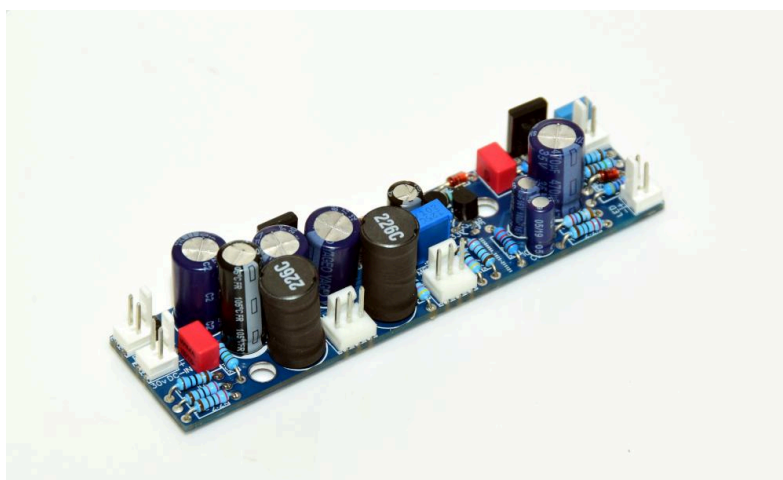


Application & Purpose:

Linear regulated supply with HF noise filtering. Will clean up the DC from any switch-mode DC supply (wall-wart, desktop, laptop) and provide a clean DC supply; clean enough for use with an MC or MM phono-stage.

Requires a 30vDC supply and regulates to $\pm 12\text{v}$ with a virtual ground at 0v.



Note: The input and output voltages can be changed to suit custom applications. There is a table at the end of this datasheet with suggested possible voltages and component swaps. Email: help@zinamp.co.uk with your requirements and we will advise.

Specification:

PCB Dimensions	102mm x 25mm x 1.6mm
Voltage Input	DC Output from any SMPS, 30-35v . Higher voltages can be used - e.g. 48v - with some component swaps
Output Current	max 400mA - typical idle 30mA
Output Devices	BD 677A - NPN - darlington BD 678A - PNP - darlington
Ripple	0.1-0.5mv - depending on load
Output Voltage	-12v/+12v and -6v/+6v

Details:

Power supply for running ZinAmp Solid State Phono & Pre-Amps and Active Crossover modules. For use with an external DC SMPS, rather than a transformer, as there is no rectifier on this module.

Output devices are power darlingtontons to ensure amplifier linearity with all transient signal demands. Linear regulation is achieved with a feedback circuit that eliminates ripple and ensures rails do not 'dip' with large transient signals e.g. bass notes.

No heatsink is required with normal use. However, when customising this supply to work with a higher input voltage, it may be necessary to mount the output darlingtontons on a small heatsink.

Dual Voltage

This supply was originally designed to power moving-coil and moving-magnet phono stages, which required 2 different voltages; $\pm 12\text{v}$ and $\pm 6\text{v}$. On the PCB shown below, these can be seen as MM-24v and MC-12v. These are both split-rail voltages and can be measured as $\pm 12\text{v}$ and $\pm 6\text{v}$ respectively.

If only one voltage is required, you can omit the components in the parts list **marked in Green**.

The input and output voltages can be changed to suit custom applications. The table below shows some possible voltages and component-swaps to achieve these:

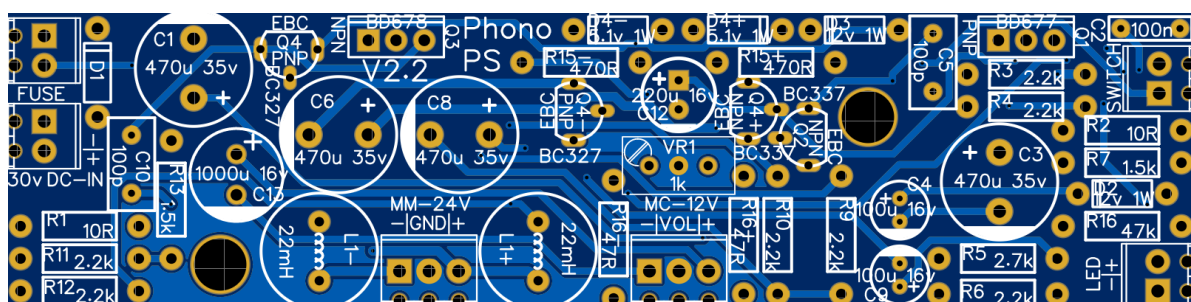
Desired Output Voltage	Min & Max Supply Voltages	Zener Values for D2 and D3
-/+12v	30-35v	12v
-/+15v	35-40v	14v
-/+21v	45-50v	20v

Split Rails:

This is a split rail supply and requires balancing under load. The 1k trimmer on the board is used to center the voltages so that +ve and -ve are equal. When you first connect the supply to a load, you may notice the +ve voltage is slightly different from the -ve. Use the trimmer to center the voltage rails.

Note: The second voltage (marked as MC-12v) on the board can also be customised. D4- and D4+ are zener diodes used to set the MC voltage. These are shown as 5.1v on the board below and they reduce the main rail voltage by the zener voltage value. So -/+12v minus a 5.1v zener is 6.9v. If you are customising the output voltage and require different voltages from both MM and MC terminals, select appropriate zener voltages for D4- and D4+ to achieve this.

WARNING: Attempting to get very low output voltages with very high input voltages will lead to very hot components that will be over-dissipating. This is a split-rail supply so the input voltage needs to be twice the voltage of each output rail, plus about 20% for regulation. So for $\pm 12\text{v}$ the input is $2 \times 12 = 24\text{v}$ plus 20% which is 28.8v (i.e. a 30v DC supply). Regulation headroom of more than 30% will result in components Q1 and Q3 requiring a heatsink.



Blank PBC

Parts List:

CONNECTORS: Both blank and ready-built PCB requires connectors be purchased and soldered on by the constructor. This is to give the constructor a choice of how they wire their own particular installation. Terminal block connectors are indicated in the list below in **blue** and can be swapped for equivalent 2.54mm pitch connectors e.g. Molex KK254 headers, which are provided to the constructor in self-wire kits.

ITEMS IN GREEN are only required for the second (lower voltage) output. Omit these if only if a single voltage is required

Designator	Value/Spec	Qty	Manufacturer	Manufacturer Part	Supplier Part
Q2,Q4+	BC337	2	On Semi	BC33740BU	761-3943
Q4,Q4-	BC327	2	On Semi	BC32716BU	761-9819
L1-,L1+	22mH	2	Murata	19R226C	715-7267
R16+,R16-	47R	2	TE Connectivity	LR1F47R	148-174
C6,C8,C1, C3	470u 35v	4	NIC	NRSZ471M35V10X20F	737-4181
Q3	BD678	1	STMicro	BD678A	485-9991
C13	1000u 16v	1	Rubycon	16ZLH1000MEFCTA8X20	703-7504
C9,C4	100u 16v	2	Rubycon	16PK100MEFC5X11	763-9396
C10,C5	100p	2	Wima	FKP2/100/100/5	484-1978
C12	220u 16v	1	Wurth	NRSZ221M10V6.3X11F	839-6438
D3,D2	12v 1W	2	Nexperia	BZX79-C12,113	544-4477
R1,R2	10R	2	Vishay	MBB02070C1009FCT00	125-1154
R9,R10,R 11,R12,R3 ,R4,R6	2.2k	7	Vishay	MRS25000C2201FCT00	683-3449
R13,R7	1.5k	2	Vishay	MRS25000C1501FCT00	683-3219
R16	47k	1	TE Connectivity	LR1F47K	148-893
R15+,R15-	470R	2	TE Connectivity	LR1F470R	125-1158
VR1	1k	1	Bournes	3299W-1-102LF	522-0287
C2	100n	1	Epcos	B32529C1104K000	896-1332
D1	50v 1A	1	TE Connectivity	LR1F2K7	125-1161
D4+,D4-	5.1v 1W	2	ON	MBRS240LT3G	LCSC
R5	2.7k	1	TE Connectivity	LR1F2K7	125-1161
Q1	BD677	1	STMicro	BD678A	485-9991
MC-12V	- VOL +	1	RS-PRO	790-1092	790-1092
LED,DC-I N	- +	2	RS-PRO	790-1098	790-1098
SWITCH,F USE	O R	2	RS-PRO	790-1098	790-1098

MM-24V	- GND +	1	RS-PRO	790-1092	790-1092
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Parts available from [RS Online](#). Also try [Farnell](#), [Mouser](#) and other online suppliers.
Parts from different manufacturers can be substituted where spec is sufficient
Supplier trading names may differ by country.