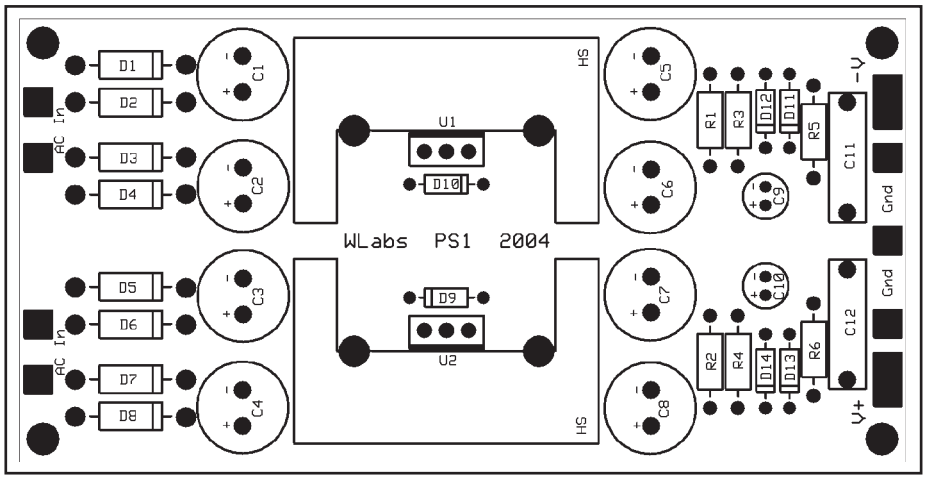
PS-1 Regulated Power Supply

The PS-1 is a high quality low voltage regulated power supply. It is recommended for use with solid state preamplifiers, active crossovers, filters, CD players, and other circuits with low-to-medium current requirements. The PS-1's voltage can be fixed from +/- 5 volts to +/- 24 volts by the selection of a few resistors, and its output is capable of supplying up to one ampere of current. The regulators are rated at 3 amps, so if your current requirements are higher than 1 amp, a larger transformer can be substituted without altering the present circuit configuration. The supplied toroid transformer can be used with both 120Vac/60Hz or 240Vac/60Hz operation. The figure on page 2 depicts the schematic diagram of the PS-1 circuit. This power supply is similar to the one designed by Walt Jung and Gary Galo and published in TAA and uses the Linear Technologies LT1085CT/LT1033CT voltage regulators. These regulators are low dropout, high efficiency devices highly recommended for audio applications. The main differences between the TAA design and the PS-1 are: The PS-1 uses a smaller VA rated transformer and a lower value output filter capacitance (the 4A transformer was really overkill); More bypass capacitors are used throughout the PS-1 circuit to prevent transients and other supply-related noise from reaching the audio circuitry, we have added the schottky low-noise rectifier diodes, use Nichicon ultra low impedance electrolytics and most importantly the PS-1 is less expensive. Available with or without the toroid power transformer.

PS-1 Parts List

D1-D8	3A/100V	Schottky Low Noise Diodes
D9-D14	1A/100V	Diode
C1-C8	1000uf/35V	Nichicon Ultra Low-Z Electrolytic Capacitor
C9, C10	100uf/50V	Nichicon Ultra Low-Z Electrolytic Capacitor
C11, C12	.01uf/600V	Wima Film Capacitor
R1, R2	Select*	1% Metal Film Resistor
R3, R4	Select*	1% Metal Film Resistor
R5, R6	1k/.5watt	1% Metal Film Resistor
U1	LT1033CT	LT Voltage Regulator
U2	LT1085CT	LT Voltage Regulator
T1	22+22V/1.5A	Toroidal Transformer
HS		Heatsinks w/hardware
CB		Circuit Board
ST		Standoffs

* See notes for determining resistance value.



PS-1 Power Supply Component Placement Diagram

PS-1 Assembly Instructions

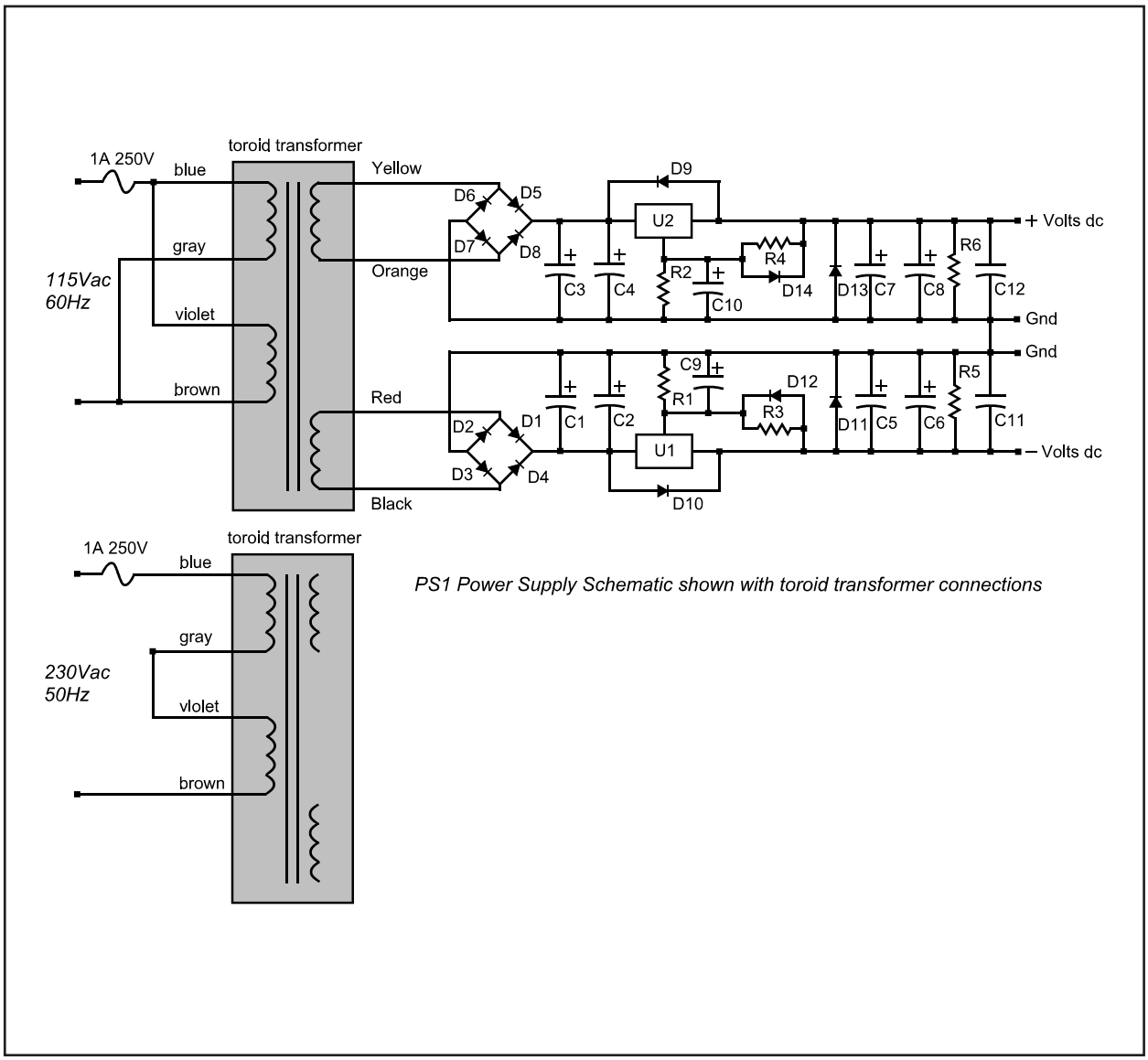
The PS-1 is a small, relatively simple circuit that can be assembled in approximately one hour. Please follow the stuffing guide shown on the previous page and note polarities of the bridge rectifiers, electrolytic capacitors, diodes and voltage regulators.

The following equation can be used to calculate the resistor values required for a specific output voltage:

$$Vout = 1.25 (1 + R1/R3) + R1 (50 \times 10^{-6})$$

The table below lists resistor values for several common voltages. If you order our kit, be sure to specify which voltage you will be using, and we will send you the correct values.

Resistance		Voltage	Resistance		Voltage
R1/R2 = 2.74 Kohm	R3/R4 = 953 ohm	+/- 5 Volts	R1/R2 = 12.1 Kohm	R3/R4 = 0.95 Kohm	+/- 18 Volts
R1/R2 = 10.0 Kohm	R3/R4 = 1.21 Kohm	+/- 12 Volts	R1/R2 = 33.2 Kohm	R3/R4 = 1.91 Kohm	+/- 24 Volts
R1/R2 = 10.5 Kohm	R3/R4 = 1.00 Kohm	+/- 15 Volts			



PS1 Power Supply Schematic shown with toroid transformer connections

PS-1 Power Supply Schematic Diagram

Recommended Assembly Sequence

We recommend you follow the assembly sequence outlined below. Before starting check your kit for all components.

1) Install and solder resistors and diodes (note polarity of diodes).
2) Install and solder capacitors C9 and C10 (note polarity).
3) Install and solder Wima capacitors C11 and C12.
4) Install and solder the electrolytic capacitors C1 thru C8 (note polarity).
5) Attach heatsinks to the regulators U1 and U2
6) Install regulators and solder to the circuit board. The heatsinks should mount flush with the circuit board and the heatsink's pins also soldered to the board.
7) Attach transformer wires to the circuit board as outlined on the previous page (note the transformer can be wired for both 120Vac or 240Vac).

PS1 Checkout and Test

Inspect all solder joints under a bright light. Look for voids, bad joints and solder bridges. Power-up the PS1 before connecting to your circuit. Check the +/- output voltages with a voltmeter to insure correct operation.