



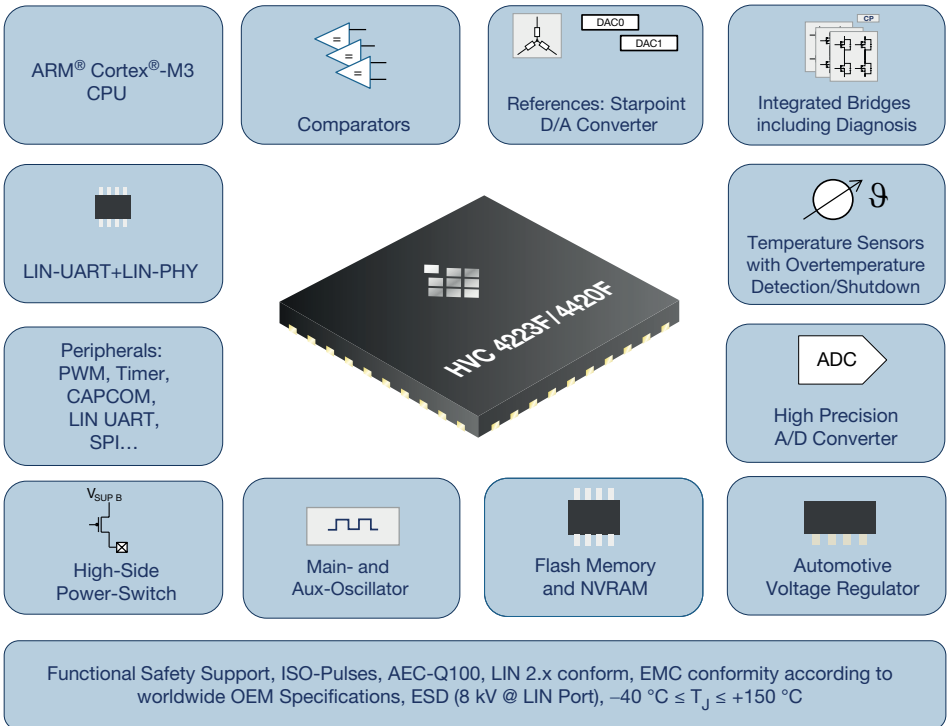
Smart Actuator Solutions for
Automotive Applications

Embedded Motor Control
with **HVC 4223F** and **HVC 4420F**

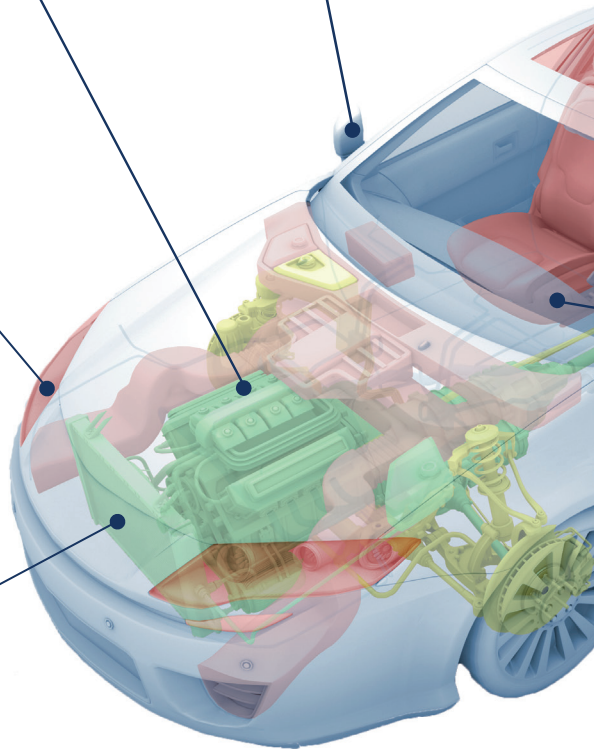
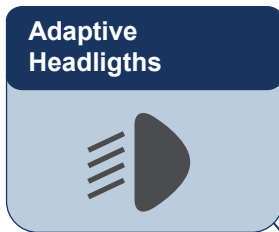
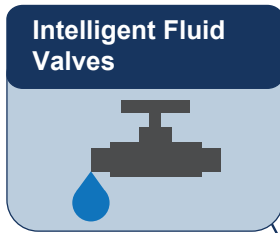
HVC 4223F, HVC 4420F

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

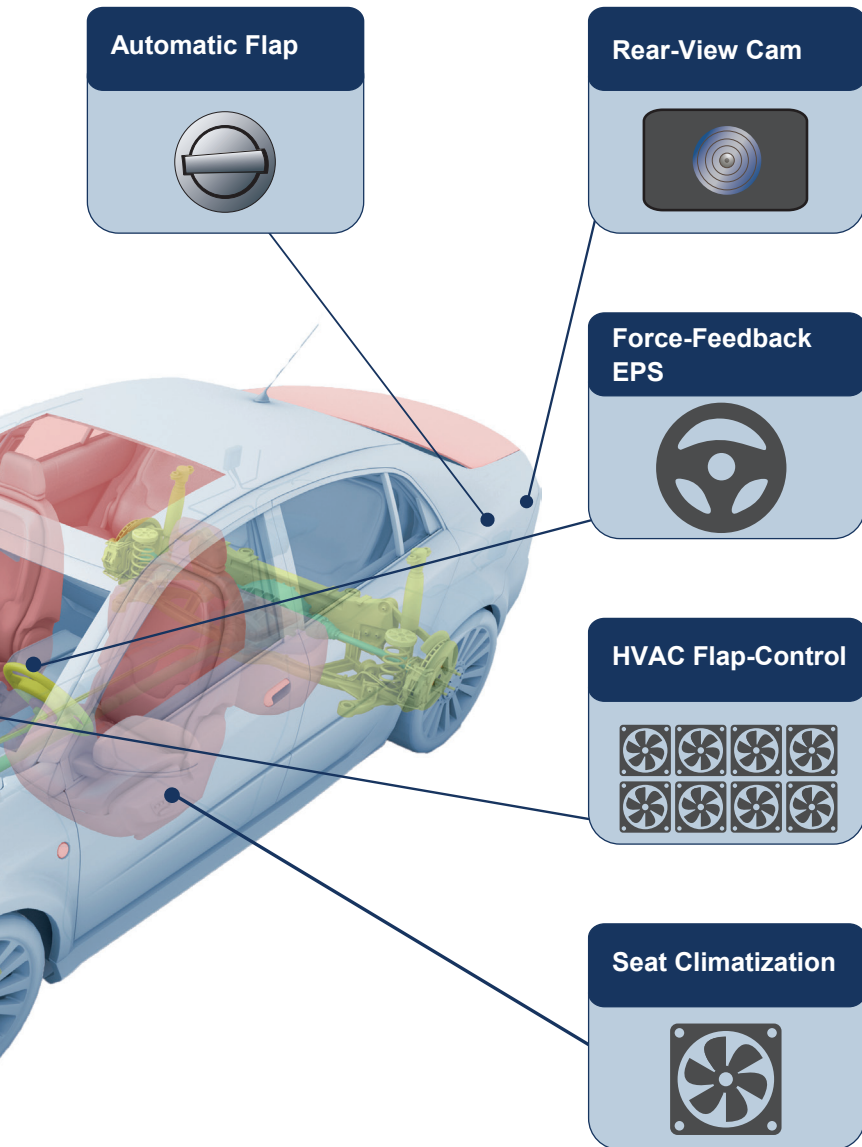
- Enables cost-effective realization of powerful and compact DC motor control
- Economically addresses growing challenges in the automotive market and beyond (industrial, consumer, instrumentation, etc.)
- Powered by a 32-bit CPU core (ARM® Cortex®-M3) and integrating high-performance analog functions
- Flexible peripherals provide all means to directly control brush-type, stepper (bipolar or three phase), or brushless direct current (BLDC) motors via integrated high-performance half-bridges without the need for external components
- HVC 4420F offers extended memory size to address the OEM diagnostics requirements. An integrated memory protection unit (MPU) supports RTOS requirements.



Typical Motor Control Applications with

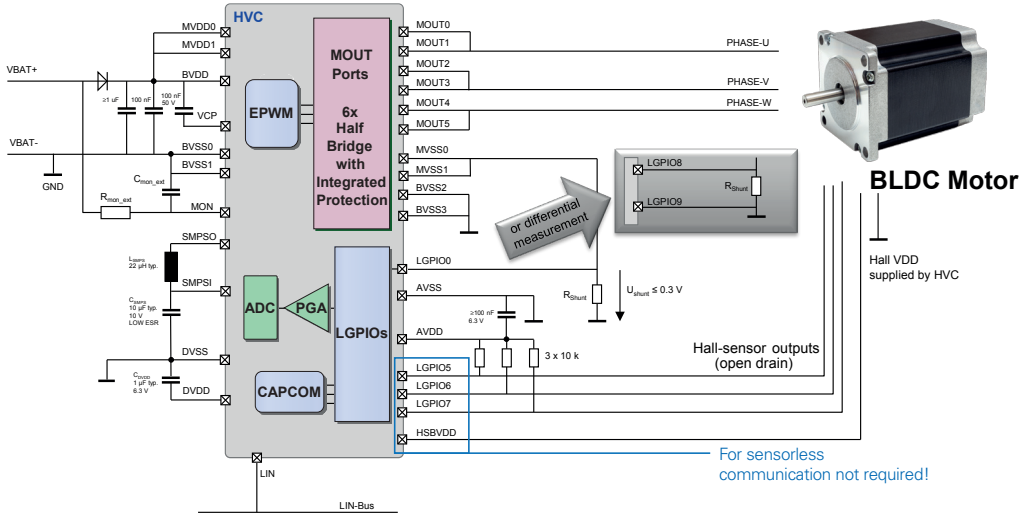


HVC 4223F/HVC 4220F in Automotive

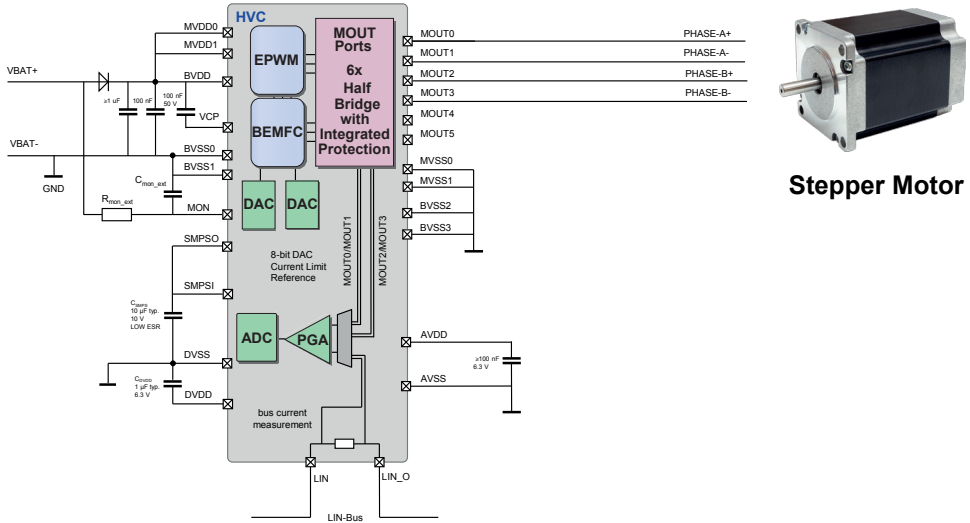


Examples for HVC Motor Control

Sensor-Controlled Block/Six-Step Commutation or Sensor-Controlled Space Vector Modulation. Motor currents driven by internal MOSFET bridge. For continuous motor currents up to 1000 mA.



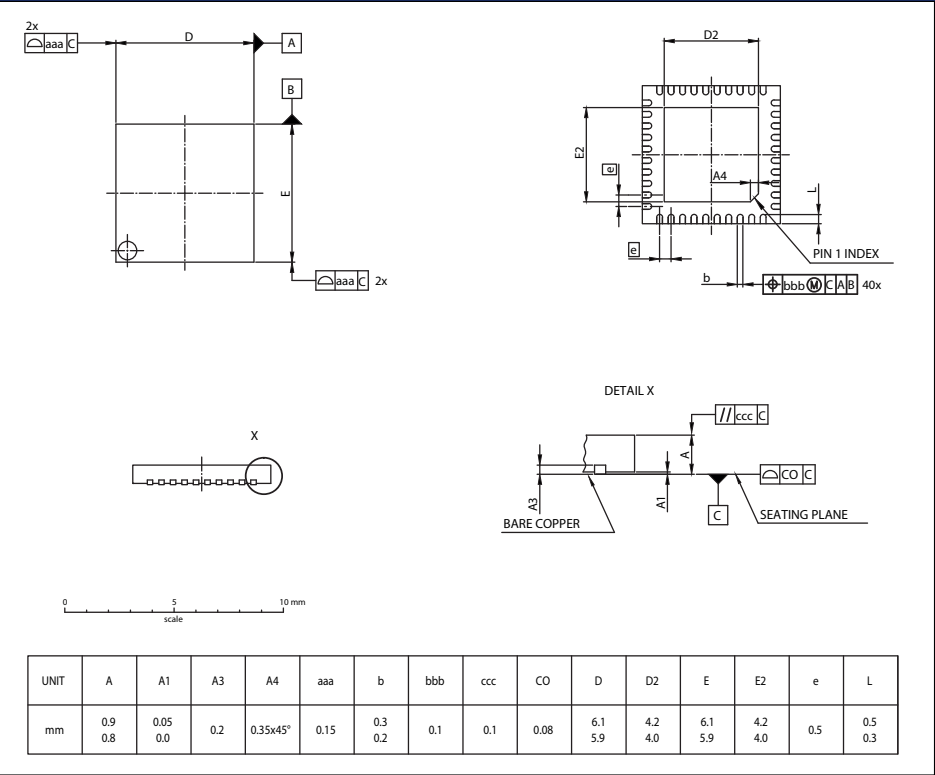
**Stepper Motor Current Control. Motor currents driven by internal MOSFET bridge.
For continuous motor currents up to 500 mA.**



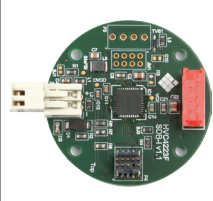
Product Versions


Device	Package	Core & Memory	Motor Function	Major Function
HVC 4223F	PQFN40 6x6	ARM Cortex M3 2 kB SRAM 32 kB Flash 512 byte NVRAM	BLDC Drive Bipolar Stepper Drive (Sensored & Sensorless)	Flexible drive of BLDC and stepper motors with diagnostic features. Suitable for applications in automotive board net.
HVC 4420F	PQFN40 6x6	ARM Cortex M3 4 kB SRAM 64 kB Flash 512 byte NVRAM	BLDC Drive Bipolar Stepper Drive (Sensored & Sensorless)	Flexible drive of BLDC and stepper motors with diagnostic features. Suitable for applications in automotive board net. Increased memory to support automotive OEM requirements for dedicated diagnostic library usage for board net.


Package Drawing

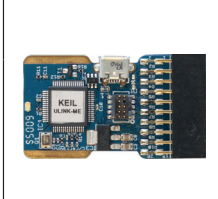


Development Tools and Compiler


	SDB-I First steps with HVC 4223F and HVC 4420F to evaluate the small yet "all-onboard" solution.
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	Application board Flexible due to onboard programming socket
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	KEIL MDK for ARM® Cortex®-M3 Complete software development environment Ask for free version.
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	ULINK-ME Debug adapter via JTAG or SWD
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Application Support

<pre>// configure I2C0 & an external chip I2C0->ADDR = I2C0_0; I2C0->I2C0 = I2C0_0; // initialise I2C0 with 100 kHz I2C0->I2C0 = 0x0000; I2C0->I2C0 = 0x0000; while(1) { // ... if (I2C0->I2C0 == 0) { // synchronise I2C0 from master // with data from the application // ... // read back data from I2C0 // ... // if not read value // ... } }</pre> 	Firmware Package Professional, Automotive ASPICE and Functional-Safety supporting firmware package available for buy-out. Various target platforms available by easy adaptation. Running standard- and sophisticated motor-control routines for BLDC and stepper motors.
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	J-Link In-circuit programmer via JTAG or SWD
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TDK-Micronas Contact

Contact	Information available
www.micronas.com	General
www.service.micronas.com (registration needed)	Data sheets, application notes, programming guides, software...
product.support@micronas.com	Technical support

TDK-Micronas GmbH

Hans-Bunte-Strasse 19 | 79108 Freiburg | Germany

Phone +49 761 517-0 | Fax +49 761 517 2174

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Technology

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TDK-Micronas Company Profile

TDK-Micronas is the most preferred partner for sensing and control. TDK-Micronas serves all major automotive electronics customers worldwide, many of them in long-term partnerships for lasting success. Operational headquarters are based in Freiburg im Breisgau (Germany). Currently, TDK-Micronas employs around 1000 persons. For more information about TDK-Micronas and its products, please visit www.micronas.com.

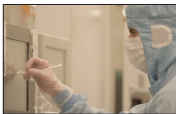
- 4 billion HAL® sensors shipped
- No. 1 supplier of linear Hall sensors (IHS 2017)



Global Presence



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

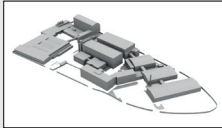


Design-Centers

Freiburg – Germany
Munich – Germany

Production Sites

Freiburg – Germany



Glenrothes – UK

