

## MLX81330 / MLX81332 / MLX81334

# SMART LIN DRIVER 0.5 A / 1 A DC, STEPPER AND BLDC MOTORS



## MLX81330 / MLX81332 / MLX81334

The MLX8133x is a gen-3 LIN driver for small motors targeting automotive mechatronic applications up to 10 W. This all-in-one LIN driver enables small-footprint applications to control small BLDC, stepper and DC motors, and support sensored or sensorless field-oriented control (FOC) algorithms.

**COSTS IN AUTOMOTIVE MECHATRONIC APPLICATIONS** 

## **KEY FEATURES**

#### Motor driver

- Minimum discrete components
- Driver for DC/BLDC/Stepper motor
- Ron = 3Ω / 0.8Ω typ. for 1 halfbridge + shunt
- 2x NFET for each half-bridge
- On-chip charge-pump for
- top-NFETsVds protection for all NFETs

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- MLX16-FX, application CPU
- MLX4, communication CPU
- 2x watch-dog
- +50 input interrupt controller
- Common purpose timer

#### Memories split per CPU

- MLX16-FX memories:
- 32 KB / 64 KB Flash with ECC
- 8 KB / 10 KB ROM
- 2 KB / 4 KB RAM
- 512 B EEPROM
- MLX4 memories:
- 6 KB ROM
- 512 B RAM

#### Orivers in SO8 and QFN24 Pin-compatible

- MLX81330 < 0.5A
- MLX81332 < 1A
- Drivers in QFN32
  Function-compatible MLX81332
  MLX81334 < 1A</li>
- Periphery
  - Configurable RC-clock 12..32 MHz
  - 4x / x8 general purpose IO's, digital, analog, 1x high-voltage input, SPI, I2C-slave (+UART for MLX81332/34)
  - 5x 16-bit motor PWM timers
  - 2x 16-bit timers
  - 10-bit ADC with < 6 µs conversion time with multiple channels and different ADC references
  - Differential current sense amplifier
  - Temperature sensor, over-temperature detection
  - Over-current detection, over-voltage and under-voltage protection

#### ✓ Voltage regulators

- Internal voltage regulators, directly powered from 12V battery supply
- Operating voltage Vs = 5.5V to 20V
- Operation down to 3.5V with reduced analog characteristics, down to 3V without losing register content, down to 1.5V with intact RAM memory
- Low standby current consumption of typ 25μA (max 50 μA) in sleep mode
- Wake-up possible via LIN, external pins or internal wake-up timer

#### Bus interface

- LIN 2.x/SAE J2602 and ISO17987-4 compliant LIN slave
- Automotive AEC-Q100 qualified
- Designed for safety applications according to ASIL-B (ISO 26262)
- Maximum IC temperature (with validated mission profile) Tj = 175°C
- FOR MORE INFORMATION: WWW.MELEXIS.COM/MLX81330 WWW.MELEXIS.COM/MLX81332 WWW.MELEXIS.COM/MLX81334



### **BLOCK DIAGRAM**



## APPLICATION WITH DC, STEPPER AND BLDC MOTORS

- Small Stepper / BLDC flap or valve, < 0.5 Apk (< 1 Apk ) per phase
- Small DC flap / valve, or single-coil fan/pump, < 0.7 Apk (< 1.4 Apk)

MLX81330	32KB Flash MCU, QFN24, Motor drive < 0.5 A
MLX81332	32KB Flash MCU, QFN24, Motor drive < 1 A
MLX81334	64KB Flash MCU, QFN32, Motor drive < 1 A



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