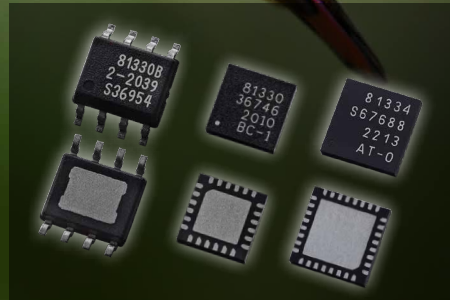


Melexis

INSPIRED ENGINEERING

MLX81330 / MLX81332 / MLX81334

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



The hummingbird's beating wings flap at extremely high frequencies, typically around 50 times per second. This allows it to fly at speeds exceeding 1.5 m/s, to fly backwards or to seemingly be suspended in the air in perfect balance. What better animal to reflect the motor/control driver and actuator capacities?

ALL-IN-ONE LIN MOTOR DRIVER CUTS MATERIAL COSTS IN AUTOMOTIVE MECHATRONIC APPLICATIONS

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 sensed or sensorless field-oriented control (FOC) algorithms.

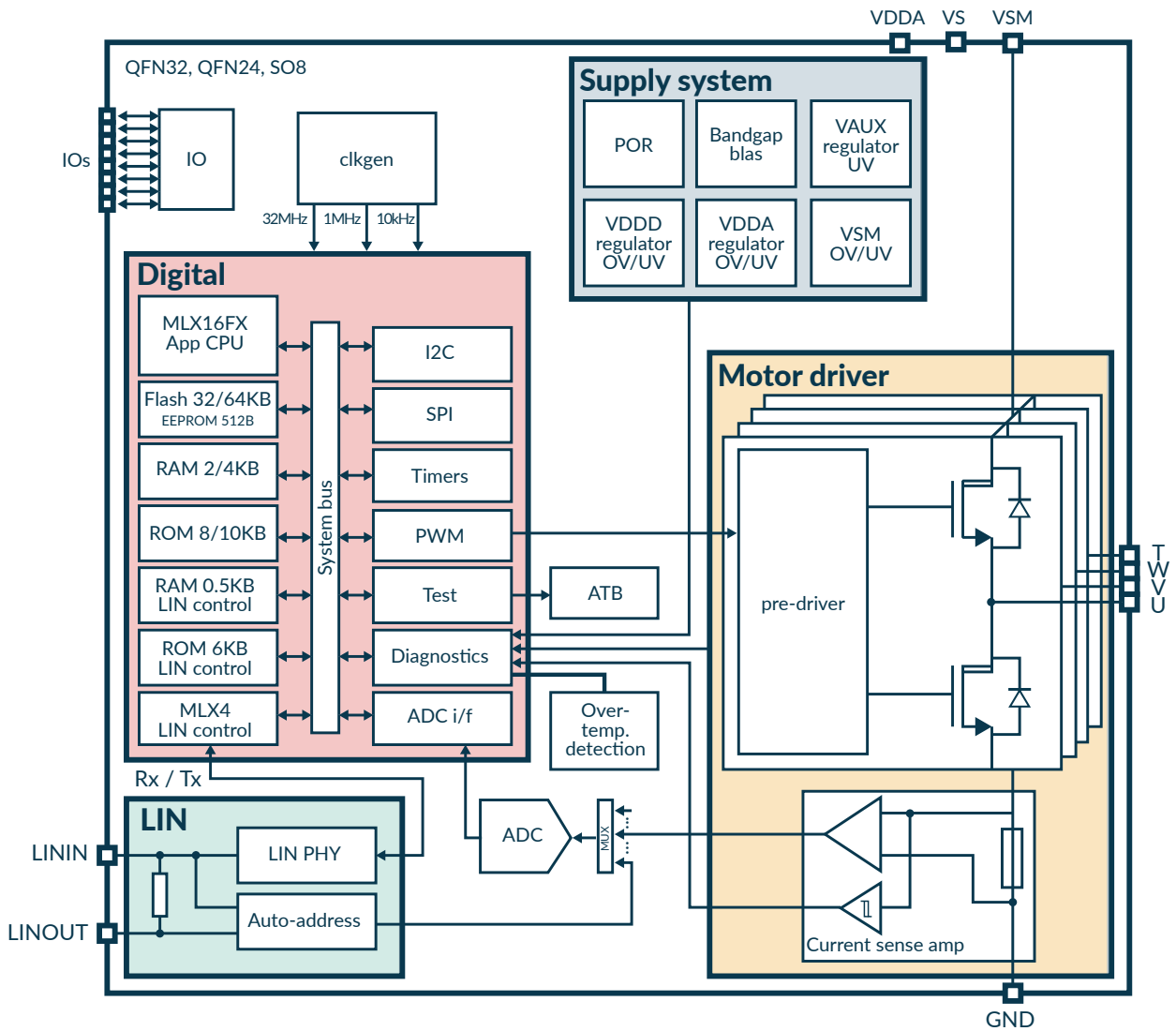
KEY FEATURES

- ✔ **Motor driver**
 - Minimum discrete components
 - Driver for DC/BLDC/Stepper motor
 - $R_{on} = 3\Omega / 0.8\Omega$ typ. for 1 half-bridge + shunt
 - 2x NFET for each half-bridge
 - On-chip charge-pump for top-NFETs
 - V_{ds} protection for all NFETs
- ✔ **Microcontroller**
 - 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
- ✔ **Drivers in SO8 and QFN24**
Pin-compatible
 - MLX81330 < 0.5A
 - MLX81332 < 1A
- ✔ **Drivers in QFN32**
Function-compatible MLX81332
 - MLX81334 < 1A
- ✔ **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 μ s 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 $V_s = 5.5V$ 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 25 μ A (max 50 μ A) 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)**
 $T_j = 175^\circ C$

FOR MORE INFORMATION: WWW.MELEXIS.COM/MLX81330
WWW.MELEXIS.COM/MLX81332
WWW.MELEXIS.COM/MLX81334

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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

