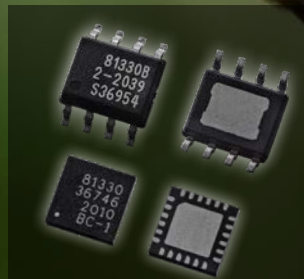


Melexis

INSPIRED ENGINEERING

MLX81330 / MLX81332

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

The MLX81330 (MLX81332) 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 MLX81330 (MLX81332)

- ✔ **Motor driver**
 - Minimum discrete components
 - Driver for DC/BLDC/Stepper motor
 - $R_{on} = 3\Omega$ typ. (0.8Ω typ.) for 1 half-bridge + shunt
 - 2x NFET for each half-bridge
 - On-chip charge-pump for top-NFETs
 - Vds 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 Flash with ECC
 - 8 KB ROM (10 KB ROM)
 - 2 KB RAM
 - 512 B EEPROM
 - MLX4 memories:
 - 6 KB ROM
 - 512 B RAM
- ✔ **Pin-compatible drivers in SO8 and QFN24**
 - MLX81330 < 0.5A
 - MLX81332 < 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)
 - 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
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