Embedded Motor Control with our HVC Family

Smart Actuator Solutions for Automotive Applications

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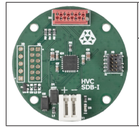
TDK
In Everything, Better

Development Tools and Compiler



Small Demo Board - I (SDB-I)

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.

Application Board (APB)

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.

KEIL MDK for Arm® Cortex®-M3

Complete software development environment

Ask for free evaluation version.

USB-to-LIN Adapter

Supports the boot loader and flash programmer application note software.

Gate Driver Application Board

Development board for HVC 5481G Gate Driver. Full access to all I/O pins and motor connections. Flexible due to onboard programming socket.

Segger Flasher Arm

In-circuit programmer

via JTAG or SWD

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

Smart|HVC Technology easy|LIN Technology lin

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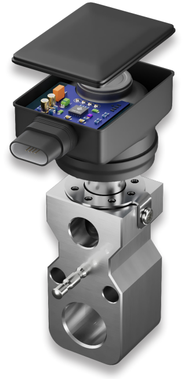
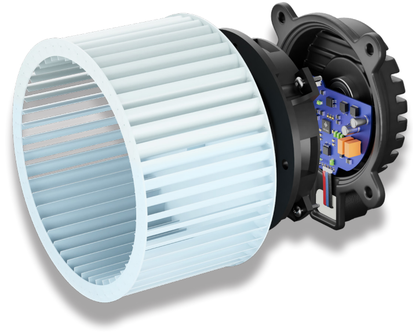
HVC Family

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.

Design Centers, Germany
- Freiburg
- Munich

Production Site, Germany
- Freiburg

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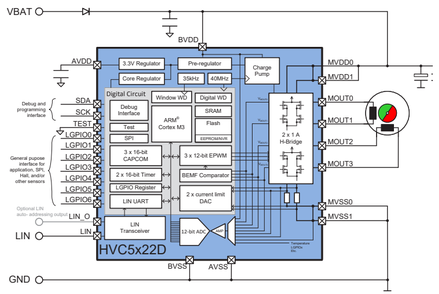
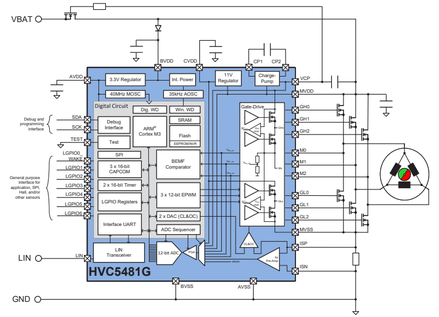
Examples for HVC Motor Control

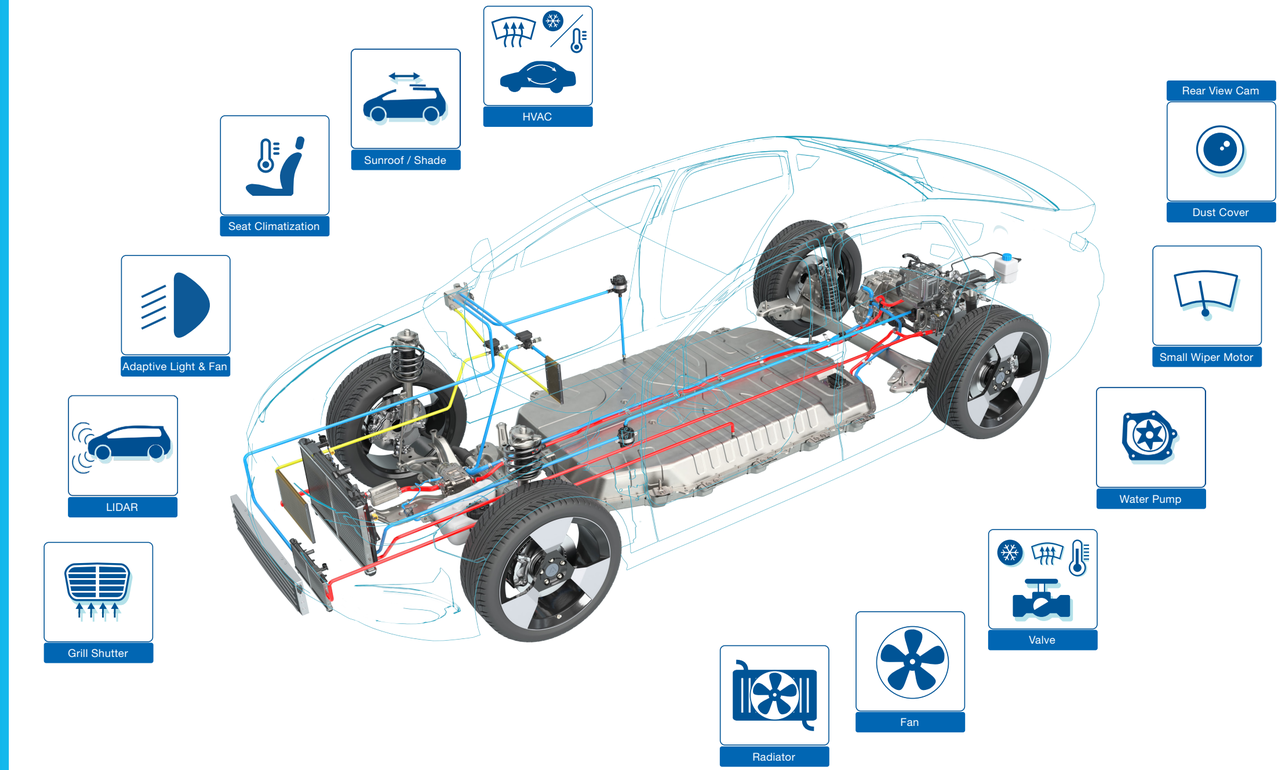
Fully integrated Motor drivers for DC, BLDC or Stepper Motors.



Gate Driver SBC for higher Power BLDC or DC Motors.



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

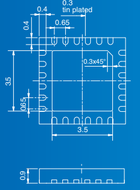


Product Versions

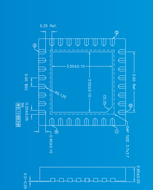
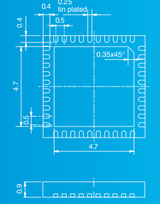
Device	Motor Outputs	Max. Current [A]	Flash Size [Kbyte]	GPIOs	Standard	Package	Package Size [mm]	Production
HVC 422xF	6	0.5	32	11	LIN 2.x	QFN40	6 x 6	now
HVC 442xF	6	0.5	64	11	LIN 2.x	QFN40	6 x 6	now
HVC 5221D	4	0.5	32	7	ISO 17987	QFN24	5 x 5	now
HVC 5222C	3	1.0	32	7	ISO 17987	QFN24	5 x 5	now
HVC 5223C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

Package Details

QFN24



PQFN32



QFN40