Protected Switch Shield with BTS50010-1TAD for Arduino

Quick start guide

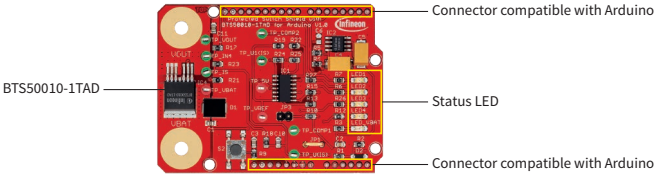
The 12V Protected Switch Shield with BTS50010-1TAD from Infineon is a flexible evaluation board that can be controlled by microcontroller boards using the Arduino form factor such as Infineon's XMC™ microcontroller kits.

The shield with Infineon's high-side switch Power PROFET™ BTS50010-1TAD allows two different working modes:

- The shield can be controlled by a programmable microcontroller, e.g. XMC1100 Boot Kit, a 32-bit ARM® powered MCU from Infineon.
- For stand-alone mode, BTS50010-1TAD can be commanded ON/OFF by connecting pin P0.3 to 5 V (P2.10) or 12 V (V_{Bat}). The IS signal of BTS50010 is monitored by the on-board circuitry, indicating operation mode of BTS50010 on LED3 (green for normal mode) and LED4 (red for FAULT mode, such as overtemperature or short circuit to GND).

Together with free programmable LED1, LED2 and button S2 on board, Infineon Technologies delivers a highly flexible evaluation board which can be used for a wide range of application areas and tests.

Protected Switch Shield with BTS50010-1TAD



Getting started – stand alone or with Infineon's XMC1100 Boot Kit

STEP 1

Choose a high current power supply

- Output voltage range V_{Bat} = 8 … 18 V
- Output current range I > 40 A DC
- Power supply should be protected

NOTE:
For all physical values we refer to the data sheet BTS50010-1TAD

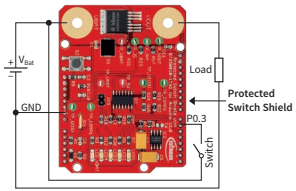
STEP 2

Choose an electrical load connected to ground

- Suitable for resistive, inductive and capacitive loads
- Load resistance higher than V_{Bat}/40 A

STEP 3 Stand alone

Connect power supply and load as described in the user manual



- For all physical values: see data sheet BTS50010-1TAD
- Connect P0.3 to 5 V (P2.10) or 12 V (V_{Bat}) via an external switch S1. After power-ON, push this switch to turn on BTS50010.

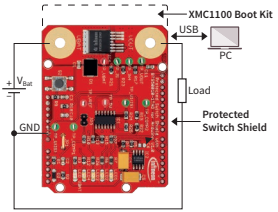
STEP 3 with XMC1100 Boot Kit

Connect the BTS50010-1TAD shield to

- XMC1100 Boot Kit compatible with Arduino

Find source code at:
www.infineon.com/shields-for-arduino

Connect power supply and load as described in the user manual



- For all physical values: see data sheet BTS50010-1TAD
- The XMC1100 Boot Kit will be powered via the USB cable
- The on-board key S2 is freely programmable in line with the requirements of the application

STEP 4

Turn on the power

STEP 4

Program XMC1100 Boot Kit

Example sketches and projects:
www.infineon.com/shields-for-arduino

Turn on the power

Applications

- Relay and fuse replacement in power distribution and junction boxes
- Drive resistive, inductive and capacitive loads such as heating resistors, filter capacitors, motor, valves and pumps
- High current applications such as ECU power feeds, auxiliary power outlets, PTC heaters and rear window heaters
- Systems with high switching cycles and high energy requirements such as “start-stop” and electric brake vacuum pumps
- General purpose for power distribution and heating applications such as HVAC blower, glow plug control unit and trailer node

Benefits

- Enables quick evaluation of Power PROFET™ for switching loads (BTS50010-1TAD: I_{NOM} = 40 A)
- Fast prototyping for switching applications

Features

- Stand alone and microcontroller mode
- Can be controlled with Arduino compatible microcontroller boards such as the XMC™ microcontroller kits from Infineon
- Easy to use “plug and play”
- Fully configurable for different kind of loads

Useful links

www.infineon.com/profet
www.infineon.com/shields-for-arduino

Product summary

Type	Description	Ordering code (OPN)
Protected Switch Shield with BTS50010-1TAD for Arduino	Flexible evaluation board compatible with Arduino; contains BTS50010-1TAD	SHIELDBTS500101TADTOBO1
BTS50010-1TAD	Single N-channel smart high-side 1.0 mΩ power switch in TO263 package with protective functions and diagnostics	BTS500101TADATMA1
XMC1100 Boot Kit	XMC1100 CPU card compatible with Arduino	KITXMC11BOOT001T0B01
XMC1100-TO38x0064	32 MHz ARM® Cortex®-M0 with 12-bit ADC, PWM, TSSOP-38, 64 K Flash, 16 KB RAM, 34 digital I/O, timer and communication peripherals	XMC1100T038X0064ABXUMA1

Dear customer,

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The evaluation board is intended for use only by qualified and skilled technical staff for laboratory usage and shall be used and managed according to the terms and conditions set forth in the related documentation provided with the evaluation board.

The customer accepts the entire risk arising out of the use of the evaluation board for any purpose for which the evaluation board is not intended, including but not limited to any further processing or distribution of the evaluation board. Infineon will not accept any liability or product warranty for these evaluation boards. The customer undertakes to indemnify and hold Infineon Technologies harmless from any third party claims in connection with or arising out of the use and/or handling of the evaluation boards by the customer.

In case of any questions, please contact your local sales partner.



Order number: SHIELDBTS500101TADTOBO1

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