



The Parasound JC 1 Design Team

Parasound has worked with renowned designer John Curl since 1989. John's designs are legends dating back to the early 1970s. These include the Mark Levinson JC-2, Denneson JC-80 preamplifier, Vendetta phono preamplifier, electronics for The Grateful Dead, and the master recorders for Wilson Audio and Mobile Fidelity. He has continuously pushed the boundaries of sound reproduction and has pioneered measurement techniques which correlate musical accuracy with the materials used in component parts. We honor John by designating the JC 1's model number with his initials.

After a decade of working together, John Curl enlisted Bob Crump and Carl Thompson to form CTC Builders in 1999. John creates the electrical designs, Carl engineers the board designs, and Bob chooses the parts, wires and connectors, and voices the final result.

CTC's products have earned the utmost respect from discerning audiophiles and high end magazine reviewers. Owners of the CTC Blowtorch preamplifier consider it to be without equal.

John Curl on the JC 1 Circuit Design

The JC-1 power amplifier is the culmination of many years of design and modification of Parasound power amplifiers. The JC 1 design is based on a complementary differential J-FET input stage followed by two stages of selected push-pull MOSFETs, ultimately driving 9 pairs of the most powerful complementary bipolar power transistors that are available today. This gives 400 watts into 8 ohms, 800 watts into 4 ohms, and 1200 watts into 2 ohms, without compromise.

In a sense, the JC 1 design started in 1989 with the original Parasound HCA-2200. This amplifier worked very well, but it was somewhat limited in power output and features. A number of prototypes and modifications over the years then evolved into the HCA-3500. This amp is very powerful, but it lacks some of the JC 1's refinements, such as much larger heat sinks, twice the power supply, as well as better connectors, wiring, and circuit layout. Also, the JC-1's class A operating region has been increased to over 25W, so that under normal listening conditions, the amp is operating entirely in the class A region, only extending to the class AB region during very loud musical passages, or 'special effects' such as explosions, rocket launches, etc. These refinements are the key to a high end product that is above and beyond a well-engineered power amp design. This makes the JC-1 a world-class amplifier that will compete favorably with any other amplifier presently available at anywhere near its price range and power level. I am very happy with the listening and measured results of this new design.

John Curl

Bob Crump on CTC Builders' Role in Developing the JC 1

State of the art audio design requires three things to succeed where others have failed: the best electrical design, the best layout, and the best parts. CTC Builders' skills encompass the best of these three separate worlds and our results have been amazing down through the years

The JC-1 project arose out of the modifications CTC performed on the Parasound HCA-3500 between 1999 and 2001. Taking things a step at a time, various changes to the circuit design and parts yielded an absolutely wonderful amplifier we called the CTC BBQ. The BBQ was exhibited at the 2001 International Consumer Electronics Show and it turned heads. In 2001 Parasound commissioned CTC to develop a no-compromise mono amplifier comparable to the BBQ and the result is the JC 1.

The JC 1 breaks new ground in parts quality, as there is nothing in high end audio that approaches the quality of parts we chose – reflecting many years of our continuing parts research and evaluation.

The JC 1 also breaks new ground for circuit boards which allows such attributes as focus, speed and immediacy to shine through due to the highly unusual, very tight layouts Carl designed. Some of the outstanding high performance parts are as follows:

- Vampire Direct gold-plated OFC RCA jacks
- Neutrik XLR connectors
- Reliable RT DC bypass and Zobel capacitors
- Superior Electric binding posts
- Vampire continuous cast copper signal and DC wiring
- Nichicon Great Supply raw DC capacitors (132,000uF in the high current supply)
- Nichicon Muse DC and local bypass capacitors
- Harris hyperfast soft recovery diodes for all bridge rectifiers
- Sanken output transistors - the most powerful complementary transistors available

The JC-1 delivers 25w in class A allowing most amplification to be contained within the class A mode except for large bass transients. The unit uses separate power supplies for the input/driver section allowing the JC-1 to be totally immune to fluctuations in the AC line voltage. We did the best we could with the electrical design, layout and parts selection/voicing and we're confident the JC 1 will surpasses virtually every other amplifier on the market regardless of price.

Bob Crump

Carl Thompson on the JC 1 Layout

The real challenge in the JC 1 project was to take John's subtle and elegant circuits, Bob's well-considered parts selections, and implement everything in an uncompromised, cost-effective manner, without the performance sacrifices usually associated with other than astronomically priced equipment. Circuit functions were divided between four separate, carefully oriented circuit boards (and associated wiring) to minimize unwanted circuit interactions. Overall, system signal flow was developed in concert with the board layout with special emphasis on overall system grounding. Boards underwent many layout iterations both to optimize manufacturability *and* performance. The final main board can handle double the very, very substantial current of which the JC 1 is capable. This required very wide matched circuit paths in 2 oz. copper on both sides of the board for critical nodes.

The JC 1 is very difficult to stress so that audible strain due to layout-generated resistance will be vanishingly small. Part of the reason for such a beefy layout is the huge power supply which required fitting four very large filter capacitors plus the separate input stage power supply on the main circuit board. The separate dedicated input board is thus more immune to power supply noise and from circuit noise in the separate auto turn on control board. The JC 1 input board mounts directly on the back panel for minimum input and input select wiring length. The layout is absolutely symmetrical with the minimum possible signal path. Here too, there's an emphasis on minimum resistance to reduce unwanted circuit interactions.

I've only occasionally said of the design of highly refined equipment that it starts to "glow" after a certain point. It's when you know that there are virtually no unquestioned design elements and there is a deceptive simplicity and wholeness to the overall package that is apparent to the practiced eye. The JC 1 glows.

Carl Thompson