VIPower™ M0-7 H-Bridges

New fully integrated, reliable and compact drivers for DC motors

VNH7 family offers high performances and versatility for automotive DC motor control applications

VNH7 products are fully integrated H-bridges for driving DC motors. They include a double HSD and two LSDs as a power stage in addition to the control stage with a full set of diagnostics and protections. All features are optimized for DC motor applications. Thanks to their combination of VIPower™ M0-7 technology and dedicated packages, the new VNH7 family offers state-of-the-art application performance and robustness as well as cost effectiveness.

SO-16N

PowerSSO-36

KEY FEATURES

- Cross-current protection
- Current limitation
- Over-temperature shutdown.
- Power limitation (ST IP)
- PWM operation up to 20 kHz
- Overvoltage clamp and undervoltage shutdown
- Output protected against loss of ground and loss of V_{CC}
- Output protected against short to ground and short to V_{CC}
- Very low standby power consumption
- Multisense for:
  - Motor current monitoring
  - V_{batt} monitoring (on PowerSSO-36 only)
  - T_{Chip} monitoring (on PowerSSO-36 only)
- AEC-Q100 compliant

KEY BENEFITS

- Cost-effective and space-saving solution compared to discrete multi-package approach.
- Embedded controls and protection for reduced microcontroller workload.
- Improved flexibility.
- State-of-the-art reliability thanks to self-limiting fast thermal transient (power limitation).

KEY APPLICATIONS

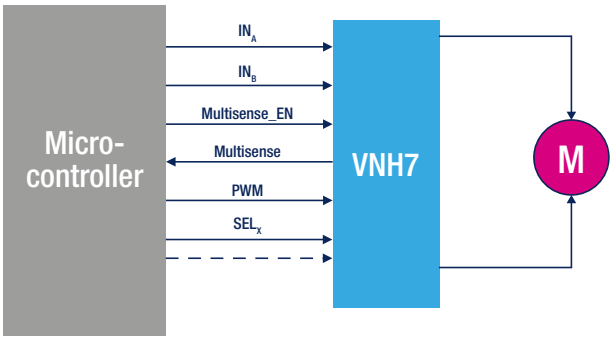
- Door lock
- Mirror adjust
- Rear curtain control
- Dual washer pump

VNH7 FAMILY ALLOWS A COMPACT DESIGN

Thanks to very small packages and high integration, these devices allow the implementation of compact and reliable solutions for automotive DC motor control applications.

The SO-16N is a full plastic triple-island package and has a body size of only 38mm^2. VNH7070AS and VNH7100AS are housed in this package, combining small size with good thermal performance and at very reasonable price.

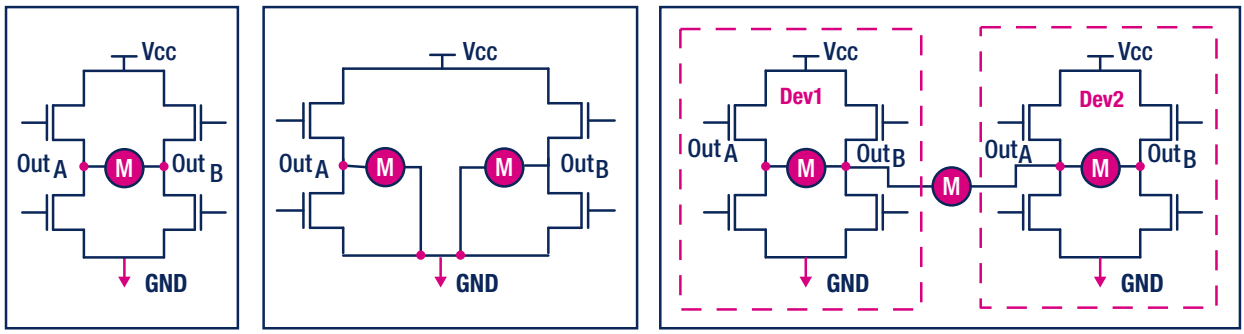
The PowerSSO-36 triple island has three exposed pads offering optimized thermal performance. This package houses the VNH7040AY, a device able to address motors operating at up to 60 W.



Typical application diagram

VNH7 FAMILY SUPPORTS AN IMPROVED FLEXIBILITY FOR DIFFERENT CONFIGURATIONS

Supported hardware configurations



H-bridge | Dual half-bridge | Cascaded

VNH7 MOTOR CONTROL ICs

Part number	Package	Ron typ (per leg) [mΩ]	Limitation Current I_{Lim} typ [A]	PWM	Multi-sense Monitoring features	Comment
VNH7070AS	SO-16N	70	22	yes	Motor current	Pin to pin with VNH7100AS
VNH7100AS	SO-16N	100	18	yes	Motor current	Pin to pin with VNH7070AS
***VNH7040AY**	PowerSSO-36	40	49	yes	Motor Current, Battery voltage, Chip Temperature	

Note: *In development. Engineering samples available