Marantz CD57 modifications (I)
with active filter and opamp outputstage

Power supply

Part:	Org. value:	Replace by:	Brand:	Farnell:	Remark:
C801/802/811/812	22/47n cer.	47n MKT	BC	568-247	
C803/804	220u/50V	6800u/35V	Panasonic TSHA	119-8693	+2u2 MKT
C805/806	100u/16V	2200u/25V	Rubycon ZLH	812-6445	+100n PPS
C813	4700u/16V	4700u/16V	Panasonic FC	303-6212	+1u MKT
C815	3300u/6,3V	4700u/10V	Rubycon ZLH	812-6224	+100n PPS
C871	47u/16V	1500u/10V	Rubycon ZL	769-071	+100n PPS
D801...804	S5688G	MBR1100	IR	489-7432	
D811/812/851/854	S5688G	MBR1100	IR	489-7432	
DN01...04	S5688G	MBR1100	IR	489-7432	
Q801	JRC78M12	LM317T	National	948-9398	* see below
Q802	JRC79M12	LM337T	National	948-9401	* see below
Q811/871	JRC7805A	MC7805ACT	ONSemi	300-4831	

Opamps (Q605/606)

C611...614	100u/25V	220u/16V	Rubycon Black Gate Std.	(or use others +100n PPS)	
C655...658	220u/16V	remove			
C659/660	100p	remove			
R613...616	27R	220uH/3R3	Epcos	511-651	+2 ferrites
R619/620	10R	remove			
R655/656	10k	remove			
R657/658	100R	remove			
R659/660	100R	47R			
U216/217	wire	remove			
QN05...08	2SC2878	remove			
Q605/606 **	NJM2114D	AD827/LM6172/LT1361....		experiment! ** see below	
- insert extra 220n/PPS between pins 4 and 8			Panasonic	383-5492	SMD

OUTPUT FILTER

C601...604	120p	120p/1%	Mica	867-901	
C605/606	1000p	470p/1%	LCR PS	304-0021	Bessel filter
C607/608	100p	100p/1%	LCR PS	303-9894	
CD21...24	120p	120p/1%	Mica	867-901	
R601...604	27k	27k/0,1%	BC	308-6288	
R607/608	18k	18k/0,1%	BC	308-6240	
R609/610	22k	22k/0,1%	BC	308-6264	
R605/606/611/612	10k	12k1/0,1%	Welwyn	950-0154	Bessel filter
RD21...28	10k	10k/0,1%	BC	308-6185	

DAC (QD01, SM5872BS)

CD04	220u/10V	remove			
CD05/06	47n cer.	390u/35V	Rubycon ZLH	812-6739	+100n PPS
CD07	220u/10V	remove			
CD12/13	47n cer.	100n PPS	Panasonic	383-5418	SMD
CD15/16	470u/10V	680u/35V	Rubycon ZLH	812-6771	+100n PPS
RD01/04	4,7R	220uH/3R3	Epcos	511-651	+2 ferrites

- insert extra 100n X7R 0603 directly between pins 15 & 16
- insert 4x extra 100n X7R 0805 between pins 17 & 19, 21 & 19, 22 & 24 and 26 & 24

Decoder (Q102, SAA7372GP)

C108	100n cer.	100n MKT	BC	567-450	
C109	22n cer.	100n MKT	BC	567-450	
C110	47p cer.	47p PS	LCR	105-058	
C114	47u/16V	remove			
C115/117...119	47n cer.	100n PPS	Panasonic	383-5418	
C116	47n cer.	220u/16V	Rubycon ZLH	812-6305	+100n PPS
C120	47u/16V	220u/16V	Rubycon ZLH	812-6305	
C125	1n cer.	1n PS			
R117/118	4,7R	220uH/3R3	Epcos	511-651	+2 ferrites

- CRIN/CROUT modification, see '**More mods...**' section below

µController (QF01, MN187164)

CF02	47u/16V	remove			
CF01	47n cer.	220u/16V	Rubycon ZLH	812-6305	+100n PPS
CY01	47n cer.	22u/16V in parallel			
RF01/RY11	4,7R	220uH/3R3	Epcos	511-651	+2 ferrites

- insert extra 100n X7R between pins 35 and 36 of JF01

Drivers (Q106/107/108, TDA7073A)

C132	47n cer.	remove		
C155	47u/16V	100u/16V	Rubycon ZLH	812-6283
C156	47u/16V	remove		
C157/159	47n cer.	100u/16V	Rubycon ZLH	812-6283

- insert 3x 100n X7R on bottom-side, directly between pin 5 and 10/14 (ground)

Servo PCB

C121/124	47n cer.	100n PPS	Panasonic	383-5418	
C122	47n cer.	100n MKT	BC	567-450	
C126	47u/16V	220u/16V	Rubycon ZLH	812-6305	+100n PPS

- suitable ferrite beads: Farnell type 242-500.

More mod's...

To clean up the +/- 12V supply that's used for the opamps, disable all other circuits that use it:
- Disable headphone circuit: remove C901/902 (signal) and jumpers U139/140 (+/- 12V).
- Disable muting circuit: remove QN24/25/91/92 and RN27/28 (disables analog -12V supply to muting circuit).

Some noise reduction...
- Replace fixed powerchord by an IEC socket and connect ground wire to chassis at the output socket.
  Use high quality steel braid shielded power cable to connect player to mains.
- Place 250VAC/20mm. varistor (100-4357 or 105-7197) directly on mains pins of IEC socket or on
  mains terminals on the PCB.
- Insert common-mode filter (Farnell 322-7509 or 969-4234). Remove U243/245 and insert filter instead.
  Place one class X capacitor 4,7n/250Vac (952-7052) across mains before and after filter.
- Insert a 100n film capacitor and 22R resistor across the sled motor. This adds a snubber, similar to R161
  and C162 for the disc motor. There are empty places for these components located near JM01.

Disable Digital Out:
- Remove R114, U172, U196 and U204 to disable the DO signal to the outputs on the back-panel.
- Remove U201 to disable +5V to the optical output connector.

Disable IR remote switch and RC-5 IN/OUT bus:
- Remove U125, U133 and DF52 to isolate the RC-5 signal.
- Remove RF52, RF54 and RF61 to disable the 5V power supply for this circuit.
- Insert a jumper wire from U125 (the hole farthest from QF61) to U133 (the hole near QF02).

And these are for the die-hard's...

- Insert one or two new muting relays to restore muting function: replace RN30/31 with 2k2 (from RN15/16), jumper base and collector pins of QN24/25 and use muting-lines to drive one or two BC547's with relays: emitters to GND, relay in collector circuit. Tap power from collector of QN02 (approx. 12VDC). Connect NC contacts to empty collector and emitter pins of QN07/08. Make sure RN27/28 are removed.
- Replace the 16.9344MHz crystal by a low jitter clock module, like The Flea. Remove CD02/03, RD02 and XD01. Connect clock signal to pin 28 of DAC and GND. Use separate power supply for best results.
- Insert SMD decoupling caps directly across the analog and digital supply pins of the DAC. Use one 0603 and four 0805 100n X7R capacitors.
- Feed the digital (DVDD) and analog supply pins (AVDD1...4) of the DAC separately, through their own inductors. Remove U202 and U203. U201 should already be removed (Digital Out disabled). Place the "RD04" inductor in the empty "+" hole of CD07 and in the hole of U203 that connects it to U200. Place a new 220uH inductor (+ 2 ferrites) in the other hole of U203 and in the hole of U201 that connects it to C815. The digital and analog +5V of the DAC are now separated.
  The deluxe version: insert a 5V voltage regulator for the analog AVDD pins of the DAC. Remove U203 and U202. Place RD04 in the empty "+" hole of CD07 and in the empty hole of U203 that connects it to U200. Place a new inductor (+ 2 ferrites) in the other hole of U203 and the hole of U202 that leads to C901. This trace is no longer used since C901 is removed. Place your favorite voltage regulator on the back of the PCB, near C813. Tap power from U267 (GND) and U268 (+). Place a small cap at the output of the regulator and connect it with a short wire to the empty "+" pin of C901, that leads to our new inductor.
- To separate the +/- 12V circuit for the opamps further: modify the power-transformer and separate the common 5V / 12V center-tap. Remove the transformer from the PCB. Carefully desolder the two thickest wires connected to pin 4 of the transformer. These are the 5V center-tap wires. Wrap them together a bit and solder a small piece of wire on them. Remove U239. Insert a wire between the two un-named holes in line with U239. This will reconnect the now separate 12V center-tap to the 12V section. Put the transformer back on the PCB and connect the free 5V center-tap wires to the empty hole of U239 that's closest to U241.

REMARKS

* replace Q801/802 with low-noise regulators or LM317/337 on small PCB's. Use expermentingboard or PCB's found at Eddie Wang DIY for example. Use tantalum or equivalent low-ESR decoupling caps.

** for best results: use single opamps, each fit for their task. Example: OPA627 + OPA132 or AD8610 + AD8510 for post-DAC + filter on SMD adapters (BrownDog or eq.). Experiment and listen!

A lot of information and tips came from various articles and forums I found on the internet:
- many thanks to Thorsten Loesch for his article at TNT-Audio.com
- many thanks to Acoustica.org for The CD63 clock-hack
- and credits to the members of diyAudio.com that contributed through the forum, although they are probably not aware of that (they'll know who they are if they recognize their idea here... :-)

For updated mods-lists and detailed photos: visit www.raylectronics.nl

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