

SmartHVC
Technology
easyLIN
Technology

Embedded Motor Control with our HVC Family

Smart Actuator Solutions for Automotive Applications



www.micronas.tdk.com



Development Tools and Compiler

| | | | |
|--|--|--|---|
| | <p>Small Demo Board - I (SDB-I)</p> <p>First steps with HVC 4x and HVC 5x to evaluate the small yet "all-onboard" solution. Available for: HVC 5221D, HVC 522xC and HVC 5x22D.</p> | | <p>Application Board (APB)</p> <p>Development board for all fully Integrated HVC 5x Products. Full access to all I/O pins and motor connections. Flexible due to onboard programming socket.</p> |
| | <p>KEIL MDK for Arm® Cortex®-M3</p> <p>Complete software development environment</p> <p>Ask for free evaluation version.</p> | | <p>USB-to-LIN Adapter</p> <p>Supports the boot loader and flash programmer application note software.</p> |
| | <p>Gate Driver Application Board</p> <p>Development board for HVC 5481G Gate Driver. Full access to all I/O pins and motor connections. Flexible due to onboard programming socket.</p> | | <p>Segger Flasher Arm</p> <p>In-circuit programmer via JTAG or SWD</p> |

TDK-Micronas Contact

| Contact | Information available |
|--|---|
| www.micronas.tdk.com | General |
| service.micronas.com (registration needed) | Data sheets, application notes, programming guides, software... |
| mic-product-support@tdk.com | Technical support |
| mic-sales@tdk.com | Worldwide sales contact |

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HVC Family

Embedded Motor Control for Direct Control of Electric Motors (Stepper / BLDC / BDC)

Enables cost-effective automotive actuators with LIN connectivity

- Powered by a 32-bit CPU core (Arm® Cortex®-M3) and integrating high-performance analog functions
- 32 KB and 64 KB Flash versions available
- From 3 to 6 integrated half-bridges to directly drive brushed, stepper, or brushless motors with peak currents up to 2 A per phase
- Gate driver for external N-FET B6 bridge
- Analog and digital peripherals allow implementation of various motor control algorithms such as:
 - Sensor-less six-step commutation for brushless motors
 - Microstepping for stepper motors
 - DC-motor control with internal current sensing
 - Field oriented control with single shunt current sensing
- Small thermally efficient PQFN packages with Grade 1 AEC-Q100 qualification



About TDK Corporation

TDK Corporation (TSE:6762) is a global technology company and innovation leader in the electronics industry, based in Tokyo, Japan. With the tagline "In Everything, Better" TDK aims to realize a better future across all aspects of life, industry, and society. For over 90 years, TDK has shaped the world from within; from the pioneering ferrite cores to cassette tapes that defined an era, to powering the digital age with advanced components, sensors, and batteries, leading the way towards a more sustainable future. United by TDK Venture Spirit, a start-up mentality built on visions, courage and mutual trust, TDK's passionate team members around the globe pursue better—for ourselves, customers, partners, and the world. Today, the state-of-the-art technologies of TDK are in everything, from industrial applications, energy systems, electric vehicles, to smartphones and gaming, at the core of modern life. TDK's comprehensive, innovative-driven portfolio includes cutting-edge passive components, sensors and sensor systems, power supplies, lithium-ion and solid-state batteries, magnetic heads, AI and enterprise software solutions, and more—featuring numerous market-leading products. These are marketed under the product brands TDK, InvenSense, Micronas, Tronics, TDK-Lambda, TDK SensEI, and ATL. Positioning the AI ecosystem as a key strategic area, TDK leverages its global network across the automotive, information and communication technology, and industrial equipment sectors to expand its business in a wide range of fields. In fiscal 2026, TDK posted total sales of USD 16.6 billion and employed about 107,000 people worldwide.

TDK-Micronas Sites

TDK-Micronas is the center of competence for magnetic-field sensors and CMOS integration within the TDK group. TDK-Micronas has gained operational excellence for sensors and actuators production in over 25 years of in-house manufacturing. It has been the first company to integrate a Hall-effect based sensor into CMOS technology in 1993. Since then, TDK-Micronas has shipped over eight billion Hall sensors to the automotive and industrial market. The operational headquarters are located in Freiburg im Breisgau (Germany). Currently, TDK-Micronas employs around 1,000 people.



● Production + R&D ● Marketing, Sales, FAE

Design Centers, Germany

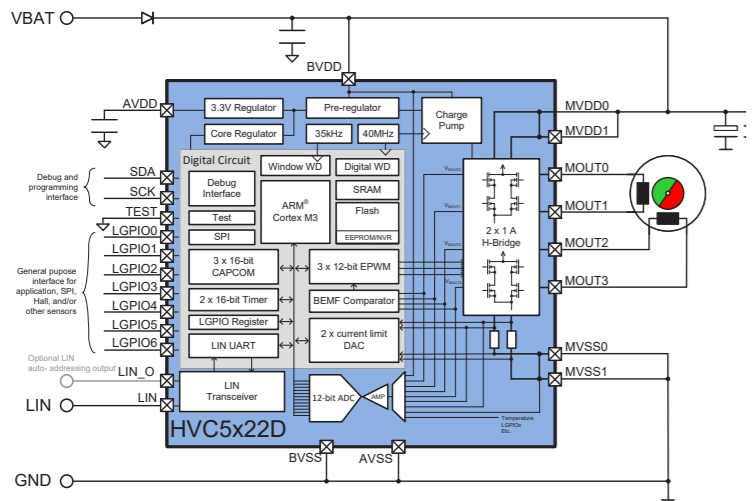
- Freiburg
- Munich

Production Site, Germany

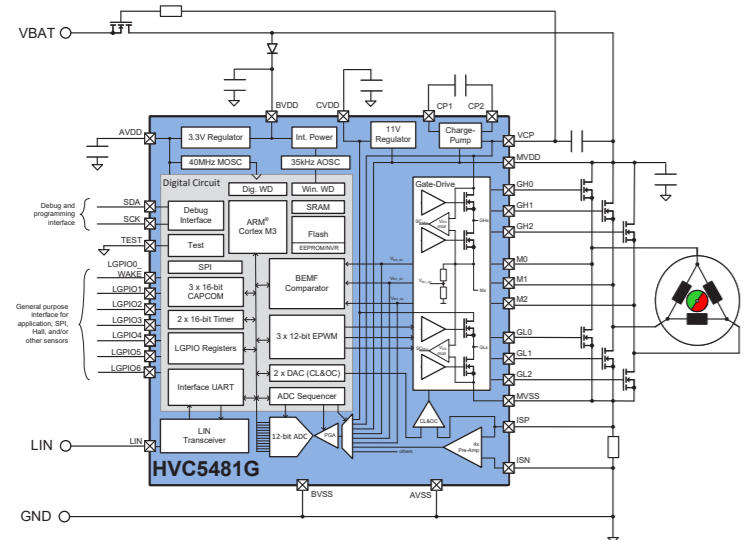
- Freiburg

Examples for HVC Motor Control

Fully integrated Motor drivers for DC, BLDC or Stepper Motors.



Gate Driver SBC for higher Power BLDC or DC Motors.



Typical Motor Control Applications in a Car with HVC 4x/5x

Product Versions

| Device | Motor Outputs | Max. Current [A] | Flash Size [Kbyte] | GPIOs | Standard | Package | Package Size [mm] | Production |
|-----------|----------------|------------------|--------------------|-------|-----------|---------|-------------------|------------|
| HVC 422xF | 6 | 0.5 | 32 | 11 | LIN 2.x | QFN40 | 6 x 6 | now |
| HVC 442xF | 6 | 0.5 | 64 | 11 | LIN 2.x | QFN40 | 6 x 6 | now |
| HVC 5221D | 4 | 0.5 | 32 | 7 | ISO 17987 | QFN24 | 5 x 5 | now |
| HVC 5222C | 3 | 1.0 | 32 | 7 | ISO 17987 | QFN24 | 5 x 5 | now |
| HVC 5223C | 3 | 2.0 | 32 | 7 | ISO 17987 | QFN24 | 5 x 5 | now |
| HVC 5222D | 4 | 1.0 | 32 | 7 | ISO 17987 | QFN24 | 5 x 5 | now |
| HVC 5422D | 4 | 1.0 | 64 | 7 | ISO 17987 | QFN24 | 5 x 5 | now |
| HVC 5481G | 6 x Gate Drive | | 64 | 7 | ISO 17987 | QFN32 | 5 x 5 | 2027 |

Package Details

