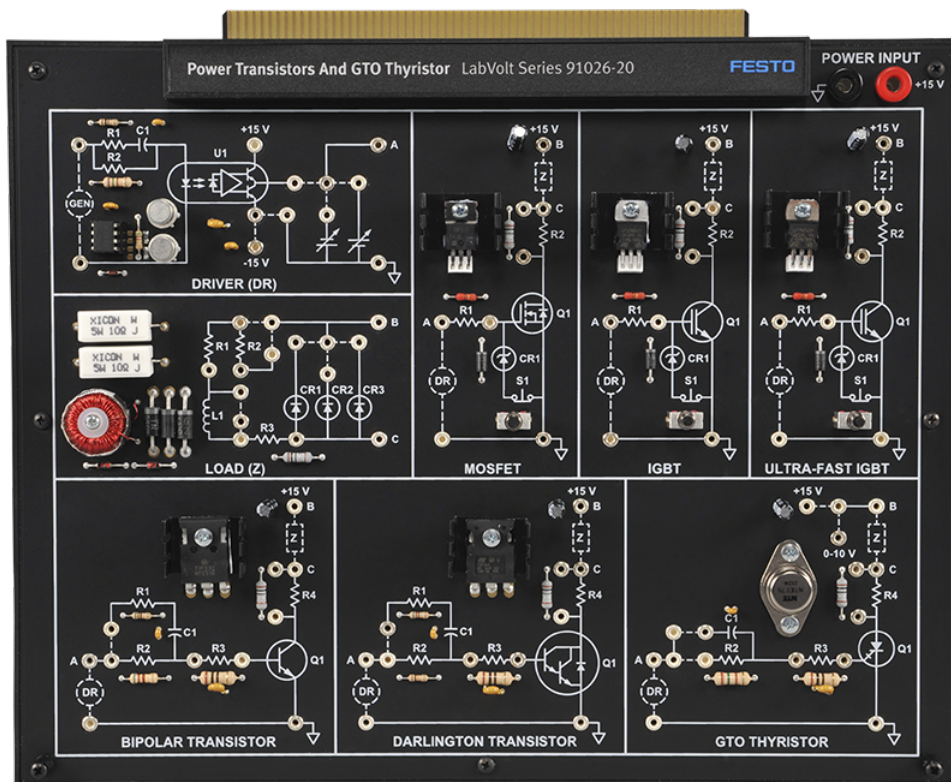


# Power Transistors and GTO Thyristor FACET Board 581171 (91026-20)

**FESTO**

LabVolt Series

Datasheet



Festo Didactic

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## General Description

The Power Transistors and GTO Thyristor circuit board enables students to perform hands-on exercises that demonstrate the use of different types of self-commutated switching devices commonly used in power electronics.

The module contains the following six different types of self-commutated switching devices:

- MOSFET
- Isolated-gate bipolar transistor (IGBT)
- Fast IGBT
- Bipolar transistor
- Darlington transistor
- GTO thyristor

It also contains Driver and Load sections that help students to study the various switching devices. The Driver consists of an opto-isolator and a driver for power transistors. The Load consists of resistive and inductive components as well as general purpose, fast, and ultra-fast free-wheeling diodes.

Using this training module, students learn the operation of power transistors and GTO thyristors. They observe the switching characteristics, conduction voltage drop, and losses of each switching device. Students also learn how to match free-wheeling diodes with the various types of switching devices mentioned above.

This module enables students to know which switching device should be used in a particular application according to the power levels and switching frequency. The GTO Thyristor integrated in this circuit block finally makes it possible to study GTOs at a small scale, even at very low power levels. With the FACET fault-insertion training system, students develop troubleshooting capabilities for all circuits included in the module as well as for the switching devices.

## Topic Coverage

- Power Transistors and GTO Thyristor Identification
- Familiarization with the Driver Circuit Block and Load Circuit Block
- Basic Operations of Power Bipolar Transistors, Power MOSFETs and IGBTs, GTO Thyristors
- Switching Time and Conduction Voltage Drop
- Switching Power in an Inductive Load, Free-Wheeling Diode Recovery Time
- Losses in Electronic Power Switches
- Components: Bipolar Power Transistor, Darlington Power Transistor, GTO Thyristor, Power MOSFET, IGBT, Ultra-Fast IGBT

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