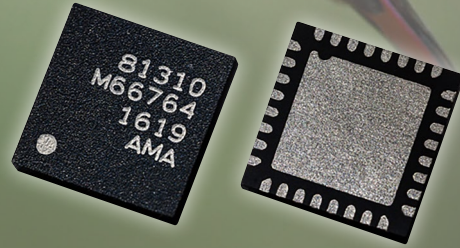


Melexis

INSPIRED ENGINEERING

MLX81310 / MLX81315
MLX81325 / MLX81206

EMBEDDED LIN MOTOR DRIVERS



The hummingbird's beating wings flap at extremely high frequencies, typically around 50 times per second. This allows it to fly at speeds exceeding 15 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?

ENABLING SMART & SMALL, PLUG & PLAY MECHATRONICS

Melexis developed a complete second generation smart LIN motor driver family, based on MLX81310, MLX81315, MLX81325 and MLX81206 for motor currents from 0.1 A to 100 A. These ICs enable small-footprint 12 V applications to control BLDC, Stepper or DC motors with on-chip or external NFETs to drive the electric motor with sensor or sensorless in the most silent and efficient way, which makes them an excellent choice for new hybrid and electric cars. The ICs have a digital LIN interface for commands and feedback to enable digital motion control by the car ECU.

The LIN interface is compliant with LIN 1, LIN 2, J2602, and can be configured for PWM communication.

TYPICAL APPLICATIONS:

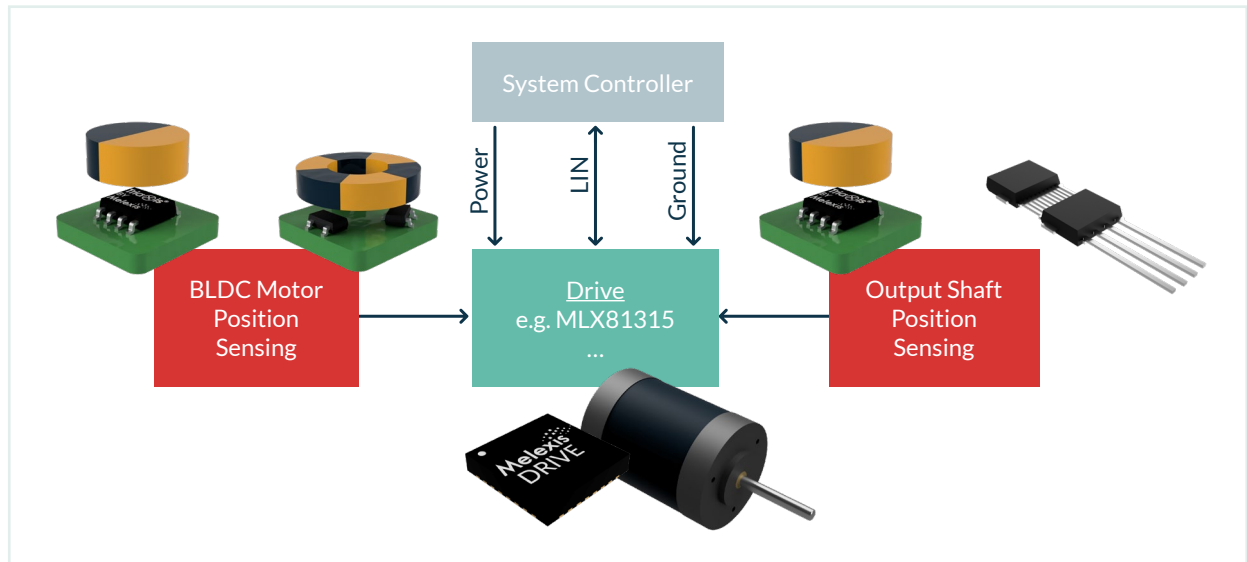
- ✔ Motor positioning for flaps & valves (DC, BLDC, Stepper motor)
- ✔ Motor positioning for window lift, sunroofs, seats, doors with LIN (DC, BLDC motor)
- ✔ BLDC sensorless fans and sensed pump with rotor resolver



IC FAMILY FEATURE OVERVIEW FOR 81310-81315-81325-81206

	MLX81310	MLX81315	MLX81325	MLX81206
MCU Memory	32 kB Flash	32 kB Flash	32 kB Flash + 16 kB ROM	64 kB Flash + 6 kB ROM
MCU NVRAM	4x 128 Byte	4x 128 Byte	4x 128 Byte	4x 128 Byte
MCU RAM	2 kB	2 kB	2 kB	4 kB
Driver / Pre-Driver	4x Driver on-chip typ.5Ω Halfbridge	4x Driver on-chip typ.1Ω Halfbridge	4x Pre-Driver <30nC ext. NFETs	4x Pre-Driver <200nC ext. NFETs
Motor power range (12 V)	typ. 1...5 W	typ. 5-10 W	typ. 10...200 W	typ. 100...1000 W
Motor voltage range	5.5 V...20 V	5.5 V...20 V	5.5 V...32 V	5.5 V...20 V
IO pins (analog, digital)	7x LV + 1x HV	7x LV + 1x HV	7x LV + 1x HV	4x LV + 1x HV
Motor current sense	Low side, on-chip	Low side, on-chip	Low-side, differential external shunt	High-side, differential external shunt
Sensor interface (3.3 V supply)	analog, pwm, spi	analog, pwm, spi	analog, pwm, spi	analog, pwm, spi, uart
Sensorless support (hw + sw)	yes	yes	yes	yes
Maximum IC temperature (with validated customer mission profile)	T _j = 175 °C	T _j = 175 °C	T _j = 175 °C	T _j = 175 °C
Package	QFN32, 5x5	QFN32, 5x5	QFN32, 5x5	QFN32, 5x5

MELEXIS SENSE & DRIVE CONCEPT PICTURE



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