

# Compatible Circuit of ALC CODEC Version 0.64 (ALC850/ALC655/658/650/203/250/202/202A/101)

## Pin Assignment:

	ALC655	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	SPDIFI/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 (ALC655/658/650/850)

Page2: Standard application circuits for 6/8 Channel ALC CODEC - Front and Back Pannel (ALC655/658/650/850)

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 compoments 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 Capacistance value from 3.3u to 4.7u in JD circuit  
(4)Modify Capacistance value of Vrefout pin from 10u to 1u  
(5)Modify circuit for power off CD function (using 1N5817)  
(6)Define HP-OUT for front pannel and LINE-OUT for back pannel as design of ALC203 and LAC250 with UAJ function  
(7)Modify value of CR64 and CR65,2.2uf  
(8)Modify Realtek Front Pannel 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:

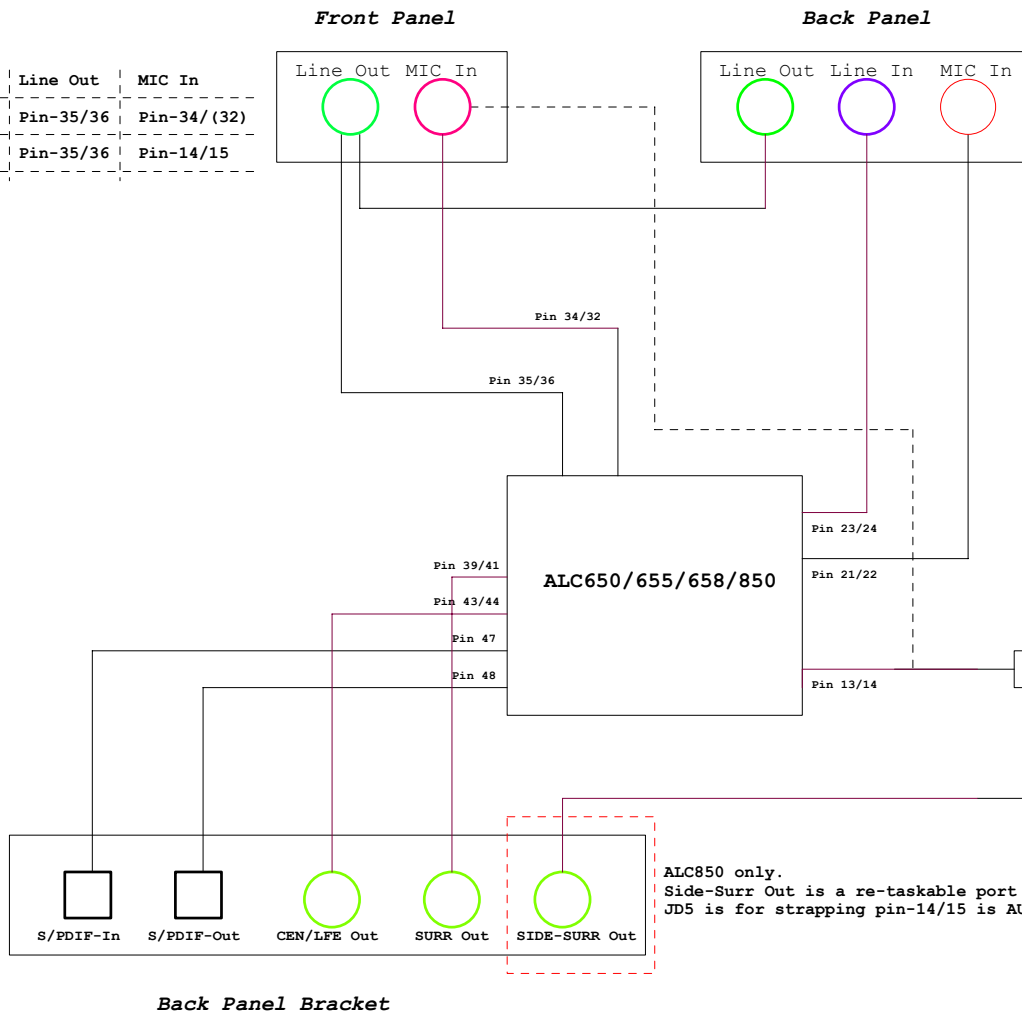
	Built-In Amplifier
ALC655	Pin-35/36, Pin-39/41
ALC658	Pin-35/36, Pin14/15
ALC650	Pin-35/36
ALC202	Pin-39/41
ALC202A	Pin-35/36
ALC101	Pin-35/36
ALC203	Pin-39/41, Pin14/15
ALC250	Pin-39/41, Pin14/15
ALC850	Pin-35/36, Pin23/24, Pin21/22

## Arrangement of Jack detection Pin:

	Pin-45 (JD0)	Pin-17 (JD1)	Pin-16 (JD2)	Pin-40 (JD3)	Pin-31 (JD4)
ALC655	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 Pannel Output		for FRONT-OUT	for LINE-IN

Realtek Semiconductor, Corp.		
Title ALC AC'97 Compatible Circuit		
Size	Document Number	Rev 0.64
<b>Version History</b>		
Date:	Thursday, September 25, 2003	Sheet 0 of 4

	Line Out	MIC In
ALC650/655/658/850	Pin-35/36	Pin-34/(32)
ALC658 UAJ Mode	Pin-35/36	Pin-14/15

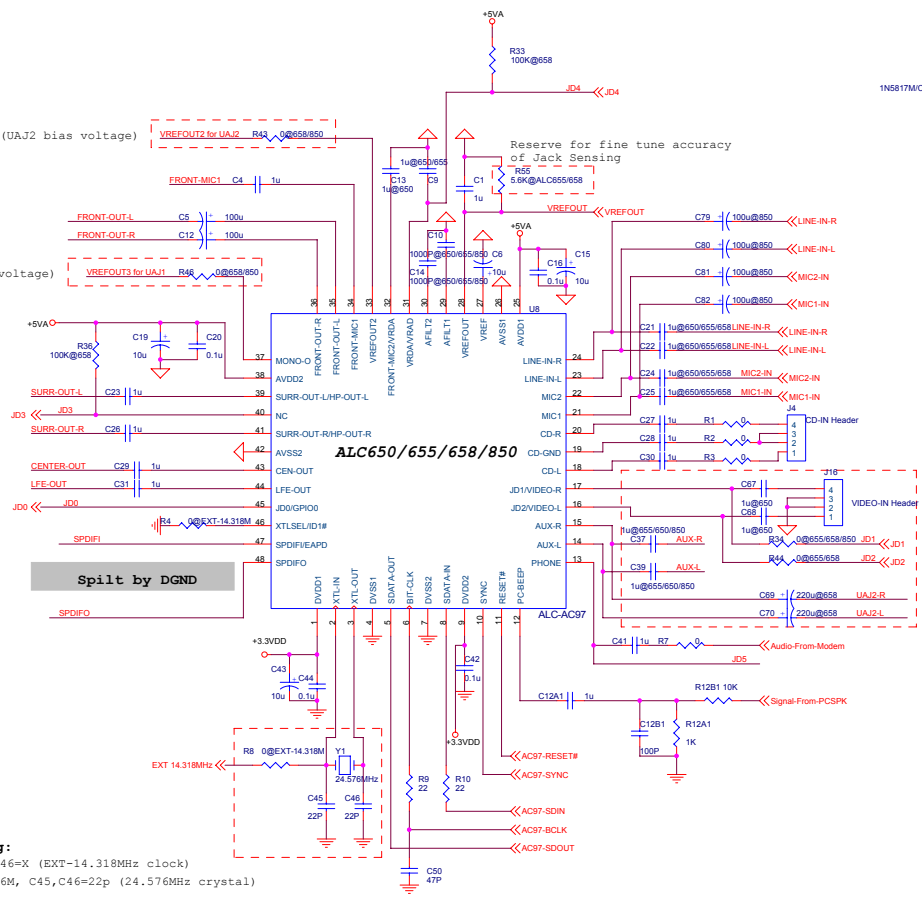


AUX-In is re-taskable to be one of following functions,  
 (1) AUX-In for ALC650/655/658/850  
 (2) Secondary Universal Audio Jack (UAJ2) for ALC658  
 (3) Side-Surr Out for ALC850

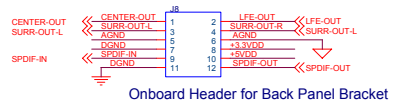
ALC850 only.  
 Side-Surr Out is a re-taskable port shared with AUX-In.  
 JD5 is for strapping pin-14/15 is AUX-In or Side-Surr Out

R43 is only for ALC658 (UAJ2 bias voltage)

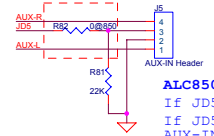
R46 is for ALC658 (UAJ1 bias voltage)



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

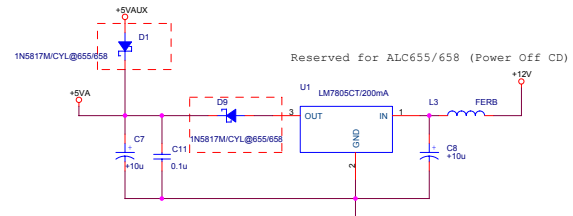


Onboard Header for Back Panel Bracket



**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

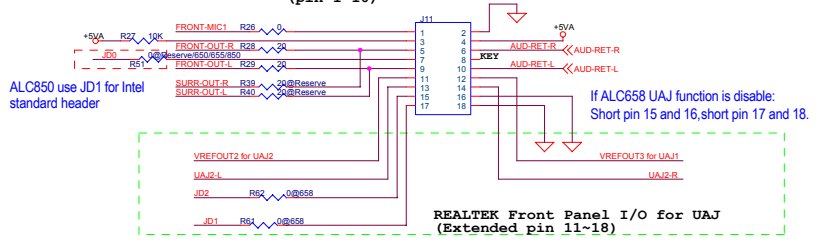


**Arrangement of Jack Detection Pin: (ALC655)**  
 JD0 for MIC-IN  
 JD1 for FRONT-OUT  
 JD2 for LINE-IN

**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)



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

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

	R26	R61	R62	R51
ALC655/658/650 (with Intel Front Panel)	0	X	X	X
ALC658 (with Realtek Front Panel - UAJ function)	X	0	0	X

	ALC655	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	X	0
C41	1u	1u	1u	X



