

Compatible Circuit of ALC CODEC Version 0.66(ALC850/ALC655/658/650/203/250/202/202A/101)

Pin Assignment:

	ALC653/655	ALC658	ALC650	ALC202/A	ALC101	ALC203(D)	ALC203(E)	ALC250	ALC850
Pin-35/36	Front-Out	Front-Out	Front-Out	Line/AMP-Out	AMP-Out	Line-Out	Line-Out	Line-Out	Front-Out
Pin-39/41	Surr.-Out	Surr.-Out	Surr.-Out	AMP/Line-Out	X	AMP-Out	AMP-Out	AMP-Out	Surr.-Out
Pin-43/44	Cen/Lfe-Out	Cen/Lfe-Out	Cen/Lfe-Out	GPIO0/1	X	GPIO0/1	GPIO0/1	I2CCK/SD	Cen/Lfe-Out
Pin-16/17	JD1/JD2	JD1/JD2	VIDEO-IN	VIDEO-IN	X	JD2/JD1	JD2/JD1	JD2/JD1	JD1/JD2
Pin-31	VRDA(1uF)	JD4	VRAD(1uF)	VRAD(1uF)	X	X	X	X	JD4
Pin-32	Front-MIC2	X	VRDA(1uF)	VRDA(1uF)	X	DCVOL	DCVOL	DCVOL	Front-MIC2
Pin-33	X	VREFOUT2	X	DCVOL	X	VREFOUT2	VREFOUT2	VREFOUT2	VREFOUT2
Pin-34	Front-MIC1	Front-MIC	Front-MIC	VAUX	X	VAUX	VAUX	VAUX	Front-MIC
Pin-45	JD0(GPIO0)	JD0(GPIO0)	GPIO0	ID0	X	ID0	JD0	NC	JD0(GPIO0)
Pin-46	XTLSEL	XTLSEL	XTLSEL	XTLSEL	XTLSEL	XTLSEL	XTLSEL	XTLSEL	XTLSEL
Pin-47	EAPD/SPDIFI or EAPD	SPDIFI/EAPD	SPDIFI/EAPD	EAPD/JD	EAPD	SPDIFI/EAPD	SPDIFI/EAPD	SPDIFI/EAPD	SPDIFI/EAPD
Pin-48	SPDIFO	SPDIFO	SPDIFO	SPDIFO	X	SPDIFO	SPDIFO	SPDIFO	SPDIFO
Pin-40	X	JD3	X	X	X	X	X	X	JD3

Page1: Standard application circuits for 6/8 Channel ALC CODEC - CODEC part (ALC653/655/658/650/850)

Page2: Standard application circuits for 6/8 Channel ALC CODEC - Front and Back Panel (ALC653/655/658/650/850)

Page3: Standard application circuits for 2 Channel CODEC (ALC203/250/202/202A/101)

Version History

- Ver 0.52: Modify component of ALC658's pin31
- Ver 0.53: Modify JD3 and JD4 circuit of ALC658
- Ver 0.54: (1)Add Diode in UAJ block for ALC658
(2)Modify components of AFILT1/2 (pin29 and 30) for ALC658
- Ver 0.61: (1)Add Diode in regulator circuit for power off CD function
(2)Modify Reset pin for ALC250's Equalizer application
(3)Modify Capacitance value from 3.3u to 4.7u in JD circuit
(4)Modify Capacitance value of Vrefout pin from 10u to 1u
(5)Modify circuit for power off CD function (using 1N5817)
(6)Define HP-OUT for front panel and LINE-OUT for back panel as design of ALC203 and LAC250 with UAJ function
(7)Modify value of CR64 and CR65,2.2uf
(8)Modify Realtek Front Panel I/O for UAJ(add 2pin)
(9)Modify ALC650/655/658/203/250 UAJ/JD function circuit
- Ver 0.62: (1)Modify UAJ circuit, add pull down resistance at left and right channel
- Ver 0.63: (1)Add parts of ALC850
- Ver 0.64: (1)The capacitor C50 at BIT-CLK (pin 6) is recommended to be 47pF

Built-In Amplifier:

	Built-In Amplifier
ALC653/655	Pin-35/36, Pin-39/41
ALC658	Pin-35/36, Pin14/15
ALC650	Pin-35/36
ALC202	Pin-39/41
ALC202A	Pin-35/36
ALC101	Pin-35/36
ALC203	Pin-39/41, Pin14/15
ALC250	Pin-39/41, Pin14/15
ALC850	Pin-35/36, Pin23/24, Pin21/22

Arrangement of Jack detection Pin:

	Pin-45(JD0)	Pin-17(JD1)	Pin-16(JD2)	Pin-40(JD3)	Pin-31(JD4)
ALC653/655	for MIC-IN	for FRONT-OUT	for LINE-IN		
ALC658	for MIC-IN	for UAJ1	for UAJ2	for FRONT-OUT	for LINE-IN
ALC203		for UAJ1	for UAJ2		
ALC250		for UAJ1	for UAJ2		
ALC850	for MIC-IN	for Front Panel Output		for FRONT-OUT	for LINE-IN

Realtek Semiconductor, Corp.

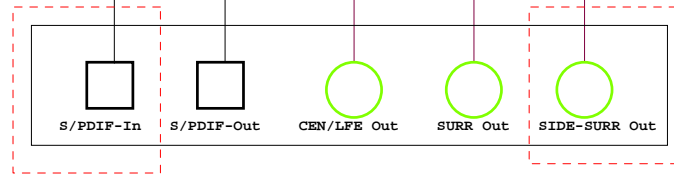
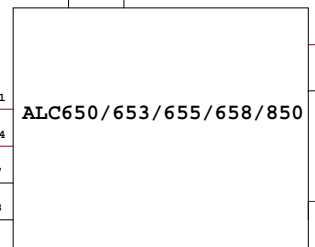
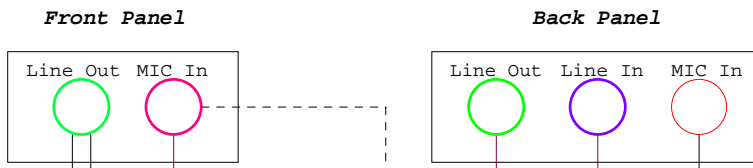
Title			ALC AC'97 Compatible Circuit		
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Ver 0.65: Add ALC653, no SPDIF In and SW jack sensing function, R76 is not mounted.

Ver 0.66: (1)modify ALC203 E version/ALC658 E version circuit(need pull-high 1M ohm resistor to +5V on Codec 27 pin)

Title		
ALC AC'97 Compatible Circuit		
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	Line Out	MIC In
ALC650/655/658/850	Pin-35/36	Pin-34/(32)
ALC658 UAJ Mode	Pin-35/36	Pin-14/15

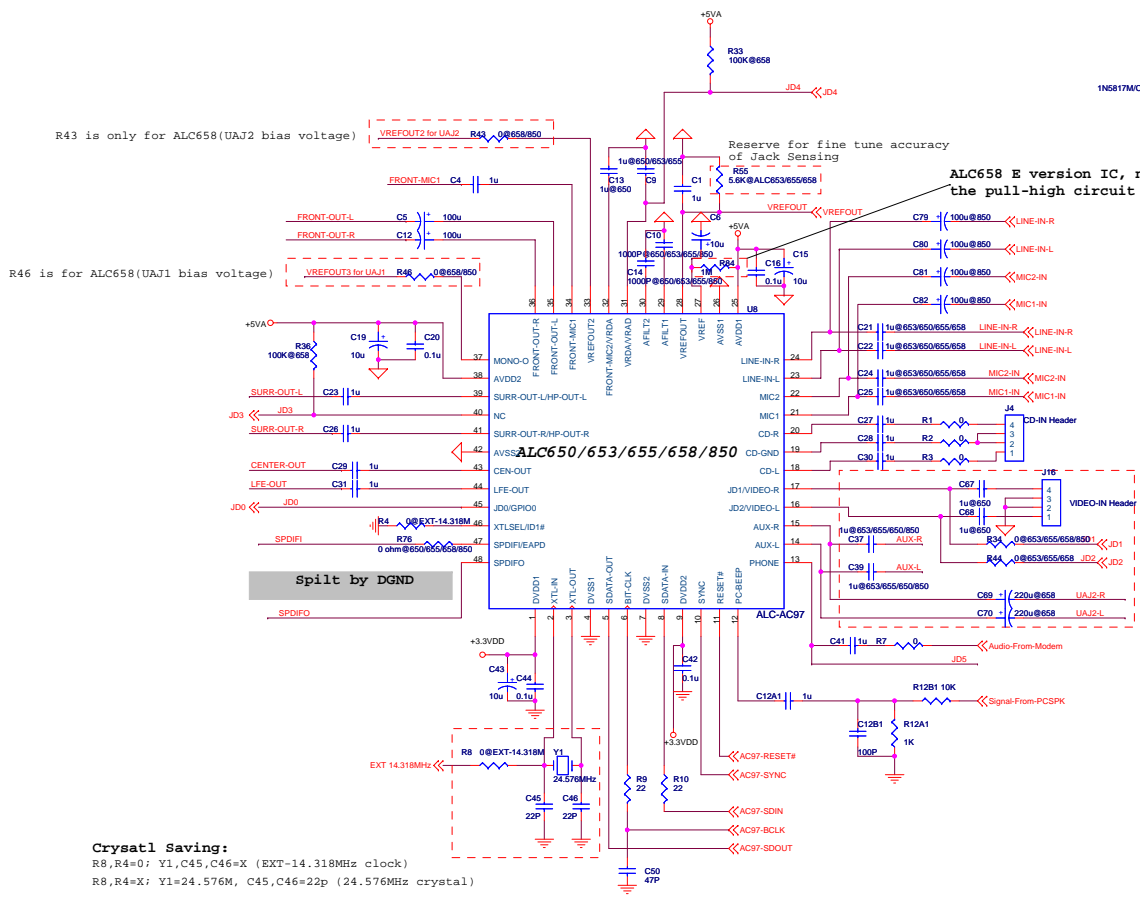


AUX-In is re-taskable to be one of following functions,
 (1)AUX-In for ALC650/653/655/658/850
 (2)Secondary Universal Audio Jack (UAJ2) for ALC658
 (3)Side-Surr Out for ALC850

ALC850 only.
 Side-Surr Out is a re-taskable port shared with AUX-In.
 JD5 is for strapping pin-14/15 is AUX-In or Side-Surr Out

Only ALC653 has no SPDIF In function.

Back Panel Bracket



R43 is only for ALC658(UAJ2 bias voltage)

R46 is for ALC658(UAJ1 bias voltage)

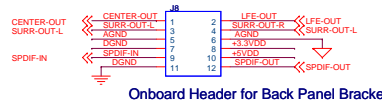
Reserve for fine tune accuracy of Jack Sensing

ALC658 E version IC, need the pull-high circuit

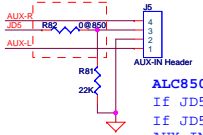
Spilt by DGND

Crystals Saving:

R8,R4=0; Y1,C45,C46=X (EXT-14.318MHz clock)
 R8,R4=X; Y1=24.576M, C45,C46=22p (24.576MHz crystal)

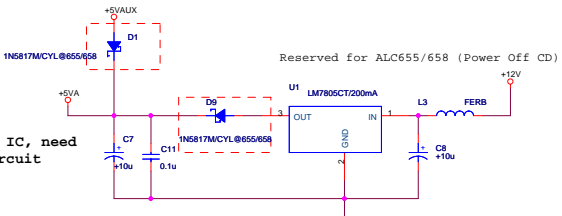


Onboard Header for Back Panel Bracket



ALC850 use JD5 for strap of AUX-IN configuration
 If JD5 is at low state, AUX-IN is configured as input(AUX-IN)
 If JD5 is at high state(Back Panel Bracker inserted),
 AUX-IN is configured as output(Side-SURR-Out)

Tied at one point only under the codec or near the codec



Arrangement of Jack Detection Pin:(ALC655/658)

JD0 for MIC-IN
 JD1 for FRONT-OUT
 JD2 for LINE-IN

Arrangement of Jack Detection Pin:(ALC658)

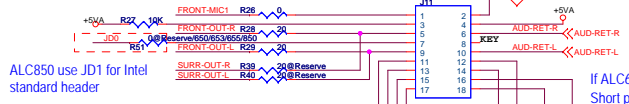
JD0 for MIC-IN
 JD1 for UAJ1(Front-Panel)
 JD2 for UAJ2 (Front-Panel)
 JD3 for FRONT-OUT
 JD4 for LINE-IN

Arrangement of Jack Detection Pin:(ALC850)

JD0 for MIC-IN
 JD1 for Front-Panel Output
 JD3 for FRONT-OUT
 JD4 for LINE-IN
 JD5 for AUX-IN Strap

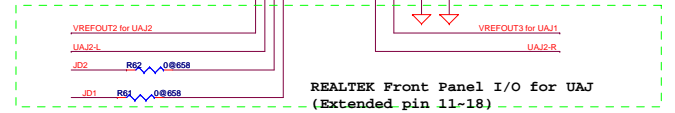
Onboard Header for Front Panel

INTEL Front Panel I/O Design Guide V1.0 (pin 1-10)



ALC850 use JD1 for Intel standard header

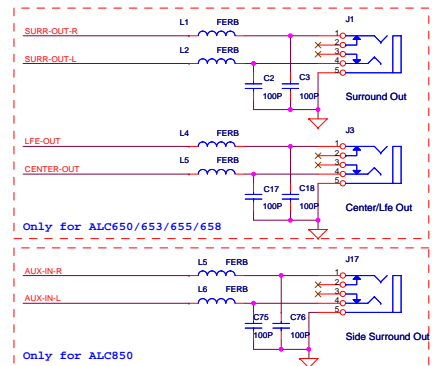
If ALC658 UAJ function is disable:
 Short pin 15 and 16,short pin 17 and 18.



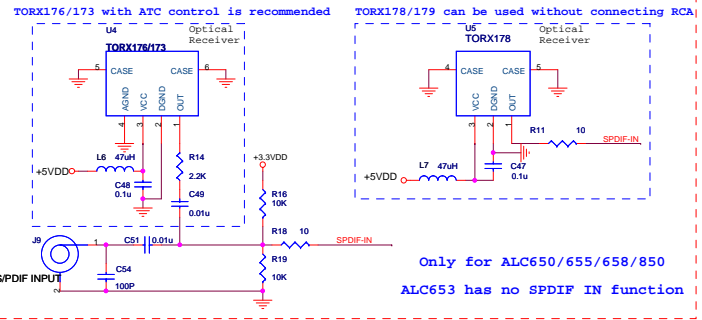
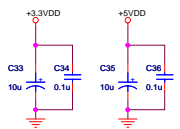
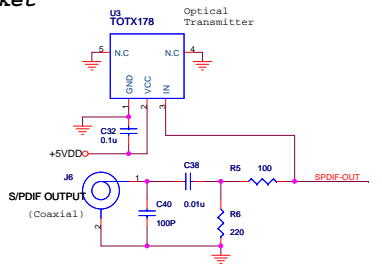
REALTEK Front Panel I/O for UAJ (Extended pin 11-18)

	R26	R61	R62	R51
ALC653/655/658/650(with Intel Front Panel)	0	X	X	X
ALC658(with Realtek Front Panel - UAJ function)	X	0	0	X

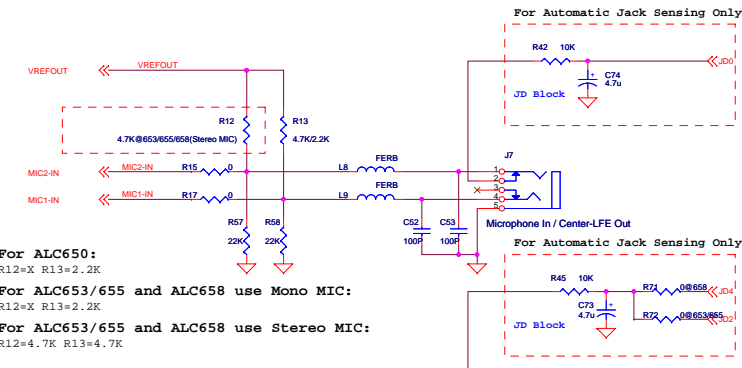
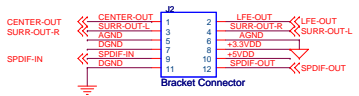
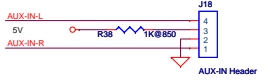
	ALC653/655	ALC658	ALC650	ALC850
C67	X	X	1u	X
C68	X	X	1u	X
R34	0	0	X	0
R44	0	0	X	X
C37	1u	X	1u	1u
C39	1u	X	1u	1u
C69	X	100u	X	X
C70	X	100u	X	X
C13	X	X	1u	X
C9	1u	X	1u	X
R46	X	0	X	0
R43	X	0	X	0
R33	X	100k	X	X
R36	X	100k	X	X
C14	1000p	X	1000p	1000p
C10	1000p	X	1000p	1000p
C21	1u	1u	1u	X
C22	1u	1u	1u	X
C24	1u	1u	1u	X
C25	1u	1u	1u	X
C79	X	X	X	100u
C80	X	X	X	100u
C81	X	X	X	100u
C82	X	X	X	100u
R81	0	0	0	22k
R82		X	X	0
C41	1u	1u	1u	X
R76	X / 0	0	0	0



Back Panel Bracket



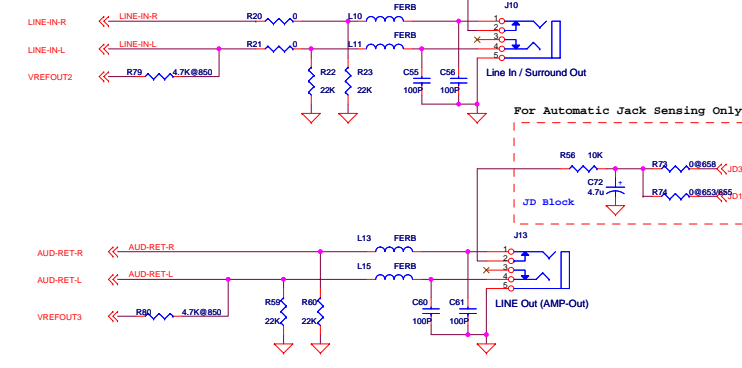
Only for ALC650/655/658/850
ALC653 has no SPDIF IN function



For ALC650:
R12=X R13=2.2K
For ALC653/655 and ALC658 use Mono MIC:
R12=X R13=2.2K
For ALC653/655 and ALC658 use Stereo MIC:
R12=4.7K R13=4.7K

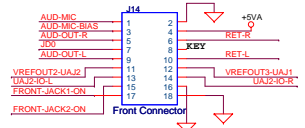
For ALC650:
JD Block=X
For ALC653/655/ALC658/ALC850:
JD Block=0

For ALC650:
JD Block=X
For ALC653/655:
R71=X R72=0
For ALC658/ALC850:
R71=0 R72=X



For ALC650:
JD Block=X
For ALC653/655:
R73=X R74=0
For ALC658/ALC850:
R73=0 R74=X

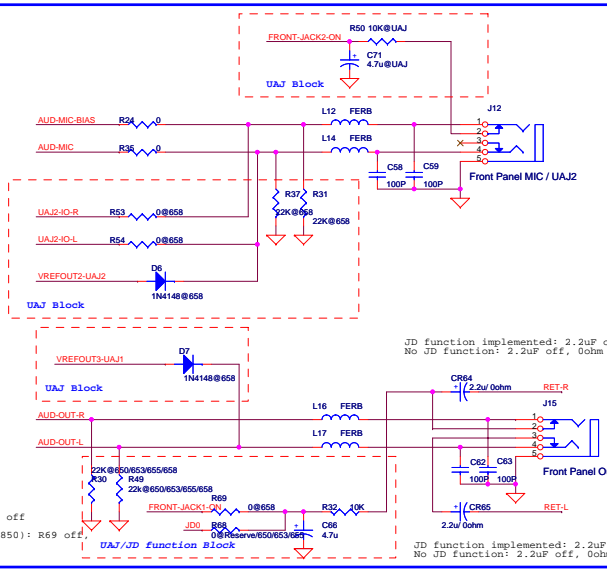
Front Panel Module



1-10 pin connector: INTEL Front Panel I/O Design Guide V1.0
11-18 pin: REALTEK Front Panel I/O for UAJ

	CR64	CR65	R32	C66	R30	R49	R31	R37	R24	R35	R53	R54	R69	UAJ Block
ALC653/655/658/650/850(with Intel Front Panel)	0	0	X	X	X	X	X	X	0	0	X	X	X	X
ALC658(with Realtek Front Panel - UAJ function)	2.2u	2.2u	10K	4.7u	22K	22K	22K	22K	X	X	0	0	0	ON

UAJ function (ALC658 only): R69 on, R68 off
Normal Jack-Detect (ALC650/653/655/658/850): R69 off, R68 on

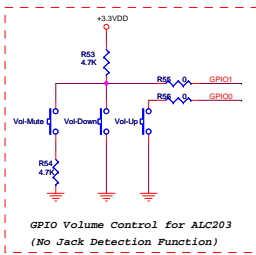
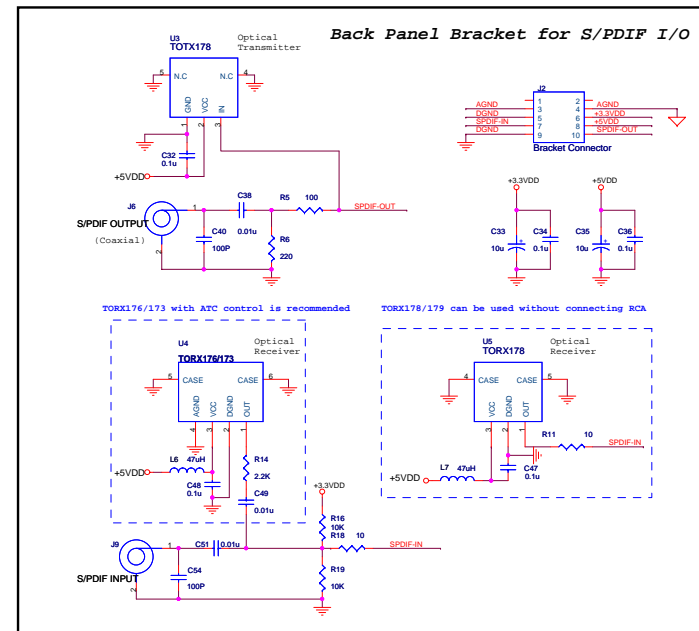


JD function implemented: 2.2uF on, 0ohm off
No JD function: 2.2uF off, 0ohm on

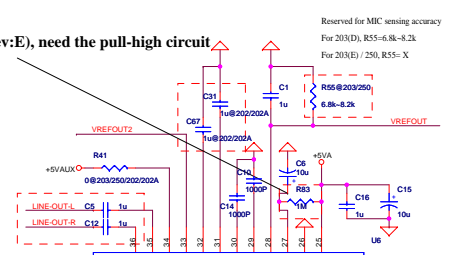
JD function implemented: 2.2uF on, 0ohm off
No JD function: 2.2uF off, 0ohm on

	R57	R58	R22	R23	R59	R60	R79	R80
ALC650	X	X	X	X	X	X	X	X
ALC653/655	22K	22K	22K	22K	22K	22K	X	X
ALC658	22K	22K	22K	22K	22K	22K	X	X
ALC850	75K	75K	75K	75K	75K	75K	4.7K	4.7K

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 Title: ALC 6/8-Ch AC'97 Compatible Circuit
 Size: Document Number: 6/8 Channel Front and Back Panel
 Date: Tuesday, February 21, 2006 Sheet: 4 of 6

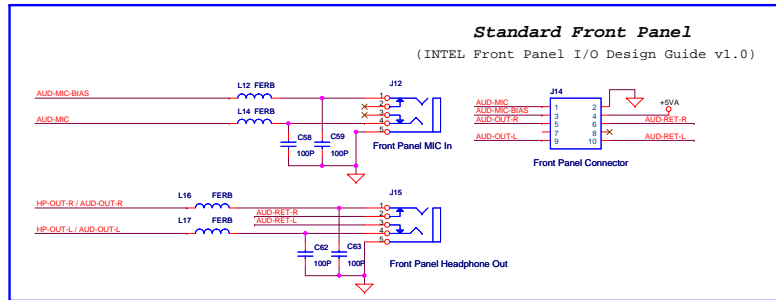


For ALC203(Rev:E), need the pull-high circuit

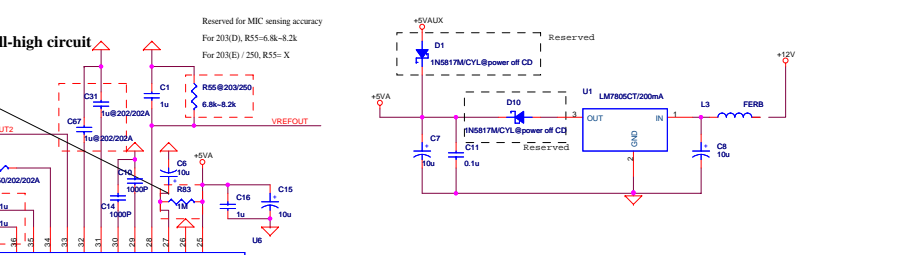
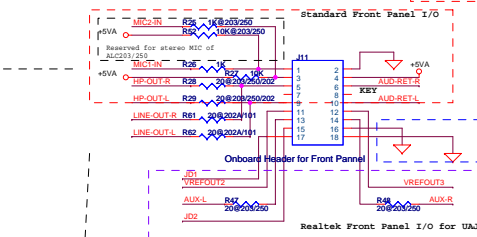


Standard Front Panel

(INTEL Front Panel I/O Design Guide v1.0)

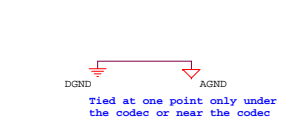


For UAJ'(ALC203 and ALC250) design only can use HP-OUT (R28,R29=0 ohm and R61,R62=X) as front panel output and LINE-OUT as back panel output



Realtak Front Panel I/O for UAJ

	ALC203	ALC250	ALC202	ALC202A	ALC101
C18	X	X	1u	1u	X
C19	X	X	1u	1u	X
R34	0	0	X	X	X
R35	0	0	X	X	X
C13	X	X	1u	1u	1u
C17	X	X	1u	1u	1u
C17	100u	100u	X	X	X
C19	100u	100u	X	X	X
GPIO JD Block	0H	X	X	X	X
GPIO1 JD Block	0H	X	X	X	X
JD0 Block	Reserved	X	X	X	X
R28	20	20	20	20	X
R29	20	20	20	20	X
R61	X	X	X	X	20
R62	X	X	X	20	20
C5	1u	1u	1u	100u	100u
C12	1u	1u	1u	100u	100u
C23	100u	100u	100u	1u	1u
C26	100u	100u	100u	1u	1u
C31	X	X	1u	1u	X
C67	X	X	1u	1u	X
R65	GPIO0	0	SDA(098uA) Equalizer Control#0 (ALC203 only)	X	X
R66	GPIO1	0	SDB(098uA) Equalizer Control#1 (ALC203 only)	X	X
R41	0	0	0	0	X



Tied at one point only under the codec or near the codec

DGNDD, AGNDD