

Product brief

MOTIX™ MCU Embedded Power IC TLE985x

The MOTIX™ 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 MOTIX™ TLE985x is based on the same platform as the other Embedded Power products (MOTIX™ TLE984x, MOTIX™ TLE986x and MOTIX™ 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, MOTIX™ 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 7 x 7 mm footprint and enables PCB space saving. The MOTIX™ TLE985x family allows driving MOSFETs at $V_{BATT} \geq 6\text{ V}$ 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 MOTIX™ 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 MOTIX™ 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 P_{diss} (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 40 MHz
- › On chip oscillator & PLL
- › Up to 96 kB flash memory
- › Up to 4 kB RAM
- › H-bridge MOSFET driver with current driven output stages
- › One protected high-side switch
- › 5 V 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

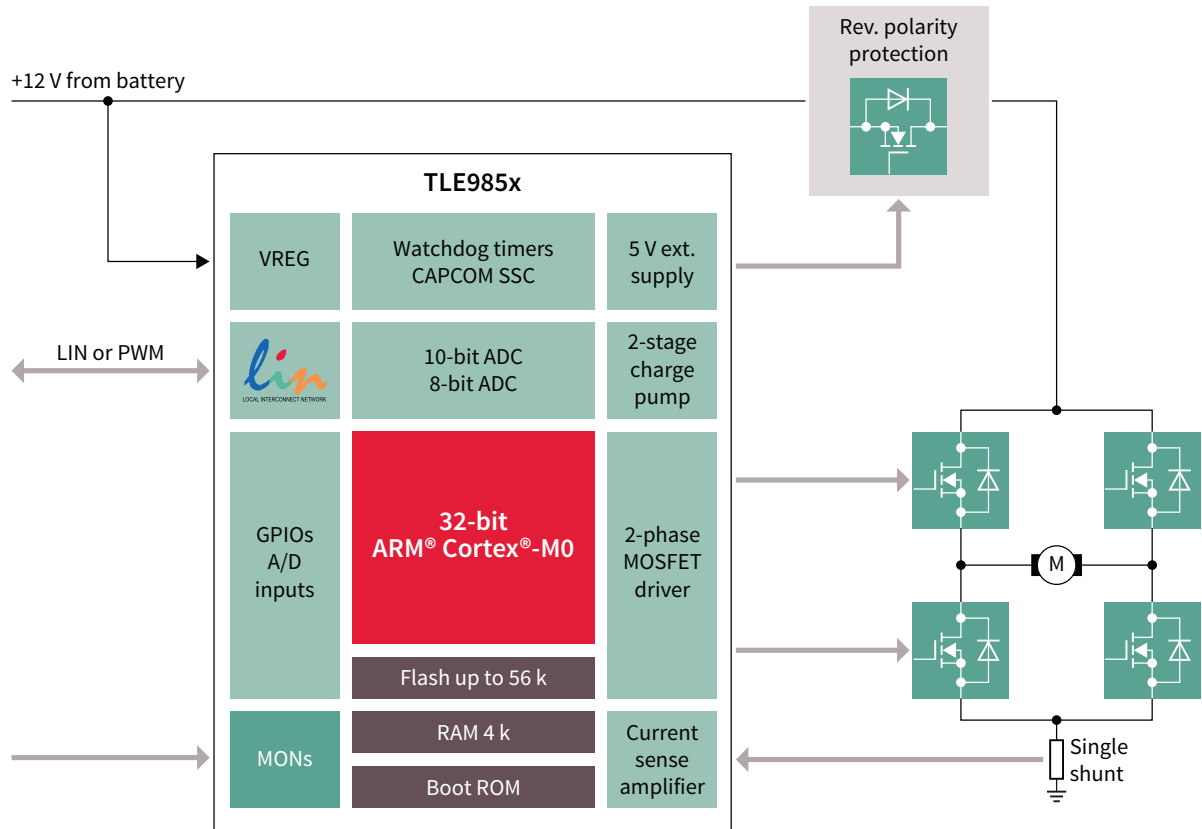
Key applications



MOTIX™ Embedded Power IC TLE985x

H-bridge driver IC with integrated ARM® Cortex®-M0 MCU

Block diagram



Product overview TLE985x

Product name	Frequency [MHz]	High-voltage monitor input	RAM [kB]	Flash [kB]	EEPROM emulation [kB]	CSA	T _j	Low-side MOSFET drivers	High-side MOSFET drivers	High-side switch	Package
MOTIX™ TLE9850QX	40	4	4	48	4	Yes	150	1	1	1	PG-VQFN-48-31
MOTIX™ TLE9852QX	40	4	4	48	4	No	150	2	2	1	PG-VQFN-48-31
MOTIX™ TLE9853QX	40	4	4	48	4	Yes	150	2	2	1	PG-VQFN-48-31
MOTIX™ TLE9854QX	40	4	4	64	4	Yes	150	2	2	1	PG-VQFN-48-31
MOTIX™ TLE9855QX	40	4	4	96	4	Yes	150	2	2	1	PG-VQFN-48-31
MOTIX™ TLE9851QXW	40	4	4	64	4	Yes	175	1	1	1	PG-VQFN-48-29
MOTIX™ TLE9854QXW	40	4	4	64	4	Yes	175	2	2	1	PG-VQFN-48-29

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