



Zener diode regulator  
 Zener diodes can be used to produce a stabilized voltage output with low ripple under varying load conditions. By passing a small current through the diode from a voltage source, via a suitable current limiting resistor  $R_s$ , the zener diode will conduct sufficient current to maintain a voltage drop  $V_z$ .

We know that the DC output voltage from the half or full-wave rectifiers remains ripple superimposed on the DC voltage and that as the load value changes so does the average output voltage. By connecting a simple Zener stabilizer circuit as shown in the diagram above, across the output of the rectifier, a more stable output voltage can be produced.

1) 500 mA max rated Zener diode -  $P_z$   
 500 mA max current  $\rightarrow I_z$

2) 20 V max. bridge rectifier is connected

3) min value of series resistor of zener diode  
 Series res  $R_s$  will be minimum at no load -  $R_s = \frac{V_s - V_z}{I_z} = \frac{V_{in} - V_z}{I_z}$

$$I_z = \frac{V_z}{R_s} = \frac{10}{0.5} = 20 \text{ A}$$

$$R_s = \frac{20 - 10}{0.5} = 20 \Omega$$

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215.  $V_2 = V_2$  [Parallel]

$$I_L = \frac{V_L}{R_L} = \frac{10}{500} = 0.02 \text{ A}$$

