

IS (ZALH04) 009
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ELECT/ELECT

1. A Zener diode regulator depends on the Zener principle where the diode displays a resistance to voltage change with varying current after reaching the breakdown point. The Zener diode is placed in series with a resistor. The Zener diode is placed resistor helps limit the current flow and dissipate some power. The load resistor is then placed across the Zener diode. Since components in parallel have equal potential drop, the load potential drop equals the Zener voltage.

$$2. I_{max} = 500 \times 10^{-3} A = 500 mA = 0.5 A$$

$$V = 5V = 10V$$

$$0.5 A$$


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

$$i) R_1 = 500 \Omega$$

$$I_1 = \frac{10V}{500 \Omega} = 0.02 A$$

$$500 \Omega$$

$$I_2 = 0.5 A - 0.02 A = 0.48 A$$

 Zener diode

