	**Teletext**	**Teletext**	
5.3.1		FLOF/TOP	No
5.3.2		Memory Page	No
5.3.3		Character Language	No
5.3.4		Teletext Level	No
5.4	**Program Management**	**Program Management**	
5.4.1		V-Chip	No

5.4.2		Parent Control(Child Lock)	Yes
5.4.3		Closed Caption	Yes
5.4.4		Subtitle	Yes
5.4.5		EPG	Yes
5.4.6		Channel list	Yes
5.4.7		Faivorate Channel List	Yes
5.4.8		Channel Editor	Yes
5.4.9		On/Off timer	Yes
5.4.10		Sleep timer	Yes
5.4.11		Channel Swap timer	No
5.4.12		Blue Screen	Yes
5.5	**AC Input**	**AC Input**	
5.5.1		AC Input Range	\
5.5.2		AC Plug Type	\
5.5.3		AC Cable Length	\
5.5.4		Power Consumption	\
5.5.5		Standby Power Consumption	<1W
5.6	**HDMI**	**HDMI**	
5.6.1		CEC	Yes
5.6.2		ARC	No
5.6.3		3D	No
5.6.4		MHL	Yes
5.7	**Software Update**	**Software Update**	
5.7.1		By USB	Yes
5.7.2		By Internet	Yes
5.7.3		Internet Auto search	No
5.7.4		By Over-Air	No
5.7.5		By other Service Port	No
5.8	**PVR**	**PVR**	
5.8.1		By External USB or HDD	Yes
5.8.2		Built in HDD	No
5.8.3		Time Shift	Yes
5.9	**OSD Lauguage**	**OSD Lauguage**	
5.9.1		OSD Lauguage	English/Spanish/Portuguese
5.1O	**USB File System**	**USB File System**	
5.10.1		FAT16	Yes
5.10.2		FAT32	Yes
5.10.3		NTFS	Yes
5.11	**Middleware**	**Middleware**	
5.11.1		MHEG5	No
5.11.2		Ginga	Yes
5.11.3		MHP	No
5.12	**Wifi**	**Wifi**	
5.12.1		Wifi Dongle	Optional
5.12.2		Wifl Built in	No
6	**Terminals Configuration**		
6.1	**Teminal Direction (Side and Bottom & Side and Rear)**		
6.2	**Wifi**	**Wifi**	
6.2.1		Tuner	BackX2
6.2.2		Composite	Side X1
6.2.3		S-Video	No
6.2.4		Full Scart	No
6.2.5		Half Scart	No
6.2.6		Component	Side X1
6.2.7		PC input with 3.5mm mini jack audio input	Side X1(same AV audio)
6.2.8		HDMI	Side X1 BackX1
6.2.9		USB	Side X1
6.2.10		LAN	Back X1
6.2.11		CI Slot	No
6.2.12		CA Slot	No

6.3	Output	Output	
6.3.1		Video Output	No
6.3.2		Audio Output (Fixed & Variable)	Share with earphone
6.3.3		Digital Audio Output (Coaxial & Optical)	No
6.3.4		Earphone	Back X1
6.4	Diagram of Teminal Configuration		Please see attached
7	Mechanical Spec		
7.1	Cabinet	Cabinet	
7.1.1	Cabinet color	For front back stand	\
7.1.2	Operation Keys / Touch sensor		
7.1.3	AC Power Switch	Mechanical power switch	\
7.1.4	LED Indicator	Power on (Green)	\
7.1.5		Power on / Standby (Green / Red)	\
7.1.6		Power on / Standby / Recording(Green / Red / Oran	\
7.1.7		Program Timer / Recoding (Green / Red)	\
7.1.8		On Timer or Program Timer(Green)	\
7.1.9	Logo Style	Silk Printing / SUS Badge (inlet type)	\
7.1.10	Stand	Tilt / Swivel	\
7.2	Dimension & Stuffing	Dimension & Stuffing	
7.2.1		Size (with stand)(mm)	\
7.2.2		Size (without stand) (mm)	\
7.2.3		Package Size (with stand)(mm)	\
7.2.4		Net Weight(Kg)	\
7.2.5		Gross Weight	\
7.2.6		Loading quantity (20GP/40GP/40GP) with pallet	\
7.2.7		Loading quantity (20GP/40GP/40GP) without pallet	\
7.2.8		Stand build in Packing Box (together or separately)	\
8	Accessories		
8.1	Remote Controller	Remote Controller	
8.1.1		Type No.	TBD
8.1.2		Battery	TBD
8.2	Instruction Manual	Instruction Manual	
8.2.1		Paper size	\
8.2.2		Printing Color	\
8.2.3		Languages (Refer to Sales Country Sheet)	\
8.2.4		Total Pages	\
8.2	Others	Others	
8.2.1		3D Glasses	\
8.2.2		Camera	\
8.2.3		etc	\
9	Requested Certification		
9.1	CB		Yes
9.2	UL		\
9.3	EMC		TBD
9.4	FCC		\
9.5	HDMI		Yes
9.6	USB		No
9.7	CI+		No
9.8	Dolby		No
9.9	DOLBY +		No
9.10	Dvix Hometheatre		\
9.11	DviX HD		\
9.12	DviX+HD		\
9.13	MHL		No
9.14	DLNA		\
9.15	CTS		\
9.16	Wifi		\
9.17	MPES		\
9.18	Energy Star		\

6M83B关键件清单

长周期\关键件分类	物料编号	单机用量	位号
TUNER	5219-06033D-7V00	1	T1
MAIN CHIP	475C-M63085-3690	1	U9
Nand-FLASH	4701-T581G1-0480	1	U23
AMP	4722-T31130-0280	1	U15
DC/DC 5V	476A-M14950-0080	1	U5
DC/DC 1.15V	476A-M14950-0080	1	U4
DC/DC 3.3V	476A-M14940-0080	1	U2
LDO 3.3V	47DG-L11171-0030	1	U6
LDO 1.5V	47B6-A11174-0300	1	U3
P-MOS	47D9-M94350-0080	1	U11

Headphone Amplifiers

Standard Headphone Amplifiers

BH3541F,BH3544F,BH3547F,BH3548F

No.10102EAT02

●Description

BH3541F, BH3544F, BH3547F, BH3548F is headphone amplifiers suitable for portable products.
BH3541F has a fixed gain of 0 dB and BH3544F, BH3547F, BH3548F has a fixed gain of 6 dB.
External resistors for gain setting are not needed. Package of BH3541F, BH3544F, BH3547F, BH3548F is pin-to-pin compatible (SOP8), enable to replace each other easily.
BH3541F, BH3544F, BH3547F, BH3548F also has mute functions that make it easy to prevent pop noise when power supply turns on/off. Moreover, thermal shutdown function is built-in.
BH3541F, BH3544F, BH3547F can drive 16/32Ω load, BH3548F can drive 8/16/32Ω. So, BH3548F is suitable for 8Ω receiver.

●Features

1) Built-in mute function for preventing pop noise when power supply turns on/off
2) Built-in thermal shutdown function
3) BH3541F, BH3544F, BH3547F, BH3548F are pin-to-pin compatible
4) SOP8 small package

●Applications

TV, Desktop PC, Notebook PC, Camcorder and other equipment having headphone output

●Line up

Part No.	BH3541F	BH3544F	BH3547F	BH3548F	Unit
Supply voltage	+2.8 ～ +6.5		+4.5 ～ +5.5	+4.0 ～ +5.5	V
Quiescent current	7.0		3.7	6.5	mA
Amplifier gain	0	6			dB
Output [RL=16Ω]	62		77	62	mW
load impedance	16 / 32			8/16/32	Ω
Operating temperature range	-25 ～ +75			-40 ～ +85	℃

●Absolute maximum ratings(Ta=25°C)

Parameter	Symbol	Ratings	Unit
		BH3541F,BH3544F,BH3547F,BH3548F	
Applied voltage	VCC	7.0	V
Power dissipation	Pd	550 *1	mW
Storage temperature	Tstg	-55～+125	°C

*1 Derating is done at 5.5mW/°C above Ta=25°C. (When mounted on a 70mm×70mm×1.6mm PCB board, FR4)

●Operating conditions (Ta=25°C)

Parameter	Symbol	Limits			Unit
		BH3541F,BH3544F	BH3547F	BH3548F	
Supply voltage	VCC	+2.8 ～ +6.5	+4.5 ～ +6.5	+4.0 ～ +5.5	V
Temperature Range	Topr	-25～+75		-40 ～ +85	℃

* These product are not designed for protection against radioactive rays.

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●**Electrical characteristics (Unless otherwise noted, Ta=25°C,VCC=5V,RL=32Ω,f=1kHz,BW=400～30kHz**
BH3541F : VIN=0dBV, BH3544F, BH3547F, BH3548F : VIN =-6dBV)

Parameter	Symbol	Limits(TYP.)				Unit	Conditions
		BH3541F	BH3544F	BH3547F	BH3548F		
Quiescent current	IQ	7		3.7	6.5	mA	VIN=0Vrms
Mute pin control voltage H	VTMH	1.6<				V	Mute OFF
Mute pin control voltage L	VTML	<0.3				V	Mute ON
Gain	GVC	0	6			dB	-
Gain difference between channels	ΔGVC	0				dB	-
Total harmonic distortion	THD	0.02		0.05	0.02	%	BW=20～20kHz
Rated output 1	PO1	31		46	31	mW	RL=32Ω,THD<0.1% (BH3541F,BH3544F,BH3548F) RL=32Ω,THD＜0.3% (BH3547F)
Rated output 2	PO2	62		77	62	mW	RL=16Ω,THD<0.1% (BH3541F,BH3544F,BH3548F) RL=16Ω,THD＜0.5% (BH3547F)
Rated output 3	PO3	-			120	mW	RL=8Ω,THD＜0.25% (BH3548F)
Output noise voltage	VNO	-93				dBV	BW=20～20kHz,Rg=0Ω
Channel separation	CS	-90		-87	-90	dB	Rg=0Ω
Mute attenuation	ATT	-80				dB	Rg=0Ω
Ripple rejection	RR	-57				dB	fRR=100Hz,VRR=-20dBV
Input resistance	Rin	180	90			kΩ	-

●**Reference data**

BH3541F/BH3544F

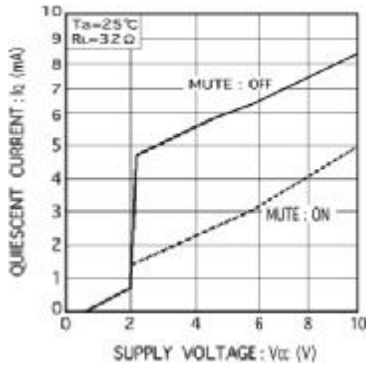


Fig. 1 Quiescent current vs. power supply voltage

BH3541F/BH3544F

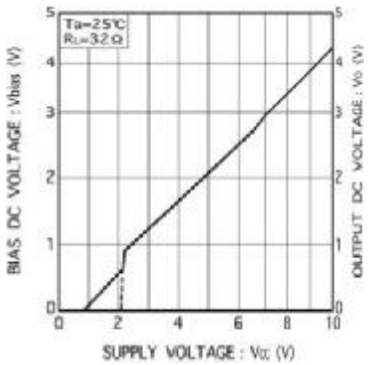


Fig. 2 in DC current vs. power supply voltage

BH3541F/BH3544F

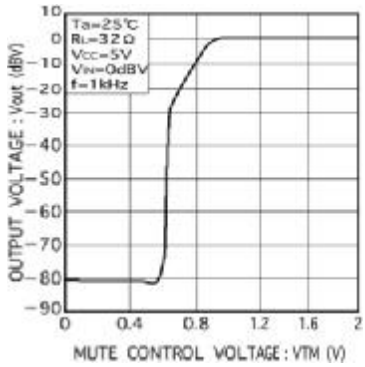


Fig. 3 Output voltage vs. Mute control voltage

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●**Reference data (Continued)**

BH3541F/BH3544F

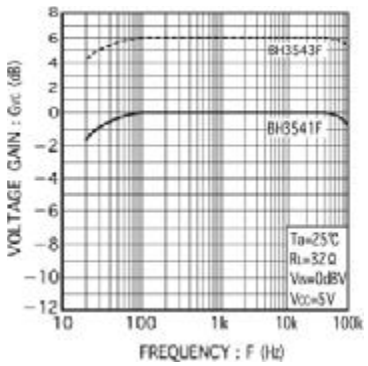


Fig. 4 Voltage gain vs. frequency

BH3541F/BH3544F

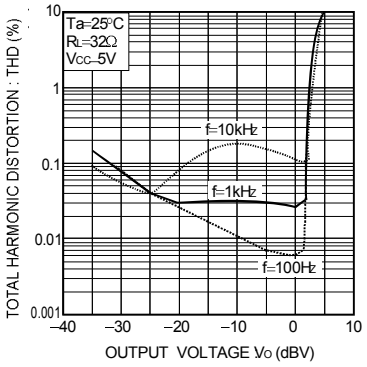


Fig. 5 Total harmonic distortion vs. output voltage (1)

BH3541F/BH3544F

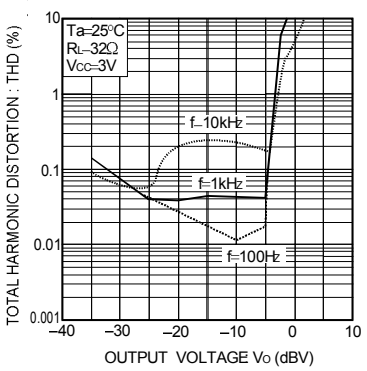


Fig. 6 Total harmonic distortion vs. output voltage (2)

BH3541F/BH3544F

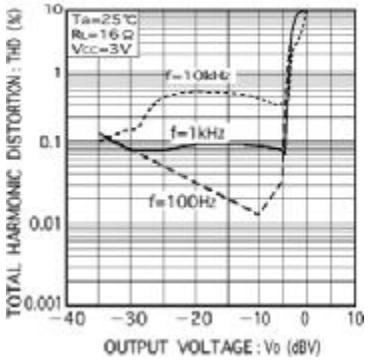


Fig. 7 Total harmonic distortion vs. output voltage (3)

BH3541F/BH3544F

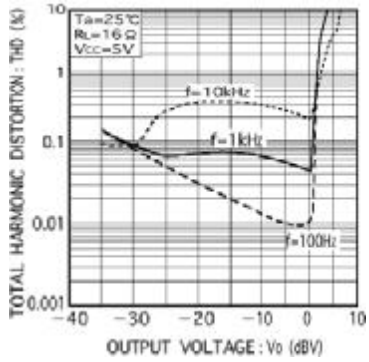


Fig. 8 Total harmonic distortion vs. output voltage (4)

BH3541F/BH3544F

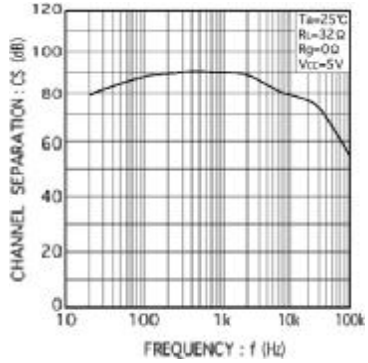


Fig. 9 Channel separation vs. frequency

BH3541F/BH3544F

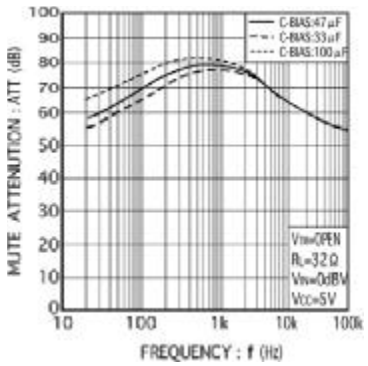


Fig. 10 MUTE attenuation vs. frequency

BH3541F/BH3544F

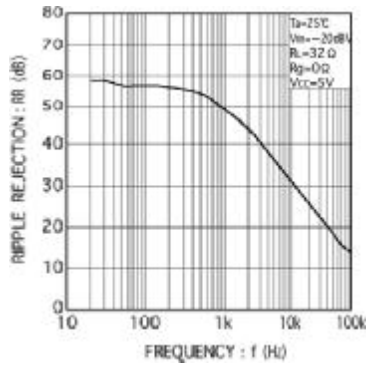


Fig. 11 Ripple rejection vs. frequency

BH3541F/BH3544F

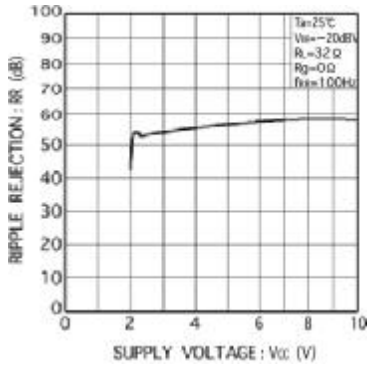
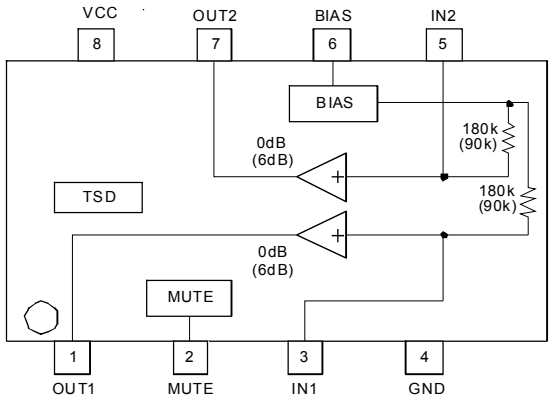


Fig. 12 Ripple rejection vs. power supply voltage

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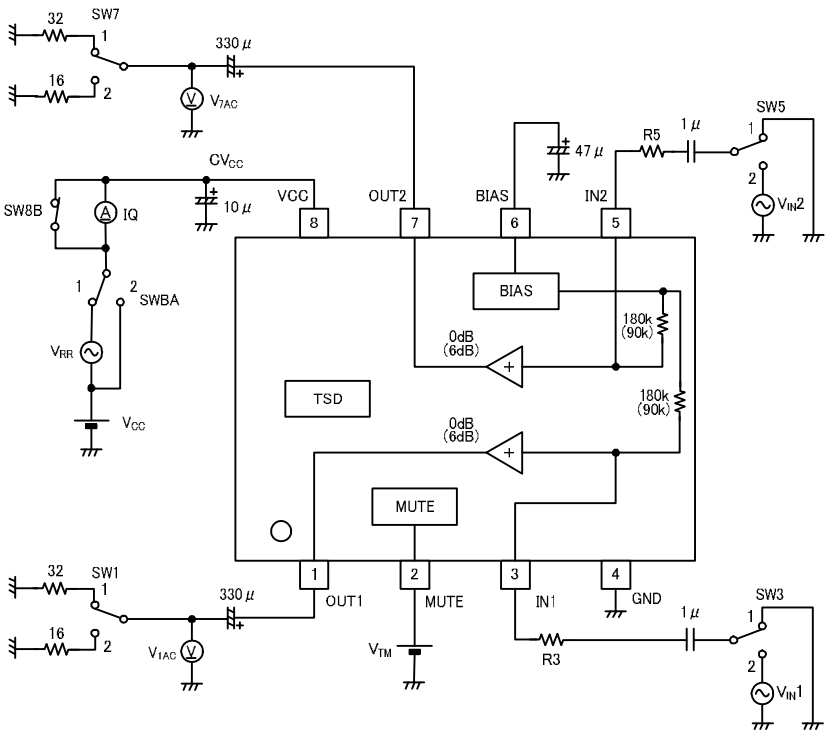
●**Block diagram**



( ) are BH3544F, BH3547F, BH3548F values.

Fig. 13

●**Measurement circuit**



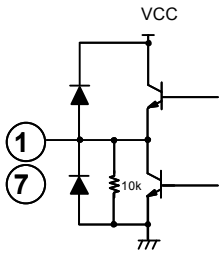
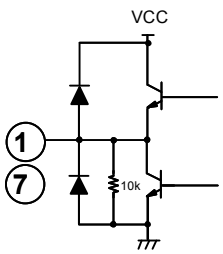
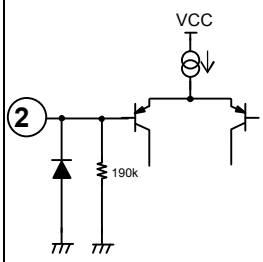
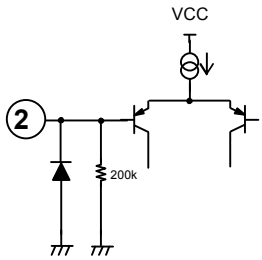
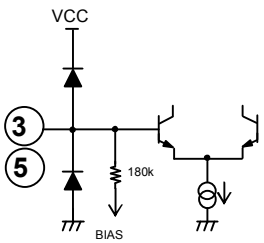
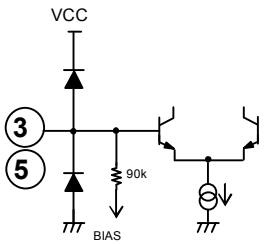
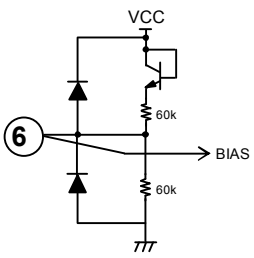
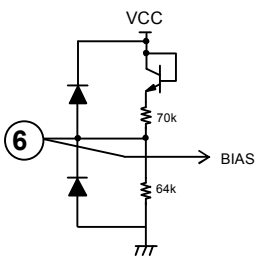
( ) are BH3544F, BH3547F, BH3548F values.

Fig. 14

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●**Terminal Equivalent Circuit / Description**

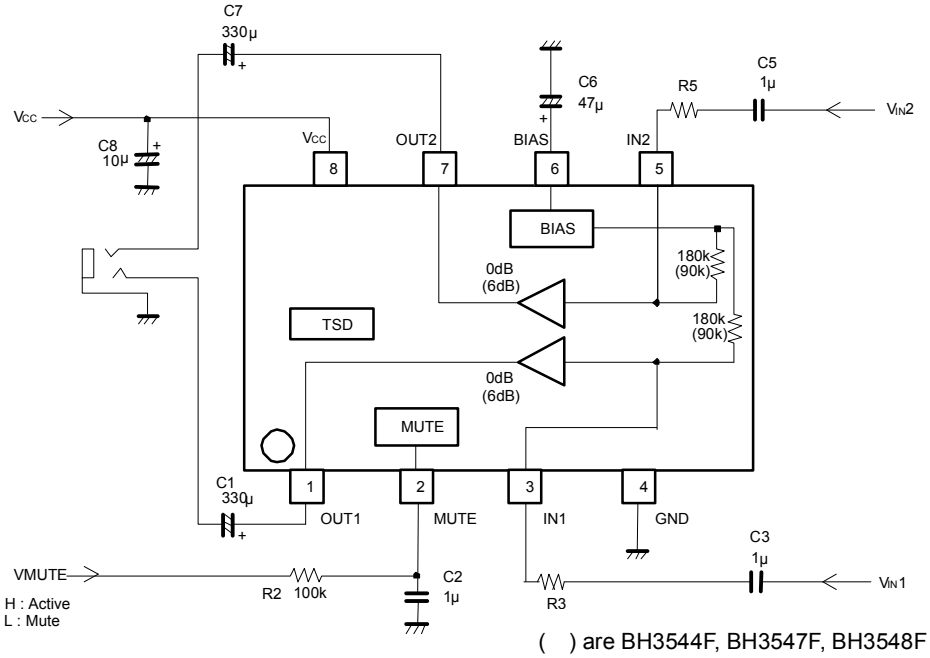
Pin No.	Pin Name	I /O	Pin voltage	Equivalent circuit		Function
				BH3544F,BH3547F,BH3548F	BH3547F	
1 7	OUT1 OUT2	O	2.1V (VCC=5V)			Output pin
2	MUTE	I	0.1V (When open)			Mute control pin Mute on:Hi Mute off:Lo (open)
3 5	IN1 IN2	I	2.1V (VCC=5V)			Input pin
6	BIAS	I/O	2.1V (VCC=5V)			Bias pin (Since the 47 μF externally attached capacitor also serves as the time constant for pop noise countermeasures, evaluate adequately when changing it.)
4	GND	I	-	-	-	GND pin
8	VCC	I	-	-	-	Power supply pin

※The figure in the pin explanation and input/output equivalent circuit is reference value, it doesn't guarantee the value.

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●**Application circuit**



( ) are BH3544F, BH3547F, BH3548F values.

Fig. 15

●**Description of external components.**

1) Input coupling capacitors (C3, C5)
These are determined according to the lower cutoff frequency fc. Moreover, since lowering the capacitance can cause the occurrence of pop noise, when changing this, determine it after adequate checking.
Since the input impedance of the BH3541F is 180kΩ and that of the BH3544F,BH3547F,BH3548F is 90kΩ, these are found by the expressions below, although drift, temperature characteristics, and other considerations are necessary. (Layered ceramic capacitors are recommended.)
C3(C5)=1/(2π×180kΩ×fc) [BH3541F]
C3(C5)=1/(2π× 90kΩ×fc) [BH3544 F ,BH3547F,BH3548F]

2) Bias capacitor (C6)
When VCC=5V, 47µF is recommended. Since lowering the capacitance too much can cause worsening of electrical characteristics or the occurrence of pop noise, when changing this, determine it after checking this adequately.

3) Mute pin pop noise countermeasures (R2, C2)
Since the BH3541F,BH3544F,BH3548F has an impedance of 190kΩ against GND and the BH3547F has 200kΩ, it may be impossible to cancel mute mode if R2 is made too large.

4) Output coupling capacitors (C1, C7)
These are determined by the lower cutoff frequency. If R_L is the output load resistance (assuming a resistance R_X is put in for output protection or current restriction), these are found by the expression below.
C1(C7)=1/(2π×(R_L+R x)× fc)

5) Input gain adjustment resistances (R3, R5) (BH3544F,BH3547F)
Externally attached resistances (R3, R5) make input gain adjustment possible. The gain found by the expression below can be set.
G_{VC}=6+20log(90kΩ/(90kΩ+R3[R5])) [dB]
When input gain is not accommodated, these resistors have no use.

●**Notes for use**

1) Numbers and data in entries are representative design values and are not guaranteed values of the items.
2) Although we are confident in recommending the sample application circuits, carefully check their characteristics further when using them. When modifying externally attached component constants before use, determine them so that they have sufficient margins by taking into account variations in externally attached components and the Rohm LSI, not only for static characteristics but also including transient characteristics.
3) Absolute maximum ratings
If applied voltage, operating temperature range, or other absolute maximum ratings are exceeded, the LSI may be damaged. Do not apply voltages or temperatures that exceed the absolute maximum ratings. If you think of a case in which absolute maximum ratings are exceeded, enforce fuses or other physical safety measures and investigate how not to apply the conditions under which absolute maximum ratings are exceeded to the LSI.

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4) GND potential
Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.
5) Thermal design
Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation in actual states of use.
6) Shorts between pins and misinstallation
When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI. If it is misinstalled and the power is turned on, the LSI may be damaged. It also may be damaged if it is shorted by a foreign substance coming between pins of the LSI or between a pin and a power supply or a pin and a GND.
7) Operation in strong magnetic fields
Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.
8) Pop noise countermeasures
In order to prevent the pop noise that occurs when the power supply turns ON or OFF, make the rise and fall with reference to the timing diagram shown below.

1)BH3541F/ BH3544F/ BH3548F

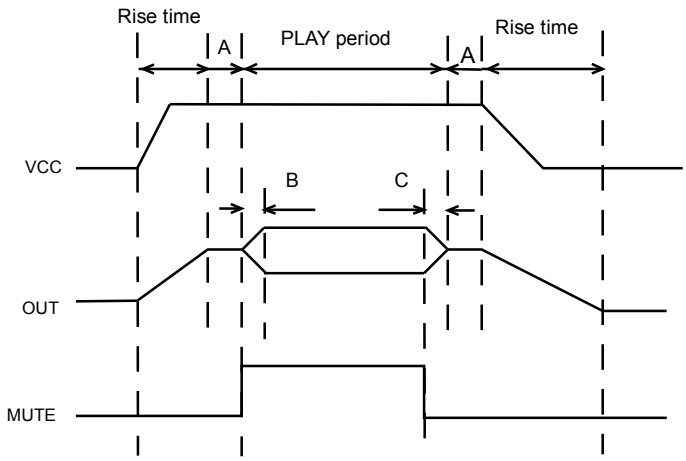


Fig. 16

(A):Mute period (Use as pop noise countermeasure when power supply turns ON/OFF by makingVMUTE=Lo.)
(B):Mute cancellation period (This has a time constant because it is used by the externally attached C2 and R2 as a pop noise countermeasure on mute cancellation, so be careful of the timing.)
(C):Mute start time (As on cancellation, this has a time constant.)

2)BH3547F

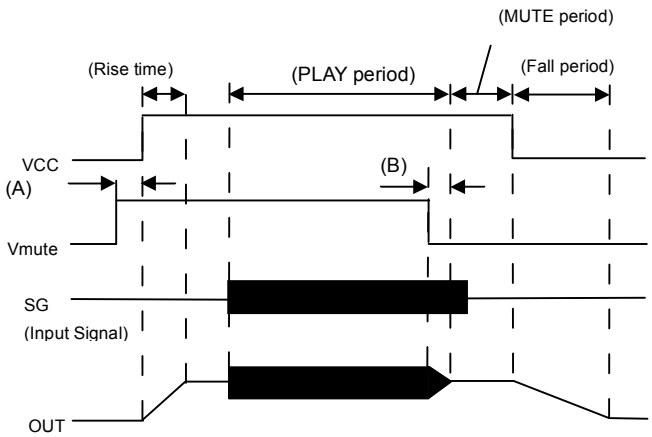


Fig. 17

(A):Before VCC rise (or at the same time as VCC) make mute cancelled (VMUTE=Hi).
(B):Soft mute period (This time can be set by externally attached R2 and C2)

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●**Ordering part number**

B	H	3	5	4	1	F	-	E	2

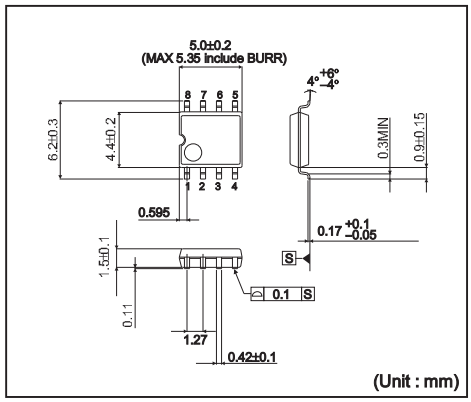
Part No.

Part No.
3541
3544
3547
3548

Package
F: SOP8

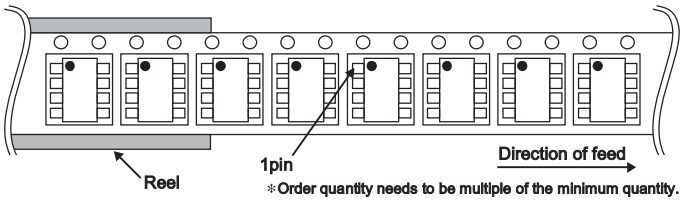
Packaging and forming specification
E2: Embossed tape and reel

SOP8



<Tape and Reel information>

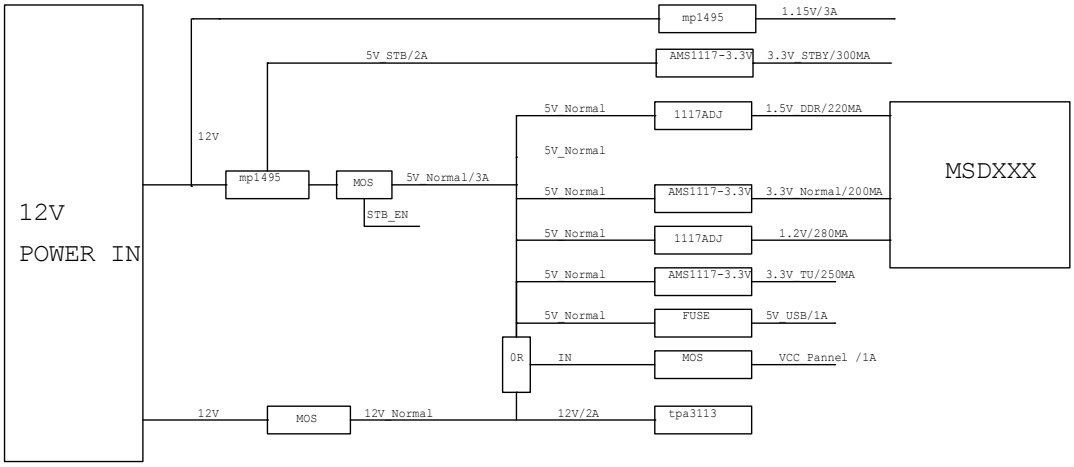
Tape	Embossed carrier tape
Quantity	2500pcs
Direction of feed	E2 (The direction is the 1pin of product is at the upper left when you hold reel on the left hand and you pull out the tape on the right hand)

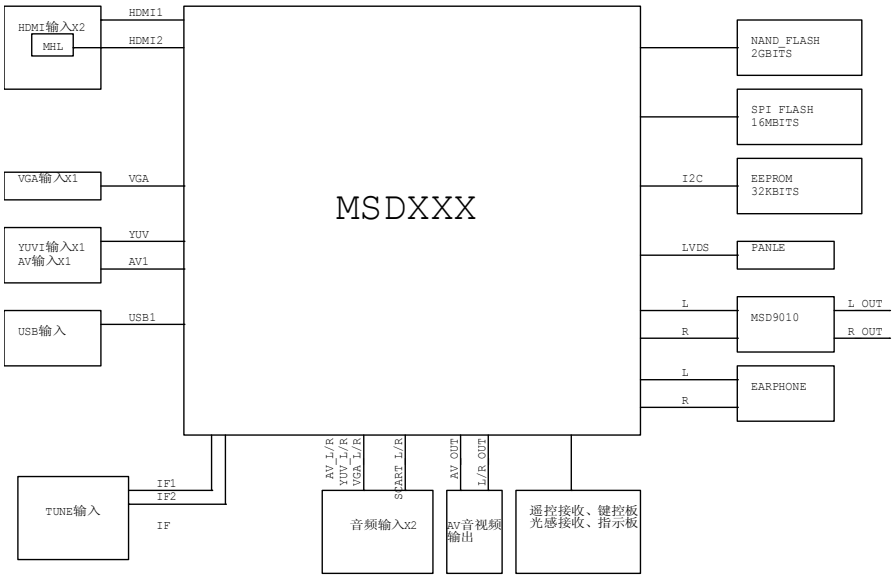


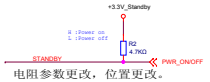
＊Order quantity needs to be multiple of the minimum quantity.

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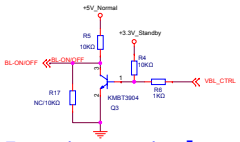
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12V
POWER IN
mp1495
1.15V/3A
5V_STB/2A
AMS1117-3.3V
3.3V_STBY/300MA
12V
mp1495
MOS
5V_Normal/3A
STB_EN
5V_Normal
1117ADJ
1.5V_DDR/220MA
5V_Normal
AMS1117-3.3V
3.3V_Normal/200MA
5V_Normal
1117ADJ
1.2V/280MA
5V_Normal
AMS1117-3.3V
3.3V_TU/250MA
5V_Normal
FUSE
5V_USB/1A
0R
IN
MOS
VCC_Pannel /1A
12V
MOS
12V_Normal
12V/2A
tpa3113
MSDXXX

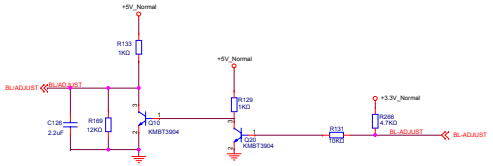

HDMI输入X2
MHL
HDMI1
HDMI2
VGA输入X1
VGA
YUVI输入X1
AV输入X1
YUV
AV1
USB输入
USB1
MSDXXX
NAND_FLASH
2GBITS
SPI_FLASH
16MBITS
I2C
EEPROM
32KBITS
LVDS
PANLE
L
R
MSD9010
L_OUT
R_OUT
L
R
EARPHONE
TUNE输入
IF1
IF2
IF
AV_L/R
YUV_L/R
VGA_L/R
SCART_L/R
音频输入X2
AV_OUT
L/R_OUT
AV音视频
输出
遥控接收、键控板
光感接收、指示板



电阻参数更改，位置更改。



Inverter controler

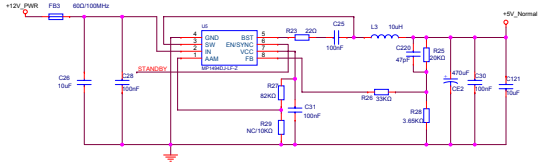




改LG PANEL
掉电屏闪

5、+12V_PWR转+5V_NOR（2A）

MHL做待机充电时，选用1495，无待机充电时，选用1494.



R6	R1	R2	Vout
10K	20K	3.6K	5.0V
33K	11.25K	3.6K	3.3V
33K	5.15K	3.6K	1.5V
33K	3.9K	3.6K	1.2V

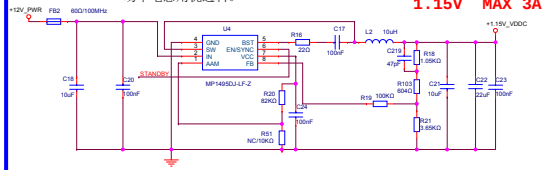
Vout=0.8x(1+(R1/R2))
R1=R2P8
R2=R3P8
Rt=R3P3

说明：1、该电路当前的参数是输出+5V_NOR.
如果要输出其他电压，如3.3V;1.5V;1.2V可以
按照表格里的参数调整R1和R2的大小就可以了
2、PCB排版时输入电容和输出电容尽量靠近IC
PCB排版时储能电感要尽量靠近IC
3、通过增大输入和输出电容的容量可以减小纹波的大小
选择小ESR值的电容也可以减小纹波的大小

1.15V 2A for VDDC

反馈电阻参数更改。
功率电感用优选料。

1.15V MAX 3A

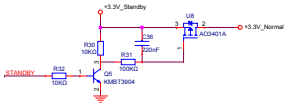


R6	R1	R2	Vout
10K	20K	3.6K	5.0V
33K	11.25K	3.6K	3.3V
33K	5.15K	3.6K	1.5V
100K	1.60K	3.60K	1.15V

Vout=0.8x(1+(R1/R2))
R1=R2P8 Rt=R3P3
R2=R3P8

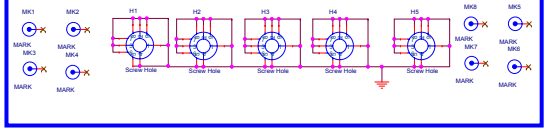
2、PCB排版时输入电容和输出电容尽量靠近IC
PCB排版时储能电感要尽量靠近IC
3、通过增大输入和输出电容的容量可以减小纹波的大小
选择小ESR值的电容也可以减小纹波的大小

5V NORMAL SW(OK)

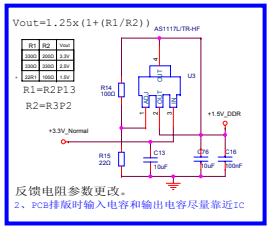


If power input has change,
this part will do option

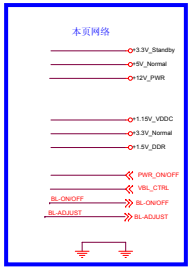
Test Point & MARK(OK)

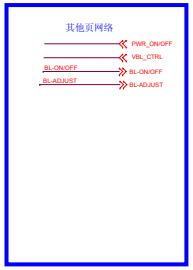


1.5V Power for DDR3(OK)

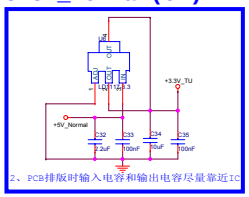


反馈电阻参数更改。
2、PCB排版时输入电容和输出电容尽量靠近IC

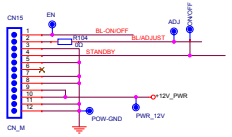




3.3V_Normal(ok)



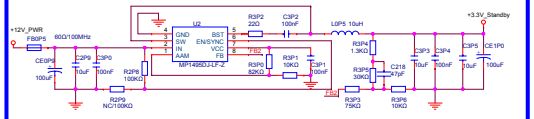
2、PCB排版时输入电容和输出电容尽量靠近IC



5、+12V_NOR转+3.3V_STB（3A）

（DC-DC价格0.13USD 规格标称最大3A 500KHZ 输入电压范围4.5V-16V 轻载高效 优选）

考虑到DC-DC的启开问题，，输出为5V时，最大负载不能超过2.4A



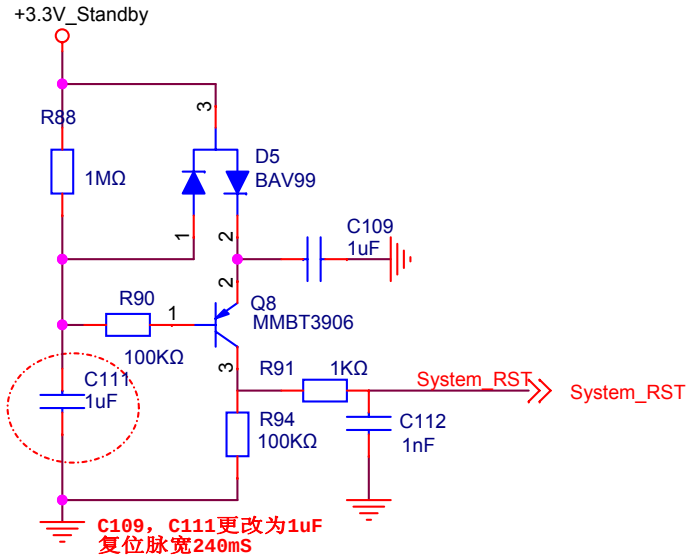
说明：1、该电路当前的参数是输出+5V_NOR. 如果要输出其他电压，如3.3V;2.5V;1.5V可以按照表格里的参数调整R1和R2的大小就可以了
2、PCB排版时输入电容和输出电容尽量靠近IC PCB排版时储能电感要尽量靠近IC
3、通过增大输入和输出电容的容量可以减小纹波的大小 选择小ESR值的电容也可以减小纹波的大小
4、输入输出电容的材质推荐使用X5R或者X7R,不能使用Y5V材质,注意耐压值.
5、模块成本仅供参考,受元器件价格及汇率影响会有变化(成本统计时间20140103)
6、EN端的电压根据实际使用的需要可以进行调整

Vout=0.807x(1+(R1/R2))
R1=R3P4+R3P5 R2=R3P6 Rt=R3P3 L=L0P5

R1(推荐编号)	R2(推荐编号)	R3(推荐编号)	Vout	L(推荐编号)	最大负载	输入电压
R10S-CA3135-2200[1]0[2]+R10S-CA3825-2200[1].0[2]	R10S-CA3135-2201[1]0[2]	R10S-CA4530-2201[1]75[2]	5.0V	R10S-CA3135-4R7[1]0[2]	2.4A	
R10S-CA3030-2200[1]20[2]+R10S-CA3125-2200[1].20[2]	R10S-CA3135-2201[1]0[2]	R10S-CA4530-2201[1]75[2]	3.3V	R00S-3115K-4R7[1]0[2]	3A	1.365RMB
R10S-CA3030-2200[1]20[2]+R10S-CA3125-2200[1]20[2]	R10S-CA3135-2201[1]0[2]	R10S-CA4530-2201[1]75[2]	2.5V	R00S-3123K-3R3[1]0[2]	2.6A	
R10S-CA3030-2200[1].20[2]+R10S-CA3125-2200[1].20[2]	R10S-CA3135-2201[1]0[2]	R10S-CA4530-2201[1]75[2]	1.8V	R00S-3123K-3R3[1]0[2]	2.7A	
R10S-CA3030-2200[1].30[2]+R10S-CA3125-2200[1].30[2]	R10S-CA3135-2201[1]0[2]	R10S-CA4530-2201[1]75[2]	1.5V	R00S-3123K-3R3[1]0[2]	2.6A	1.36RMB
R10S-CA3120-2200[1].20[2]+R10S-CA3625-2200[1]0[2]	R10S-CA3135-2201[1]0[2]	R10S-CA4530-2201[1]75[2]	1.2V	R00S-3123K-3R3[1]0[2]	2.9A	

File	SYSTEM POWER		
Size	Document Number		Rev
D			1.0
Date:	Wednesday, September 17, 2014	Sheet 1 of 13	

RESET



本页网络

System_RST → System_RST

其他页网络

System_RST → System_RST

Title <Title>		
Size A	Document Number <Doc>	Rev <RevCode>
Date: Tuesday, May 06, 2014	Sheet 1 of 1	

video

RGB Interface

VGA

YPBPR

AV Interface

HDMI & Audio

Audio Line IN

Audio Line Out

NAND & CI & TS & Front End

GPIO & LVDS

POWER&GND

Mode Selection

Crystal

NOTE:晶体两端需要各一个30PPM

CLKOUT0/1/3

C1

detect NAND Flash Power

IR&Key_CONNECT

使用物料5400-991128-0800，请注意封装是否相同

RF

Other

DEBUG

heat sink

Standby Power 3.3V

Normal Power 3.3V

CORE POWER

DDR3 POWER

nodie

Close to MST IC

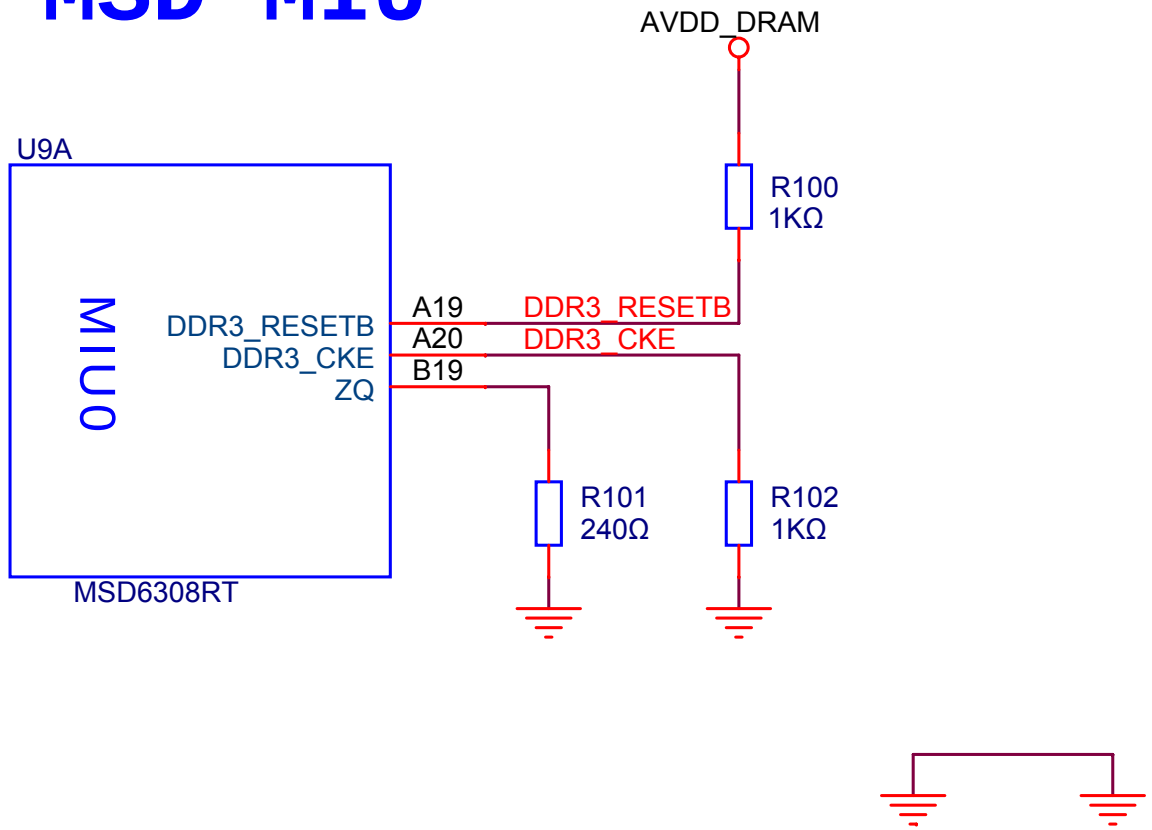
Close to MSTAR IC with width trace

Close to MSTAR IC

Close to MST IC with wide trace

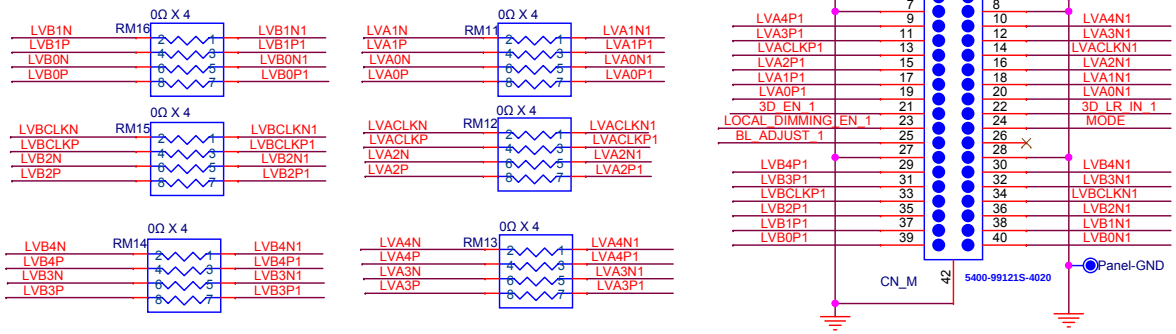
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Size	Document Number
Date	Sheet of

MSD MIU

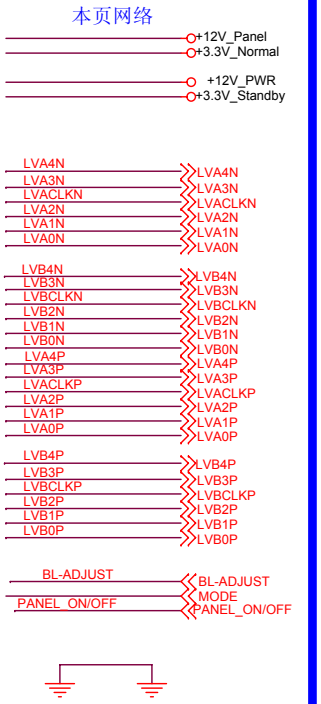


Title: D RAM		
Size: Custom	Document Number	Rev: 1.0
Date: Wednesday, September 17, 2014	Sheet 3 of 13	

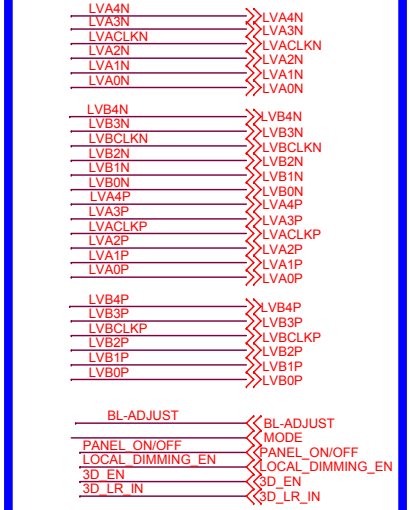
SZ LVDS Connector

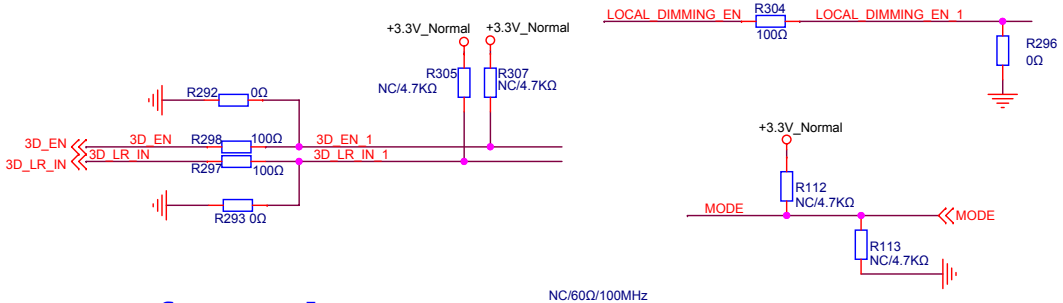


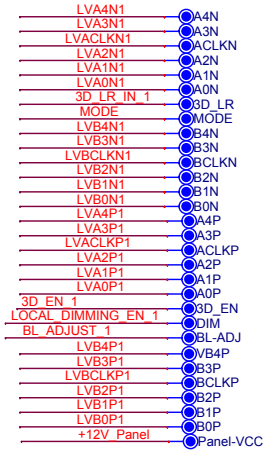
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其他页网络

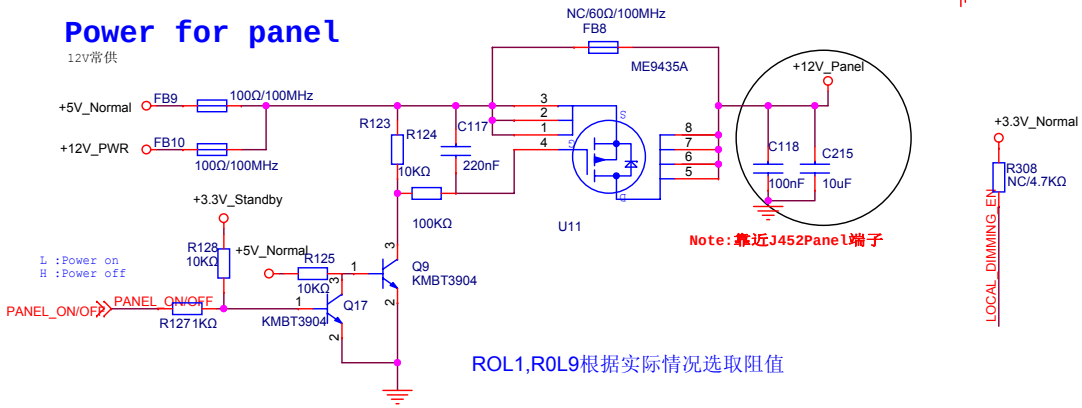






Power for panel

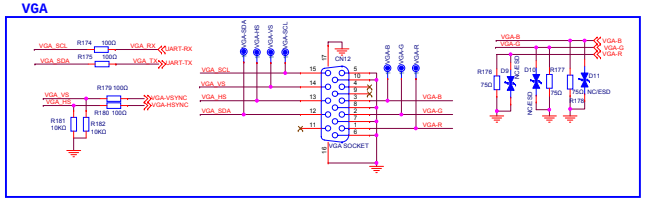
12V常供



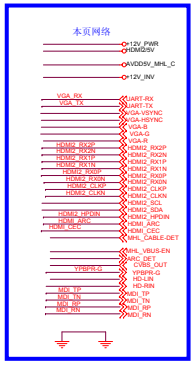


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Size: B	Document Number	Rev: 1.0
Date: Wednesday, September 17, 2014	Sheet 4 of 13	

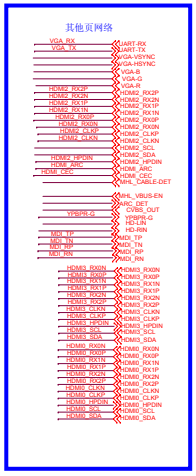
VGA



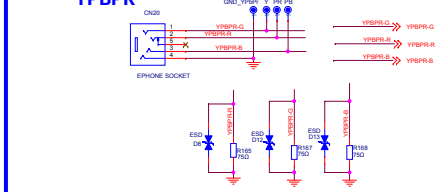
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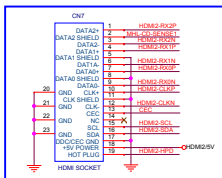
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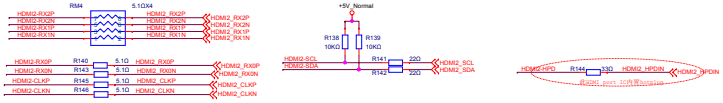
YPBPR



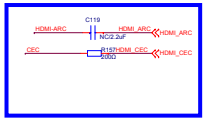
MHL HDMI1



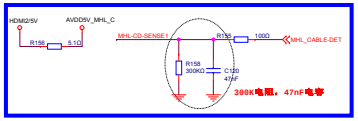
靠近IC放置(OK)



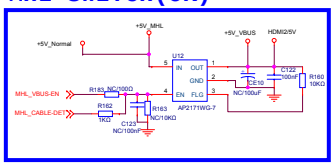
CEC & ARC



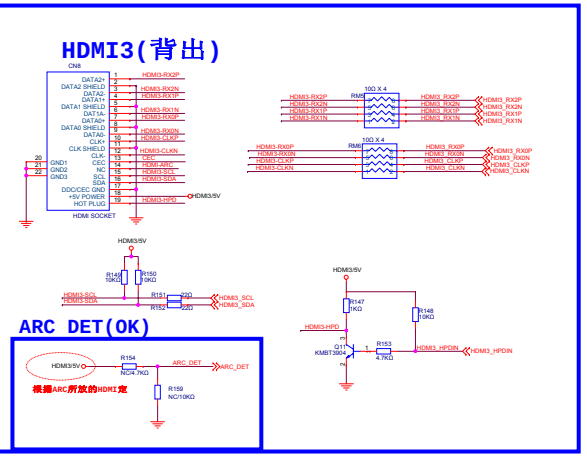
MHL



MHL SWITCH(OK)

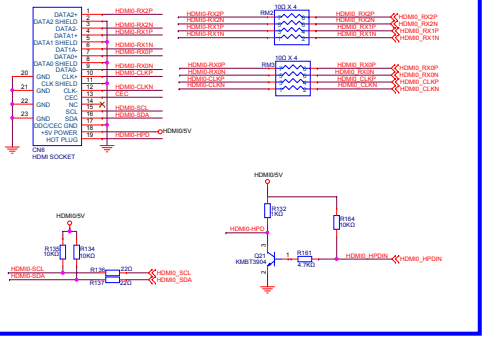


HDMI3(背出)

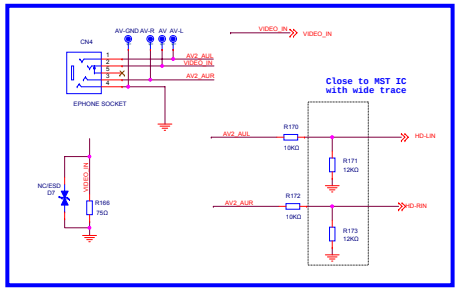


ARC DET(OK)

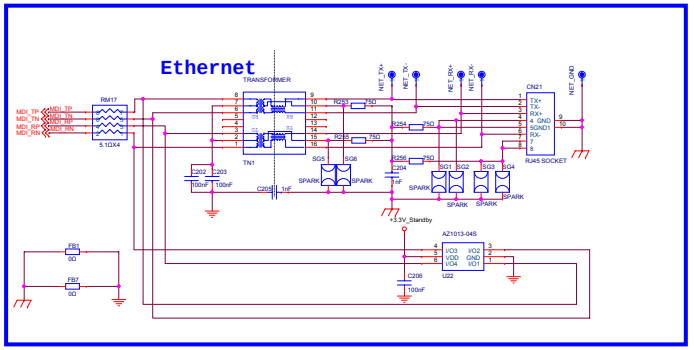
HDMI2

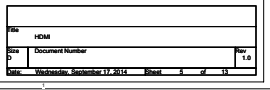


AV-IN(OK)



Ethernet





USB POWER

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+5V_Normal +5V_USB

USB1_DM USB1_DP → USB1_DM USB1_DP

USB0_DM USB0_DP → USB0_DM USB0_DP

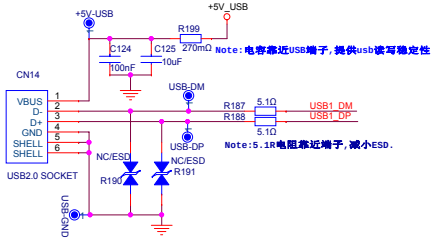
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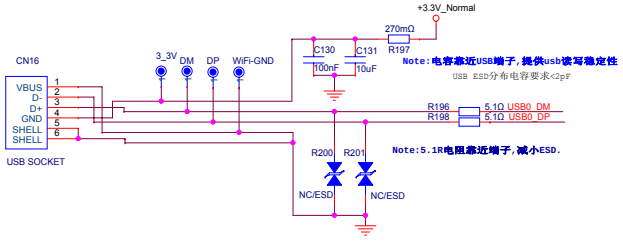
USB1_DM USB1_DP → USB1_DM USB1_DP

USB0_DM USB0_DP → USB0_DM USB0_DP

+3.3V_Normal

USB2.0 INTERFACE





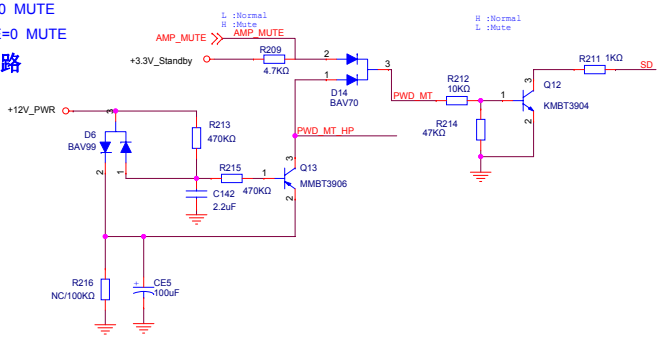
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Size C	Document Number	Rev 1.0
Date: Wednesday, September 17, 2014	Sheet 8 of 13	

MUTE CONTROL

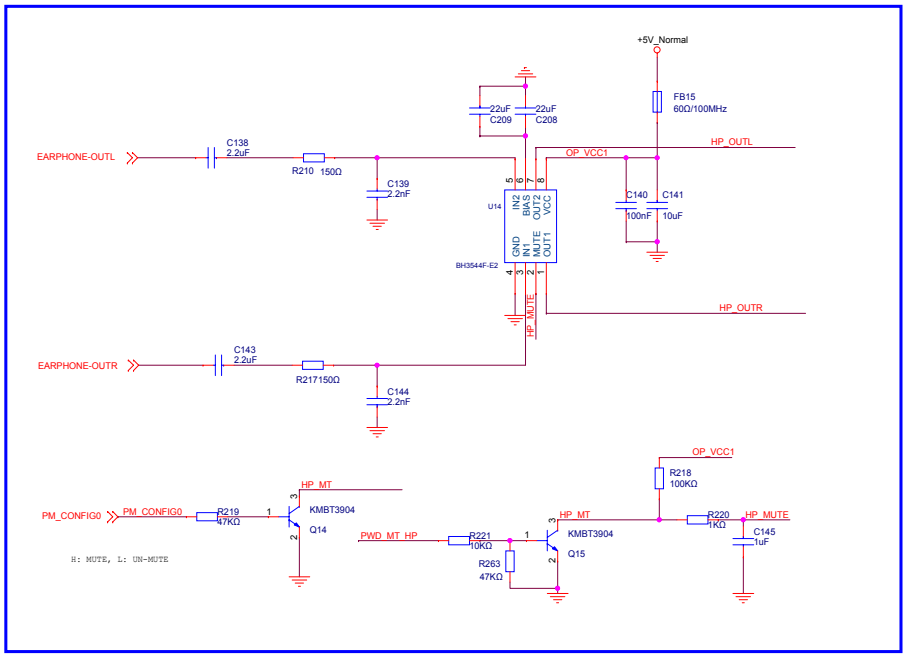
AMP_RST=0 MUTE

AMP_MUTE=0 MUTE

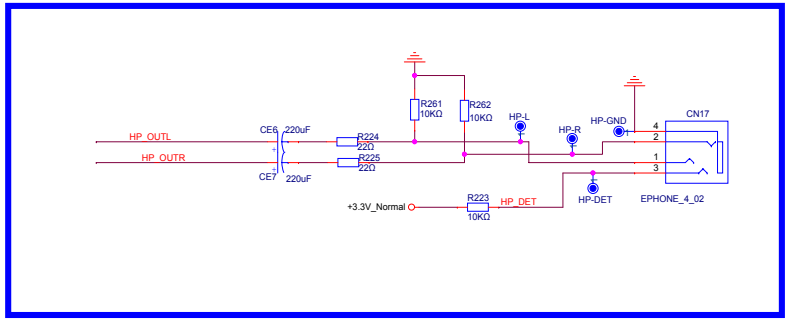
静音电路



HeadPhone Out



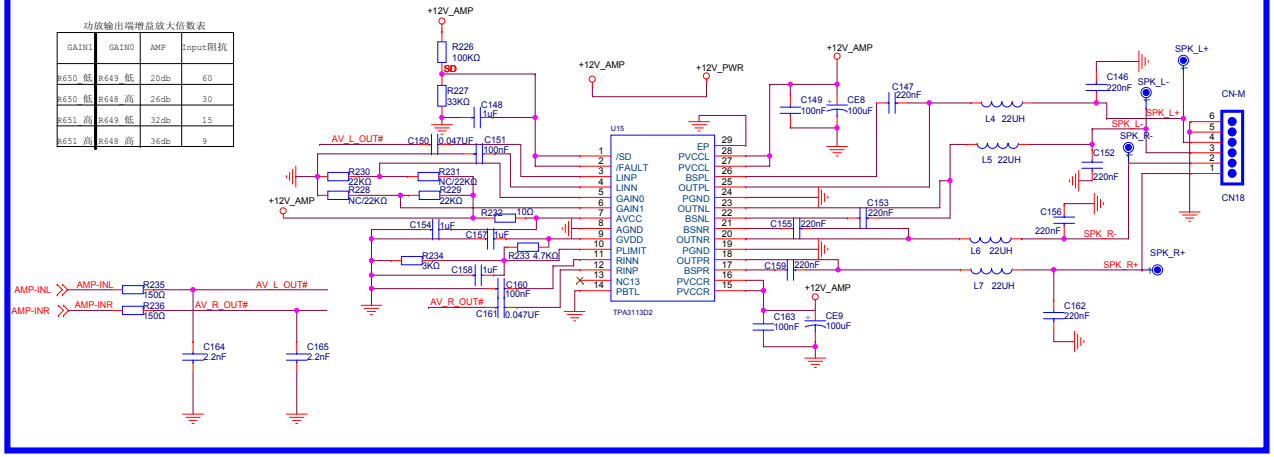
EARPHONE OUT



AUDIO AMP

功放输出端增益放大倍数表

GAIN1	GAIN0	AMP	Input阻抗
R650 低	R649 低	20db	60
R650 低	R648 高	26db	30
R651 高	R649 低	32db	15
R651 高	R648 高	36db	9



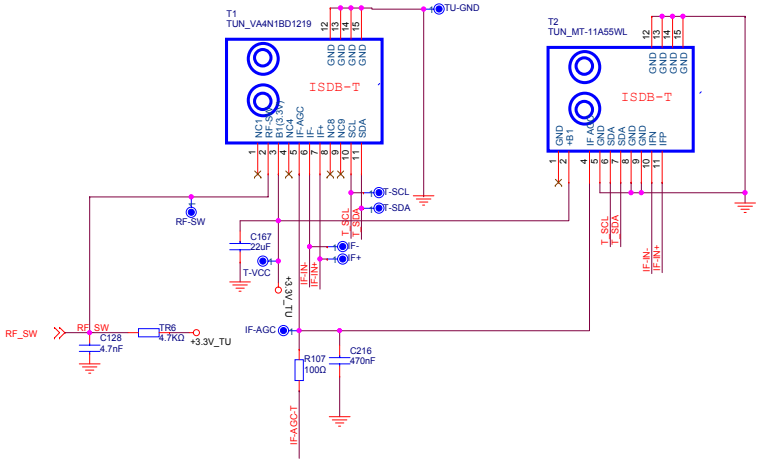
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+3.3V_Standby
+12V_PWR
+3.3V_Normal
AMP_MUTE
AMP_MUTE
HP_DET
HP_DET
EARPHONE-OUTL
EARPHONE-OUTR
PM_CONFIG0
AMP-INL
AMP-INR

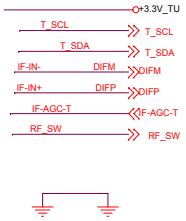
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AMP_MUTE
AMP_MUTE
HP_DET
HP_DET
EARPHONE-OUTL
EARPHONE-OUTR
PM_CONFIG0
AMP-INL
AMP-INR

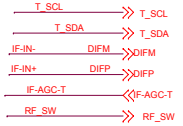
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Size C	Document Number	Rev 1.0
Date: Wednesday, September 17, 2014	Sheet 9 of 13	



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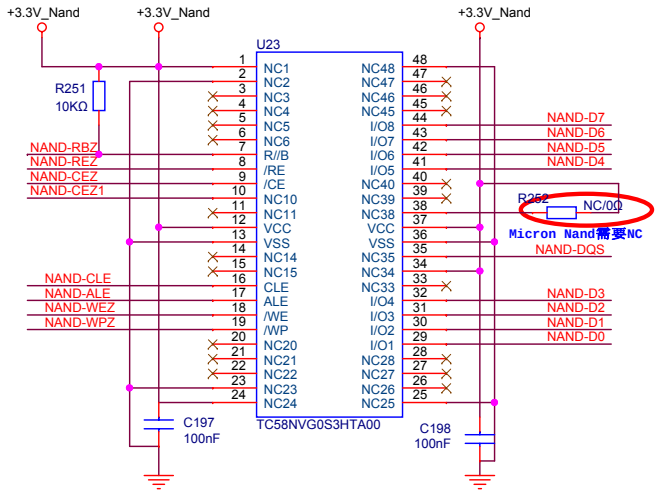


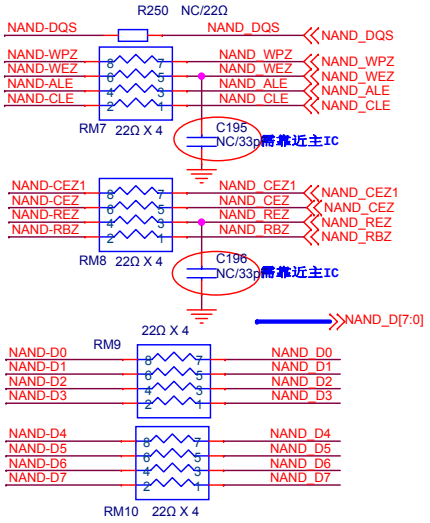
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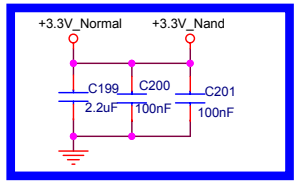


Title	TUNER	
Size C	Document Number	Rev 1.0
Date: Wednesday, September 17, 2014	Sheet 10 of 13	

NAND FLASH

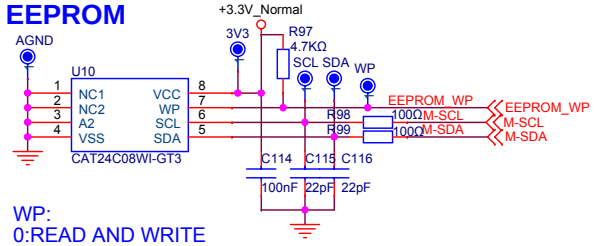






NAND Power

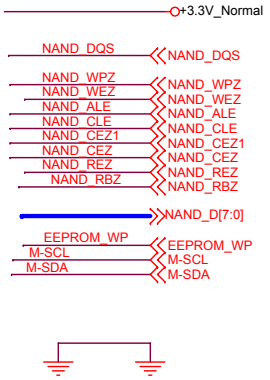
EEPROM



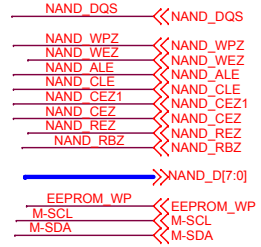
WP:
0:READ AND WRITE
1::WRITE PROTECT

4707-C24021-08
4707-M24C32-08
4707-24C640-08
4752-C24320-0080
47CJ-K24040-0080
47CJ-K24162-0080
47CJ-K24640-0080
47CJ-K24120-0080

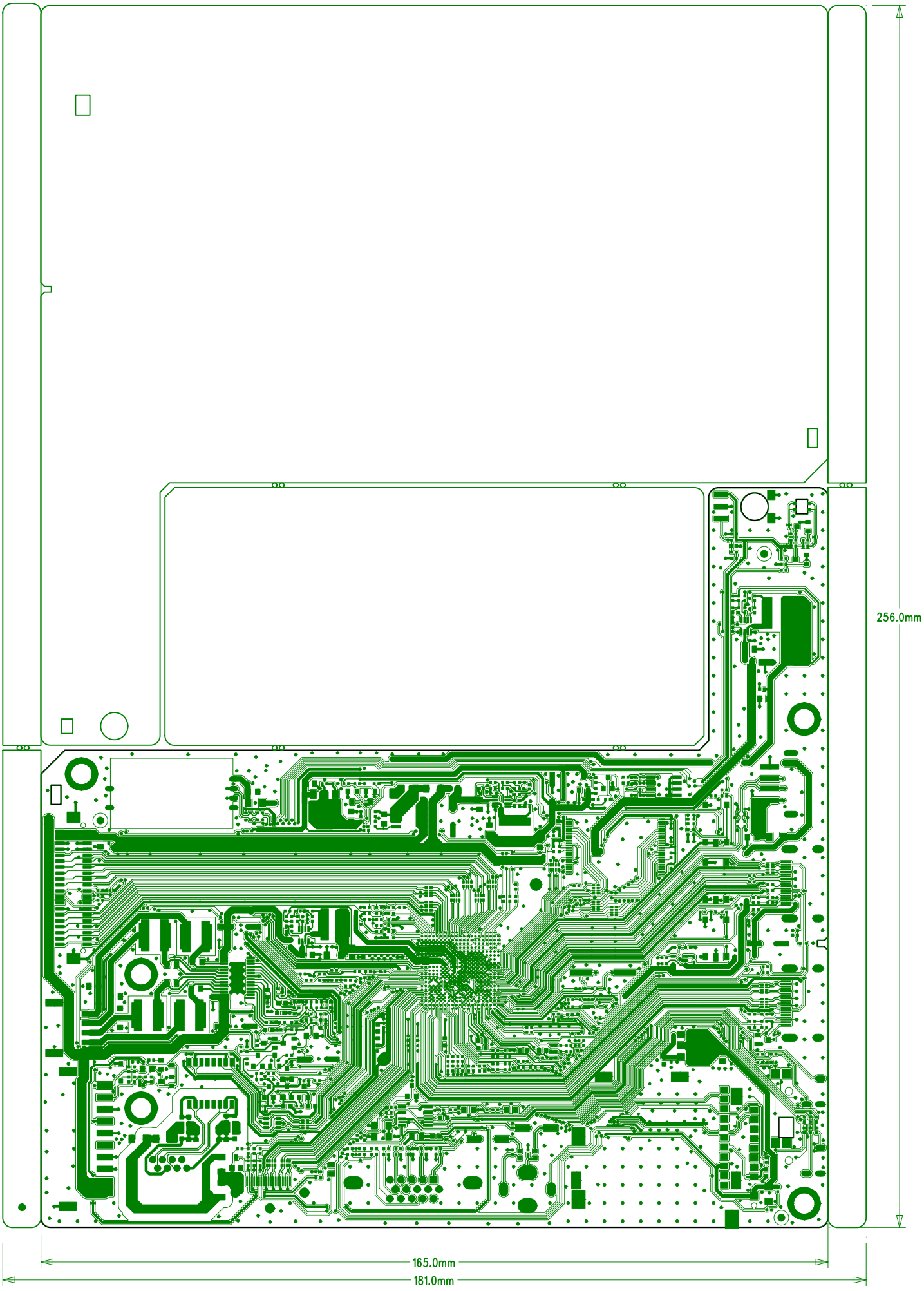
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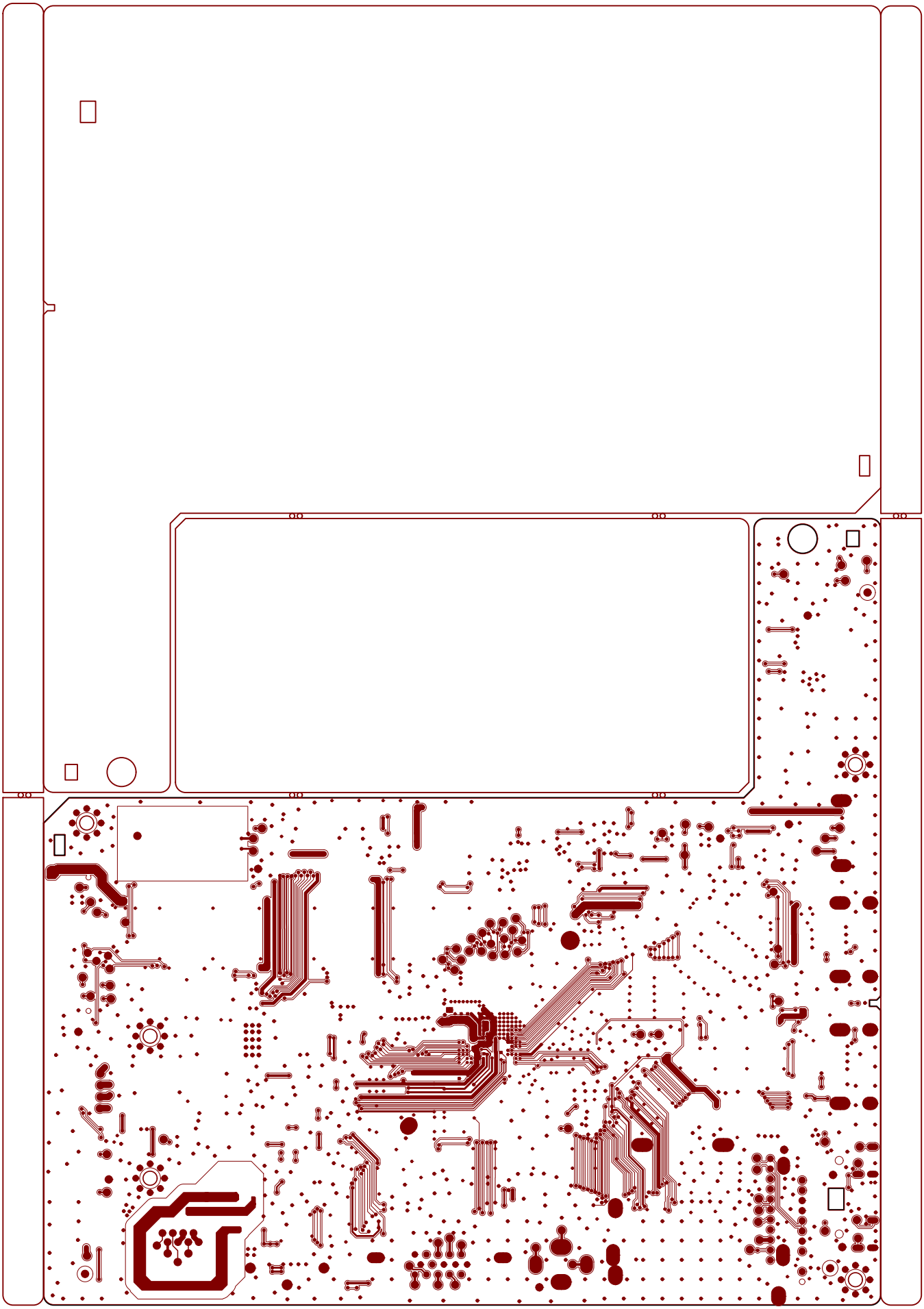


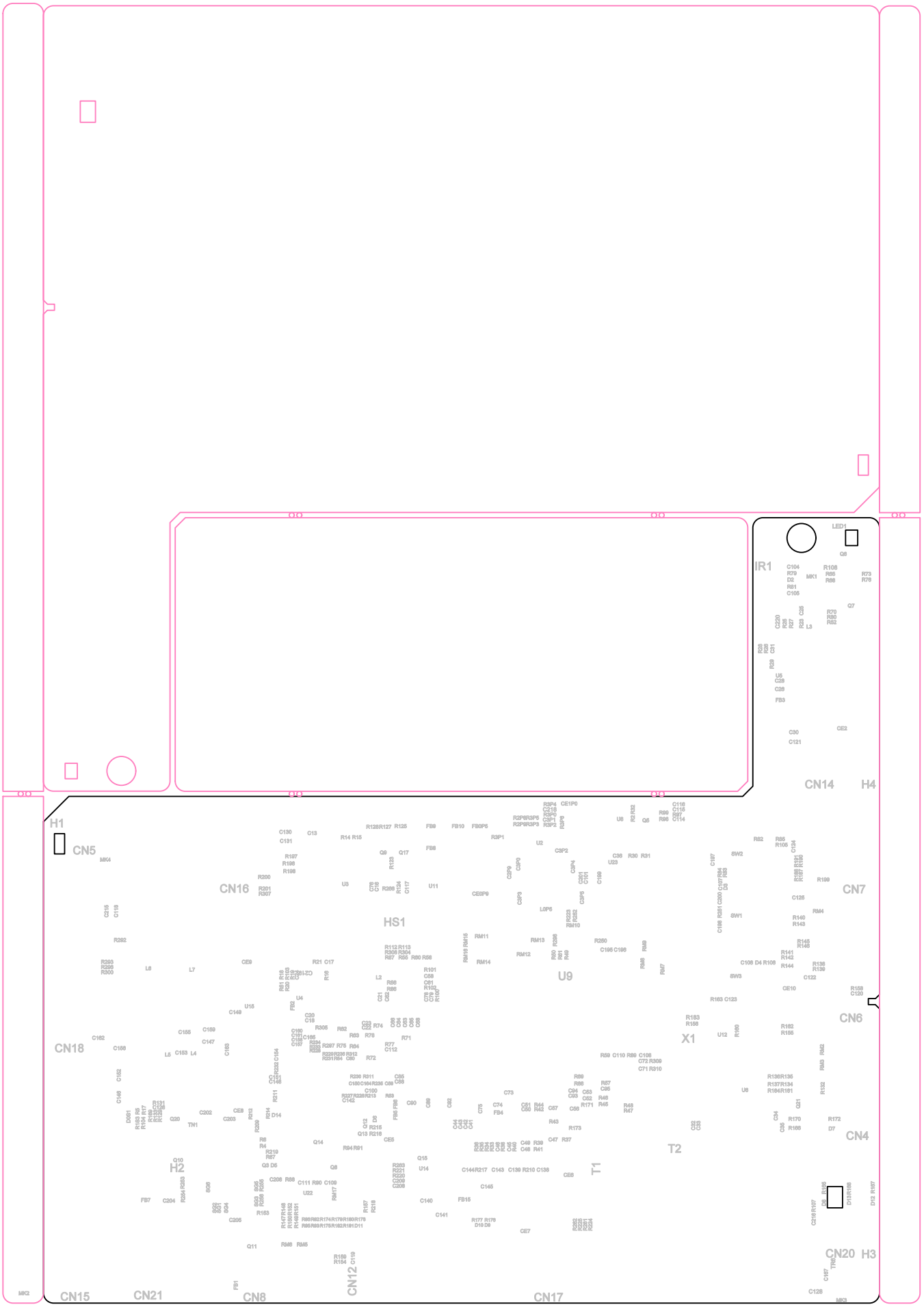
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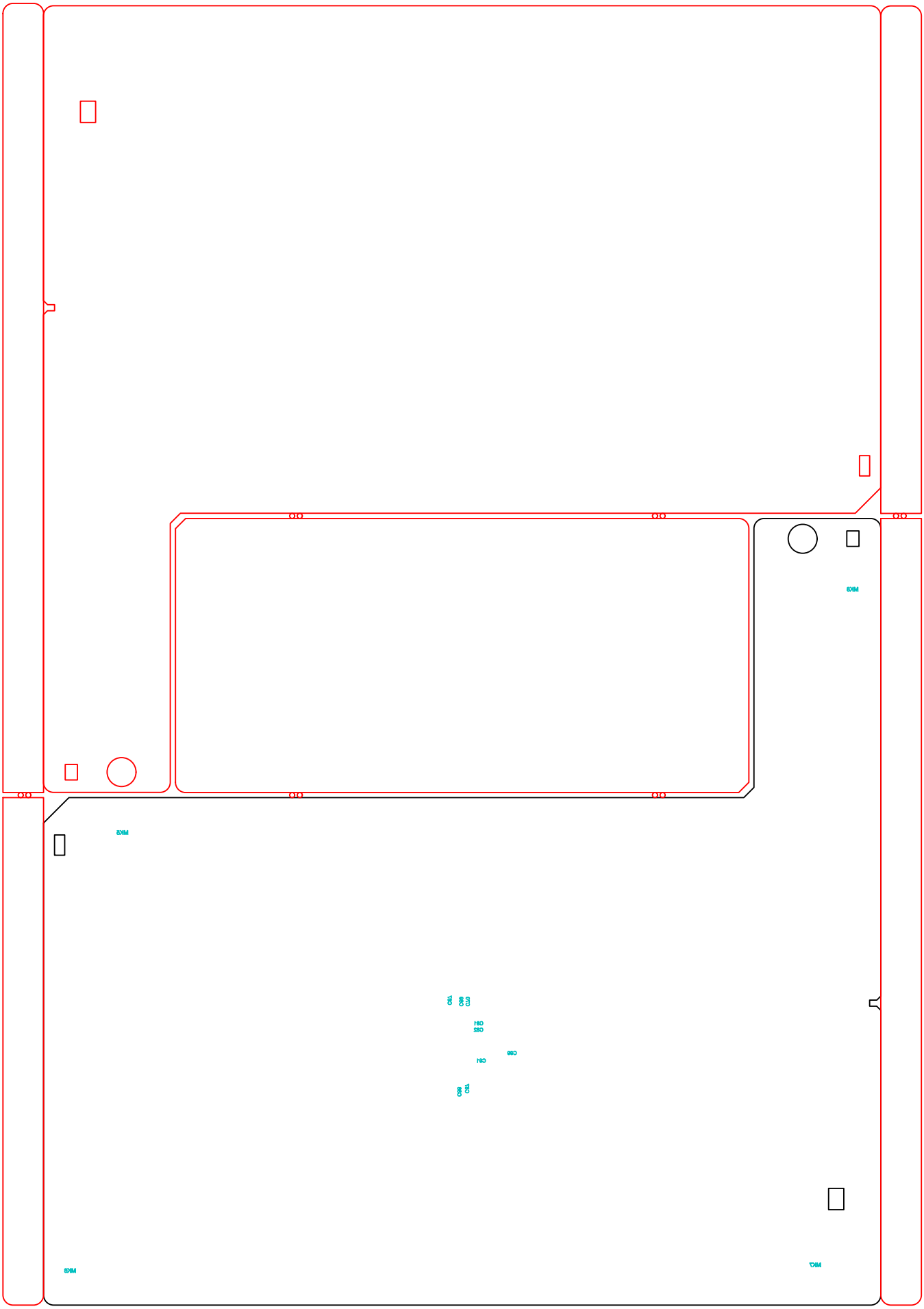


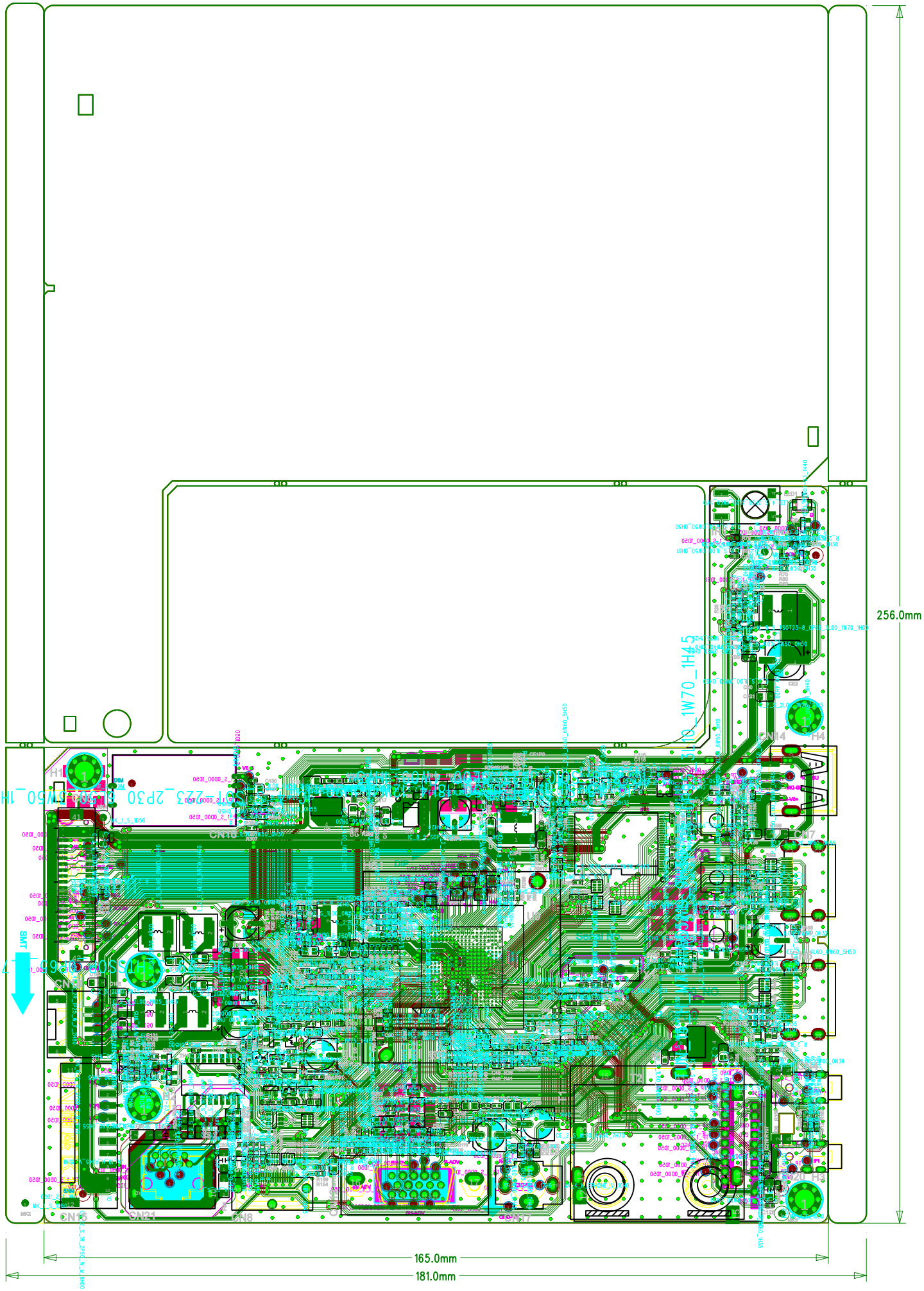
Title	NAND FLASH	
Size B	Document Number	Rev 1.0
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256.0mm
165.0mm
181.0mm




256.0mm
165.0mm
181.0mm
IR1
LED1
CN14
H4
H1
CN5
CN16
HS1
CN7
U9
CN18
X1
CN6
H2
T2
T1
CN4
CN20
H3
CN15
CN21
CN8
CN12
CN17




256.0mm
165.0mm
181.0mm