



Product brief

High-current PROFET™

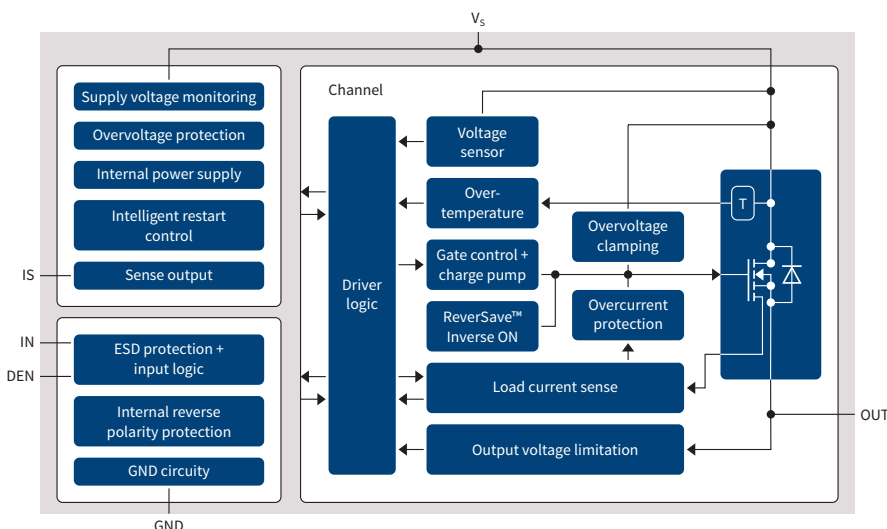
Benchmark low-ohmic smart switches for automotive heating and power distribution

The new high-current PROFET™ high-side smart switch family is designed to drive currents up to 20 A DC in 12 V automotive applications. With a $R_{DS(on)}$ range from 2 mΩ to 8 mΩ, the devices come in very small footprint package TSDSO-14, offering pin-compatibility across the whole family. The benchmark power density supports the trend towards low ohmic designs to reduce overall system power consumption in order to meet CO₂ emission reduction targets.

A shared feature set and functionality that scales with the $R_{DS(on)}$ of each device provides a broad design flexibility and enables cost optimized system solutions. High-current PROFET™ handle high inrush currents, have best-in-class current sense accuracy and support PWM, being suitable to control a wide span of high current loads. A switching cycle capability > 1 million cycles addresses the reliability requirements of “start-stop” systems. Best-in-class diagnosis and protection features such as short circuit or overtemperature protection are integrated.

Typical target applications are heating loads such as seat heaters, PTC heaters, glow plugs, rear defoggers or windshield deicers and also inductive and capacitive loads such as DC motors, starter relays, horns, pumps or fans found in body control modules and relay boxes.

Block diagram



Key features

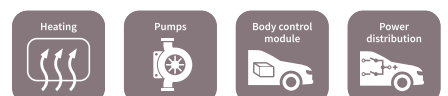
- > High-side switch family 2 to 8 mΩ
- > Pin-compatible TSDSO packages
- > Nominal op. voltage 4.1 V to 28 V
- > Min. op. voltage 3.1 V (cranking)
- > Inrush current up to > 120 A
- > Built-in diagnosis and protection
- > ±5% current sense accuracy (cal.)
- > Overcurrent protection with latch
- > Overtemperature protection
- > Reversave™ protection

Key benefits

- > Small footprint with high power density enables miniaturization
- > Reduce cost for cooling and improve system power efficiency
- > High switching reliability (> 1 M cycles) and robustness for power distribution architectures

Key applications

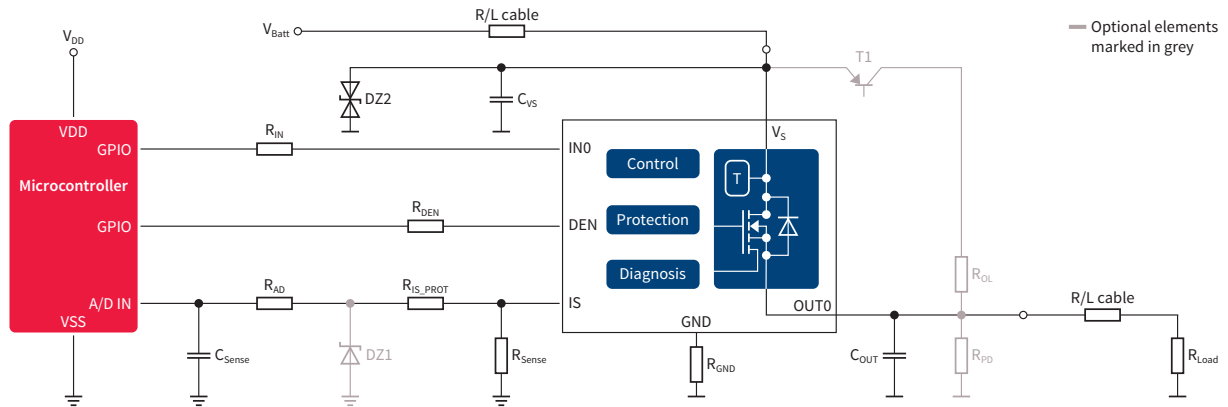
- > Seat heating
- > PTC heaters
- > Rear defoggers, windshield deicer
- > Starter relay, pumps and fans
- > Relay and fuse replacement
- > Power distribution centers, body control modules and relay boxes



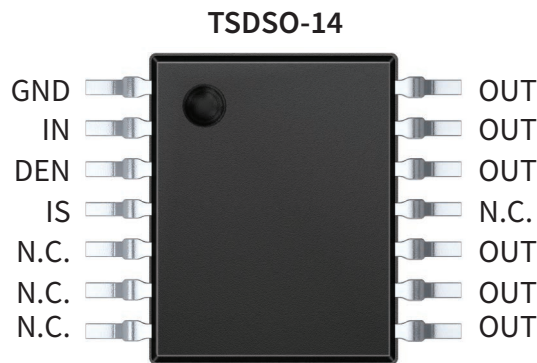
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Application diagram



Pin-out



Product table

| Type | $R_{DS(on)}$ (typ) @ $T_j = 25^\circ\text{C}$ [mΩ] | $I_{L(NOM)}$ (typ) [A] | $I_{L(SC)}$ (min) [A] | Nominal operating voltage [V] | Extended operating voltage [V] | Ordering code | Package |
|----------------------------|--|------------------------|-----------------------|-------------------------------|--------------------------------|---------------|----------|
| BTS7002-1EPP ¹⁾ | 2 | 20 | 107 | 4.1 ... 28 | 3.1 ... 28 | SP001605424 | TSDSO-14 |
| BTS7004-1EPP | 4 | 15 | 88 | 4.1 ... 28 | 3.1 ... 28 | SP001403858 | TSDSO-14 |
| BTS7006-1EPP ¹⁾ | 6 | 13 | 79 | 4.1 ... 28 | 3.1 ... 28 | SP001605428 | TSDSO-14 |
| BTS7008-1EPP ¹⁾ | 8 | 11 | 64 | 4.1 ... 28 | 3.1 ... 28 | SP001605432 | TSDSO-14 |

1) In development. ES available

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