

DAC 24/96 (CS8416+AK4393/6)

Position	Role	Value	Manufacturer	Type	Value	Notes	Subjective improvement
<b>OpAmp Positive PS</b>							
C24	Smoothing	2200 uF 25V	Nichicon	FW	4700uF 50V		HF more refined, less harshness
C12	C24 Bypass	100 nF 50V	ANY	X7R Ceramic	100 nF 50V		
U9	15V Regulator	L7815CT	On Semiconductor	MC7812CT	-	Much lower noise	
C38	15V Regulator C Out	330uF 25V	Elna	RFS (Silmic II)	220 uF 35V		Much better bass extension, more body
C14	OpAmp Decoupling	100 nF 50V	Elna	RFS (Silmic II)	100 uF 35V	Alt. (much smaller): RFS 47uF 25V	
<b>OpAmp Negative PS</b>							
C25	Smoothing	2200 uF 25V	Nichicon	FW	3300uF 50V		HF more refined, less harshness
C15	C25 Bypass	100 nF 50V	ANY	X7R Ceramic	100 nF 50V		
U10	-15V Regulator	L7915CT	On Semiconductor	MC7912CT	-	Much lower noise	
C39	-15V Regulator C Out	330uF 25V	Elna	RFS (Silmic II)	220 uF 35V		Much better bass extension, more body
C17	OpAmp Decoupling	100 nF 50V	Elna	RFS (Silmic II)	100 uF 35V	Alt. (much smaller): RFS 47uF 25V	
<b>Signal Path (Common)</b>							
C1	SPDIF Coupling	10 nF 50V	Wima	FKP2	10 nF 63V	Specific for pulse apps	
C46-C47	LPF	3300 pF	Wima	FKP2	3300 pF 100V	Best industrial cap for LPF	Much larger and deeper soundstage, better bass and HF
U3	Opamp	NE5532	Texas Instruments	OPA827	x2 on BrownDog	Alt.: National LME49720	
CNEW	Opamp V+/V- Decoupling	NEW	Wima	FKP2	10 nF 63V		
<b>Signal Path (AK4393/AK4395)</b>							
R24-R34	LPF	1KOhm 1/4W	PRP	PR9372	1KOhm 1/4W		
C40, C41, C42, C43	LPF	1000 pF	Wima	FKP2	1000 pF 100V	Best industrial cap for LPF	Much larger and deeper soundstage, better bass and HF
<b>Signal Path (AK4396)</b>							
R24, R26, R30, R32	LPF	1KOhm 1/4W	Vishay	SMA0207	2.4 Kohm 1/4W 0.1%	Alt: Carbon Film matched <1%	Tonal balance is finally just right, carbon gives more body and much less harshness
R25, R27, R31, R33	LPF	1KOhm 1/4W	Vishay	SMA0207	150 Ohm 1/4W 0.1%	Alt: Carbon Film matched <1%	
R23, R28, R29, R34	LPF	1KOhm 1/4W	Carbon Film	Matched <1%	2.4kOhm 1/4W	Alt: SMA0207 1/4W 0.1%	
C40, C41, C42, C43	LPF	1000 pF	Wima	FKP2	680 pF 100V	Best industrial cap for LPF	Much larger and deeper soundstage, better bass and HF
<b>Digital 3.3V (CS8416 &amp; AK439x)</b>							
C23	Smoothing	2200 uF 25V	Nichicon	FW	3300uF 35V		
C6	C23 Bypass	100 nF 50V	Evox-Rifa	SMR	100 nF 50V		
U4	9V Regulator	L7809CT	On Semiconductor	MC7809CT	-	Much lower noise	More precise and focused
C27	9V Regulator C Out	10 uF 16V	BC Components	038	100 uF 50V		
C8	C27 bypass	100 nF 50V	Evox-Rifa	SMR	100 nF 50V		
C29	3.3V Regulator C Out	10 uF 16V	BC Components	038	47 uF 35V		
C9	C27 bypass	100 nF 50V	Evox-Rifa	SMR	100 nF 63V		
<b>Analog 3.3V (CS8416)</b>							
C34	3.3V Regulator C Out	10 uF 16V	BC Components	038	47 uF 35V		
C21	C34 Bypass	100 nF 50V	Evox-Rifa	SMR	100 nF 50V		
<b>Analog 5V (AK439x)</b>							
C31	5V Regulator C Out	10 uF 16V	BC Components	038	47 uF 35V		
C11	C31 Bypass	100 nF 50V	Evox-Rifa	SMR	100 nF 50V		
<b>CS8416 Decoupling</b>							
C2	RXN Decoupling	10 nF 50V	Evox-Rifa	SMR	100 nF 50V		
C3	VA Decoupling	100 nF 50V	Sanyo	Oscon SEPC	470 uF 6.3V	Alt.: Nichicon LS 150uF 10V	Clear improvement in all parameters
			Panasonic	ECHU 0603 *	1000 pF 50V	Alt.: NPO 0603	
C36	CRIP	1 nF 50V	ANY	NPO 0603 *	1000 pF 50V	Alt.: Panasonic ECHU 0603	
C5	CFILT	22 nF 50V	Evox-Rifa	SMR	22 nF 50V		
C28	VD Decoupling	10 uF 16V	Sanyo	Oscon SEPC	470 uF 6.3V	Alt.: Nichicon LS 150uF 10V	Clear improvement, particularly focus and authority
C4	VD Decoupling HF	10 nF 50V	Evox-Rifa	SMR	100 nF 50V		
<b>AK4393/6 Decoupling</b>							
C30	DVDD Decoupling	10 uF 16V	Sanyo	Oscon SEPC	470 uF 6.3V	Alt.: Nichicon LS 150uF 10V	Clear improvement, particularly bass, focus and authority
C18	DVDD Decoupling HF	100 nF 50V	ANY	X7R 0603 *	100 nF 50V		
C32	AVDD Decoupling	10 uF 16V	Elna	RFS (Silmic II)	47 uF 25V		Mandatory, bass, authority, HF, much less harshness
C19	AVDD Decoupling HF	100 nF 50V	ANY	X7R Ceramic	100 nF 50V		Better bass
C33	VREF Decoupling	10 uF 16V	Sanyo	ROA (Cerafine)	10 uF 35V		Clear improvement in all parameters
C20	VREF Decoupling HF	100 nF 50V	ANY	X7R Ceramic	100 nF 50V		Better bass
C35	VCOM Decoupling	10 uF 16V	Elna	ROA (Cerafine)	10 uF 35V	Should be 10uF!!! Critical!	Clear improvement in all parameters
C22	VCOM Decoupling HF	100 nF 50V	Evox-Rifa	SMR	100 nF 50V		

\* direct on-pin decoupling

Evox-Rifa SMR could be replaced with Panasonic ECHU (SMD but 4,8mm long), both have PPS dielectric which is best for PS bypassing, sometimes lacks bass and a ceramic is preferred

Gray test indicates planned but untested mods

Blue test indicates implemented but to be further investigated mods