

Product Brief

Power PROFET™

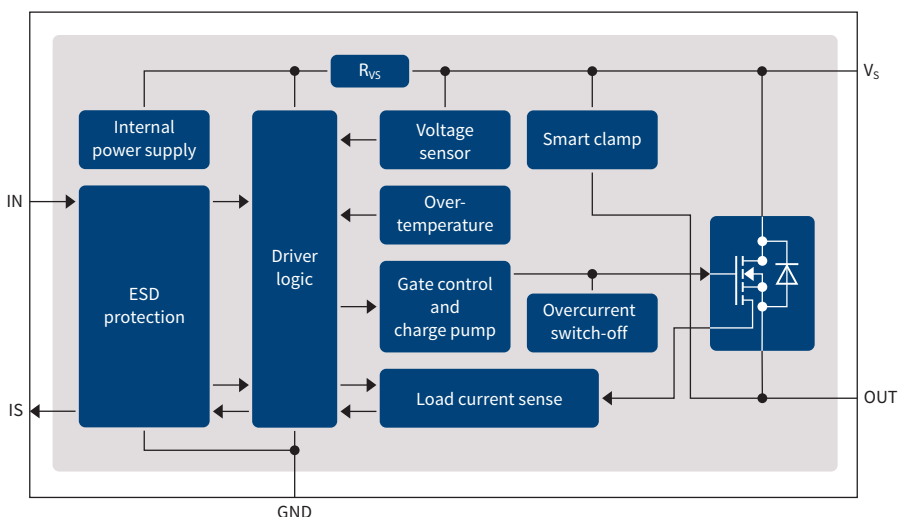
Ultra-low ohmic smart high-side power switches

Power PROFET™ is a benchmark family of ultra-low ohmic protected high-side switches (1.0 mΩ to 2.5 mΩ) with integrated protection functions and diagnostics for automotive and 12 V industrial markets. The devices are especially designed to drive high current loads of 20 to 40 A DC and to replace high current relays and fuses in a wide range of applications such as power distribution (e.g. module main switches and trailer node supply) and heating (e.g. PTC heaters and rear defoggers). Power PROFET™ switches are based on a new benchmark technology offering very high energy capability and are therefore an ideal driving solution for an increasing number of applications with high switching cycle requirements, e.g. starter relays in “start-stop” systems and electric brake vacuum pumps.

Compared with relays and fuses, these switches are immune to dust, shock and vibration, reduce power losses, improve electrical endurance, increase application availability (software reset instead of fuse replacement at car repair shop) and minimize the module size. At system level, they also optimize cost through more accurate system sizing and the reduction of mechanical components (wire harness, connector, heavy relay box).

Last but not least, the Power PROFET™ family offers 100 percent pin compatibility across all devices, along with a shared feature set and functionality that scales with the $R_{DS(on)}$ of each device. With this family-based approach, designers are free to change loads and devices without modifying the printed circuit board layout.

Block diagram



Key features

- > High-side switches with protection and diagnostic features
- > Ultra-low $R_{DS(on)}$ down to 1.0 mΩ
- > Benchmark energy capability up to 3000 mJ at I_{Nom}
- > Analog current sensing
- > Benchmark short-circuit performance specified in datasheet

Key benefits

- > Turn-key solution reducing time to market
- > Reduces power losses up to factor 7 compared to relays
- > Saves cost on system level by removing the need for freewheeling diode for many applications
- > Improved load monitoring and protection with current sense
- > Resettable device: no maintenance required as with a fuse

Key applications

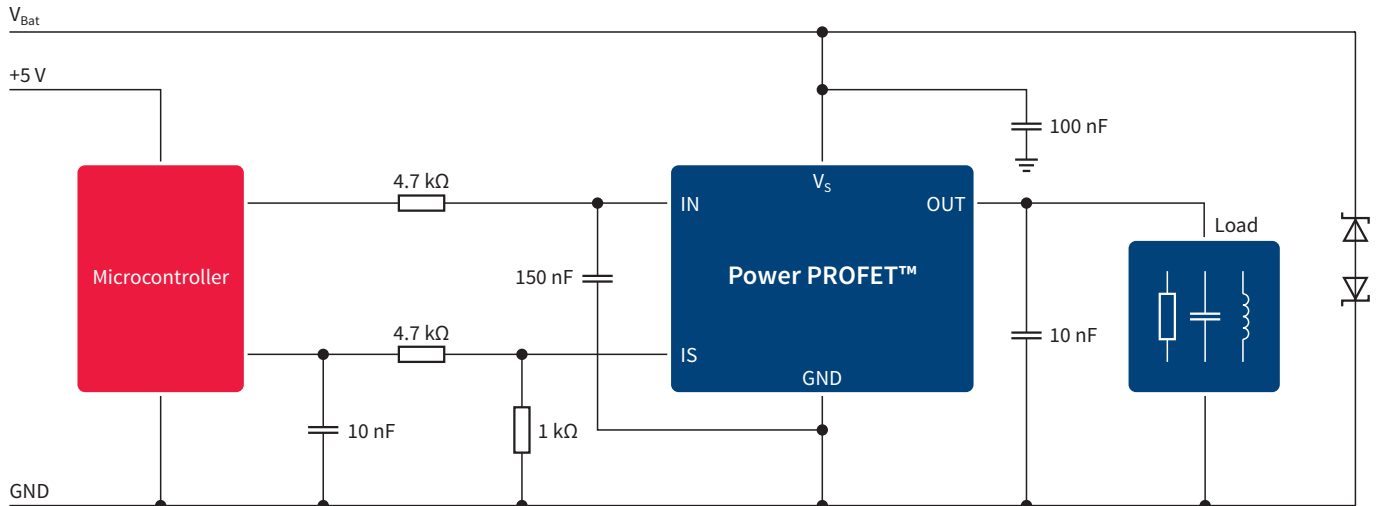
- > Suitable for automotive and industrial applications based on 12 V high-side loads up to 40 A DC
- > Replaces electromechanical relays, fuses and discrete circuits



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Application diagram



Product summary

Device name	$R_{DS(on)}$ (typ at 25°C) [mΩ]	I_{Nom} [A]	Short circuit current threshold (min) [A]	Single energy pulse (E_{AS}) [mJ]
BTSS50010-1TAD	1.0	40	150	3000 ¹⁾
BTSS50015-1TAD	1.5	33	135	3000
BTSS50020-1TAD	2.0	29	100	1750 ¹⁾
BTSS50025-1TAD	2.5	25	70	1000 ¹⁾

1) Target value

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