



## HVC 2480B for BLDC Motor Control Features, Tools, and Application Support

### HVC 2480B Overview

The Micronas HVC 2480B is a highly integrated 8-bit microcontroller for direct 12 V operation.

The integrated triple half-bridge drives up to three times 300 mA. Alternatively, up to three external half-bridges can be directly controlled to drive higher currents. A LIN 2.x compliant transceiver with LIN UART provides Local Interconnect Network communications with little CPU interaction.

Available in a PQFN40 package and thanks to the high integration level, the HVC 2480B is an ideal solution for applications with limited available space.

### Key Features

- ◆ Direct 12V operation
- ◆ High-performance 8-bit 8051 core (two-clock machine cycle) running with up to 24 MHz
- ◆ 1.75 kbyte RAM
- ◆ 32 kbyte Flash memory
- ◆ 512 byte EEPROM

- ◆ On-chip oscillators and watchdogs
- ◆ Active EMI suppression module
- ◆ Triple half-bridge
- ◆ Drivers for up to three half-bridges
- ◆ Three comparators with selectable reference: integrated virtual star point or external reference input
- ◆ Embedded operational amplifier
- ◆ 10-bit queued ADC, with down to 2.6  $\mu$ s conversion time, various triggers and references
- ◆ Temperature sensor
- ◆ Switchable 5 V supply
- ◆ LIN 2.x physical layer interface
- ◆ PQFN40 6x8 mm<sup>2</sup> package
- ◆ AEC-Q100 qualified
- ◆ TA = -40 °C to +125 °C

### Target Applications

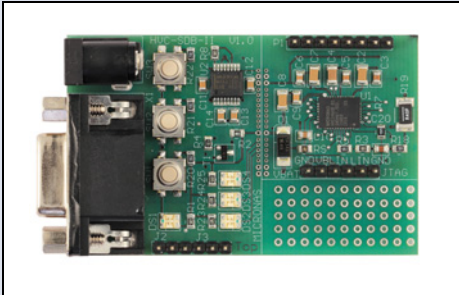
- ◆ Control of single-, two- or three-phase(s) BLDC motors in
  - Fans
  - Pumps
  - Smart Actuators

- ◆ Sensor or sensorless controlled operation.
- ◆ Block or sinusoidal (Space Vector Modulation) commutation.
- ◆ Closed-loop control of speed, torque, etc.

### Development Environments

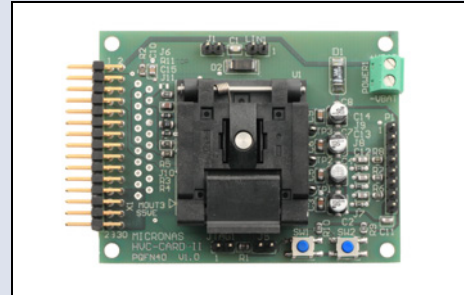
- ◆ Workbenches / IDEs
  - IAR Embedded Workbench®
  - Keil  $\mu$ Vision
  - Raisonance RIDE
- ◆ Debugger
  - Phyton CodeMaster with JEM-52 JTAG debug probe
- ◆ Application Notes and Software
  - Sensored / Sensorless BLDC motor six-step commutation
  - Space vector modulated motor control
  - API and drivers
  - LIN software stack

## Evaluation Boards



### Small Demo Board

PCB with soldered HVC 2480B in PQFN40 package. The three-part board consists of a solder pad area, a general-purpose I/O section with 9-pin Sub-D connector for LIN/SPI/RS232, debug I/F, jack for 12 V unregulated power supply, and the controller section with an 8-pin BLDC motor connector. The controller section can be separated to achieve a minimized ( $27 \times 29 \text{ mm}^2$ ) PCB version.

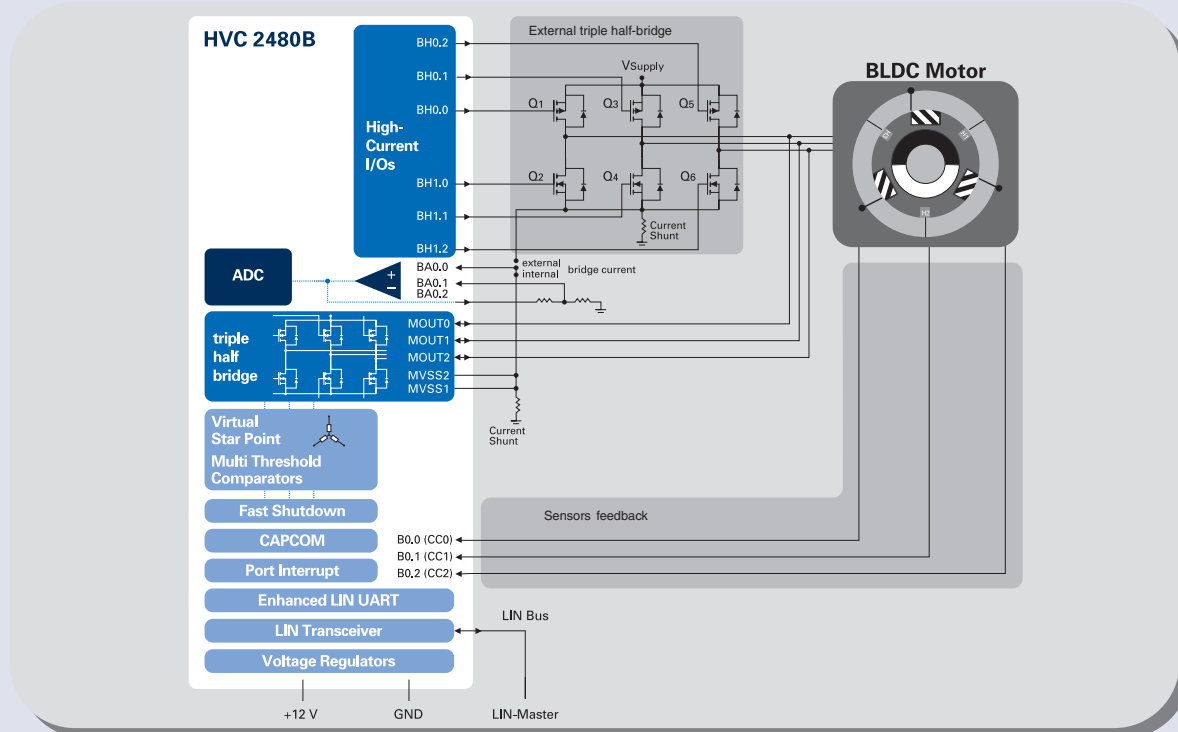


### HVC-Card

Board with clam shell socket for PQFN40 providing:

- ◆ 2-pin connectors for debug and LIN I/F
- ◆ 8-pin BLDC motor connector
- ◆ Shunt resistor for current measurement
- ◆ All I/O signals available on a 30-pin connector

## Application Example: Sensor/Sensorless-controlled Commutation of a BLDC Motor with an Internal/External Triple Half-Bridge



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