

Transistor Switch and PWM

Student Group

First Name	Surname	Matrikel Nr.

Table of Contents

Short preview: transistor switch and PWM 2

Short preview: transistor switch and PWM

A transistor switch can connect and disconnect a load very quickly. If the switch is periodically on and off, the load sees an average voltage.

For an ideal switch with supply voltage (U_{dc}) :

$$\overline{u_{\text{L}}} = \frac{1}{T} \int_0^T u_{\text{L}}(t) dt = \frac{T_{\text{on}}}{T} U_{\text{dc}}$$

The duty cycle is

$$d = \frac{T_{\text{on}}}{T}$$

Thus

$$\boxed{\overline{u_{\text{L}}} = d U_{\text{dc}}}$$

This is the basic idea of pulse-width modulation (PWM). Applications to motor drivers and power stages are continued in [Block 14](#).

From:

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

Permanent link:

https://wiki.mexle.org/electrical_engineering_and_electronics_2/block14?rev=1780973220

Last update: **2026/06/09 04:47**

