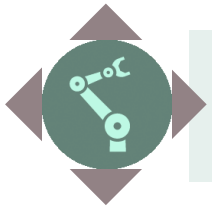
MOTIX™ TLE9185
Product Presentation

BLDC Driver ICs
Product Family Page

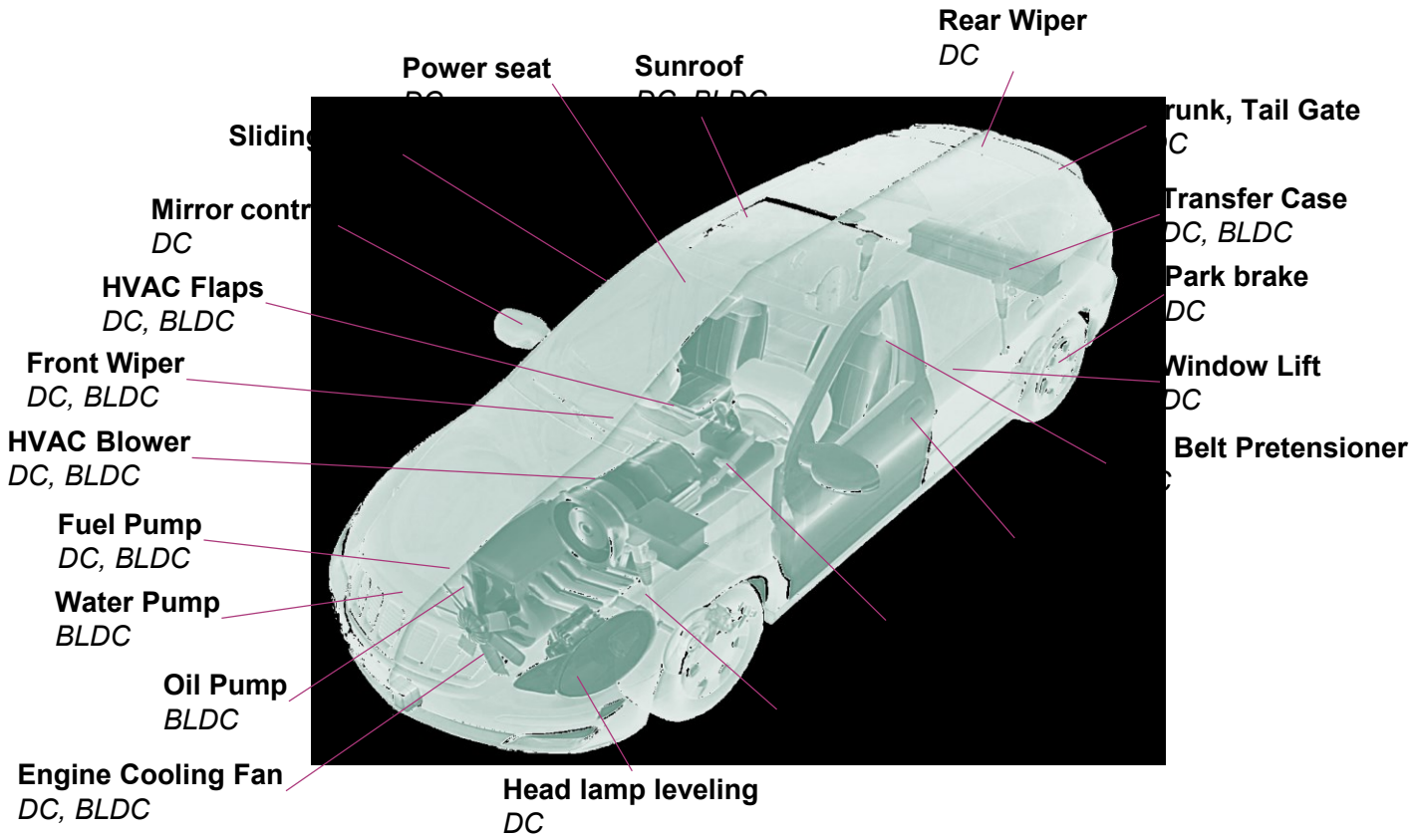
Industry mega trends shaping the market

	Trend	Motivation	Impact
	Energy efficiency	› Strong pressure to meet CO_2 emission goals	› Power-on-Demand driving the implementation of PWM control scheme
	Comfort features	› Better driver experience › Semi solution reaching relay-based price	› Increased take rate for comfort features › MOSFET instead of relay
	BLDC motors	› Smaller size › Better efficiency & reliability › Higher dynamics	› Transition BDC → BLDC for >500 W motors and specific loads (e.g. diesel pump)
	Mechatronic integration	› Space savings › Complete system ownership within 1-tier	› Motor makers devolving electronic expertise › New customers for Infineon

MOTIX™ offers high value motor control solutions addressing the mega trends in the industry

Motor Control and System ICs
>35 electric motors in average car today

Trend for smart loads driven by energy savings, creative vehicle design, distributed intelligence

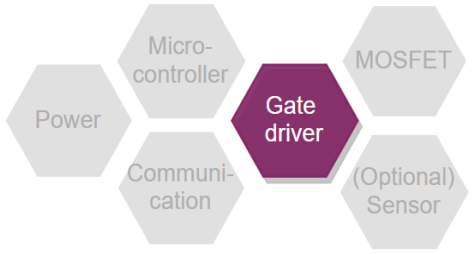


Benefits of distributed motor intelligence

- Minimized wiring
- Reduced weight/space
- Balanced power dissipation and improved EMC performance
- Dedicated functions for optimum cost/performance

Partitionings

MOTIX™ Driver



MOTIX™ multi MOSFET driver ICs

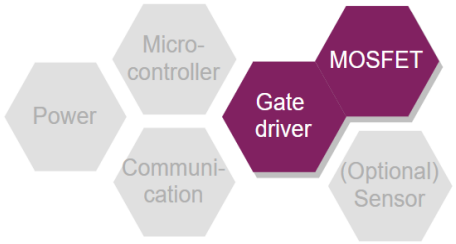
TLE92104/8

MOTIX™ motor gate driver ICs

TLE9180x

TLE9185x

MOTIX™ Bridge



MOTIX™ single half-bridge ICs (NovalithIC™)

BTNxxxx / IFX007

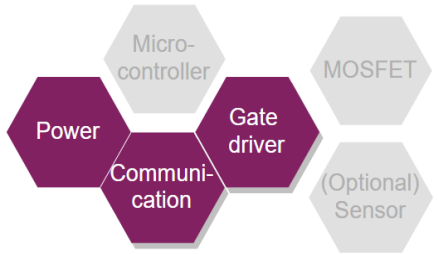
MOTIX™ multi half-bridge ICs

TLE94xxx

MOTIX™ full bridge ICs

TLE9201 / IFX9201

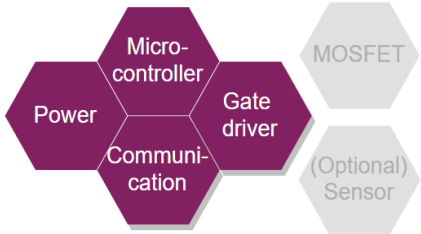
MOTIX™ SBC



MOTIX™ Motor system ICs

TLE956x

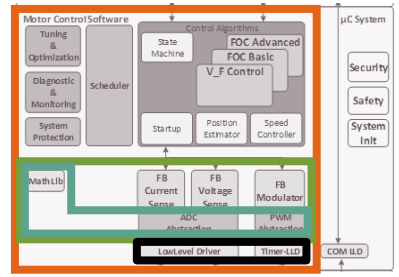
MOTIX™ MCU



MOTIX™ Embedded Power ICs

TLE98xx

MOTIX™ software



MOTIX™ Motor Control Software

eSLx

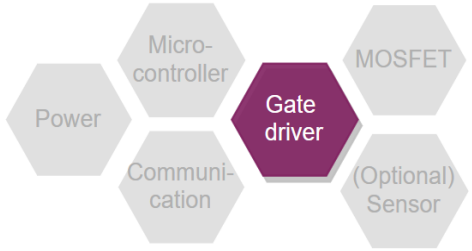
MOTIX™ Diagnostic Software

MOTIX™ Communication Software

MOTIX™ Tools

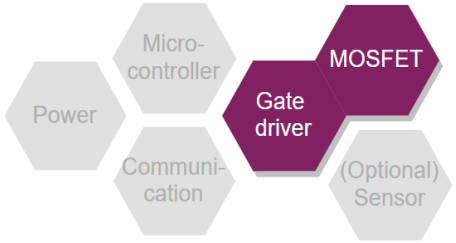
Partitionings

MOTIX™ Driver

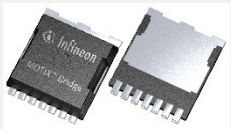


- has highest current capability
- Very flexible
- High ambient temperatures supported

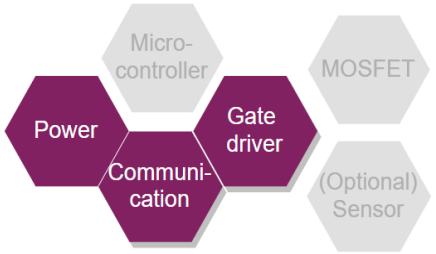
MOTIX™ Bridge



- low PCB footprint
- Low development effort with ease-of-use power stages
- Strong protection features

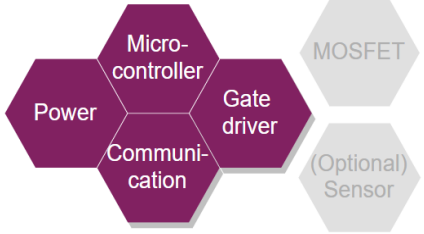


MOTIX™ SBC



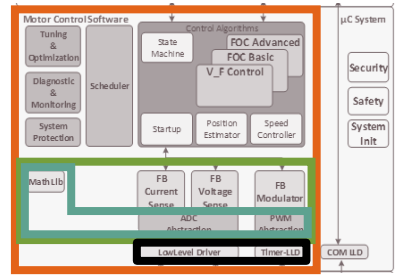
- unique level of system integration
- Addressing space constraints with small footprint

MOTIX™ MCU



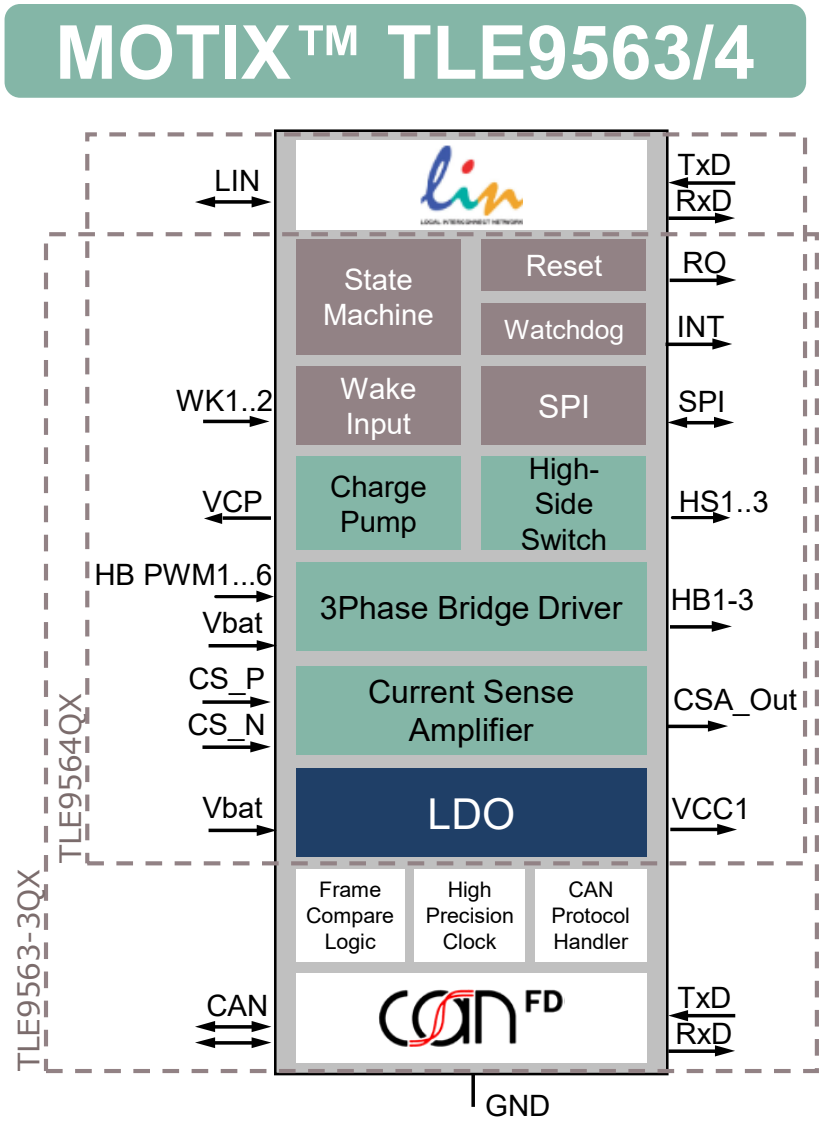
- Addressing space constraints with smallest footprint
- High ambient temperatures supported

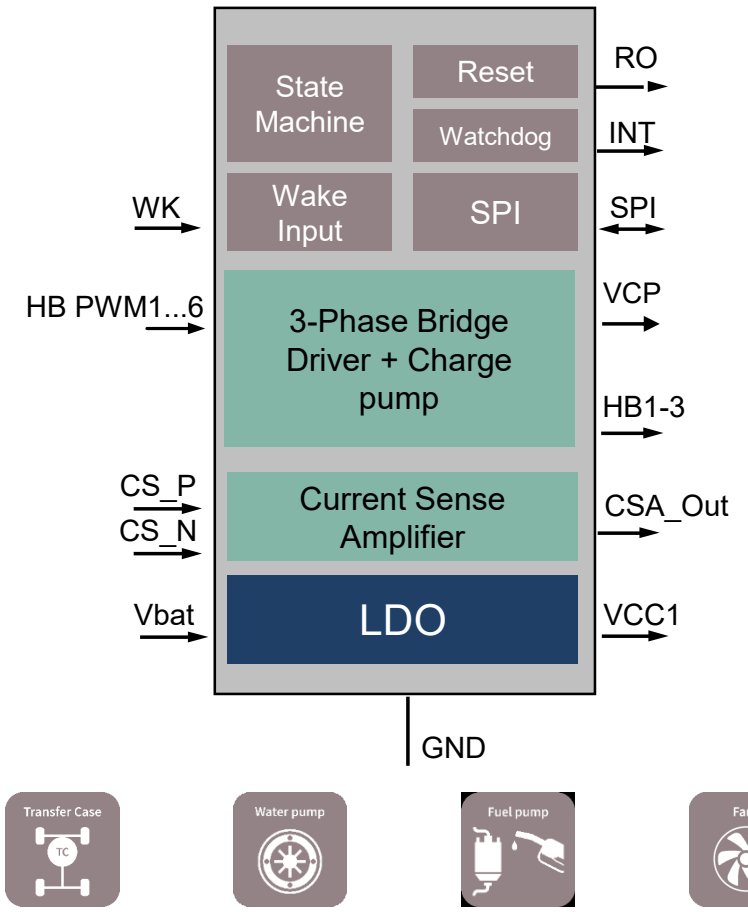
MOTIX™ software



- Complete system solution offering hardware and software
- Accelerating time-to-market with production-ready motor control software

MOTIX™ TLE9185
BLDC motor driver IC derived from MOTIX™ TLE9563/4

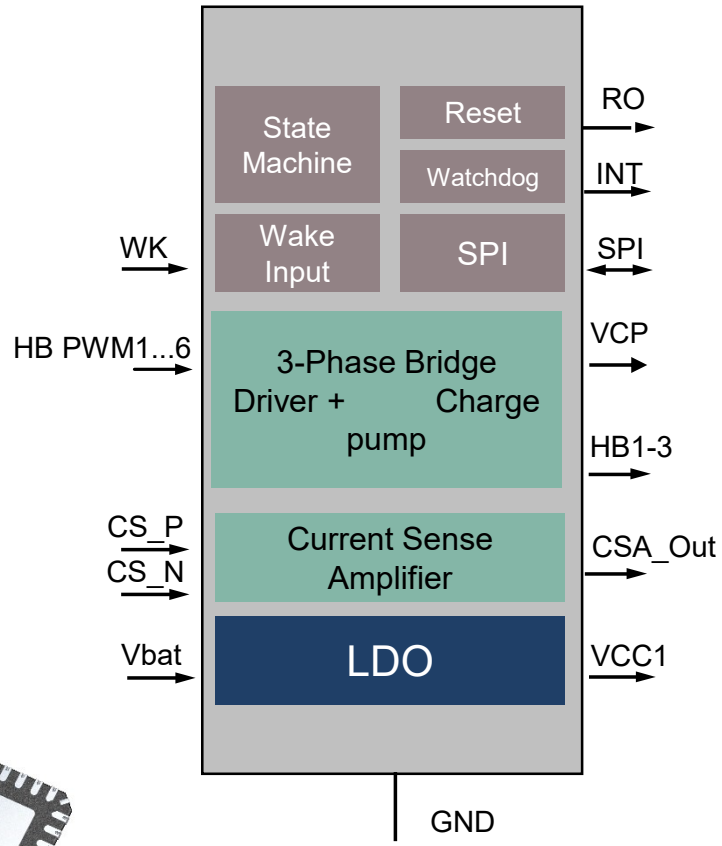




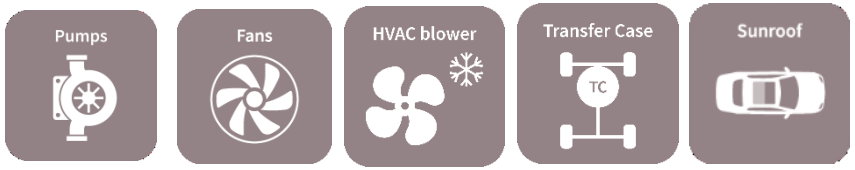
MOTIX™ TLE9185QX and MOTIX™ TLE9185QX V33
Product overview

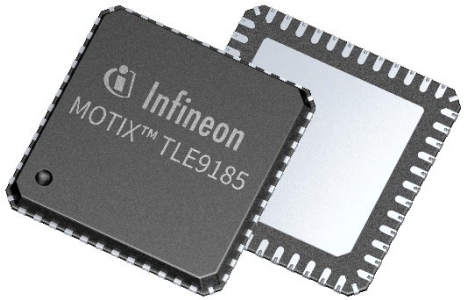
Key Features

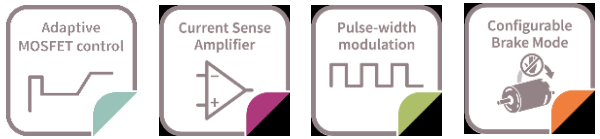
- Available in 2 versions: 5V and 3.3V µC interface (5V/3.3V LDO Vcc1)
- B6 Gate Driver
  - Adaptive MOSFET control
  - 6-bit resolution 0.5 to 150 mA gate charge current
  - Min 7V VGS @ 6Vs; nominal Q_{Gtot}=70nC
  - 20kHz 90nC Q_{Gtot} @ 8Vs
- 1 OpAmp for current sensing
- 1x 3Phase gate driver w/ 6 PWM inputs and CSA
- 1 HV Wake input
- Window and Timeout Watchdog
- Package: PG-VQFN48
- QM product



Possible Applications







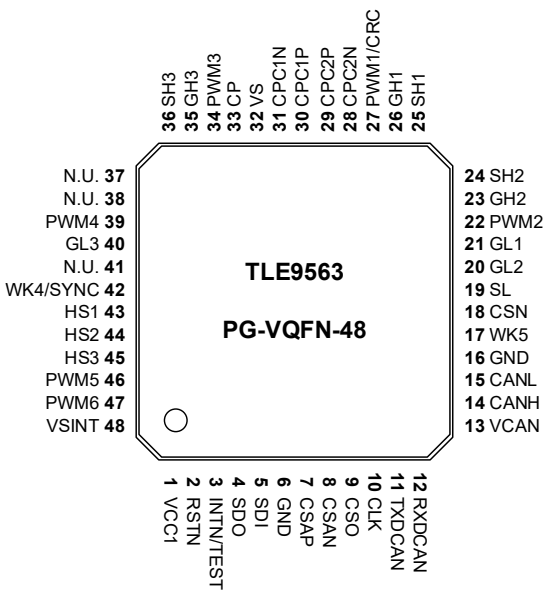
Pin and SW compatibility assured to support platform concepts and reduce time-to-market

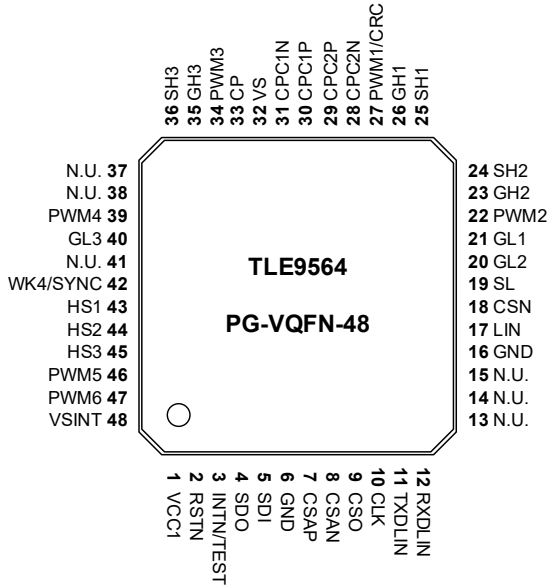
MOTIX™ TLE9563
CAN FD
3 Half-bridges

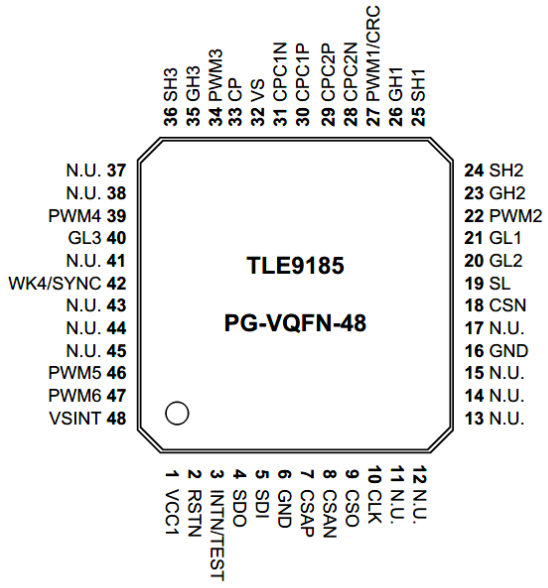
MOTIX™ TLE9564
LIN
3 Half-bridges

MOTIX™ TLE9185
3 Half-bridges

Pin & SW Compatible







Pin and SW compatibility assured to support platform concepts and reduce time-to-market

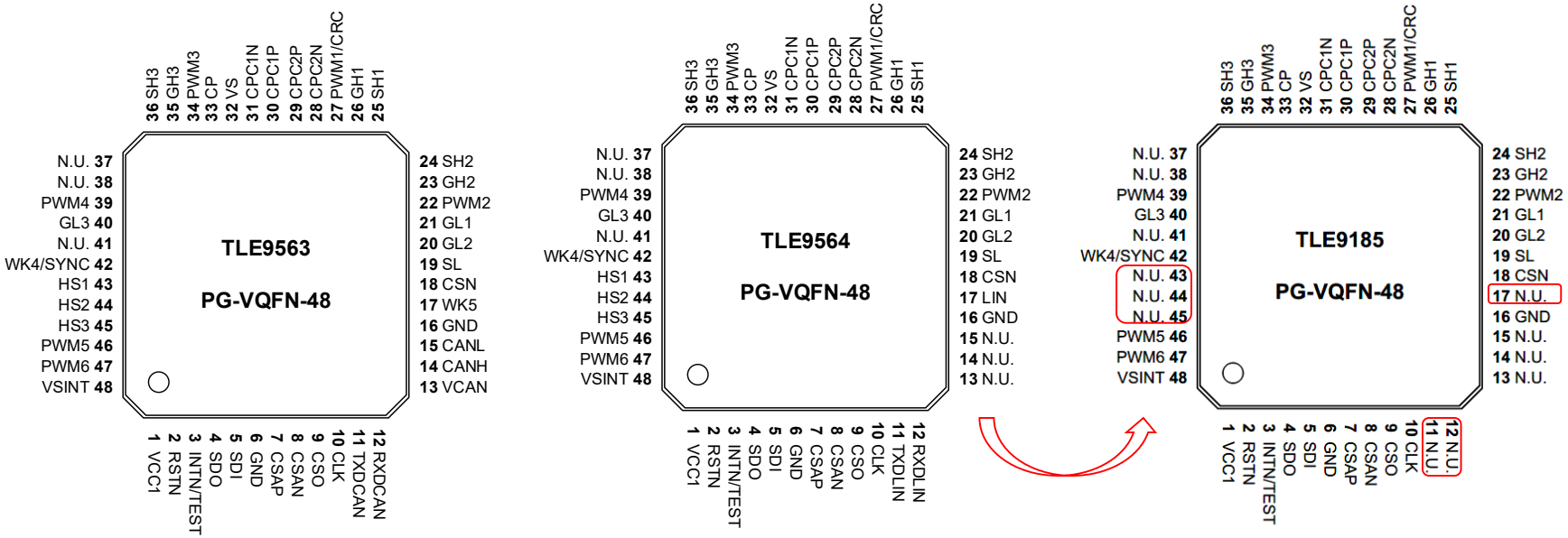
BLDC Motor

MOTIX™ TLE9563
CAN FD
3 Half-bridges

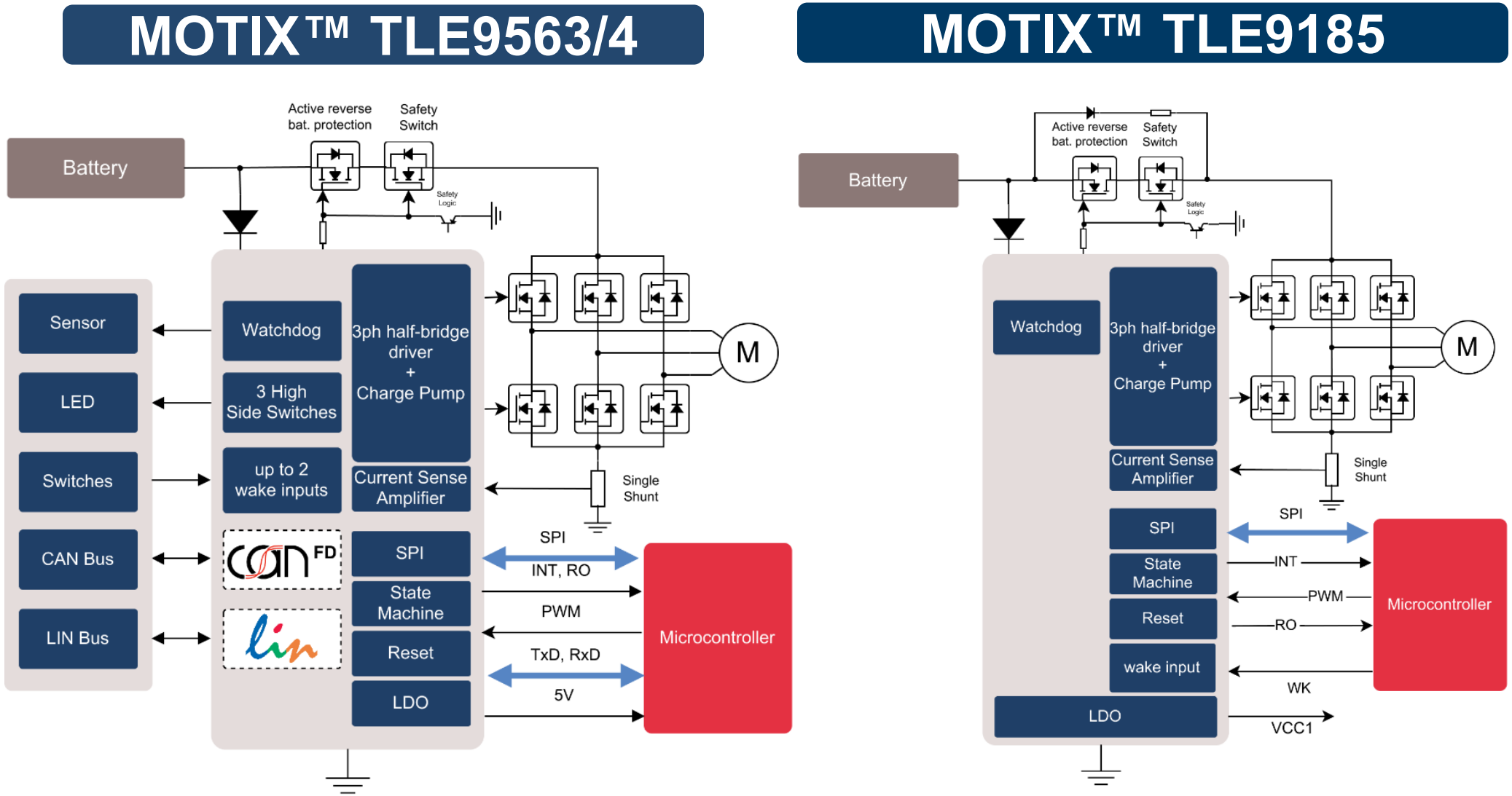
MOTIX™ TLE9564
LIN
3 Half-bridges

MOTIX™ TLE9185
3 Half-bridges

Pin & SW Compatible



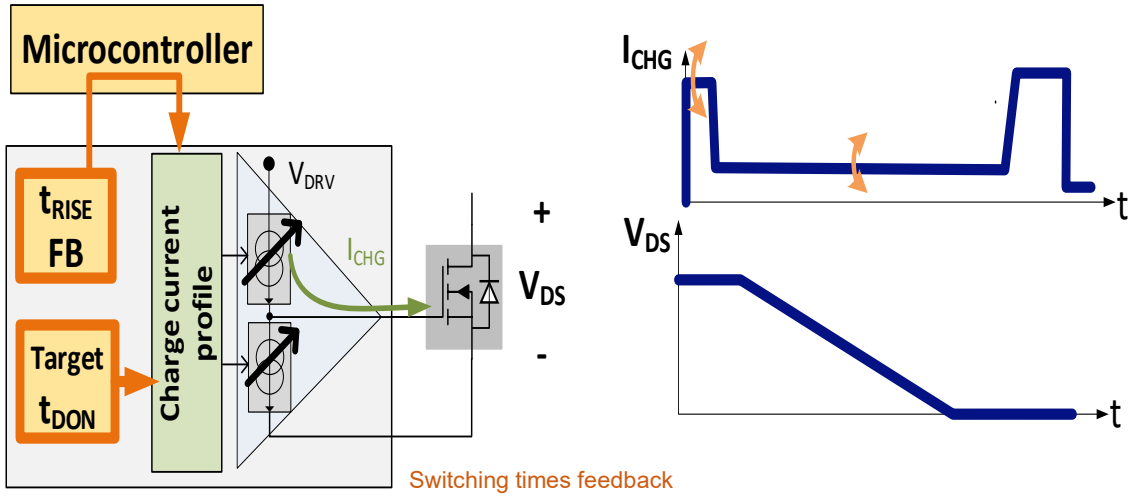
MOTIX™ TLE9185
Application example compared to MOTIX™ TLE9563/4



Learn more about [12V Pump and Fan Applications]

Feature highlight: Adaptive MOSFET control – How it works?

Adaptive MOSFET Control



- Regulated switching times without calibration, without MOSFET selection, without external capacitors and resistors
- Achieved emission/power losses trade-off without system over-dimensioning

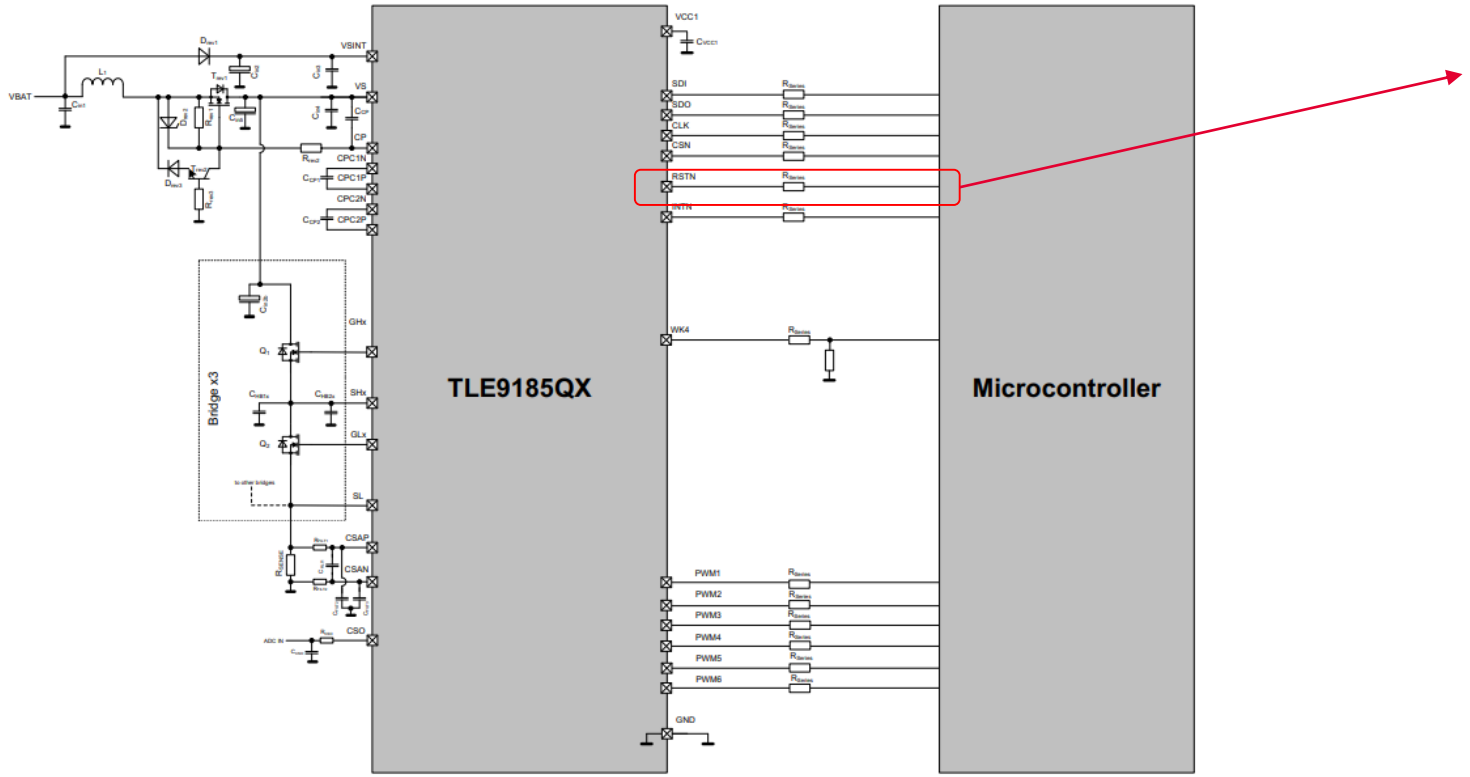
Learn more about Adaptive MOSFET Control

MOTIX™ TLE9185x specific behaviour

1

The MOTIX™ TLE9185x is a slave device, it does not supply the microcontroller:

- The reset pin must be connected to a microcontroller input and monitored.



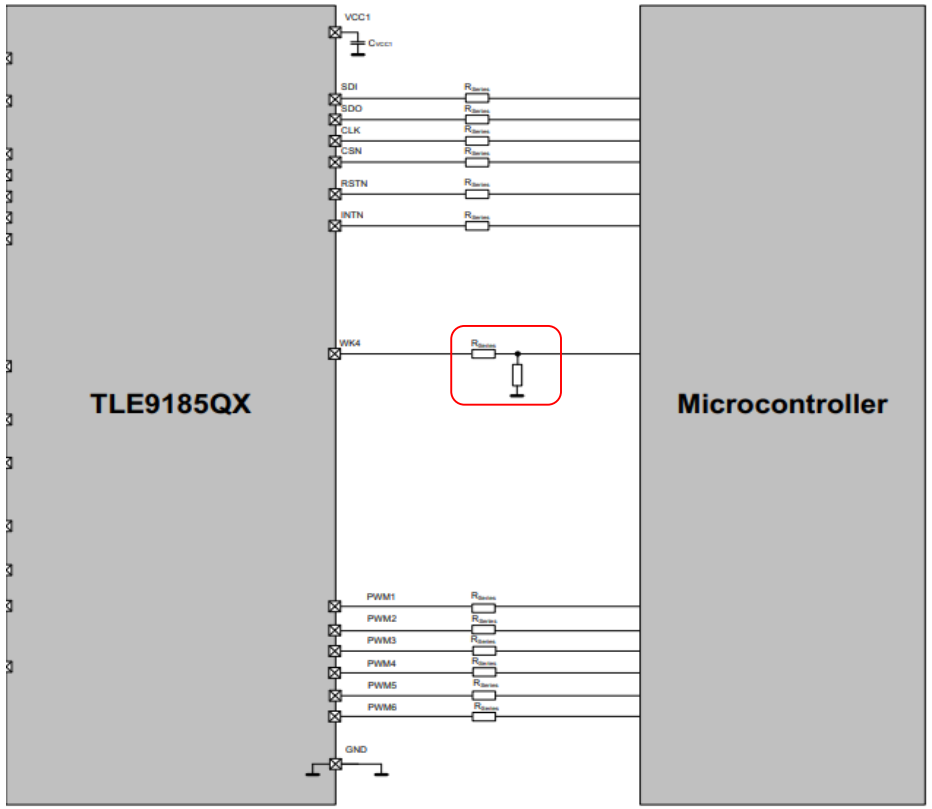
RSTN = Low indicates that an issue occurred, causing a loss of the SPI communication.
After sending the device in sleep mode the µC must delay its own sleep mode for at least the reset low time (t_{RD1} or t_{RD2}, configurable) and sample the RSTN.

MOTIX™ TLE9185QX specific behaviour

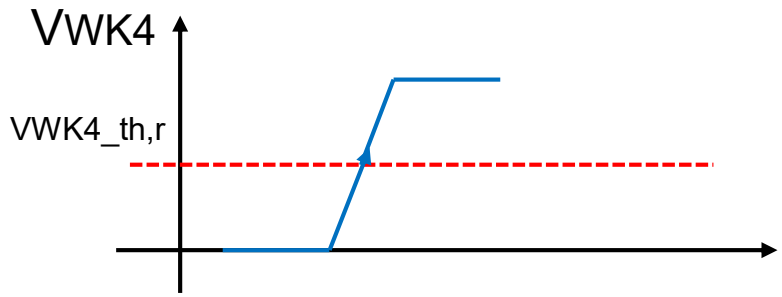
1

The MOTIX™ TLE9185 is a slave device, it does not supply the microcontroller:

- The reset pin must be connected to a microcontroller input and monitored.
- The microcontroller must wake-up the device.



1. WK4 is kept low while in sleep mode (external pull-down)
2. Wake up: WK4 must be pulled high by the 5V microcontroller

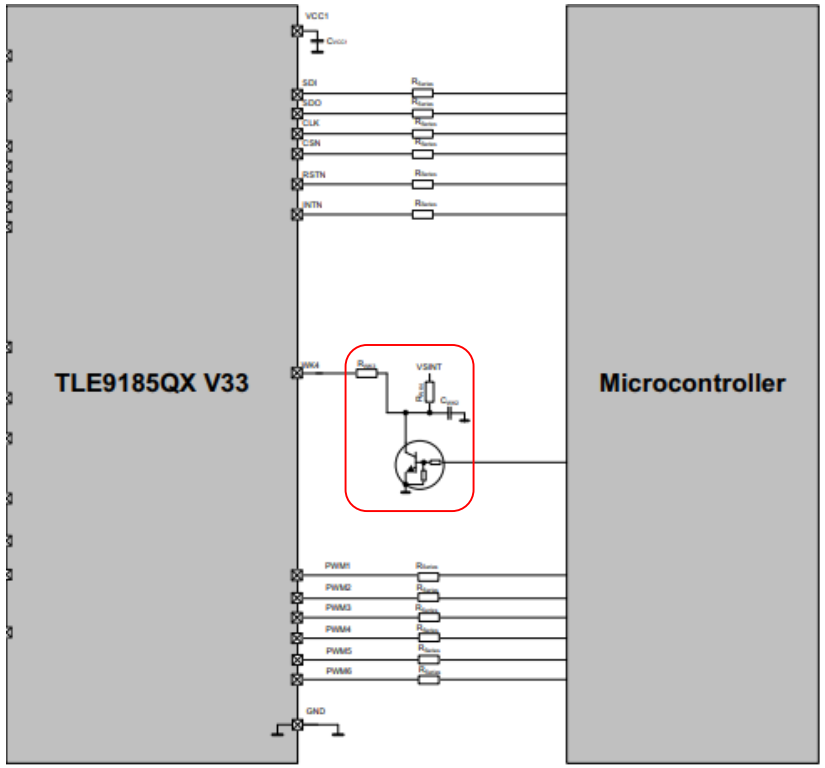


MOTIX™ TLE9185QX V33 specific behaviour

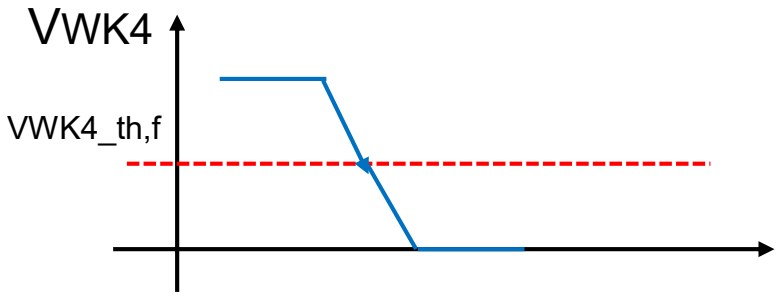
1

The MOTIX™ TLE9185 is a slave device, it does not supply the microcontroller:

- The reset pin must be connected to a microcontroller input and monitored.
- The microcontroller must wake-up the device.



1. WK4 is kept high while in sleep mode (external pull-up)
2. Wake up: WK4 must be pulled down by the 3.3V microcontroller



Part of your life. Part of tomorrow.