

## Product Brief

# TLE985x Infineon Embedded Power IC

## H-Bridge driver IC with integrated Arm® Cortex®-M0 MCU

The TLE985x product family integrates an Arm® Cortex®-M0 microcontroller core and market proven peripherals. It provides a highly integrated H-bridge driver motor control solution for automotive applications such as sunroof, window lift, power lift gate and pumps. The TLE985x is based on the same platform as the other Embedded Power products (*TLE984x*, *TLE986x* and *TLE987x*). This will enable design synergies between DC and BLDC motor control applications.

Its peripheral set includes an 8-bit ADC with 9 multiplexed analog inputs to process up to 4 high voltage monitoring inputs. The HV-MON inputs don't need external voltage divider or switch-off transistors and save costs for external components. In addition the TLE985x has a 10-Bit ADC with 12 multiplexed inputs for voltage and temperature supervision.

Besides that, it comprises two full duplex serial interfaces (*UART*) with LIN support and two on-chip temperature and battery voltage measurement units.

It is supported by a complete development tool chain provided by Infineon and third party vendors.

### Key benefits

- › **Enable cost and board space improvements** – Our system-on-chip solution integrates data processing, actuation and sensing. The chip comes in a leadless VQFN package with 7x7 mm footprint and enables PCB space saving. The TLE985x family allows driving MOSFETs at  $V_{BATT} \geq 6V$  with a low number of external components, providing a very cost effective solution on a system level. Minimum number of external components reduces BOM cost. Additionally, our TLE985x product family supports energy management with various power-saving modes: MCU slow-down mode, sleep mode, stop mode, cyclic wake-up sleep mode.
- › **MOSFET driver with adaptive control** – The TLE985x H-Bridge MOSFET driver has an adaptive control hardware implementation. The adaptive control algorithm is able to compensate MOSFET parameter spread in the system by automatically adjusting gate current values as a reaction on timing measurement results. This allows an optimization of the system concerning EME (*slow slew rates*) and Pdiss (*short dead times*) simultaneously.
- › **Enable high levels of system reliability** – Extensive diagnostics and protections are embedded within the System-on-Chip, more than a discrete approach can offer. In addition the Embedded Power IC and the external MOSFETs can be protected.

### Key features

- › Arm® Cortex®-M0 MCU
- › System clock up to 40MHz
- › On chip oscillator & PLL
- › Up to 96kB Flash memory
- › Up to 4KB RAM
- › H-Bridge MOSFET driver with current driven output stages
- › One protected high-side switch
- › 5V power supply output
- › Integrated LIN transceiver compatible with LIN standard 2.2 and SAE J2602-supports fast programming via LIN
- › Measurement Unit:
  - › 8-bit ADC with 9 channels for Voltage and Temperature supervision
  - › 10-bit ADC with 7 channels + 5 external analog inputs
  - › 2 on chip temperature and battery voltage measurement
- › Current Sense Amplifier for motor current sensing via shunt (CSA)
- › Independent programmable window watchdog
- › Grade-0 qualification
- › Math co-processor unit with divider unit for signed and unsigned 32-bit division operations
- › Stack overflow detection logic
- › AEC Q-100 Qualified

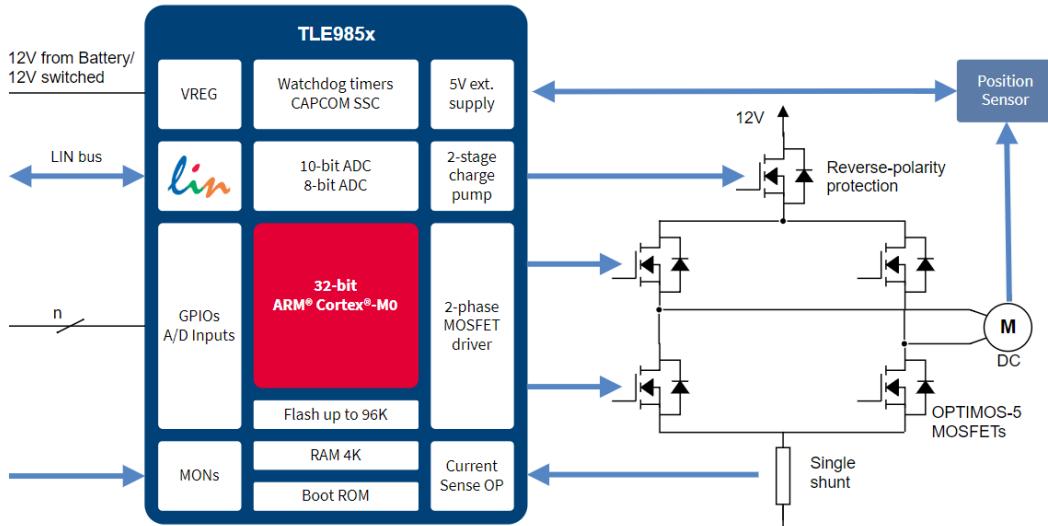
### Key applications



# TLE985x Infineon Embedded Power ICs

## H-Bridge driver IC with integrated Arm® Cortex®-M0 MCU

### Block Diagram



### Product Overview

#### H-Bridge Driver IC with Integrated Microcontroller

Product name	Flash [kB]	RAM [kB]	EEPROM in Flash included [kB]	Freq [MHz]	Low Side MOSFET Drivers	High Side MOSFET Drivers	High Side Switch	High Voltage Monitor Input	T <sub>j</sub>	Package Type
<b>TLE985xQX, ARM Cortex M0 based 2-Phase NFET Gate Driver DC Motor Control, Grade-1</b>										
TLE9850QX	48	4	4	40	1	1	1	4	150	VQFN-48-31
TLE9853QX	48	4	4	40	2	2	1	4	150	VQFN-48-31
TLE9854QX	64	4	4	40	2	2	1	4	150	VQFN-48-31
TLE9855QX	96	4	4	40	2	2	1	4	150	VQFN-48-31
<b>TLE985xQXW, ARM Cortex M0 based 2-Phase and Single Phase NFET Gate Driver for DC Motor Control, Grade-0</b>										
TLE9851QXW	64	4	4	40	1	1	1	4	175	VQFN-48-29
TLE9854QXW	64	4	4	40	2	2	1	4	175	VQFN-48-29

#### Application Kits & Evaluation Boards

Product name	Description
TLE985X EVALBOARD	Evaluation of all functions and peripherals of the H-bridge driver IC product family (TLE985x)
TLE9855 EVALKIT	Evaluation of all functions and peripherals of the TLE9855QX

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