

## CS-40ps Power Amplifier modules

Our CS-40ps modules are our most sold amplifier modules, probably because of the built in Power Supply. Due to our way of designing a PCB, components choice and splitting the input stage from the output stage, the sound quality is simply staggering as noticed by now by all kinds of people, from [visitors to professionals](#). According to them even the real serious High-End brands can be beaten.

For optimal performance a Voltage Regulator board OR a Protection module could be mounted as well.

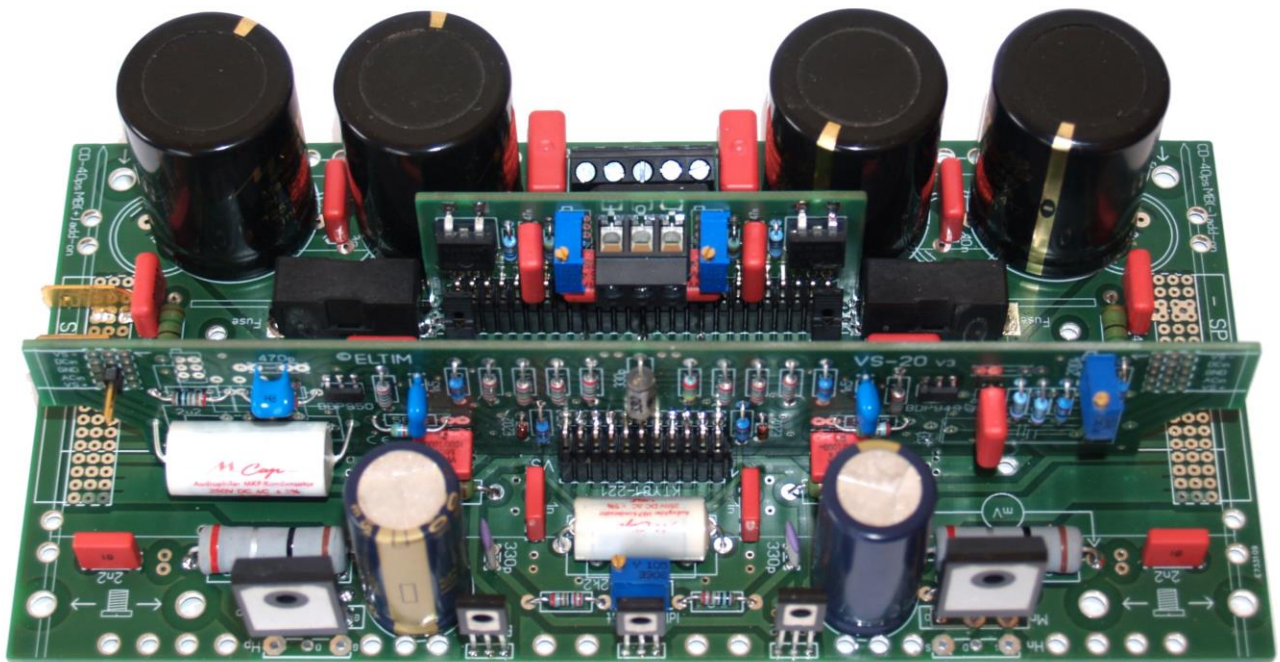
We split the regular known power amplifier schematics in an input stage (voltage)- and an output stage (large currents) board, resulting in a better and fully symmetrical PCB design. Doing so, we also have more room for larger PCB tracks and more space around the components, all high quality stuff.

On purpose we spread the components wider than we usually see, where it looks like a competition of who can make the smallest board, all ignoring practical design rules like minimum track widths, interacting capacitive influences, EM interference, heat distribution, etc. Thanks to that, our designs are free from on/off irregularities, so we don't need a relay to protect your speakers from this nasty irregularities.

Without precautions they run from DC - >2MHz, "tamed" by us to 350kHz on our VS-input modules and present a rise time of >60V/uS, more than 3 times faster than any opamp we know about. Over/undershoot is hardly there, as specific harmonics aren't either. This all due to the symmetrical, wide layout and the use of modern, classy components. Thanks to the double sided (FR4) boards we also can keep the tracks as short as possible.

The CS-40ps modules we present here are our most convenient to use Current Stage modules, since we managed to design them with an integrated power supply. Compared to our other CS-module ranges the power reserve is limited due to the available PCB space and lack of cooling of the rectifier.

For a functioning amplifier you also need one of our VS-input stage modules, the long board in the picture! On all VS-modules an AC as well as a DC input is provided. By using the DC input the standard mounted input capacitor is bypassed and you could connect an input signal via a classy input capacitor.



**A functioning, complete ELTIM amplifier module based on**

- **CS-40ps** Current Stage (large board, and as described in this document),
- stack mounted **VS-20** Voltage Stage module (long, slim board),
- **VR-3/30** Voltage Regulator board, feeding the VS-20 only (the tiny board).

## Table of available models

Basically, the differences are the type of power transistors and type of power capacitors used.

Due to the max load of the transistors and/or the max. voltage over the capacitors, the max. power differs.

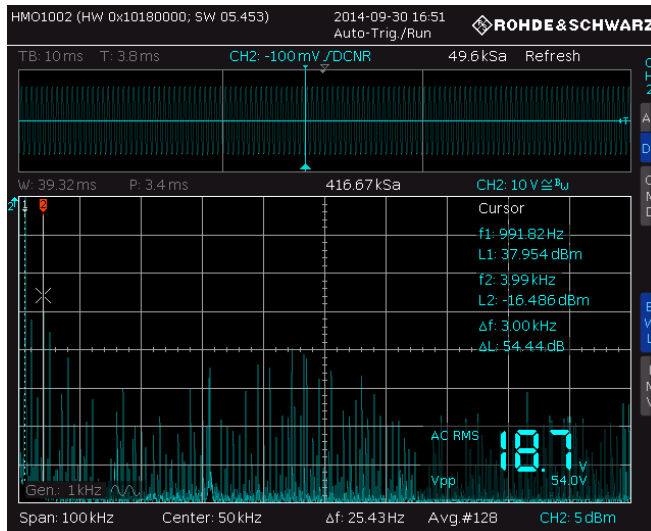
TYPE	Recommended additional module(s)	Power Fets	Capacitors	Recc. trafo	+/- Vac max.	Dimensions
<a href="#">CS-40ps EC</a> 6,3mm tongues	VS-10	IR Hexfets 200V, 12A	2x4.700uF/50V axial + 2x 1000uF/50V Panasonic FR	2x22V/120VA  <b>55Wrms@8Ω</b> <b>80Wrms@4Ω</b>	2x 30V  <b>90Wrms@8Ω</b>	209x103x27mm
<a href="#">CS-40ps LP</a> 6,3mm tongues	VS-10	IR Hexfets 200V, 12A	2x6 1.000uF/50V Panasonic FR	2x25V/160VA  <b>75Wrms@8Ω</b> <b>100Wrms@4Ω</b>	2x 30V  <b>100Wrms@8Ω</b>	209x103x30mm
<a href="#">CS-40ps ST</a> 6,3mm tongues	VS-10 (VR3-30)	IR Hexfets 200V, 12A	2x6 1.800uF/63V Panasonic FC	2x30V/160VA  <b>100Wrms@8Ω</b> <b>150Wrms@4Ω</b>	2x 40V  <b>165Wrms@8Ω</b>	209x103x40mm
<a href="#">CS-40ps HC</a> 2x18p headers	VS-10	IR Hexfets 100V, 24A	2x2 10.000uF/50V NICHICON + 2x 2.200uF/50V Panasonic FC	2x25V/225A  <b>80Wrms@8Ω</b> <b>130Wrms@4Ω</b> <b>155Wrms@2Ω</b>	2x 30V  <b>110Wrms@8Ω</b> <b>160Wrms@4Ω*</b>	209x103x55mm
<a href="#">CS-40ps HV</a> 2x18p headers	VS-10 (VR3-30)	IR Hexfets 200V, 12A	2x2 8.200uF/63V NICHICON + 2x 1.800uF/63V Panasonic FC	2x30V/160VA  <b>100Wrms@8Ω</b> <b>150Wrms@4Ω</b>	2x 40V  <b>150Wrms@8Ω*</b> (CD modules req.)	209x103x50mm
<a href="#">CS-40-ps HQ-LP</a> 6,3mm tongues	VS-10	EXICON Mosfets 200V, 8A	2x6 1.000uF/50V Nichicon UFM "Fine Muse" caps	2x30V/160VA  <b>90Wrms@8Ω</b> <b>135Wrms@4Ω</b>	2x 35V  <b>115Wrms@8Ω</b>	209x103x30mm
<a href="#">CS-40ps HQ</a> 2x18p headers	VS-20 ( <i>matched transistor array</i> ) (VR3-30)	EXICON Mosfets 200V, 8A <i>Matched!</i>	2x2 6.800uF/63V Mundorf MLGO + 2x 1.800uF/63V Panasonic FC	2x30V 160VA  <b>100Wrms@8Ω</b> <b>125Wrms@4Ω</b>	2x 40V  <b>125Wrms@8Ω*</b>	209x103x50mm
<a href="#">CS-40ps RQ-ST</a> 6,3mm tongues	VS-10 (VR3-30)	EXICON Mosfets 200V, 16A	2x6 2200uF/63V Nichicon UPW caps Long life, low ESR	2x35V/225VA  <b>120Wrms@8Ω</b> <b>165Wrms@4Ω</b>	2x 40V  <b>140Wrms@8Ω</b> <b>190Wrms@4Ω</b>	209x103x40mm
<a href="#">CS-40ps RQ</a> 2x18p headers	VS-20 ( <i>matched transistor array</i> ) (VR3-30)	EXICON Mosfets 200V, 16A <i>Matched!</i>	2x2 10.000uF/63V Mundorf MLGO + 2x 1.800uF/63V Panasonic FC	2x35V 300VA  <b>130Wrms@8Ω</b> <b>205Wrms@4Ω</b>	2x 40V  <b>150Wrms@8Ω</b> <b>200Wrms@4Ω*</b>	209x103x55mm
<a href="#">CS-40ps CB</a> 2x18p vertical side headers (MB) + 2x 12p back Headers (GDS/GSD) <b>NO Power transistors!</b>  This module only contains the 3 driving transistors and vertical headers at the side and back for mounting of <a href="#">CD-MB and CD-GDS/GSD modules</a> . (required!)	VS-20 ( <i>matched transistor array</i> ) CD-40ps MB-HQ (VR3-30)	EXICON Mosfets 200V, 8A, are on CD-modules! <i>Matched!</i>	2x2 10.000uF/63V Mundorf MLGO +  2x 100uF/63V NICHICON UFG "Fine Gold" caps	2x30V 225VA  <b>100Wrms@8Ω</b> <b>140Wrms@4Ω</b>	2x 35V  <b>130Wrms@8Ω</b>	209x103x80mm (incl. CD modules)
	VS-20 ( <i>matched transistor array</i> ) CD-40ps MB-RQ VR3-30	EXICON Mosfets 200V, 16A, are on CD-modules! <i>Matched!</i>		2x35V 300VA  <b>140Wrms@8Ω</b> <b>200Wrms@4Ω</b>	2x 40V  <b>180Wrms@8Ω</b> <b>240Wrms@4Ω</b>	209x103x120mm (incl. CD modules)
	VS-10/20 CD-40ps GDS/GSD  VR3-30	2 – 4 pairs of power transistors on the CD modules,		Depending the GDS/GSD module(s) used	Depending the GDS/GSD module(s) used	209x103x65mm (CS-module) Total height depends on the GDS/GSD mod. used.

\*Max. power @ 2 or 4ohms can be extended by adding extra CD-40 Mosfet pairs left and right of the module.

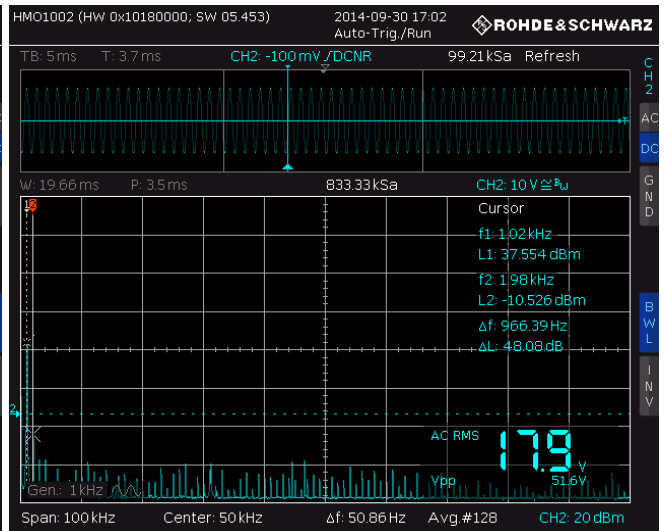
More specific info of every separate module you can find at [our website](#).

[www.eltim.eu](http://www.eltim.eu)

## Harmonics levels at full power:

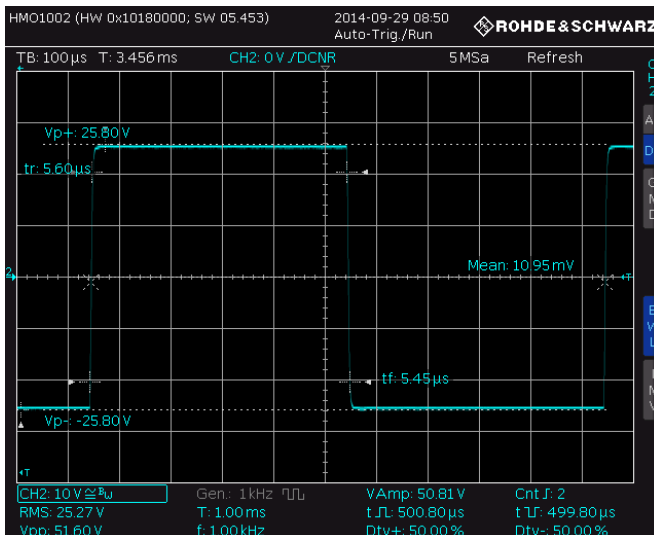


Hexfets (EC, LP, ST, HV, HC models)



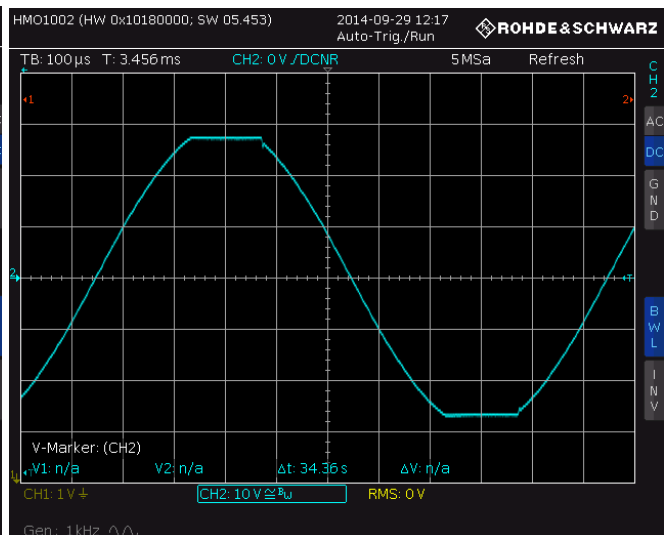
EXICON lateral Mosfets (HQ and RQ models)

## Rise/fall time and behaviour:



Rise/fall time: >> 60V/μS  
About without over/undershoot !

## Clipping behaviour:



NO strange clipping effects  
Just limited by Power rails levels

## Some figures, based on the less best performing model:

Input sensitivity	1Veff
Input impedance	47kΩ
Rms Output level @0,1%THD/ ±35 V supply	75W/8Ω, 120W/4Ω
Power bandwidth	DC- > 350kHz (ACin: 2-300kHz)
Slew rate	> 60V/μS (limit of our measuring eq.)
Signal/noise ratio (A-weighted) @ 1W/8Ω	> 105dB
Harmonics distortion @ 8Ω/1kHz, 1W, 60W, PB/60W	< 0,003%   < 0,002%   < 0,03%
Intermodulation distortion 50Hz/7kHz, 4:1	< 0,005%
Dynamic IM distortion square 3,15kHz / sine 15kHz	< 0,002%
Damping factor @ 8Ω (strongly depending on PS parts!)	> 200
Recc. Idle current power transistors	20 – 100 mA

These designs are copyrighted by ELTIM audio BV, Louis Timmers 2018 ©