

uebung_2.1.3

Student Group

First Name	Surname	Matrikel Nr.

Table of Contents

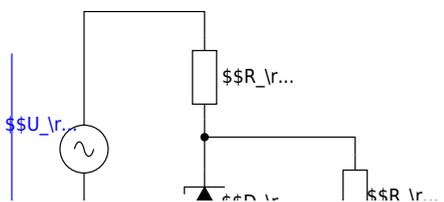
Exercise 2.1.3 Z-diode as voltage reference 2

Exercise 2.1.3 Z-diode as voltage reference

The following circuit depicts a simple voltage reference circuit. There, a Z-diode provides a constant output voltage U_L on the load - despite a fluctuating input voltage U_S from the source.

The following quantities shall to be used:

- Source voltage $U_S = 7.0 \dots 13.0 \text{ V}$ (e.g. via sinusoidal input voltage with $f = 50 \text{ Hz}$),
- series resistor $R_V = 1.0 \text{ k}\Omega$
- load resistor $R_L = 10 \text{ k}\Omega$
- Z-diode D_Z as BZX84C6V2 ($U_Z = 6.2 \text{ V}$)



An ideal Z-diode would be assumed to hold the breakdown voltage U_Z at all reverse currents I_S .

This is to be checked for the real diode.

1. Model the circuit in Tina TI and insert a picture of the circuit.
2. Compare the progression of U_L to U_S . In particular, measure the maximum and minimum values of U_L .
3. Change the load resistance to $R_L = 1.0 \text{ k}\Omega$ and perform the same comparison of U_L to U_S again.
4. How can the difference be explained?

From:

<https://wiki.mexle.org/> - **MEXLE Wiki**

Permanent link:

https://wiki.mexle.org/circuit_design/uebung_2.1.3

Last update: **2023/12/01 01:23**

