

LH185S93D LH216S93D SERVICE MANUAL

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POWER
CONNECTOR

INEVRTER
CONNECTOR

KEY&IR
CONNECTOR

LVDS
CONNECTOR

DVD-POWER
CONNECTOR

DVD
CONNECTOR

AMPLIFER
CONNECTOR

SW upgrad
CONNECTOR

HDMI

VGA

YPbPr

AV

VGA Audio In

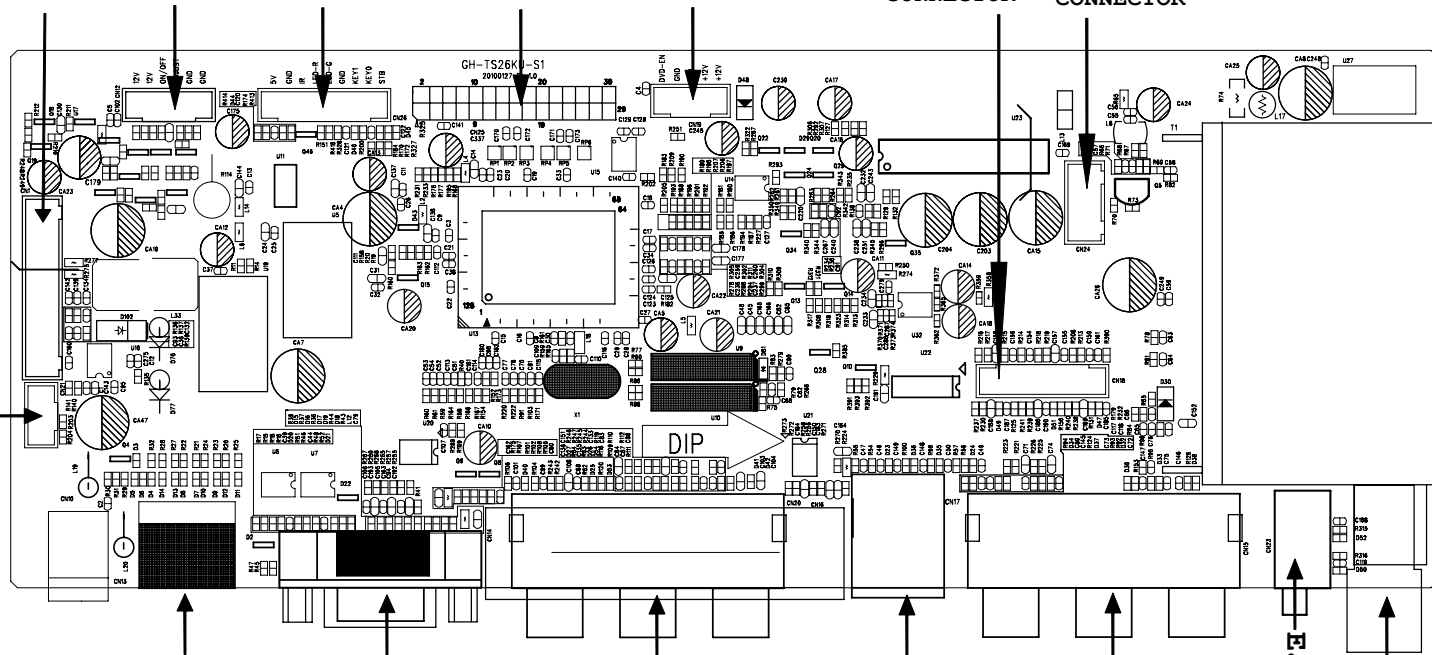
S-Video

YPbPr

AV

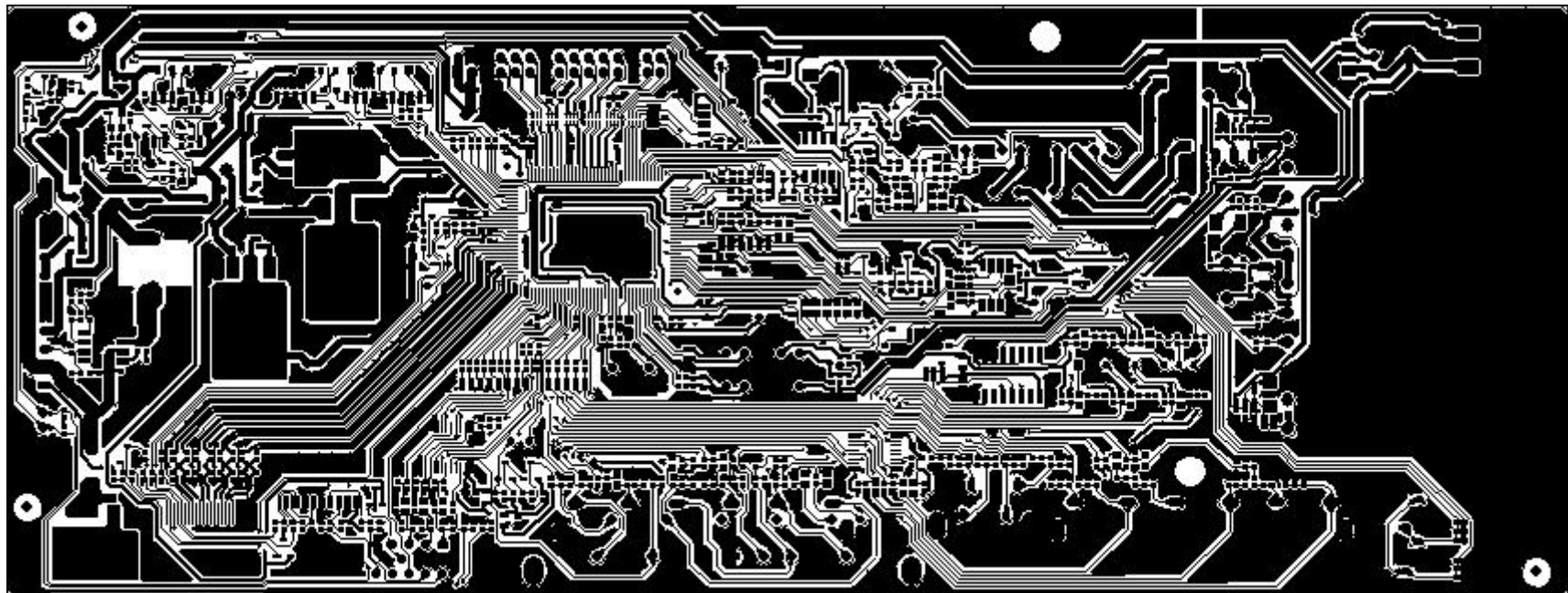
Earphone

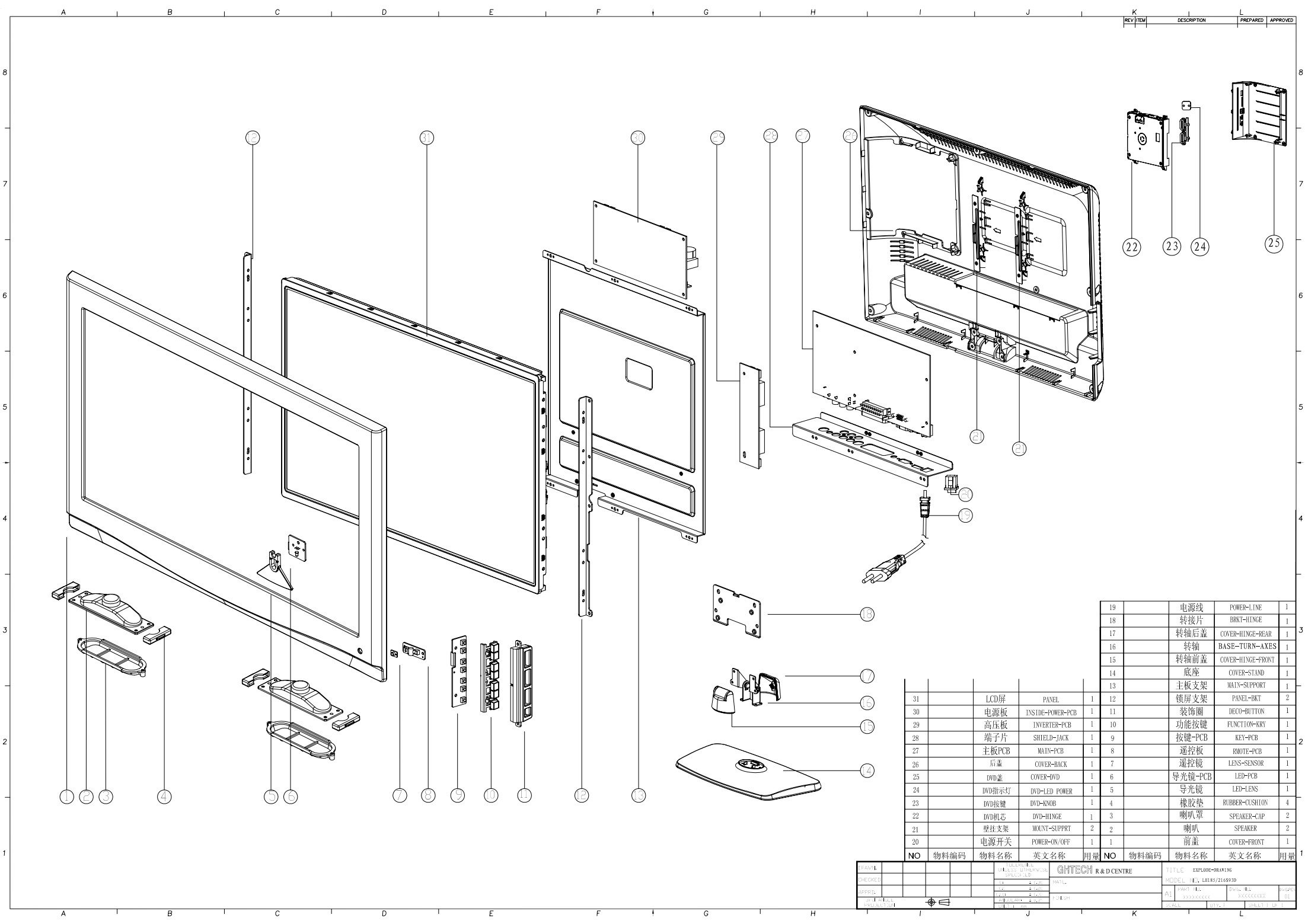
TUNER



Printed Circuit

TV Main Board (Top View)





REV	ITEM	DESCRIPTION	PREPARED	APPROVED
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19		电源线	POWER-LINE	1
18		转轴片	BRKT-HINGE	1
17		转轴后盖	COVER-HINGE-REAR	1
16		转轴	BASE-TURN-AXES	1
15		转轴前盖	COVER-HINGE-FRONT	1
14		底座	COVER-STAND	1
13		主板支架	MAIN-SUPPORT	1
31		LCD屏	PANEL	1
30		电源板	INSIDE-POWER-PCB	1
29		高压板	INVERTER-PCB	1
28		端子片	SHIELD-JACK	1
27		主板PCB	MAIN-PCB	1
26		后盖	COVER-BACK	1
25		DVD盖	COVER-DVD	1
24		DVD指示灯	DVD-LED POWER	1
23		DVD按键	DVD-KNOB	1
22		DVD机芯	DVD-HINGE	1
21		壁挂支架	MOUNT-SUPPT	2
20		电源开关	POWER-ON/OFF	1
12		锁屏支架	PANEL-BKT	2
11		装饰圈	DECO-BUTTON	1
10		功能按键	FUNCTION-KEY	1
9		按键-PCB	KEY-PCB	1
8		遥控板	RMOTE-PCB	1
7		遥控镜	LENS-SENSOR	1
6		导光镜-PCB	LED-PCB	1
5		导光镜	LED-LENS	1
4		橡胶垫	RUBBER-CUSHION	4
3		喇叭罩	SPEAKER-CAP	2
2		喇叭	SPEAKER	2
1		前盖	COVER-FRONT	1

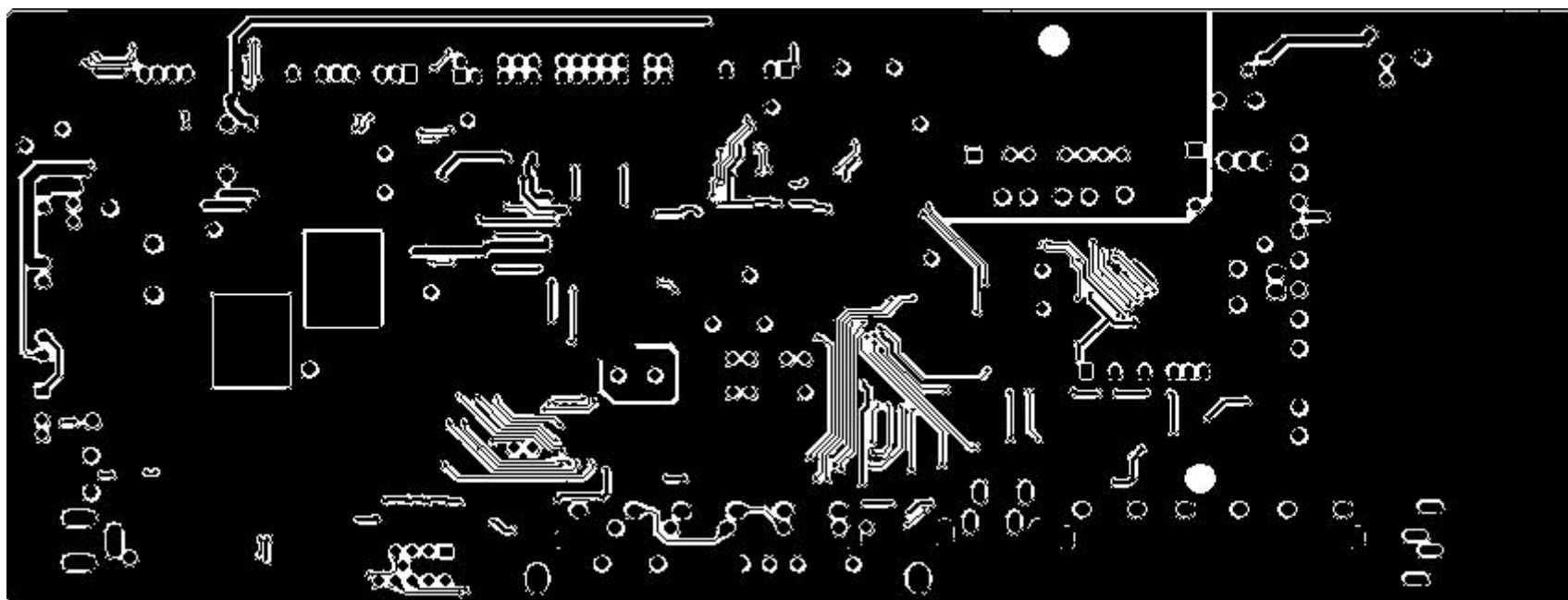
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31		LCD屏	PANEL	1	12		锁屏支架	PANEL-BKT	2
30		电源板	INSIDE-POWER-PCB	1	11		装饰圈	DECO-BUTTON	1
29		高压板	INVERTER-PCB	1	10		功能按键	FUNCTION-KEY	1
28		端子片	SHIELD-JACK	1	9		按键-PCB	KEY-PCB	1
27		主板PCB	MAIN-PCB	1	8		遥控板	RMOTE-PCB	1
26		后盖	COVER-BACK	1	7		遥控镜	LENS-SENSOR	1
25		DVD盖	COVER-DVD	1	6		导光镜-PCB	LED-PCB	1
24		DVD指示灯	DVD-LED POWER	1	5		导光镜	LED-LENS	1
23		DVD按键	DVD-KNOB	1	4		橡胶垫	RUBBER-CUSHION	4
22		DVD机芯	DVD-HINGE	1	3		喇叭罩	SPEAKER-CAP	2
21		壁挂支架	MOUNT-SUPPT	2	2		喇叭	SPEAKER	2
20		电源开关	POWER-ON/OFF	1	1		前盖	COVER-FRONT	1

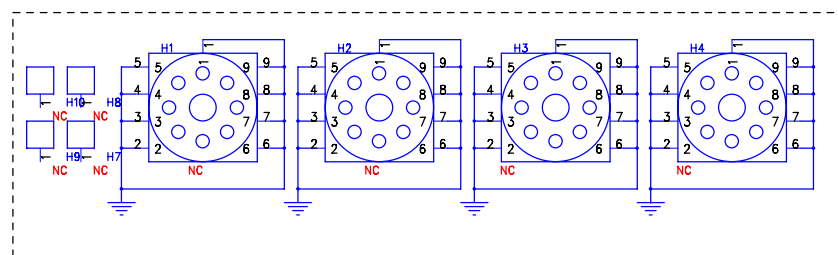
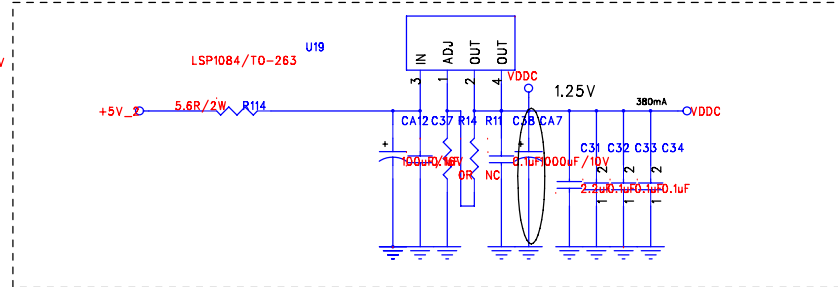
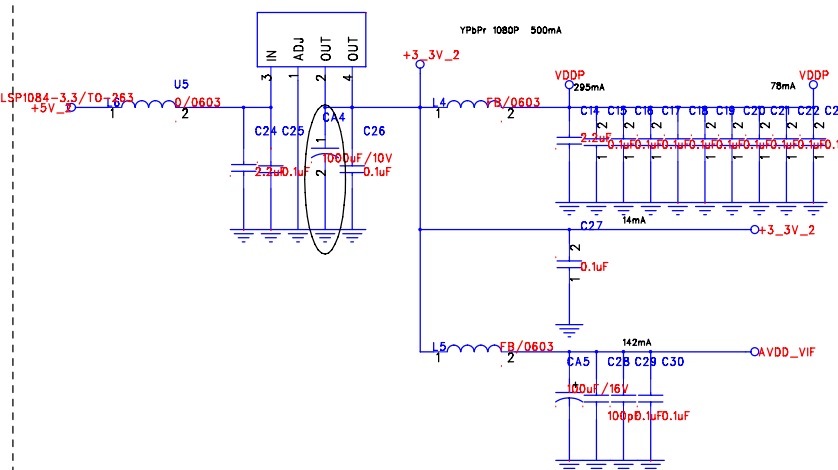
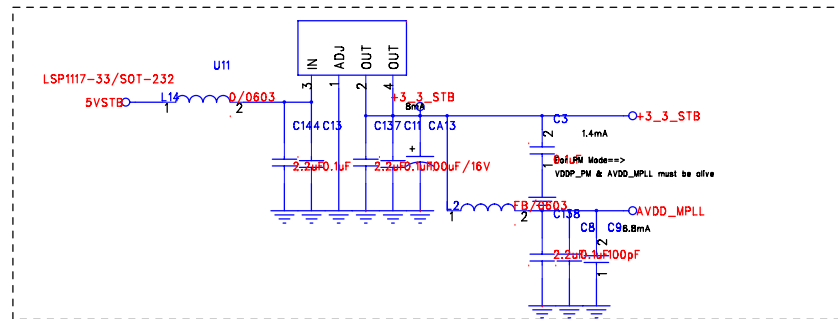
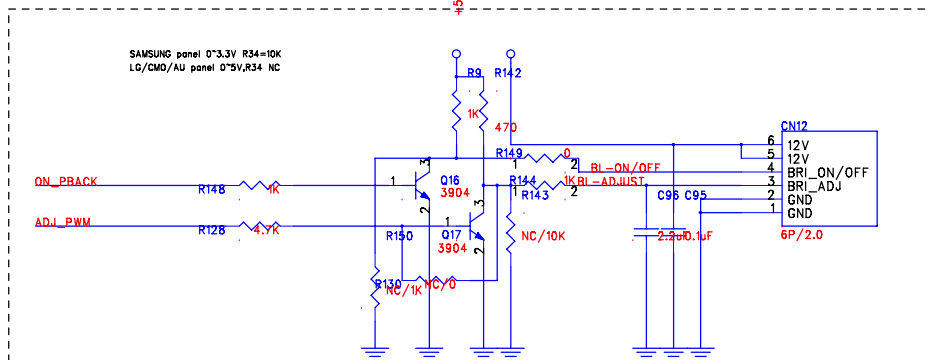
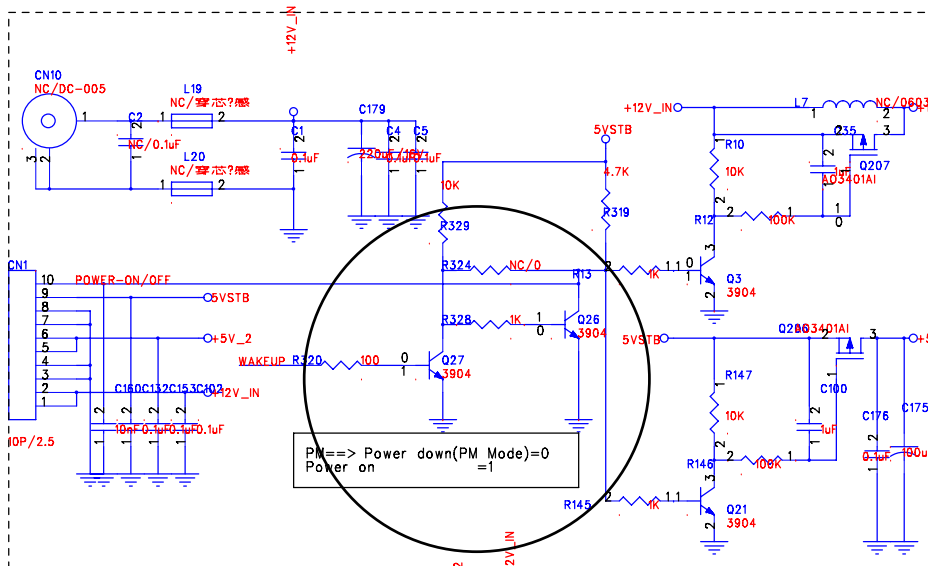
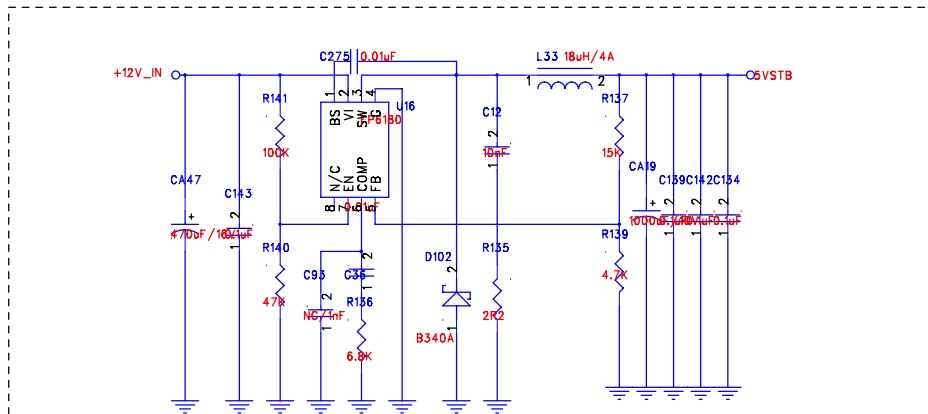
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NO	物料编码	物料名称	英文名称	用量	NO	物料编码	物料名称	英文名称	用量
31		LCD屏	PANEL	1	12		锁屏支架	PANEL-BKT	2
30		电源板	INSIDE-POWER-PCB	1	11		装饰圈	DECO-BUTTON	1
29		高压板	INVERTER-PCB	1	10		功能按键	FUNCTION-KEY	1
28		端子片	SHIELD-JACK	1	9		按键-PCB	KEY-PCB	1
27		主板PCB	MAIN-PCB	1	8		遥控板	RMOTE-PCB	1
26		后盖	COVER-BACK	1	7		遥控镜	LENS-SENSOR	1
25		DVD盖	COVER-DVD	1	6		导光镜-PCB	LED-PCB	1
24		DVD指示灯	DVD-LED POWER	1	5		导光镜	LED-LENS	1
23		DVD按键	DVD-KNOB	1	4		橡胶垫	RUBBER-CUSHION	4
22		DVD机芯	DVD-HINGE	1	3		喇叭罩	SPEAKER-CAP	2
21		壁挂支架	MOUNT-SUPPT	2	2		喇叭	SPEAKER	2
20		电源开关	POWER-ON/OFF	1	1		前盖	COVER-FRONT	1

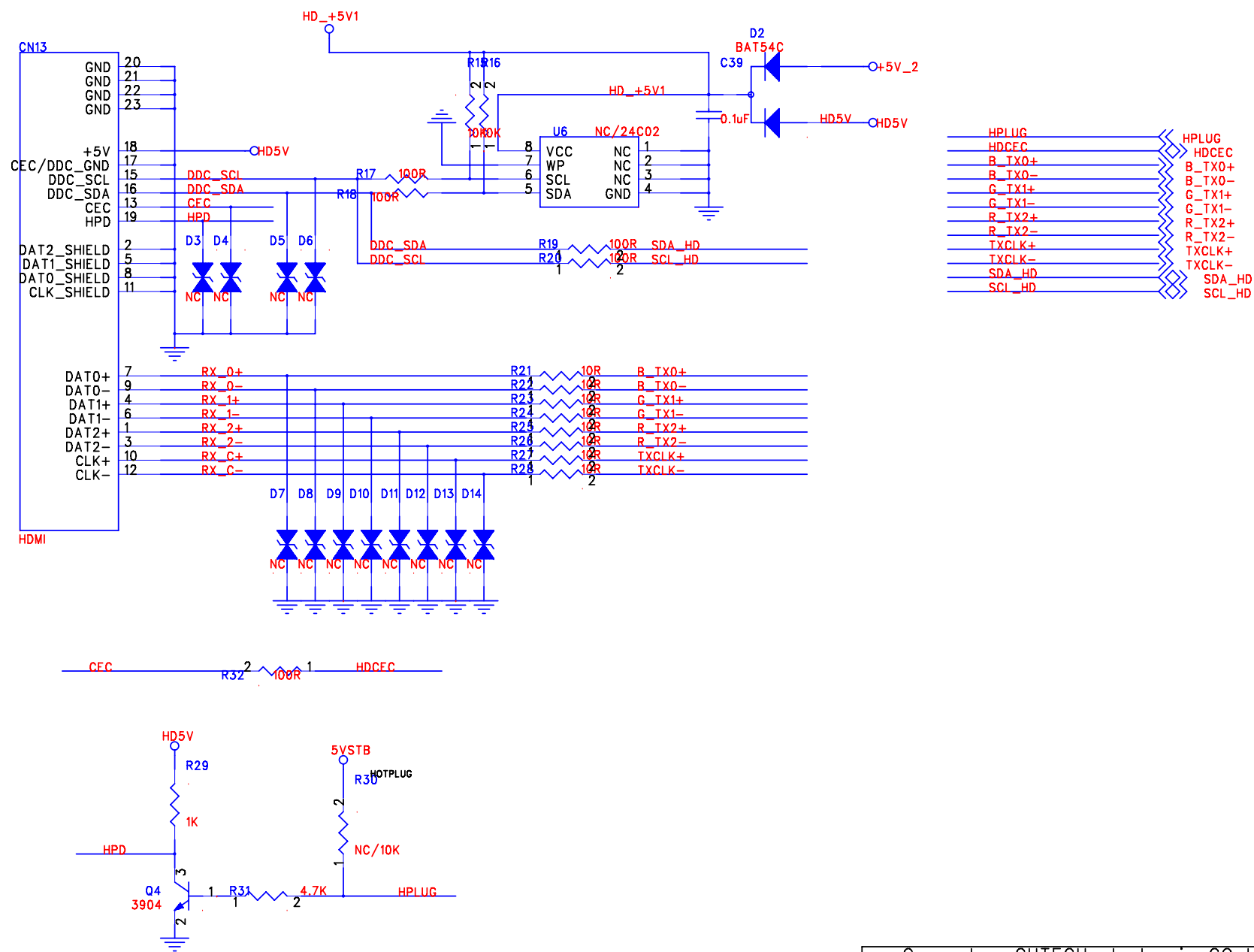
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31		LCD屏	PANEL	1	12		锁屏支架	PANEL-BKT	2
30		电源板	INSIDE-POWER-PCB	1	11		装饰圈	DECO-BUTTON	1
29		高压板	INVERTER-PCB	1	10		功能按键	FUNCTION-KEY	1
28		端子片	SHIELD-JACK	1	9		按键-PCB	KEY-PCB	1
27		主板PCB	MAIN-PCB	1	8		遥控板	RMOTE-PCB	1
26		后盖	COVER-BACK	1	7		遥控镜	LENS-SENSOR	1
25		DVD盖	COVER-DVD	1	6		导光镜-PCB	LED-PCB	1
24		DVD指示灯	DVD-LED POWER	1	5		导光镜	LED-LENS	1
23		DVD按键	DVD-KNOB	1	4		橡胶垫	RUBBER-CUSHION	4
22		DVD机芯	DVD-HINGE	1	3		喇叭罩	SPEAKER-CAP	2
21		壁挂支架	MOUNT-SUPPT	2	2		喇叭	SPEAKER	2
20		电源开关	POWER-ON/OFF	1	1		前盖	COVER-FRONT	1

TV Main Board (Bottom view)



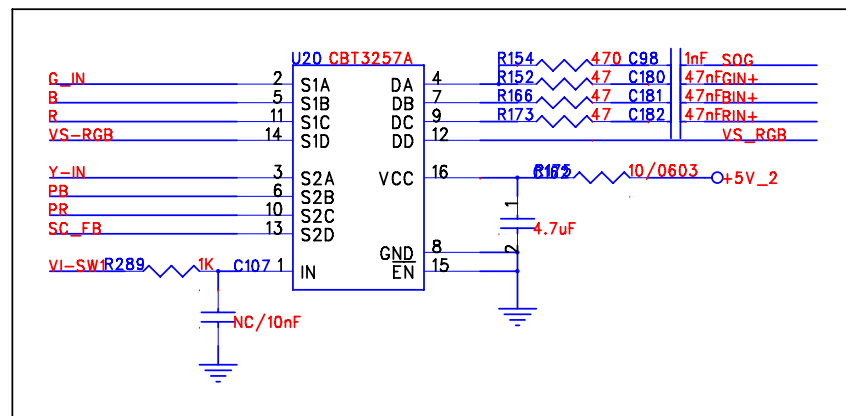
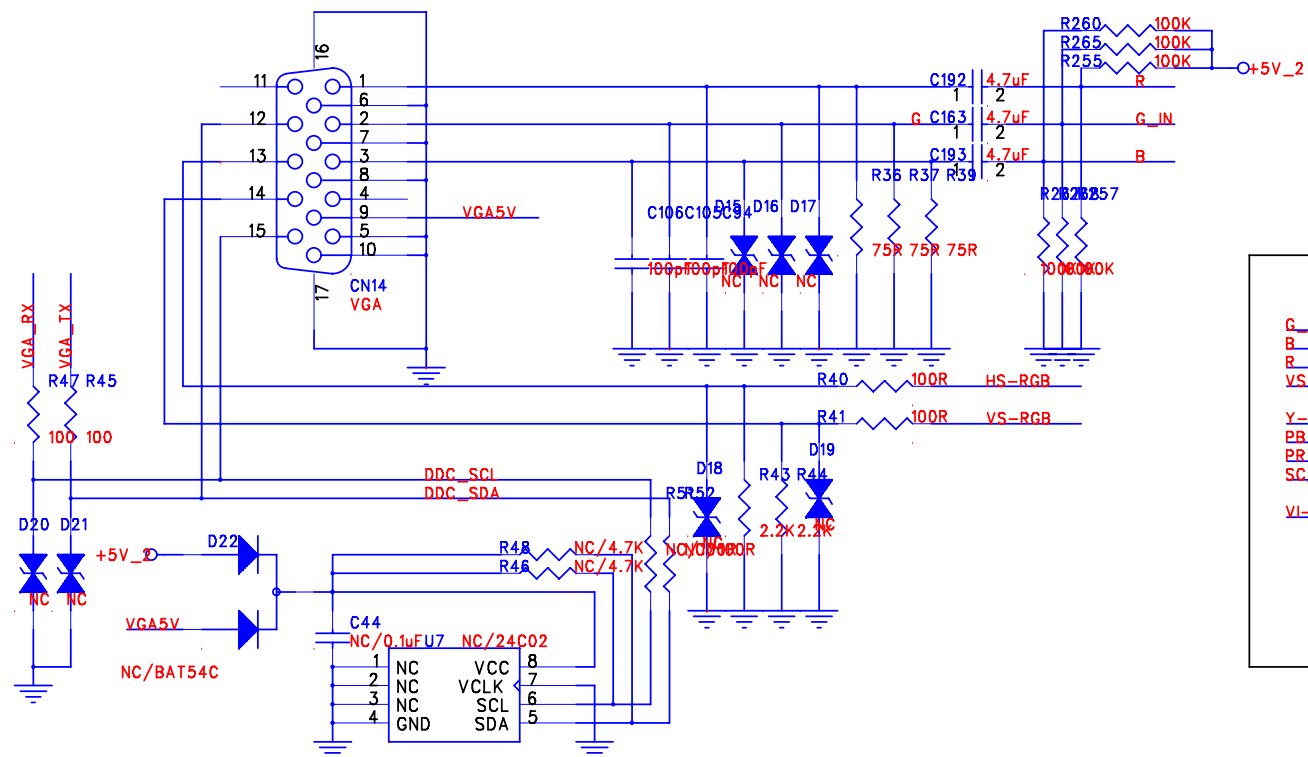


ADJ_PWM
ON_PBACK
WAKEUP

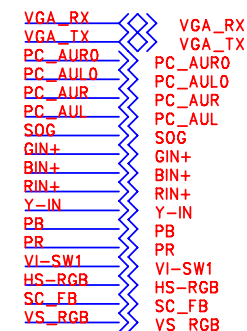
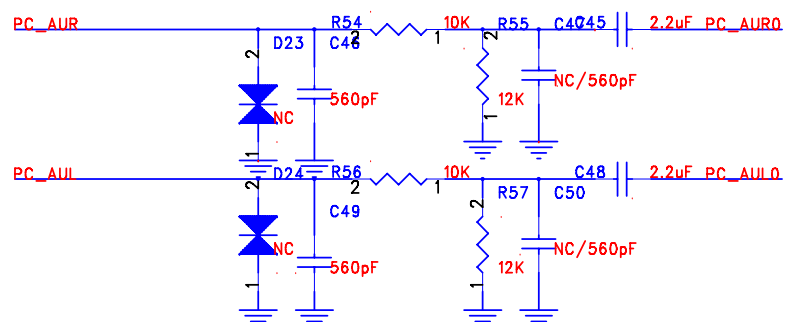


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A4	V1	?
Date:	Wednesday, January 27, 2010	Sheet 6 of 8

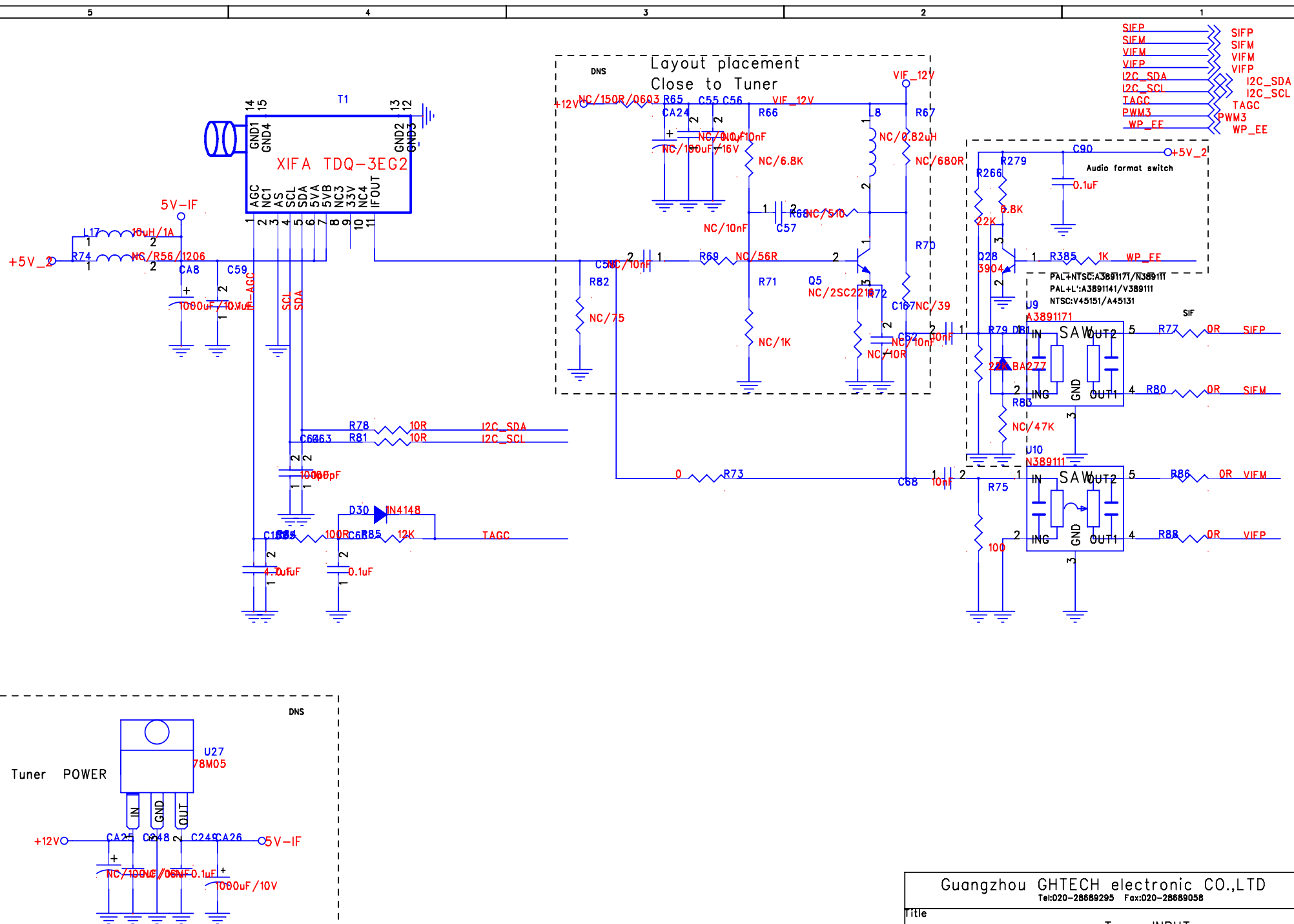


PC audio Input



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Title		
VGA input		
Size	Document Number	Rev
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Date:	Wednesday, January 27, 2010	Sheet 5 of 8



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Title

Tuner INPUT

Size
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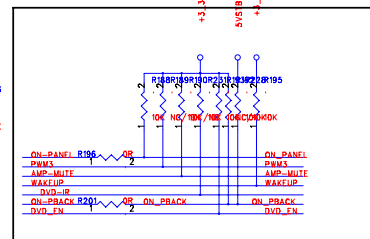
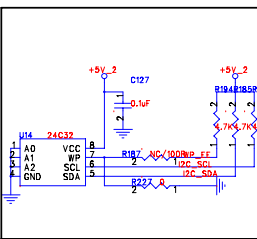
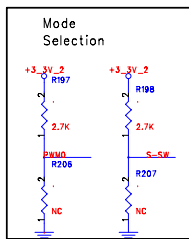
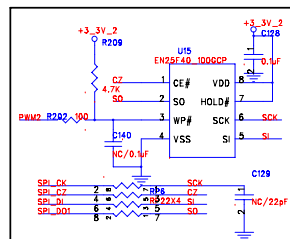
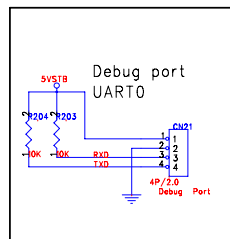
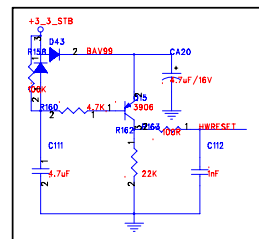
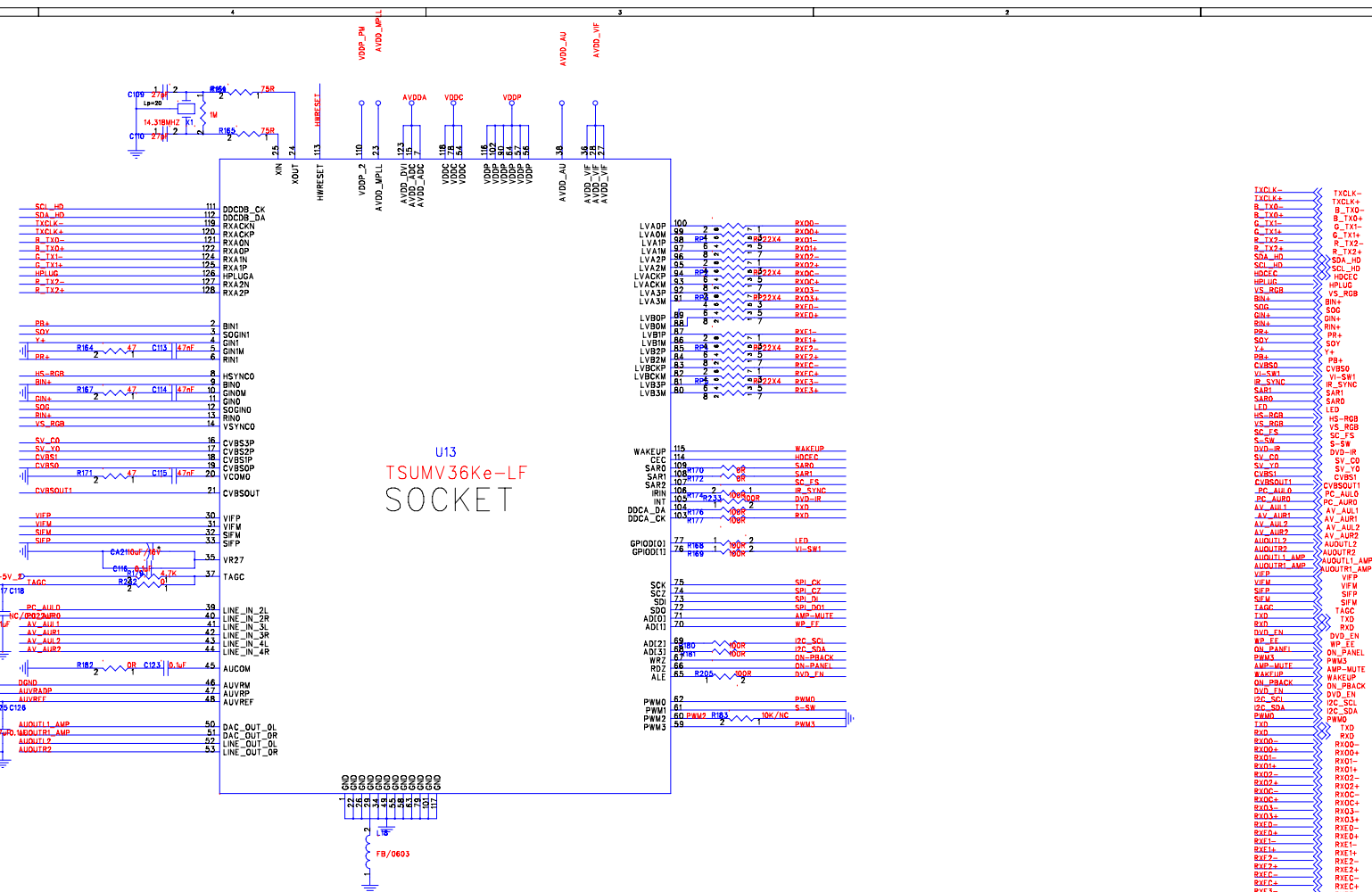
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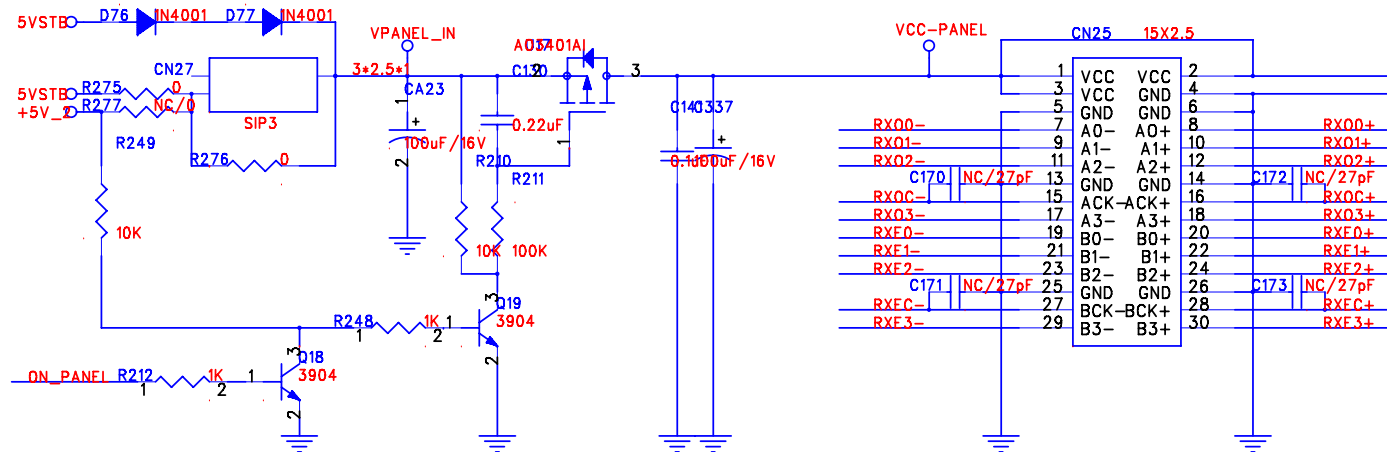
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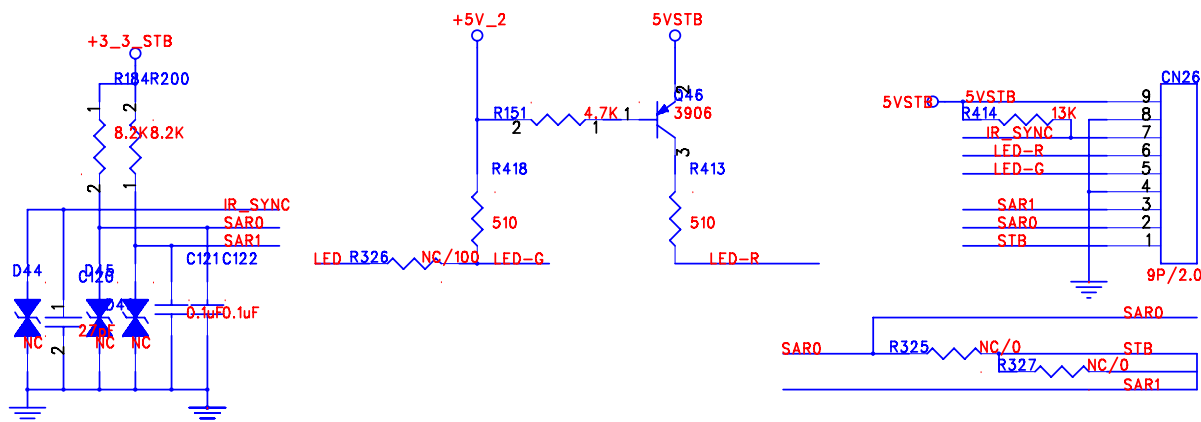


LVDS CONNECTOR



RX00- RX00-
 RX00+ RX00+
 RX01- RX01-
 RX01+ RX01+
 RX02- RX02-
 RX02+ RX02+
 RX0C- RX0C-
 RX0C+ RX0C+
 RX03- RX03-
 RX03+ RX03+
 RXE0- RXE0-
 RXE0+ RXE0+
 RXE1- RXE1-
 RXE1+ RXE1+
 RXE2- RXE2-
 RXE2+ RXE2+
 RXEC- RXEC-
 RXEC+ RXEC+
 RXE3- RXE3-
 RXE3+ RXE3+
 IR_SYNC IR_SYNC
 SAR1 SAR1
 SAR0 SAR0
 LED LED
 ON_PANEL ON_PANEL

KEY CONNECTOR



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Tel:020-28689295 Fax:020-28689058

Title		
Panel&Key Interface		
Size	Document Number	Rev
Custom	V1	?
Date:	Thursday, February 04, 2010	Sheet 8 of 8

序号	代码	物料名称	规格型号	单位	数量	工位
1	1. 01. 50220J0103R	RES LINE CHIP (贴片排阻)	22 Ω , X4, 1/16W, ±5%, 0402, SMT, ROHS	pcs	6	RP1, RP2, RP3, RP4, RP5, RP6
2	1. 01. 60000J0100R	RES CHIP(贴片电阻)	0 Ω , 1/10W, ±5%, 0603, SMT, ROHS	pcs	3	L6, L14, R277
3	1. 01. 60000J0103R	RES CHIP(贴片电阻)	0 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	13	R14, R77, R80, R86, R88, R170, R172, R182, R196, R201, R149, R227, R232
4	1. 01. 60000J0502R	RES CHIP(贴片电阻)	0 Ω , 1/4W, ±5%, 1206, SMT, ROHS	pcs	1	L13
5	1. 01. 60100J0100R	RES CHIP(贴片电阻)	10 Ω , 1/10W, ±5%, 0603, SMT, ROHS	pcs	5	R175, R224, R229, R274, R358
6	1. 01. 60100J0103R	RES CHIP(贴片电阻)	10 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	11	R21, R22, R23, R24, R25, R26, R27, R28, R72, R78, R81
7	1. 01. 60101J0103R	RES CHIP(贴片电阻)	100 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	24	R17, R18, R19, R20, R32, R40, R41, R84, R162, R168, R169, R174, R176, R177, R180, R181, R205, R233, R202, R278, R294, R305, R311, R320
8	1. 01. 60102J0103R	RES CHIP(贴片电阻)	1K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	19	R9, R13, R29, R144, R145, R148, R212, R235, R248, R264, R289, R293, R328, R343, R385, R390, R391, R393, R71
9	1. 01. 60103J0103R	RES CHIP(贴片电阻)	10K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	40	R10, R15, R16, R54, R56, R92, R93, R95, R96, R107, R109, R111, R116, R127, R129, R132, R138, R147, R188, R193, R195, R203, R204, R208, R210, R213, R214, R215, R228, R231, R234, R249, R261, R262, R263, R315, R316, R329, R370, R371
10	1. 01. 60104J0103R	RES CHIP(贴片电阻)	100K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	39	R12, R141, R146, R158, R211, R216, R217, R218, R219, R221, R223, R225, R226, R230, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R255, R256, R257, R258, R260, R265, R267, R268, R270, R271, R272, R273, R359, R362
11	1. 01. 60105J0103R	RES CHIP(贴片电阻)	1M Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	1	R159
12	1. 01. 60122J0103R	RES CHIP(贴片电阻)	1. 2K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	1	R307
13	1. 01. 60123J0103R	RES CHIP(贴片电阻)	12K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	5	R85, R55, R57, R110, R112
14	1. 01. 60133J0103R	RES CHIP(贴片电阻)	13K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	5	R288, R299, R302, R304, R414
15	1. 01. 60151J0100R	RES CHIP(贴片电阻)	150 Ω , 1/10W, ±5%, 0603, SMT, ROHS	pcs	1	R65
16	1. 01. 60153J0103R	RES CHIP(贴片电阻)	15K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	1	R137
17	1. 01. 60221J0103R	RES CHIP(贴片电阻)	220 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	2	R102, R105
18	1. 01. 60222J0103R	RES CHIP(贴片电阻)	2. 2K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	2	R43, R44
19	1. 01. 60223J0103R	RES CHIP(贴片电阻)	22K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	4	R79, R101, R163, R266
20	1. 01. 60272J0103R	RES CHIP(贴片电阻)	2. 7K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	3	R119, R197, R198
21	1. 01. 60333J0103R	RES CHIP(贴片电阻)	33K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	3	R322, R373, R374
22	1. 01. 60390J0000R	RES CHIP(贴片电阻)	39 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	1	R70
23	1. 01. 60470J0103R	RES CHIP(贴片电阻)	47 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	19	R58, R59, R60, R91, R103, R152, R164, R166, R167, R171, R173, R220, R222, R312, R313, R317, R323, R344, R345
24	1. 01. 60471J0103R	RES CHIP(贴片电阻)	470 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	5	R61, R142, R154, R236, R342
25	1. 01. 60472J0103R	RES CHIP(贴片电阻)	4. 7K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	17	R31, R139, R151, R160, R179, R185, R186, R194, R209, R250, R251, R308, R314, R319, R392, R128, R287
26	1. 01. 60473J0103R	RES CHIP(贴片电阻)	47K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	5	R140, R309, R318, R365, R372

序号	代码	物料名称	规格型号	单位	数量	工位
27	1. 01. 60511J0103R	RES CHIP(贴片电阻)	510 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	3	R413, R418, R68
28	1. 01. 60560J0102R	RES CHIP(贴片电阻)	56 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	1	R69
29	1. 01. 60562J0103R	RES CHIP(贴片电阻)	5. 6K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	1	R306
30	1. 01. 60681J0103R	RES CHIP(贴片电阻)	680 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	1	R67
31	1. 01. 60682J0103R	RES CHIP(贴片电阻)	6. 8K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	4	R136, R279, R292, R66
32	1. 01. 60750J0103R	RES CHIP(贴片电阻)	75 Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	22	R36, R37, R39, R62, R63, R64, R94, R82, R98, R100, R104, R106, R108, R120, R124, R125, R126, R131, R153, R156, R161, R165
33	1. 01. 60822J0103R	RES CHIP(贴片电阻)	8. 2K Ω , 1/16W, ±5%, 0402, SMT, ROHS	pcs	4	R184, R200, R310, R321
34	1. 04. 40101J0103R	CAP CHIP(贴片电容)	COG 100pF, 6. 3V ±5%, 0402, SMT, ROHS	pcs	21	C9, C28, C63, C64, C88, C89, C94, C105, C106, C135, C136, C145, C146, C147, C148, C149, C185, C187, C190, C286, C287
35	1. 04. 40102K0303R	CAP CHIP(贴片电容)	X7R, 1000pF/16V, ±10%, 0402, SMT, ROHS	pcs	5	C54, C98, C112, C119, C168
36	1. 04. 40103Z0601R	CAP CHIP(贴片电容)	0. 01uF, 50V, -20/+80%, 0402, SMT, ROHS	pcs	9	C62, C68, C160, C36, C275, C56, C57, C58, C167
37	1. 04. 40104Z0303R	CAP CHIP(贴片电容)	Y5V, 0. 1uF, 16V, -20/+80%, 0402, SMT, ROHS	pcs	55	C1, C3, C4, C5, C8, C11, C13, C15, C16, C17, C18, C19, C20, C21, C22, C23, C25, C26, C27, C29, C30, C32, C33, C34, C37, C38, C39, C55, C59, C65 , C66, C80, C90, C95, C102, C116, C117, C121, C122, C123, C124, C126, C127, C128, C132, C134, C139, C141, C142, C143, C153, C169, C176, C249, C279
38	1. 04. 40183Z0303R	CAP CHIP(贴片电容)	Y5V, 0. 018uF, 16V, +80/-20%, 0402, SMT, ROHS	pcs	4	C236, C237, C259, C260
39	1. 04. 40224Z0300R	CAP CHIP(贴片电容)	Y5V 0. 22uF, 16V, -20/+80%, 0603, SMT, ROHS	pcs	7	C71, C74, C157, C158, C232, C243, C130
40	1. 04. 40270J0103R	CAP CHIP(贴片电容)	NP0/27pF, 6. 3V, ±5%, 0402, SMT, OHS	pcs	5	C101, C109, C110, C120, C161
41	1. 04. 40331Z0103R	CAP CHIP(贴片电容)	330pF, 6. 3V, -20%+80%, 0402, SMT, ROHS	pcs	1	C99
42	1. 04. 40473Z0103R	CAP CHIP(贴片电容)	Y5V, 0. 047uF, 6. 3V, -20+80%, 0402, SMT, ROHS	pcs	13	C51, C52, C53, C70, C77, C78, C81, C113, C114, C115, C180, C181, C182
43	1. 04. 40561Z0103R	CAP CHIP(贴片电容)	X5R/560pF, 6. 3V, -20%+80%, 0402, SMT, ROHS	pcs	12	C46, C49, C72, C73, C75, C76, C83, C87, C154, C155, C156, C159
44	1. 04. 42105Z0600R	CAP CHIP(贴片电容)	Y5V 1uF, 16V, -20/+80%, 0603, SMT, ROHS	pcs	2	C35, C100
45	1. 04. 42225Z0100R	CAP CHIP(贴片电容)	Y5V, 2. 2uF, 6. 3V, -20/+80%, 0603, SMT, ROHS	pcs	19	C14, C24, C31, C45, C48, C82, C85, C96, C103, C104, C137, C138, C144 , C165, C166, C177, C178, C233, C234
46	1. 04. 42475M0600R	CAP CHIP(贴片电容)	6. 3V 4. 7uF, 50V, ±20%, 0603, SMT, ROHS	pcs	24	C79, C108, C111, C125, C133, C150, C151, C152, C162, C163, C164, C183, C184, C186, C188, C189, C191, C192, C193, C220, C238, C240, C251, C267
47	1. 05. 3R82K0001R	COIL-CHIP (贴片电感)	0. 82uH, ±10%, 1210, 绕线电感, SMT, ROHS	pcs	1	L8
48	1. 06. 200603120R	BEAD-CHIP (贴片磁珠)	BEAD, 铁氧体磁珠/0603, 120 Ω /100MHz, SMT, ROHS	pcs	5	L2, L4, L5, L12, L18
49	1. 09. 100BA2771R	DIODE CHIP (贴片二极管)	BA277, 片状二极管, 0603, SMT, ROHS	pcs	1	D81
50	1. 09. 100BAV991R	DIODE CHIP (贴片二极管)	BAV99LT, 二極管, SOT-23, SMT, ROHS	pcs	1	D43
51	1. 09. 101N41481R	DIODE CHIP (贴片二极管)	1N4148, (SMD-DIODE-4220) , 1206, SMT, ROHS	pcs	2	D30, D48
52	1. 09. 1B340A000R	DIODE CHIP (贴片二极管)	B340A, SMA, SMT, ROHS	pcs	1	D102

序号	代码	物料名称	规格型号	单位	数量	工位
53	1. 09. 1BAT54C00R	DIODE CHIP (贴片二极管)	BAT54C, SOT23, SMT, ROHS	pcs	2	D2, D29
54	1. 13. 102N39041R	TR CHIP (贴片三极管)	2N3904, NPN, VCE0=40V/IC=200mA, SOT-23, SMT, ROHS	pcs	17	Q3, Q4, Q9, Q10, Q13, Q14, Q16, Q17, Q18, Q19, Q20, Q21, Q24, Q26, Q27, Q28, Q29
55	1. 13. 102N39061R	TR CHIP (贴片三极管)	2N3906, PNP, VCE0=40V/IC=200mA, SOT-23, SMT, ROHS	pcs	4	Q8, Q15, Q22, Q46
56	1. 13. 134010000R	TR CHIP (贴片三极管)	A03401, 片状MOS管, SOT23, SMT, ROHS	pcs	3	U17, Q206, Q207
57	1. 17. 210840003R	IC SMT (贴片集成电路)	LSP1084/TO-263, ADJ, SMT, ROHS	pcs	1	U19
58	1. 17. 211170006R	IC SMT (贴片集成电路)	LSP1117-33/SOT-223, SMT, ROHS	pcs	1	U11
59	1. 17. 236KE0000R	IC SMT (贴片集成电路)	TSUMV36KE, SMT, ROHS	pcs	1	U13
60	1. 17. 245580000R	IC SMT (贴片集成电路)	MC4558CDT, S08, 8PIN, SMT, ROHS	pcs	1	U32
61	1. 17. 261800001R	IC SMT (贴片集成电路)	FP6180, SOP-8, SMT, ROHS	pcs	1	U16
62	1. 17. 274HC4052R	IC SMT (贴片集成电路)	PHILIPS, 74HC4052D, AUDIO SWITCH, SOP16, 16PIN, SMT, ROHS	pcs	1	U22
63	1. 17. 278050000R	IC SMT (贴片集成电路)	78M05-SOT252, 500MA, SMT, ROHS	pcs	1	U27
64	1. 17. 2AP1084K0R	IC	AP1084K-33LA, 集成电路3. 3V/5 A TO-263, Anachip /Gamma /ADD (ROHS)	pcs	1	U5
65	1. 17. 2CT3257A0R	IC SMT (贴片集成电路)	CT3257A (CBT3257ADS), SSOP-16, 16PIN, SMT, ROHS	pcs	2	U20, U21
66	1. 17. 2EN25F400R	IC Flash	EN25F40, Flash (预烧录) (丝印: F40-100GCP) (ROHS)	pcs	1	U15
67	1. 17. 2FT24C320R	IC SMT (贴片集成电路)	FT24C32A, 半导体存储器 (32K ROM), SOP8, 8PIN, SMT, ROHS	pcs	1	U14
68	1. 21. 2000HDMI2R	HDMI JACK (HDMI插座)	HDMI_J, AD3PBP19*0-*, 不带螺丝孔, 10*12个, 托盘, SMT, ROHS	pcs	1	CN13
69	1. 28. 121900811R	PCB (板材) 双面板	1. 6MM, 215MM*81MM, TS26KU-20100127, (ROHS)	块	1	
序号	物料代码	物料名称	规格型号	单位	数量	工位
1	1. 01. 105R6J0800R	金属膜电阻	5. 6 Ω , 2W, ROHS	pcs	1	R114
2	1. 04. 10475M0300R	CAP EC (电解电容)	4. 7uF ± 20%/50V/4X7 (DIP) (ROHS)	pcs	1	CA20
3	1. 04. 10477M0303R	CAP EC (电解电容)	470uF, 16V, ± 20%, 8*12mm, 5. 0mm, DIP, ROHS	pcs	4	CA15, CA47, C203, C204
4	1. 04. 11106M0302R	CAP EC (电解电容)	10uF, 16V, ± 20%, 5X11, 2. 5mm, DIP, 自动排插, ROHS	pcs	7	CA10, CA11, CA14, CA18, CA21, CA22
5	1. 04. 11107M0304R	CAP EC (电解电容)	100uF, 16V, ± 20%, 5X11mm, 5. 0mm, DIP, 自动排插, ROHS	pcs	10	CA5, CA12, CA13, CA16, CA23, CA24, CA25, C175, C239 , C337
6	1. 04. 11108M0200R	CAP DIP (直插电容)	1000uF, 10V, ± 20%, 电解电容, 8X12mm, 5. 0mm, DIP, 自动排插, ROHS	pcs	5	CA4, CA7, CA8, CA19, CA26
7	1. 04. 11227M0303R	CAP EC (电解电容)	220uF, 16V, ± 20%, 6. 3X11mm, 5. 0mm, DIP, 自动排插, ROHS	pcs	1	C179
8	1. 04. 11476M0303R	CAP EC (电解电容)	47uF, 16V, ± 20%, 5X11mm, 5. 0mm, DIP, 自动排插, ROHS	pcs	2	CA17, C245
9	1. 05. 6180M4000R	INDUCTOR DIP (直插电感)	18uH, ± 20%, 4A, 无套管, Φ 15*7, 线径 0. 8mm, DIP, ROHS	pcs	1	L33

序号	代码	物料名称	规格型号	单位	数量	工位
10	1. 10. 1A3891141R	SAW FILTER VIDBO (声表滤波器)	A3891141, DIP, ROHS	pcs	1	U9
11	1. 10. 1N3891110R	SAW FILTER VIDEO (声表滤波器)	N389111, DIP, ROHS	pcs	1	U10
12	1. 13. 12SC22160R	TRANSISTOR DIODE (插装三极管)	2SC2216, T0-92, DIP, ROHS	pcs	1	Q5
13	1. 16. MHZ00143R	晶振	14. 31818MHz (49SA/Lp=20pF) crystal, 引脚长4. 0 ±0. 5MM (ROHS)	pcs	1	X1
14	1. 17. 215170000R	IC DIP (插件集成电路)	TDA1517P, AMP2X6W, DIP18, DIP, ROHS	pcs	1	U23
15	1. 20. 330P020R	LVDS SOCKET (LVDS 插座)	LVDS SOCKET, 15X2PIN, 2. 0mm, DIP, ROHS	pcs	1	CN25
16	1. 20. 604P020R	CONN (直插插座)	2. 0mm, 4pin, 180度, DIP, ROHS	pcs	1	CN21
17	1. 20. 604P250R	CONN (直插插座)	2. 54mm, 4pin, 180度, DIP, ROHS	pcs	2	CN1, CN24
18	1. 20. 605P020R	CONN (直插插座)	2. 0mm, 5pin, 180度, DIP, ROHS	pcs	1	CN19
19	1. 20. 606P020R	CONN (直插插座)	2. 0mm, 6pin, 180度, DIP, ROHS	pcs	1	CN12
20	1. 20. 609P020R	CONN (直插插座)	2. 0mm, 9pin, 180度, DIP, ROHS	pcs	2	CN18, CN26
21	1. 21. 100000004R	VGA JACK (VGA插座)	HDR52-15F, 15P-Dsub窄型, 3. 08mm, 卧式, 带六角 螺丝, DIP, ROHS	pcs	1	CN14
22	1. 21. 340100001R	SVIDEO JACK (S端 子)	上面:phone-黑色, 下面:S-VIDEO, DIN-3. 5- 401/E, DIP, ROHS	pcs	1	CN17
23	1. 21. 400000004R	SCART (SCART插座)	SC115, 黑色, DIP, ROHS	pcs	1	CN16
24	1. 21. 500000007R	AV JACK (AV插座)	AV6-8. 4-13D, 6孔AV端子 (下:黄-白-红;上:绿-蓝 -红), 铁皮屏蔽, DIP, ROHS	pcs	1	CN15
25	1. 21. 600000001R	PHONE JACK (耳机插座)	Phone jack/PJ325C/黑色, 5PIN, DIP, ROHS	pcs	1	CN23
26	1. 21. 900000016R	Tuner (高频头)	Xinfa/TDQ-3EG2/DIP, ROHS	pcs	1	T1
27	7. 03. 3600E0003_S	MAIN BOARD (主板)	TS36, 俄罗斯, SMT, 小尺寸, ROHS	块	1	

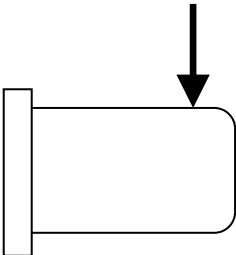
<div>TENA ELECTRONICS Co.,Ltd.</div> <div>特纳电子</div>		<div>PRODUCT SPECIFICATION</div> <div>产品规格说明书</div>	<div>型号/MODEL</div> <div>TNF931D BFDR1B</div>	<div>页码/PAGE</div> <div>2</div>
		<div>描述/DESCRIPTION</div> <div>中频 IF 38.90</div>		
NO.	项目/ITEM	规格/SPECIFICATION		
1.	概要/GENERAL	The TNF931D BFDR1B tuner belongs to the TNF93XD family of tuners, which are designed to meet a wide range of applications. SYSTEM: B/G, D/K, I, H,L/L'		
1.1	调谐系统/Tuning System	FS with I ² C PLL, DC-DC inside		
1.2	接收制式/Receiving System	Standard system with hyper band		
1.3	接 收 频 道 /Receiving Channels	VHF Low : 44.25 ~ 142.25MHz VHF High : 145.25 ~ 424.25MHz UHF : 430.25 ~ 863.25MHz		
1.4	中频频率/Intermediate Frequency	System : IF Picture : 38.90 Color : 34.47 Sound : 33.40		
1.5	天线输入阻抗/	VHF/UHF : 75 ohm unbalanced		
1.6	Antenna Input Impedance	75 ohm unbalanced		
1.7	输出阻抗/Output Impedance	Approximate: 40 grams		
1.8	重量/Weight 连接端子/Connection	Antenna : IEC jack CONNECTOR <div><div>U/V INPUT</div><div>TUINER</div><div>TO TV IF</div></div>		
1.9	操作温度/Operating Temp	-15℃to+70℃(standard+25℃)		
1.10	储藏温度/Storage Temp	-20℃to+80℃(standard+25℃)		

<div>特纳电子</div> <div>TENA ELECTRONICS Co.,Ltd.</div>		<div>PRODUCT SPECIFICATION</div> <div>产品规格说明书</div>		型号/MODEL	页码/PAGE																																																																																		
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					描述/DESCRIPTION			
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NO.	项目/ITEM	规格/SPECIFICATION						NOTES
2.1	幅频特性曲线 AMPLITUDE RESPONSE		Min	Typ	Max	Unit	Condition	
					4	dB	Tilt of PC to top of curve	
					7		Tilt of SC to top of curve	
2.2	驻波系数 VSWR	VHF Low		5	7	DB	The worst point between fp and fs	
		VHF High		5	7			
		UHF		5	6			
2.3	功率增益 Power Gain	VHF Low	30	33		DB	GR=0	
		VHF High	28	32				
		UHF	30	35				
2.4	增益变化 Gain Variation	VHF Low		8	12	DB		
		VHF High		8	12			
		UHF		8	10			
2.5	增益衰减量 Gain Reduction	VHF Low	35	50		DB	When AGC voltage is fluctuated from 4.0V~0V	
		VHF High	35	50				
		UHF	35	40				
2.6	镜像抑制比 Image Rejection	VHF Low	50	60		DB	GR=0	
		VHF High	50	60				
		UHF	45	58				
2.7	中频抑制比 IF Rejection	VHF Low	50	60		DB	GR=0	
		VHF High	65	80				
		UHF	65	80				
2.8	噪声系数 Noise Figure	VHF Low		8	10	DB	GR=0	
		VHF High		7	9			
		UHF		8	10			

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NO.	项目/ITEM	规格/SPECIFICATION						NOTES
2.9	带内交扰调制 Cross Modulation -In band: Low band(n+/-2)		Min	Typ	Max	Unit	Condition	Spectrum-analyzer method 1KHz,30%Modulation
			75			dBu	GR=0	
			75			dBu		
2.10	彩色条拍打 Color Beat		50	70	dB			
2.11	输入端子辐射 ANT Radiation	0~1GHz			46	dBu	75Ω Terminate	
		1~1.75GHz			54			
2.12	中频端子泄露 IF Leakage	VHF-Low			80			
		VHF-High			80	dBu	75Ω Terminate	
		UHF			80			
2.13	电压引起本振 频率的变化 OSC instability				50	KHz	B +/-5%	
2.14	本振停振电压 OSC stop Votage				4.5	V	B Voltage	

特纳电子 TENA ELECTRONICS Co.,Ltd.		PRODUCT SPECIFICATION 产品规格说明书	型号/MODEL TNF931D BFDR1B 描述/DESCRIPTION 中频 IF 38.90	页码/PAGE 6
NO.	项目/ITEM	规格/SPECIFICATION		
2.15	差拍干扰抑制比 BEAT INTERFERENCE REJECTION RATIO	5CH:45dB 6CH:42dB A- 5CH:42dB		
2.16	最大输入电平 THE MAXINPUT SIGNAL LEVEL	All band:110dBμ V Max		
2.17	频率覆盖余量 Margin Frequency	All band vt (0.5v-28v) +/-2MHz Min		
2.18	调谐电压范围 Tuning cover range	VT range:0.3v-30v		
2.19	本振频率温度漂移 Temperature Drift(osc)	Temperature 25℃ ± 30℃ VHF:-80KHz~+80KHz UHF:-100KHz~+100KHz		
2.20	输入信号漂移 Input signal drift	All band range:+/-70KHz		
2.21	环境测试 Environment Test			
2.21.1	高温实验 Heat Load test	in 70° ±2° C for 96±5 hrs, and in standard test for 30 min, then take measurement within 1 hour. Supply: STD +10%, supply voltage cycle:1.5 H On, 0.5 H Off;		
2.21.2	湿度实验 Humidity Load test	in 40° ±5° for 24±2 hrs, in STD test for 30 min, then take meas. in 40° ±2° C, 90~95% RH for 96±5 hrs, and in STD test for 30 min than take meas. Within 1 hrs. Supply voltage: STD+10%, cycle 1.5H ON, 0.5 H off, Leave in -20° ±2° C for 96±5 hrs and in, STD test for 2hrs,		
2.21.3	低温测试 Cold test	Leave sample for 1000hrs, then meas.		
2.21.4	使用寿命测试 Life test	±8KV, 10 times, charge cap. 150pF, series. 330W,		
2.21.5	防静电测试 ESD test (contact)	amplitude 1mm, 10~55Hz for 40 min in X, Y, Z direction,		
2.21.6	振动测试 Vibration test	After 2.21.1-2.21.6 test, the electrical characteristics: noise change :+/-3dB MAX, power gain change:+/-3dB MAX, freq drift:+80KHz MAX		
	Result:			

<div>TENA ELECTRONICS Co.,Ltd.</div> <div>特纳电子</div>		<div>PRODUCT SPECIFICATION</div> <div>产品规格说明书</div>	<div>型号/MODEL</div> <div>TNF931D BFDR1B</div> <div>页码/PAGE</div> <div>7</div> <div>描述/DESCRIPTION</div> <div>中频 IF 38.90</div>
3.	机械特性 MECHANICAL AND CONSTRUCTION CHARACTERISTICS		
3.1	端子插拔力 Holding Strength of ANT Jack	Initlal Inserting Force : Max 5.0Kg Extracting Force After 5 Cycle: Min . 0.7 Kg	
3.2	端子强度 Terminal Strength	Vertical Direction : Min 2 Kg Folding-Strength : The terminals must not be damaged when bent left and right up to 45 ,4 time.	
3.3	IEC 插口破坏性强度 Destructive Strength of IEC Connector	Shall stand the force up to 15Kgf applied to the end <div><div>IEC connector</div></div>	
3.4	PCB 孔位尺寸 Recommended Hole for P.C.B.	PAGE 9 FEATURES SIZE	

4. PLL 性能/PLL Characteristics (I²C-BUS Data Format)

4.1 写入数据格式/Write Data Format:

Byte	Msb							Lsb	Ack
Address	1	1	0	0	0	MA1	MA0	0	A
Freq. Data	0	N14	N13	N12	N11	N10	N9	N8	A
Freq. Data	N7	N6	N5	N4	N3	N2	N1	N0	A
Control byte	1	CP	0	0	1	R1	R0	0	A
Band Switch	*	*	*	*	BS4	BS3	BS2	BS1	A

(*) Don't Care

4.1.1 N14 to N0: Programmable divider dit

$$N=N14*2^{14}+N13*2^{13}+N12*2^{12}+.....+N1*2+N0$$

4.1.2 CP: Charge-Pump Current

CP=1 : High Current

4.1.3 波段切换数据/Band Switch by Byte

Band	BS4	BS3	BS2	BS1
VHF Low	0	*	0	1
VHF High	0	*	1	0
UHF	*	1	0	0
UHF	1	*	0	0

4.1.4 Locked OSC Frequency

$$f_{OSC}=fr*8*N \quad fr : \text{Reference Frequency}$$

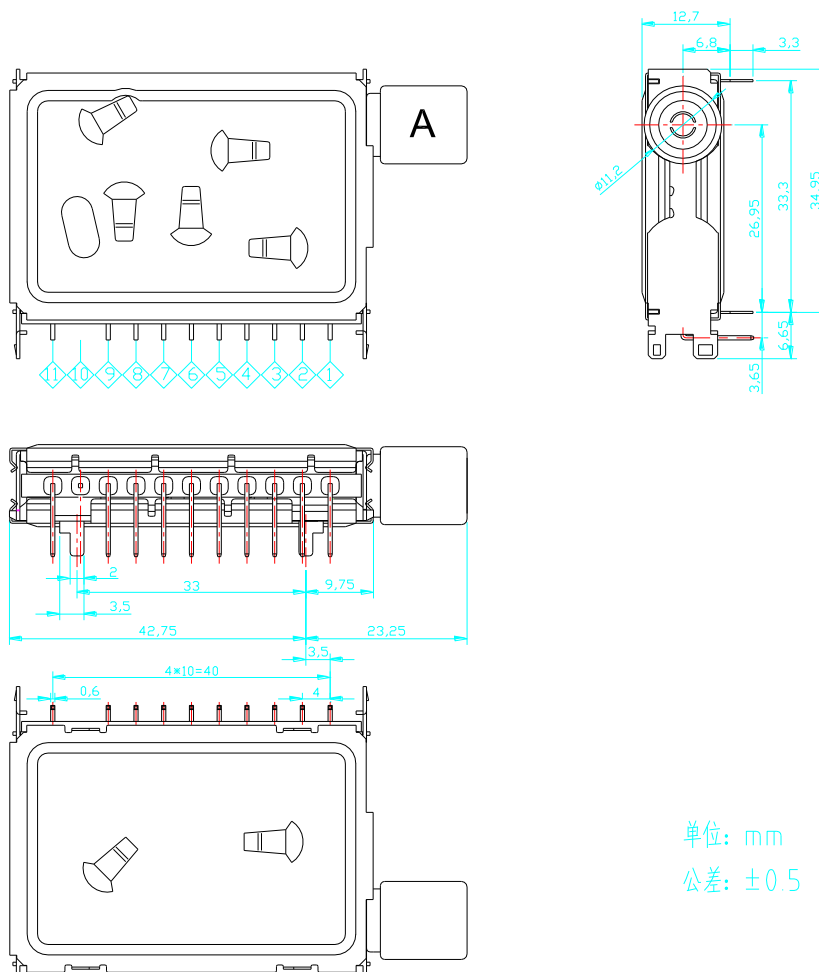
(4.0MHz/640=6.25KHz, 4.0MHz/512=7.8125KHz, 4.0MHz/1024=3.90625KHz)

4.1.5 地址选择/Address Selection

MA1	MA0	V input on AS Pin
0	0	0 to 0.1 Vcc
0	1	0.2 Vcc to 0.3 Vcc
1	0	0.4 Vcc to 0.6 Vcc
1	1	0.9 Vcc to Vcc

4.1.6 分频比率参考/Reference Divider Ratio

R1	R0	Reference Divider	Frequency Step
0	1	1024	31.25KHz
1	1	512	62.5KHz
*	0	640	50.0KHz



单位: mm

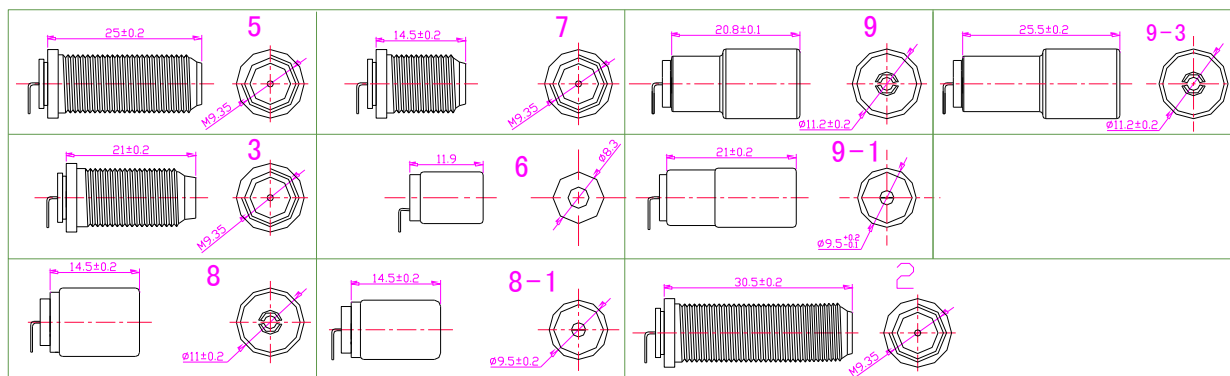
公差: ± 0.5

Note1: RF INPUT(A) USE '9'

Note2:

PIN	1	2	3	4	5	6	7	8	9	10	11
Name	AGC	TU	AS/CE	SCL	SDA	4MHZ OUT	VCC	ADC	NC	NC	IF

Note3: RF INPUT CONNECT



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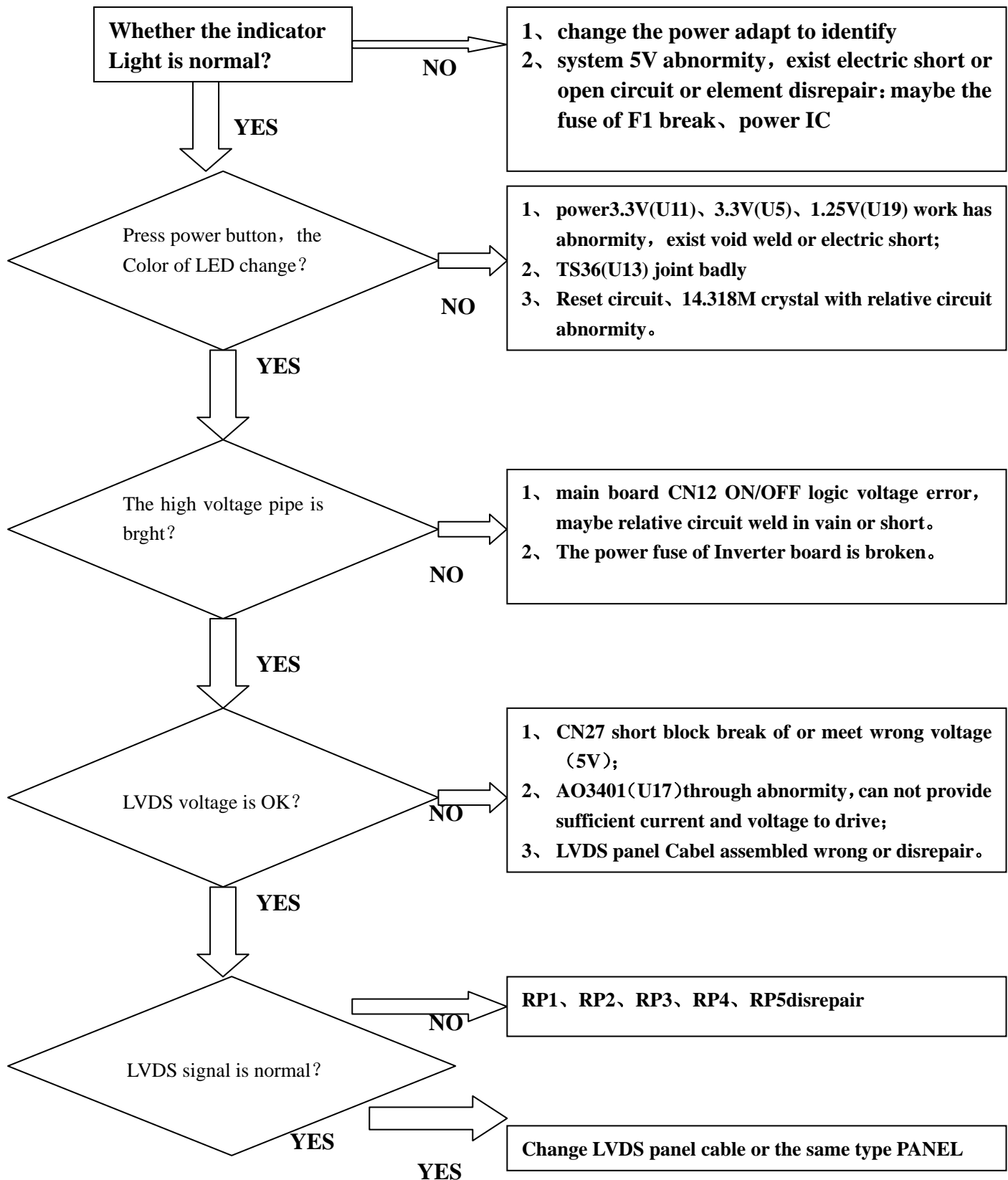
地址: 深圳市宝安区林果科学研究所 17 栋

电话: 0755-27497651 27497647 传真: 0755-27497650

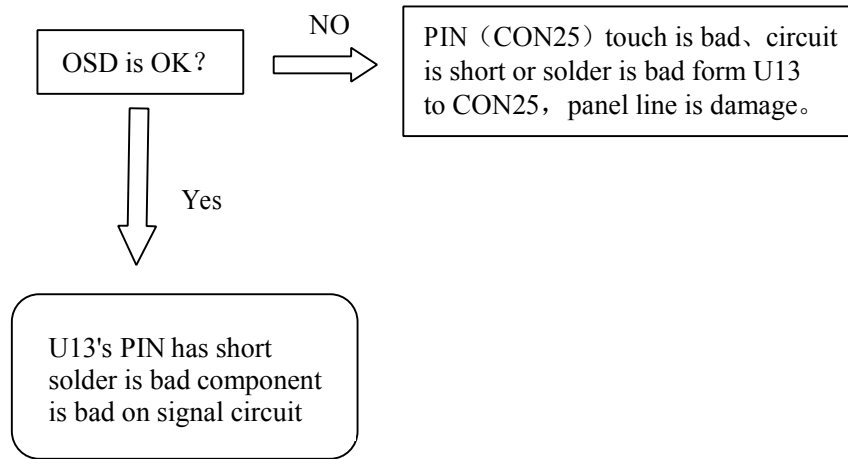
http://www.tenas.net/ E-mail: tenas@tenas.net

TS36 TV Main board service explain

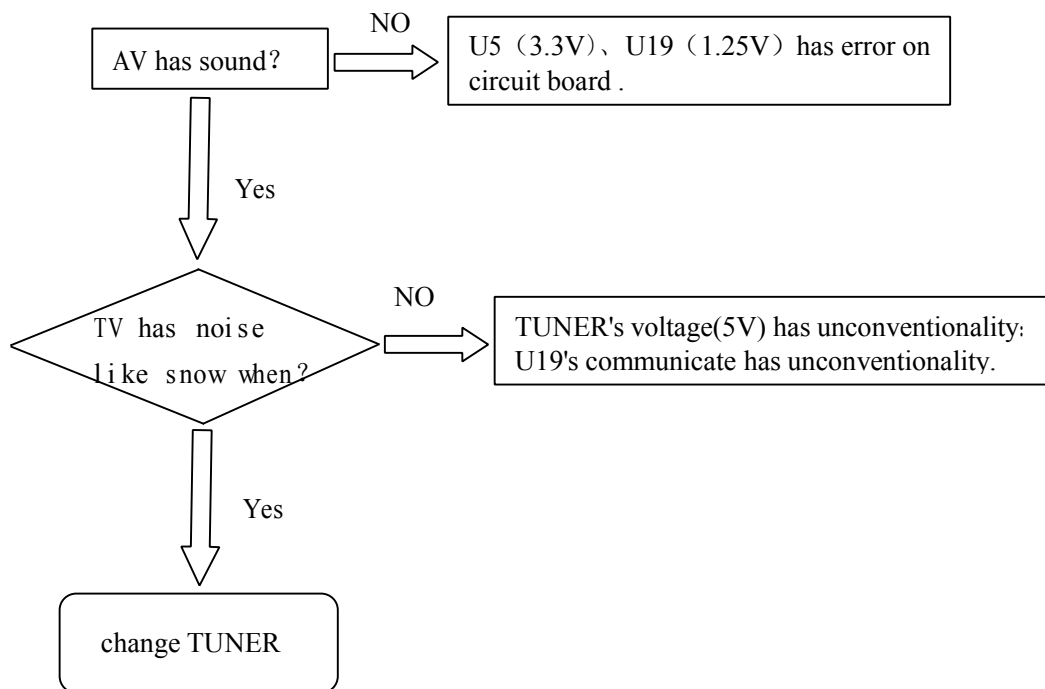
Trouble:biack screen



Trouble 2: U1's PIN has short solder is bad
component is bad on signal circuit



Trouble 3: can't incept TV(AV) signal



Trouble 4: TV(AV) no sound

