

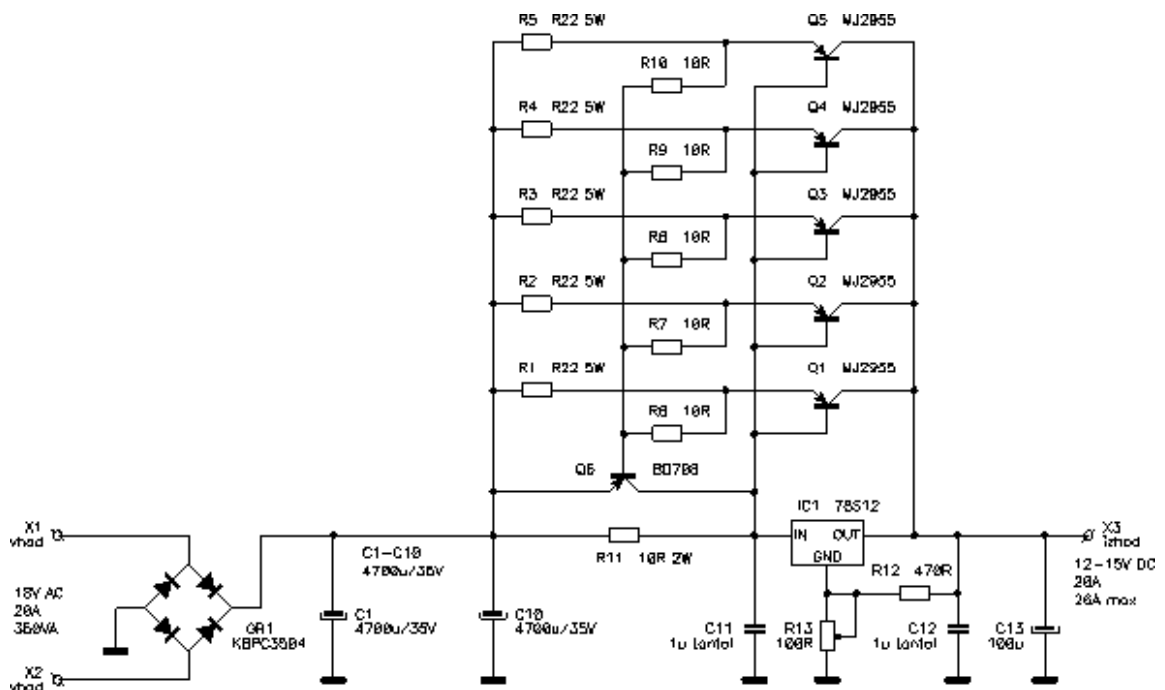


USMERNIK 12V 20A



Izhodna napetost je fino nastavljiva s potenciometrom od 12V do 15V. Usmernik je primeren za napajanje vseh 12V naprav, oziroma naprav ki se običajno priključijo na 12V akumulator oziroma v vozilo z 12V sistemom napajanja. Ta napetost je običajno 13,8V. Iz tega razloga je tudi usmernik nastavljen na to napetost, v redu pa je katerakoli napetost od 12V do 14V. V tem primeru je napetost nastavljena nekje okrog 13,6V. To napetost določata upora poleg napetostnega regulatorja 78S12. Namesto potenciometra 100R je vstavljen upor 56R.

The scheme is quite simple, but it is partly derived from some of the schemes that have been implemented in the past. The material used is easily obtainable in Slovenian stores, which was also a condition when I started designing this rectifier.



How to use or print images? first click on the link, then right click on the image to open the menu and select "save image as ..." and save the image to disk. To help you print full-size images, a resolution is attached to the image (300dpi means 300 pixels per 1 inch - inch, 1 inch is 25.4mm)

The diagram does not show the transformer and the network part of the connection on the primary side of the transformer. The transformer is 350VA (manufacturer: Dolinšek-Dvojmoz Sonja - Kranj), the primary winding is 230V and the secondary winding is 18V. The secondary voltage of 18V is considered to be a transformer load, and the idle voltage is usually higher than 5% to 10% at such power levels. The transformer is designed so that at 100% load it can be so loaded 24 hours / day, 120% can be loaded for up to 30 minutes, 130% for up to 10 minutes, and times can be several times longer if the transformer is more than 100% at the start of the load cold and has the ability to cool again after the load is complete. In short, the transformer easily permits short-term loads of 26A, this is also the maximum rectifier current. The maximum current is determined by the emitter resistors, since the drop on them opens the BD708 transistor, which then binds the base-emitter junction at all MJ2955, so that the rectifier does not allow more current than allowed. As a result, short circuits do no harm to the rectifier. The rectifier is designed to withstand over 30A, but the limitation here is also the Graetz 35A. However, it is good for such things to have sufficient reserve in the strength of the material so that smoke signals do not occur. As a result, short circuits do no harm to the rectifier. The rectifier is designed to withstand over 30A, but the limitation here is also the Graetz 35A. However, it is good for such things to have sufficient reserve in the strength of the material so that smoke signals do not occur. As a result, short circuits do no harm to the rectifier. The rectifier is designed to withstand over 30A, but the limitation here is also the Graetz 35A. However, it is good for such things to have sufficient reserve in the strength of the material so that smoke signals do not occur.

The primary part of the transformer is connected to the mains via a 2.5A fuse and switch. Since the housing is metal, it is mandatory to use a shuko safety plug and 3 core cables, and the housing must be connected to a grounding conductor.



The transformer secondary is connected directly to the graetz (rectifier bridge) KBPC35xx for example KBPC3504, the graetz (GR1) must be 35A compulsory, it can also be 50A cooled. The entire rectifier circuit with large smoothing capacitors (C1-C10) is printed on the circuit. Serial transistors (5x MJ2955 or Q1-Q5) are mounted on the aluminum profile and printed circuit board at the same time. The total power of the transistors is 575W, which means they can easily withstand short circuits, although in the case of a short circuit at the output of the rectifier, the dissipation on the transistors is maximal. In normal operation, the dissipation is much smaller, since the transistors typically have a voltage somewhere around 6V, which means 3x less dissipation than in the case of a short circuit. Cooling Rib is HR200 (Seller: www.mali-sp.si), aluminum L profile is 5mm thick, 50x30mm long, 200mm long, special shape aluminum carrier is 3mm thick for 78S12 (IC1) and transistor (Q6) BD708, the latter must be cooled and thermally connected aluminum L profile. Instead of a BD708 transistor, some other pnp transistor with similar characteristics can be used, eg BD712, BD912.



Take a closer look at the diagram and photos for a better understanding. In case of ambiguity, I will not reply to the e-mail, but I will include the answers here in the project description. Whatever is not clear to you and whatever you would like to know about this router, you can send an e-mail, then you can find the answer to your question here.

Naslednje slike prikazujejo montažo napetostnega regulatorja 78S12, tranzistorja BD708 na aluminij 3mm posebne oblike.



Montaža aluminija posebne oblike na alu L profil in montaža graetz KBPC3504



Slike prikazujejo vrstni red montaže. Napetostni regulator in tranzistor se zaspajka v tiskano vezje šele potem, ko je graetz pritrjen z vijakom. V alu L profilu je navoj M4, v ta navoj se privijači vijak M4x25, ki drži graetz, vijak pa je toliko dolg, da na drugi strani tiskanega vezja nanj pride še matica M4, ki dodatno drži tiskano vezje.

Alu L profil se nahaja med tranzistorji in tiskanim vezjem. Vijaki in priključki tranzistorjev so izolirani z izolirnimi cevkami primernih dimenzij.

The Alu profile is secured to the HR200 with four M4x16 hex screws. Fastening screws with a different head could also be used, but in this case the hex screws were found to be the best fit.



The description is still incomplete, I will complete it when I receive the questions again. If you find a mistake, please also point me out to you, if something is not clear to you, you can also ask me to complete the description.

If you are interested in additional information about the content of the articles, circuit, operation, TIV, KIT, ... ask the general question on the [forum](#) , more personal on [e-mail](#) .