

## Product brief

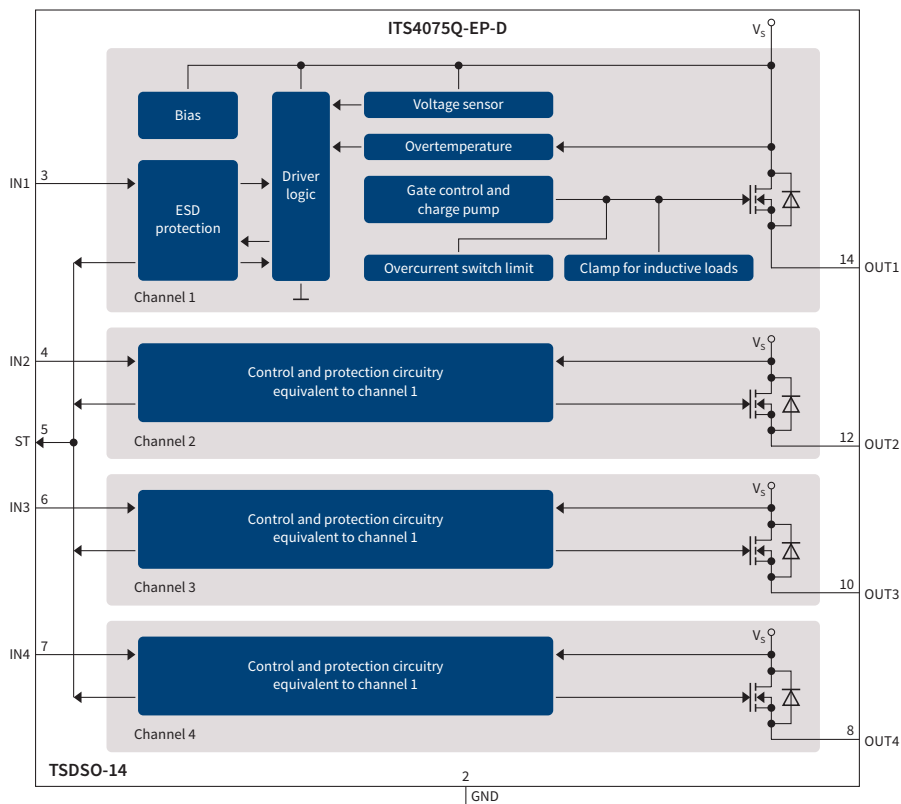
# IT4040D-EP-D, ITS4075Q-EP-D, ITS4090Q-EP-D, ITS4130Q-EP-D

## Smart high-side switch family for industrial applications

This new family of smart high-side switches has been designed to specifically address the requirements of industrial and multimarket applications. The family concept allows industrial system designer to chose between four different  $R_{DS(on)}$  values whilst staying with the same package to achieve pin compatibility. All devices do provide integrated protection function and diagnostics feedback. ITS4040 and ITS4075 are suited to switch nominal output currents of 2 A per channel, ITS4090 and ITS4130 of 0.5 A.

The exposed pad of the thermally enhanced TSDSO-14 4.9 x 6 mm package allows a very efficient heat transfer. The two and 4 switching channels respectively are controlled by parallel digital inputs. Devices' robustness and longevity have been validated by extended qualification according to JEDEC standard "JESD47J".

### Block diagram ITS4075Q-EP-D



### Key features

- > Dual- and quad smart switch family
- >  $R_{DS(on)}$  reaching from 40 m $\Omega$  to 130 m $\Omega$  per channel
- > Extended supply voltage range up to 45 V
- > Protection against overtemperature (with restart), short circuit, loss of ground, overvoltage, reverse polarity
- > Diagnostics function
- > Device qualification along industrial mission profile

### Key benefits

- > Low  $R_{DS(on)}$  for little system
- > Pin compatible family reducing R and D system design costs
- > High level of integration in small package for small system form factor
- > Low current limit for cost efficient PCB layout
- > Extended safe operating area for reducing system down times

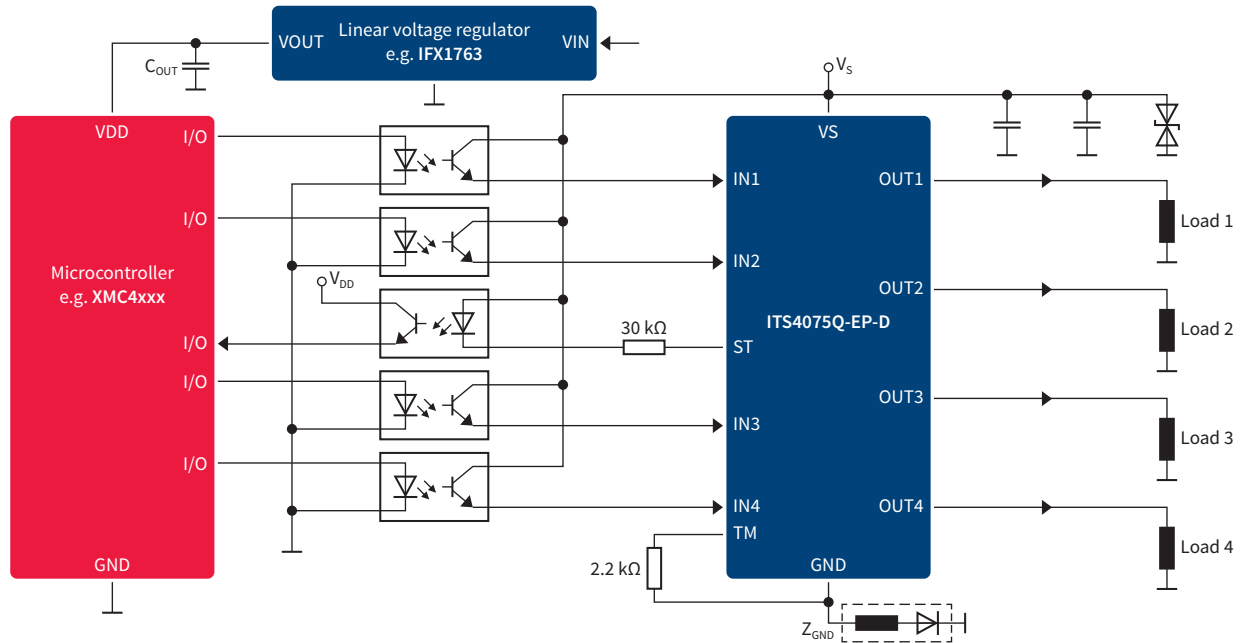
### Key applications

- > Digital output modules in industrial automation and PLC systems
- > Drive control systems
- > Robotics
- > Building automation
- > Applications switching any kind of resistive, inductive and capacitive loads
- > Replacing electromechanical relays, fuses and discrete circuits in applications where protection and diagnostics upgrade is needed

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## Application diagram



This simplified application diagram shows the inputs being galvanically isolated from  $V_s$  by use of optocouplers. Thanks to the input pins being 24 V capable they may directly be connected.

The TM-pin needs always to be tied with a serial resistor to device ground in order to protect the pin in case of reverse polarity. ST-pin provides global diagnostic feedback to microcontroller.

## Product summary

| Parameter  | Symbol                 | Value         |               |               |               |
|--|------------------------|---------------|---------------|---------------|---------------|
| Type   |                        | ITS4040D-EP-D | ITS4075Q-EP-D | ITS4090Q-EP-D | ITS4130Q-EP-D |
| Number of channels   |                        | 2             | 4             | 4             | 4             |
| Operating voltage range  | $V_{SNOM}$ [V]         | 8 ... 36      | 8 ... 36      | 8 ... 36      | 8 ... 36      |
| Maximum supply voltage   | $V_{S(EOP)}$ [V]       | 45            | 45            | 45            | 45            |
| Maximum ON state resistance at $T_j = 125^\circ\text{C}$ per channel | $R_{DS(on), 125}$ [mΩ] | 80            | 120           | 140           | 205           |
| Maximum nominal load current (all channels active)                   | $I_{L(NOM)1}$ [A]      | 2.6           | 2.6           | 0.75          | 0.65          |
| Minimum current limitation   | $I_{L(lim)}$ [A]       | 3.3           | 3.3           | 1.2           | 1.0           |
| Maximum energy dissipation (single pulse, one channel)               | $E_{AS}$ [mJ]          | 185           | 60            | 410           | 380           |
| Junction temperature range   | $T_j$ [°C]             | -40 ... 150   | -40 ... 150   | -40 ... 150   | -40 ... 150   |

Published by  
Infineon Technologies AG  
81726 Munich, Germany

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