life.augmented

Smart power solutions for car body applications

Content

Introduction

High-side switches

ST's offer of fully-protected automotive high-side switches (HSDs) is the broadest in the market. Having an unmatched range of packages, on-resistances, number of output channels and diagnostic options, HSDs are able to drive resistive, inductive and capacitive grounded loads in compliance with the stringent safety and reliability requirements of automotive applications.
Based on its proprietary VIPower™ technology, ST's high-side switches have 3 V and 5 V CMOS compatible I/Os for control and vertical mosfet for the power outputs, and are the perfect companions for a microcontroller.

VIPower™ M0-7 SERIES

The M0-7 series is the ultimate VIPower product generation, born to deliver the widest range of on-state resistance and number of channels with full pin-to-pin compatibility in the smallest packages. Further application benefits are:

- Best-in-class EMI performance, short-circuit protection and robustness
- Lower quiescent current
- Precise load-current, battery voltage and device temperature analog feedback

VIPower™ M0-5 SERIES

The M0-5 series is the largest family of VIPower high-side switches developed to drive any kind of automotive load.

The devices are equipped with digital status or analog current sense feedback. Further advantages are available in the M0-5Enhanced options:

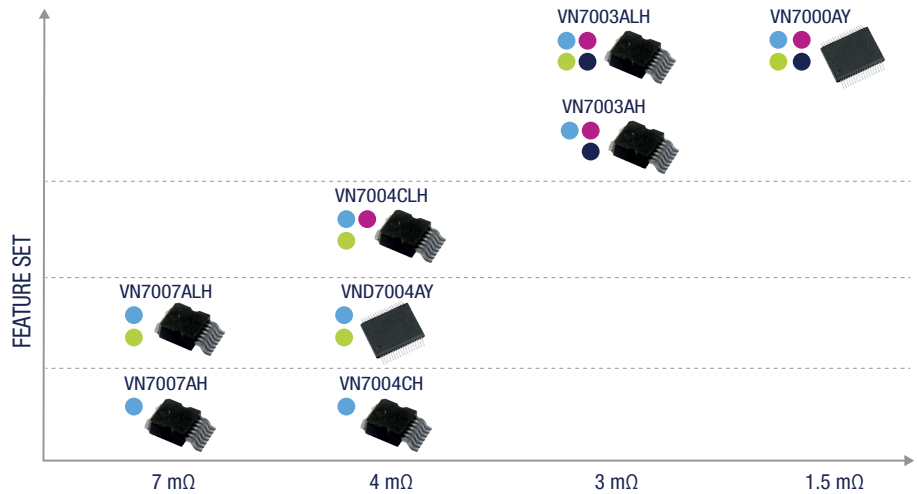
- Extended load compatibility due to higher current limitation
- Instantaneous diagnosis of short-to-ground or overload
- OFF-state diagnosis for the analog current sense option ('E' types)

VIPower™ Zero series

ST's VIPower™ Zero series offers innovative and high-performance protected switches for driving high power applications.
This series covers today's growing demand for intelligent power devices able to drive and protect high-power loads such as those used in high-current fan motors, heaters and protected battery lines in electrical power distribution systems.

KEY FEATURES

- Complete family of low on-resistance protected solutions
- Output re-activation during reverse polarity
- State-of-the-art and adaptable protection strategy
- Sophisticated diagnostics
- Cold-cranking capability (device option)
- Device option with extended diagnostics capability cover a wide range of load currents



VIPower M0-7 Typical Feature Set
• Unsurpassed Protection Strategy based on proprietary IPs
• Advanced Diagnostic with accurate Output Sensing
• Output re-activation under Reverse Polarity

Programmable Protection
Enabling flexible and adaptable protection strategy based on Output Auto-reactivation / Latch-off under overload conditions

Extended Current Sensing
For application requiring extra precision in output sensing and covering a wider current range

Very Low-Voltage Operation
Suitable for applications requiring to keep active equipment even during extreme low battery (Cold Cranking condition - LV124 compliance)

Door actuator drivers with embedded Power Management

The new L99DZ1x0 Family brings higher performances in the Door Zone Applications: novel devices embed, in the same package, Power management power supply functionality (including various standby modes, as well as LIN and HS CAN physical communication layers) together with all the Actuators for main Door loads. The two low-drop voltage regulators of the devices supply the system microcontroller and external peripheral loads such as sensors and provide enhanced system standby functionality with programmable local and remote wake-up capability.

An advanced driver provides logic and protection for external Mosfet transistors in H-bridge, or Dual Half Bridge, configuration . Other features include integrated bridges for double door-lock control, mirror fold, and mirror-axis control, together with high-side drivers for bulbs and LEDs control. In addition, high-side drivers allow small resistive loads driving for increasing system integration level. An additional gate drive can control an external MOSFET in high-side configuration to supply a resistive load connected to GND (e.g. mirror heater). An electro-chromic mirror glass can be controlled using the integrated SPI-driven module in conjunction with an external MOS transistor.

All the embedded outputs come with protection and supervision features such as Current Monitor (only for High Side outputs), Openload, Overcurrent, Thermal Warming, Thermal Shutdown (increased up to 175 °C as mimimum threshold) and Themal Expiration. Devices include two Fail safe low side switches that are intended to be used to turn off the gates of the external high-side MOSFETs in the power window h-bridge if a fatal error happens. The ST standard SPI interface (4.0) allows control and diagnosis of the device and enables generic software development.

Low-side switches

Fully-protected, low-side switches safely drive resistive, inductive and capacitive loads with one terminal connected to the battery, in compliance with the stringent safety and reliability requirements of automotive applications.
ST's low-side switches offer a power output in addition to control and diagnostic function in one single chip and are available with both single- and dual-channel options.

OMNIFET III

Built in the VIPower M0-5 technology, the OMNIFET III series addresses a broad range of applications in tiny packages, delivering protection and diagnostic features. Key application benefits include:

- Low stand-by current consumption
- Overload and open-load diagnostic
- Optimized EMI performances
- Enhanced short circuit robustness

OMNIFET AND OMNIFET II

ST offers a wide portfolio of low-side switches suitable for any kind of automotive load and applications rated up to 70 V.

Door module drivers

ST's door module drivers family is designed for state-of-the-art automotive door electronics. Devices are characterized by a scalable actuator driving concept, which includes packages and software specially designed to satisfy a wide range of door module variants. Drivers support all regular door module loads such as lock motors, mirror levelling and foldering, defroster, electro-chromic mirror glass, window lift and several lighting functions from incandescent bulbs to LEDs.

Power management ICs for automotive systems

Power management ICs come with enhanced power supply functions and they include various standby modes as well as LIN and HS-CAN (also with HS-CAN supporting Partial Network) physical communication layers. They offer two low-drop voltage regulators to supply the system microcontroller and external peripheral loads (sensors) and provide superior system standby functionality with programmable local and remote wake-up capabilities. Other features, like high-side and low-side drivers or operational amplifiers, are embedded to increase the system integration level.
What's more, ST has a wide multifunctional voltage regulator portfolio that meets all automotive infotainment needs. They are protected against load dump and support battery voltage variations and transients, providing multiple linear or switching voltage outputs, with or without an I^2C bus, and have a very low standby quiescent current.

Motor control ICs

Taking advantage from the proprietary VIPower™ silicon technology and from miniaturized packaging solutions, the VNH family of fully integrated H-bridges combines in single packages a matchless level of diagnostic and sensing capabilities together with solid protections and robust vertical structure MOSFETs making automotive DC motor control applications - ranging from a few up to hundreds of watts - more robust and compact.

High-side switches

HIGH-SIDE SWITCHES – SINGLE-CHANNEL

Part number	Package	Supply voltage (V_{cc})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (mΩ)	Output current limit (I_{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
VIPower™ Zero series								
VN7000AY(*)	PowerSSO-36	3	28	38	1.5	190	Analog multi-sense	Autorestart & Latch-off
VN7003AH	Octapak	3.2	28	38	3.5	100	Analog current sense	Autorestart
VN7003ALH	Octapak	3.2	28	38	3.5	100	Analog current sense	Autorestart & Latch-off
VN7004CH	Octapak	4	28	38	4	100	Analog current sense	Autorestart
VN7004CLH	Octapak	4	28	38	4	100	Analog current sense	Autorestart & Latch-off
VN7007AH	Octapak	4	28	38	7	100	Analog current sense	Autorestart
VN7007ALH	Octapak	4	28	38	7	100	Analog current sense	Autorestart & Latch-off
VIPower™ M0-7 series (to be preferred for new developments)								
VN7008AJ	PowerSSO-16	4	28	38	8.5	98	Analog current sense	Autorestart & Latch-off
VN7010AJ	PowerSSO-16	4	28	38	10	91	Analog multi-sense	Autorestart & Latch-off
VN7016AJ	PowerSSO-16	4	28	38	16	77	Analog multi-sense	Autorestart & Latch-off
VN7020AJ	PowerSSO-16	4	28	38	20	63	Analog multi-sense	Autorestart & Latch-off
VN7040AS	SO-8	4	28	38	40	34	Analog current sense	Autorestart
VN7040AJ	PowerSSO-16	4	28	38	40	34	Analog multi-sense	Autorestart & Latch-off
VN7050AS	SO-8	4	28	38	50	30	Analog current sense	Autorestart
VN7050AJ	PowerSSO-16	4	28	38	50	30	Analog multi-sense	Autorestart & Latch-off
VN7140AS12	SO-8	2.85	28	38	140	12	Analog current sense	Autorestart
VN7140AS	SO-8	4	28	38	140	12	Analog current sense	Autorestart
VN7140AJ	PowerSSO-16	4	28	38	140	12	Analog multi-sense	Autorestart & Latch-off
VIPower™ M0-5Enhanced (M vers.) series								
VN5E010MH-E	HPAK	4.5	28	41	10	85	Analog current sense	Autorestart
VN5E016MH-E	HPAK	4.5	28	41	16	73	Analog current sense	Autorestart
VN5E025MJ-E	PowerSSO-12	4.5	28	41	25	60	Analog current sense	Autorestart
VN5E050MJ-E	PowerSSO-12	4.5	28	41	50	27	Analog current sense	Autorestart
VN5E160MS-E	SO-8	4.5	28	41	160	10	Analog current sense	Autorestart
VIPower™ M0-5Enhanced series								
VN5E010AH-E	HPAK	4.5	28	41	10	85	Analog current sense	Autorestart
VN5E016AH-E	HPAK	4.5	28	41	16	73	Analog current sense	Autorestart
VN5E025AJ-E	PowerSSO-12	4.5	28	41	25	60	Analog current sense	Autorestart
VN5E050J-E	PowerSSO-12	4.5	28	41	50	27	Digital status	Autorestart

(*) In development.

HIGH-SIDE SWITCHES – SINGLE-CHANNEL

Part number	Package	Supply voltage (V_{CC})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (mΩ)	Output current limit (I_{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
VN5E050AJ-E	PowerSSO-12	4.5	28	41	50	27	Analog current sense	Autorestart
VN5E160S-E	SO-8	4.5	28	41	160	10	Digital status	Autorestart
VN5E160AS-E	SO-8	4.5	28	41	160	10	Analog Current Sense	Autorestart
VIPower™ M0-5 series								
VN5E006ASP-E	PowerSO-10	4.5	36	41	6	100	Analog Current Sense	Autorestart
VN5010AK-E	PowerSSO-24	4.5	36	41	10	65	Analog Current Sense	Autorestart
VN5012AK-E	PowerSSO-24	4.5	36	41	12	65	Analog Current Sense	Autorestart
VN5016AJ-E	PowerSSO-12	4.5	36	41	16	60	Analog Current Sense	Autorestart
VN5025AJ-E	PowerSSO-12	4.5	36	41	25	40	Analog Current Sense	Autorestart
VN5050J-E	PowerSSO-12	4.5	36	41	50	18	Digital Status	Autorestart
VN5050AJ-E	PowerSSO-12	4.5	36	41	50	18	Analog Current Sense	Autorestart
VN5160S-E	SO-8	4.5	28	41	160	5	Digital Status	Autorestart
VIPower™ M0-3 series								
VN610SP-E	PowerSO-10	5.5	36	41	10	75	Analog Current Sense	Autorestart
VN920SP-E	PowerSO-10	5.5	36	41	15	45	Analog Current Sense	Autorestart
VN920PEP-E	PowerSSO-24	5.5	36	41	15	45	Analog Current Sense	Autorestart
VN920-E	PENTAWATT	5.5	36	41	16	45	Analog Current Sense	Autorestart
VN920DSP-E	PowerSO-10	5.5	36	41	16	45	Digital Status	Autorestart
VN920B5-E	P²PAK	5.5	36	41	16	45	Analog Current Sense	Autorestart
VN920DB5-E	P²PAK	5.5	36	41	18	45	Digital Status	Autorestart
VN820SP-E	PowerSO-10	5.5	36	41	40	13	Digital Status	Autorestart
VN820PT-E	PPAK	5.5	36	41	40	13	Digital Status	Autorestart
VN820B5-E	P²PAK	5.5	36	41	40	13	Digital Status	Autorestart
VN750SMP-E	SO-8	5.5	36	41	55	9	Digital Status	Autorestart
VN750PT-E	PPAK	5.5	36	41	60	9	Digital Status	Autorestart
VN750PS-E	SO-8	5.5	36	41	60	9	Digital Status	Autorestart
VN750-E	PENTAWATT	5.5	36	41	60	9	Digital Status	Autorestart
VN750B5-E	P²PAK	5.5	36	41	60	9	Digital Status	Autorestart
VN800PT-E	PPAK	5.5	36	41	135	1.3	Digital Status	Autorestart
VN800PS-E	SO-8	5.5	36	41	135	1.3	Digital Status	Autorestart

(*) In development.

HIGH-SIDE SWITCHES – DUAL-CHANNEL

Part number	Package	Supply voltage (V_{CC})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (mΩ)	Output current limit (I_{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
VIPower™ Zero series								
VND7004AY	PowerSSO-36	4	28	38	4	100	Analog Multi-Sense	Autorestart & Latch-off
VIPower™ M0-7 series (to be preferred for new developments)								
VND7012AY	PowerSSO-36	4	28	38	12	75	Analog Multi-Sense	Autorestart & Latch-off
VND7020AJ	PowerSSO-16	4	28	38	22	63	Analog Current Sense	Autorestart & Latch-off
VND7030AJ	PowerSSO-16	4	28	38	31	56	Analog Current Sense	Autorestart & Latch-off
VND7040AJ	PowerSSO-16	4	28	38	40	34	Analog Multi-Sense	Autorestart & Latch-off
VND7050AJ12	PowerSSO-12	2.85	28	38	50	30	Analog Multi-Sense	Autorestart
VND7050AJ	PowerSSO-16	4	28	38	50	30	Analog Multi-Sense	Autorestart & Latch-off
VND7140AJ12	PowerSSO-12	2.85	28	38	140	12	Analog Current Sense	Autorestart
VND7140AJ	PowerSSO-16	4	28	38	140	12	Analog Multi-Sense	Autorestart & Latch-off
VIPower™ M0-5Enhanced (M vers.) series								
VND5E008MY-E	PowerSSO-36	4.5	28	41	8	85	Analog Current Sense	Autorestart
VND5E012MY-E	PowerSSO-36	4.5	28	41	12	74	Analog Current Sense	Autorestart
VND5E025MK-E	PowerSSO-24	4.5	28	41	25	60	Analog Current Sense	Autorestart
VND5E050MCK-E	PowerSSO-24	4.5	28	41	50	27	Analog Current Sense	Autorestart
VND5E050MCJ-E	PowerSSO-12	4.5	28	41	50	27	Analog Current Sense	Autorestart
VND5E160MJ-E	PowerSSO-12	4.5	28	41	160	10	Analog Current Sense	Autorestart
VIPower™ M0-5Enhanced series								
VND5E004C30-E	MultiPowerSO-30	4.5	28	41	4	100	Analog Current Sense	Autorestart
VND5E004A-E	PQFN	4.5	28	41	4	100	Analog Current Sense	Autorestart
VND5E006ASP-E	PowerSO-16	4.5	28	41	6	100	Analog Current Sense	Autorestart
VND5E008AY-E	PowerSSO-36	4.5	28	41	8	85	Analog Current Sense	Autorestart
VND5E008ASP-E	PowerSO-16	4.5	28	41	8	85	Analog Current Sense	Autorestart
VND5E012AY-E	PowerSSO-36	4.5	28	41	12	74	Analog Current Sense	Autorestart
VND5E025NAY-E	PowerSSO-36	4.5	28	41	25	60	Analog Current Sense	Autorestart
VND5E025LK-E	PowerSSO-24	4.5	28	41	25	40	Analog Current Sense	Autorestart
VND5E025BK-E	PowerSSO-24	4.5	28	41	25	60	Analog Current Sense	Autorestart
VND5E025AY-E	PowerSSO-36	4.5	28	41	25	47	Analog Current Sense	Autorestart
VND5E025AK-E	PowerSSO-24	4.5	28	41	25	60	Analog Current Sense	Autorestart
VND5E050K-E	PowerSSO-24	4.5	28	41	50	27	Digital Status	Autorestart
VND5E050J-E	PowerSSO-12	4.5	28	41	50	27	Digital Status	Autorestart
VND5E050ACK-E	PowerSSO-24	4.5	28	41	50	27	Analog Current Sense	Autorestart

HIGH-SIDE SWITCHES – DUAL-CHANNEL

Part number	Package	Supply voltage (V_{CC})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (mΩ)	Output current limit (I_{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
VND5E050ACJ-E	PowerSSO-12	4.5	28	41	50	27	Analog Current Sense	Autorestart
VND5E160J-E	PowerSSO-12	4.5	28	41	160	10	Digital Status	Autorestart
VND5E160AJ-E	PowerSSO-12	4.5	28	41	160	10	Analog Current Sense	Autorestart
VIPower™ M0-5 series								
VND5012AK-E	PowerSSO-24	4.5	36	41	12	60	Analog Current Sense	Autorestart
VND5025AK-E	PowerSSO-24	4.5	36	41	25	40	Analog Current Sense	Autorestart
VND5050K-E	PowerSSO-24	4.5	36	41	50	18	Digital Status	Autorestart
VND5050J-E	PowerSSO-12	4.5	36	41	50	18	Digital Status	Autorestart
VND5050AK-E	PowerSSO-24	4.5	36	41	50	18	Analog Current Sense	Autorestart
VND5050AJ-E	PowerSSO-12	4.5	36	41	50	18	Analog Current Sense	Autorestart
VND5160J-E	PowerSSO-12	4.5	36	41	160	5	Digital Status	Autorestart
VND5160AJ-E	PowerSSO-12	4.5	36	41	160	5	Analog Current Sense	Autorestart
VIPower™ M0-3 series								
VND920P-E	SO-28	5.5	36	41	16	45	Analog Current Sense	Autorestart
VND600SP-E	PowerSSO-10	5.5	36	41	30	40	Analog Current Sense	Autorestart
VND600P-E	SO-16L	5.5	36	41	35	40	Analog Current Sense	Autorestart
VND830SP-E	PowerSSO-10	5.5	36	41	60	9	Digital Status	Autorestart
VND830MSP-E	PowerSO-10	5.5	36	41	60	9	Digital Status	Autorestart
VND830P-E	SO-16L	5.5	36	41	60	9	Digital Status	Autorestart
VND830LSP-E	PowerSO-10	5.5	36	41	60	23	Digital Status	Autorestart
VND830ASP-E	PowerSSO-10	5.5	36	41	60	9	Analog Current Sense	Autorestart
VND830AEP-E	PowerSO-24	5.5	36	41	60	10	Analog Current Sense	Autorestart
VND810MSP-E	PowerSSO-10	5.5	36	41	150	0.9	Digital Status	Autorestart
VND810SP-E	PowerSSO-20	5.5	36	41	160	5	Digital Status	Autorestart
VND810PEP-E	PowerSO-12	5.5	36	41	160	5	Digital Status	Autorestart
VND810P-E	SO-16	5.5	36	41	160	5	Digital Status	Autorestart

(*) In development.

HIGH-SIDE SWITCHES – QUAD-CHANNEL

Part number	Package	Supply voltage (V_{cc})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (mΩ)	Output current limit (I_{lim}) (A)	Digital status	Short-circuit protection
		Min (V)	Max (V)					
VIPower™ M0-7 series (to be preferred for new developments)								
VNQ7040AY	PowerSSO-36	4	28	38	40	34	Analog Multi-Sense	Autorestart & Latch-off
VNQ7050AJ	PowerSSO-16	4	28	38	50	27	Analog Current Sense	Autorestart & Latch-off
VNQ7140AJ	PowerSSO-16	4	28	38	140	12	Analog Multi-Sense	Autorestart & Latch-off
VIPower™ M0-5Enhanced (M vers.) series								
VNQ5E050MK-E	PowerSSO-24	4.5	28	41	50	27	Analog Current Sense	Autorestart
VNQ5E160MK-E	PowerSSO-24	4.5	28	41	160	10	Analog Current Sense	Autorestart
VIPower™ M0-5Enhanced series								
VNQ5E050K-E	PowerSSO-24	4.5	28	41	50	27	Digital Status	Autorestart
VNQ5E050AK-E	PowerSSO-24	4.5	28	41	50	27	Analog Current Sense	Autorestart
VNQ5E160K-E	PowerSSO-24	4.5	28	41	160	10	Digital Status	Autorestart
VNQ5E160AK-E	PowerSSO-24	4.5	28	41	160	10	Analog Current Sense	Autorestart
VNQ5E250AJ-E	PowerSSO-16	4.5	28	41	250	5	Analog Current Sense	Autorestart
VIPower™ M0-5 series								
VNQ5027AK-E	PowerSSO-24	4.5	36	41	27	40	Analog Current Sense	Autorestart
VNQ5050K-E	PowerSSO-24	4.5	36	41	50	18	Digital Status	Autorestart
VNQ5050AK-E	PowerSSO-24	4.5	36	41	50	18	Analog Current Sense	Autorestart
VNQ5160K-E	PowerSSO-24	4.5	36	41	160	5	Digital Status	Autorestart
VIPower™ M0-3 series								
VNQ600P-E	SO-28	5.5	36	41	35	40	Analog Current Sense	Autorestart
VNQ600AP-E	SO-28	5.5	36	41	35	40	Analog Current Sense	Autorestart
VNQ660SP	PowerSSO-10	6	36	41	50	10	Digital Status	Autorestart
VNQ830PEP-E	PowerSO-24	5.5	36	41	60	18	Digital Status	Autorestart
VNQ830P-E	SO-28	5.5	36	41	65	9	Digital Status	Autorestart
VNQ690SP-E	PowersSO-10	6	36	41	90	14	Digital Status	Autorestart
VNQ05XSP16-E	PowerSSO-16	5.5	36	41	110	7.5	Analog Current Sense	Autorestart
VNQ810PEP-E	PowerSO-24	5.5	36	41	160	7.5	Digital Status	Autorestart
VNQ810P-E	SO-28	5.5	36	41	160	5	Digital Status	Autorestart
VNQ500PEP-E	PowerSO-12	5.5	36	41	500	0.6	Digital Status	Latch-off

HIGH-SIDE SWITCHES WITH SPI AND ASYMMETRICAL OUTPUT

Part number	Package	Supply voltage (V_{CC})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (mΩ)	Output current limit (I_{lim}) (A)	Current sense	SPI	Description
		min (V)	max (V)						
VNP7008SY(*)	PowerSSO-36	4	28	38	5 x 40	34	•	•	Output power: 5 x 21 W
VNQ7003SY(*)	PowerSSO-36	4.0	28	38	2 x 7	80	•	•	Output power: 2 x 65 W and 2 x 32 W
					2 x 25	35			
VNQ7004SY(*)	PowerSSO-36	4.0	28	38	2 x 9	80	•	•	Output power: 2 x 65 W and 2 x 32 W
					2 x 35	30			

(*) In development.

HIGH-SIDE SWITCHES FOR 24 V APPLICATIONS – TRUCK DEVICES

Part number	Package	Supply voltage (V_{CC})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (mΩ)	Output current limit (I_{lim}) (A)	Current sense
		min (V)	max (V)				
VN5T006ASP-E	PowerSO-10	8	36	58	6	115	•
VND5T016ASP-E	PowerSO-16	8	36	58	16	70	•
VN5T016AH-E	HPAK	8	36	58	16	60	•
VND5T035LAK-E	PowerSSO-24	8	36	58	35	42	Optimized for LED applications
VND5T035AK-E	PowerSSO-24	8	36	58	35	42	•
VND5T050AK-E	PowerSSO-24	8	36	58	50	34	•
VND5T100LAJ-E	PowerSSO-12	8	36	58	100	22	Optimized for LED applications
VND5T100AJ-E	PowerSSO-12	8	36	58	100	22	•
VND5T100A-E	SO-16N	8	36	58	100	22	•

Low-side switches

OMNIFET III™

Part number	Package	Number of channels	Clamp voltage typ (V)	Drain current limit (I_{lim}) (A)	On-state resistance $R_{DS(on)}$ (mΩ)	Digital status
VNL5030S5-E	SO-8	1	46	35	30	•
VNL5030J-E	PowerSSO-12	1	46	35	30	•
VNL5050S5-E	SO-8	1	46	27	50	•
VNL5050N3-E	SOT-223	1	46	27	50	
VNLD5090-E	SO-8	2	46	18	90	•
VNL5090S5-E	SO-8	1	46	18	90	•
VNL5090N3-E	SOT-223	1	46	18	90	
VNLD5160-E	SO-8	2	46	5	160	•
VNL5160S5-E	SO-8	1	46	5	160	•
VNL5160N3-E	SOT-223	1	46	5	160	
VNLD5300-E	SO-8	2	46	2	300	•
VNL5300S5-E	SO-8	1	46	2	300	•

OMNIFET™

Part number	Package	Number of channels	Typ. clamp voltage (V)	Drain current limit (I_{lim}) (A)	On-state resistance $R_{DS(on)}$ (mΩ)
VNV35NV04-E	PowerSO-10	1	45	45	10
VNB35NV04-E	D²PAK	1	45	45	10
VNS14NV04P-E	SO-8	1	45	18	35
VND14NV04-1-E	IPAK	1	45	18	35
VND14NV04-E	DPAK	1	45	18	35
VNB14NV04-E	D²PAK	1	45	18	35
VND7NV04-E	DPAK	1	45	9	60
VNS7NV04P-E	SO-8	1	45	9	65
VNN7NV04P-E	SOT-223	1	45	9	65
VNS3NV04DP-E	SO-8	2	45	5	120
VNS3NV04P-E	SO-8	1	45	5	120
VNN3NV04P-E	SO-8; SOT-223	1	45	5	120
VND3NV04-E	DPAK	1	45	5	120
VNS1NV04DP-E	SO-8	2	45	2.6	250
VNS1NV04P-E	SO-8	1	45	2.6	250
VNN1NV04P-E	SOT-223	1	45	2.6	250
VND1NV04-1-E	IPAK	1	45	2.6	250
VND1NV04-E	DPAK	1	45	2.6	250
VNV35N07-E	PowerSO-10	1	70	35	28
VNP35N07-E	TO-220	1	70	35	28
VNB35N07-E	D²PAK	1	70	35	28
VNV20N07-E	PowerSO-10	1	70	20	50
VNP20N07-E	TO-220	1	70	20	50
VNB20N07-E	D²PAK	1	70	20	50
VNP10N07-E	TO-220	1	70	10	100
VNB10N07-E	D²PAK	1	70	10	100
VNP5N07-E	TO-220	1	70	5	200
VND5N07-E	DPAK	1	70	5	200

Voltage regulators

Part number	Package	Number of outputs	Regulated output voltage (V)	Output current (I_{OUT}) (mA)	Output tolerance (%)	Dropout voltage (V_{DP})		Reset output	Enable pin	Early warning	Watchdog timer	Watchdog enable	Typ. supply current (standby) (µA)	Quiescent current at low load typ (µA)
						Typ (mV)	Max (mV)							
L4938ED	SO-20	2	Out1: 5 Out2: 5Adj	Out1: 100 Out2: 400	Out1: ±1 Out2: ±2	Out1: 200 Out2: 300	Out1: 400 Out2: 600	•	•	•				65
L4938EPD	PowerSO-20	2	Out1: 5 Out2: 5Adj	Out1: 100 Out2: 400	Out1: ±1 Out2: ±2	Out1: 200 Out2: 300	Out1: 400 Out2: 600	•	•	•				65
L4949ED-E	SO-8	1	5	100	±1	300	500	•		•				200
L4949EP-E	SO-20	1	5	100	±1	300	500	•		•				200
L4979D	SO-8	1	5	150	±2	200	400	•	•		•		6	100
L4979MD	SO-20	1	5	150	±2	200	400	•	•		•		6	100
L4988D	SO-8	1	5	200	±2	270	500	•			•	•		93
L4988MD	SO-20	1	5	200	±2	270	500	•			•	•		93
L4989D	SO-8	1	5	150	±3	180	400	•			•	•		110
L4989MD	SO-20	1	5	150	±3	180	400	•			•	•		110
L4993D	SO-8	1	5	150	±2	200	400	•			•	•		100
L4993MD	SO-20	1	5	150	±2	200	400	•			•	•		100
L4995RJ	PowerSSO-12	1	5	500	±2	270	500	•						90
L4995RK	PowerSSO-24	1	5	500	±2	270	500	•						90
L4995AJ	PowerSSO-12	1	5	500	±2	270	500	•	•				3	90
L4995AK	PowerSSO-24	1	5	500	±2	270	500	•	•				3	90
L4995J	PowerSSO-12	1	5	500	±2	270	500	•	•		•		3	90
L4995K	PowerSSO-24	1	5	500	±2	270	500	•	•		•		3	90
L5150BNTR	SOT-223	1	5	150	±2		500							50
L5150CJ	PowerSSO-12	1	5	150	±2		500	• (1)		•				55
L5150CS	SO-8	1	5	150	±2		500	• (1)		•				55
L5150GJ	PowerSSO-12	1	5	150	±2		500	• (1)	•	•			5	55
L5300AH7	HPAK	1	5	300	±2		500	•	•				5	55
L5300GJ	PowerSSO-12	1	5	300	±2		500	•	•	•			5	55
L5300EPT	PPAK	1	5	300	±2		500		•				5	55
L5300RPT	PPAK	1	5	300	±2		500	•						55

(1) Adjustable threshold

Door actuators drivers with embedded Power Management

Part number	Package	Driver stages	Max on-state resistance $R_{DS(on)}$ (mΩ)	Current limitation I_{lim} (A)	Extended operative range (V)	PWM control	Motor control driver	Electro-chrome mirror	Heater	Transceivers	Voltage regulators	Thermal clusters	Auto LED dimming compensation	A/D Voltage-temperature convertion thermal clusters	Thermal Expiration
L99DZ100GP	LQFP64	1 Full Bridge	300	3	3.5(*) to 28	Independent PWM control for all the Outputs, 4 programmable frequencies and 10 channels with 10 bit resolution. 2 internal timers	H-bridge or dual Half bridge	•	•	HS-CAN with Selective Wake Up LIN 2.2a / SAE J2602	Output 5V1 Max current 250mA Accuracy ±2 % (**) Output 5V2 Max current 50mA Accuracy ±3 % (**)	•	•	•	•
		2 Half Bridges	2000	0.5											
		1 Half Bridge	100	7.5											
		1 Half Bridge	150	7.5											
		1 $R_{DS(on)}$ Configurable High Side	500/1600	1.5/0.35											
		1 $R_{DS(on)}$ Configurable High Side	800/1600	0.8/0.35											
		3 Current Configurable High Side	2000	0.15/0.35											
		1 Current Configurable High Side	2000	0.25/0.5											
		4 Current Configurable High Side	5000	0.15/0.25											
L99DZ100G	LQFP64	1 Full Bridge	300	3	3.5(*) to 28	Independent PWM control for all the Outputs, 4 programmable frequencies and 10 channels with 10 bit resolution. 2 internal timers	H-bridge or dual Half bridge	•	•	HS-CAN LIN 2.2a / SAE J2602	Output 5V1 Max current 250mA Accuracy ±2 % (**) Output 5V2 Max current 50mA Accuracy ±3 % (**)	•	•	•	•
		2 Half Bridges	2000	0.5											
		1 Half Bridge	100	7.5											
		1 Half Bridge	150	7.5											
		1 $R_{DS(on)}$ Configurable High Side	500/1600	1.5/0.35											
		1 $R_{DS(on)}$ Configurable High Side	800/1600	0.8/0.35											
		3 Current Configurable High Side	2000	0.15/0.35											
		1 Current Configurable High Side	2000	0.25/0.5											
		4 Current Configurable High Side	5000	0.15/0.25											

Door actuators drivers with embedded Power Management

Part number	Package	Driver stages	Max on-state resistance $R_{DS(on)}$ (mΩ)	Current limitation I_{lim} (A)	Extended operative range (V)	PWM control	Motor control driver	Electro-chrome mirror	Heater	Transceivers	Voltage regulators	Thermal clusters	Auto LED dimming compensation	A/D Voltage-temperature convertion thermal clusters	Thermal Expiration
L99DZ120	LQFP64	1 Full Bridge	300	3	3.5(*) to 28	Independent PWM control for all the Outputs, 4 programmable frequencies and 10 channels with 10 bit resolution. 2 internal timers	H-bridge or dual Half bridge			LIN 2.2a / SAE J2602	Output 5V1 Max current 250mA Accuracy ±2 % (**) Output 5V2 Max current 50mA Accuracy ±3 % (**)	•	•	•	•
		1 Half Bridge	100	7.5											
		1 Half Bridge	150	7.5											
		1 $R_{DS(on)}$ Configurable High Side	500/1600	1.5/0.35											
		1 $R_{DS(on)}$ Configurable High Side	800/1600	0.8/0.35											
		3 Current Configurable High Side	2000	0.15/0.35											
		1 Current Configurable High Side	2000	0.25/0.5											
		4 Current Configurable High Side	5000	0.15/0.25											

(*) All SPI communication, logic, voltage regulators and Oscillator are working down to VSREG = 3.5 V

(**) From Icmp to 100 mA

Door modules

Part number	Package	Driver stages	Max on-state resistance $R_{DS(on)}$ (mΩ)	Current limitation I_{lim} (A)	Operating range (V)	PWM control	Short-circuit protection	Current sense	Thermal shutdown	Reverse battery protection	Diagnostics and programming	EC control	LED mode	H-bridge control	Description
L9949	PowerSO-20	1 full bridge	150	6	7 to 28		•	•	•	•	SPI	-			Mid-end front-door module
		3 half bridges	800	1.6											
		1 high-side switch	100	6											
L9950XP	PowerSSO-36	2 half bridges	300	3	7 to 28	•	•	•	•	•	SPI	-			High-end front-door module
		2 half bridges	800	1.5											
		1 full bridge	150	6											
		4 high-side switches	800	1.5											
		1 high-side switch	100	6											
L9951XP	PowerSSO-36	1 half bridge	150	7.4	7 to 28	•	•	•	•	•	SPI	-			Rear-door module
		2 half bridges	200	5											
		2 high-side switches	800	1.25											
L9953XP	PowerSSO-36	3 half bridges	800	1.5	7 to 28	•	•	•	•	•	SPI	-			Mid-end front-door module
		1 full bridge	150	6											
		2 high-side switches	800	1.5											
		1 high-side switch	100	6											
L9953LXP	PowerSSO-36	3 half bridges	1600	0.75	7 to 28	•	•	•	•	•	SPI	-	2x		Mid-end front-door module compatible with bulbs/LEDs
		1 full bridge	150	6											
		2 high-side switches	500/1800	1.5/0.35											
		1 high-side switch	100	6											
L9954XP	PowerSSO-36	3 half bridges	800	1.5	7 to 28	•	•	•	•	•	SPI	-			Mid-end front-door module without door lock
		2 high-side switches	800	1.5											
		1 high-side switch	100	6											
L9954LXP	PowerSSO-36	3 half bridges	1600	0.75	7 to 28	•	•	•	•	•	SPI	-	2x		Mid-end front-door module without door lock compatible with bulbs/LEDs
		2 high-side switches	500/1800	1.5/0.35											
		1 high-side switch	100	6											
L99DZ70XP	PowerSSO-36	1 full bridge	150	6	7 to 28	•	•	•	•	•	SPI	6-bit resolution 1.2 V/1.5 V	4x		High-end front-door module compatible with bulbs/LEDs. Control circuitry for electrochromic mirror glass.
		2 half bridges	300	3											
		2 half bridges	1600	0.75											
		1 high-side switch	90	6											
		2 configurable high-side switches	500/1800	1.5/0.4											
		2 high-side switches	1600	0.5											

Door modules

Part number	Package	Driver stages	Max on-state resistance $R_{DS(on)}$ (mΩ)	Current limitation I_{lim} (A)	Operating range (V)	PWM control	Short-circuit protection	Current sense	Thermal shutdown	Reverse battery protection	Diagnostics and programming	EC control	LED mode	H-bridge control	Description
L99DZ80EP	TQFP64	1 full bridge	150	6	7 to 28	•	•	•	•	•	SPI	6-bit resolution 1.2V/1.5V Negative Discharge	4x	•	High-end front door module compatible with bulbs/LEDs. Control circuitry for electrochromic mirror glass with possibility for negative discharge. H-Bridge control, for external MOSFETs, with adjustable slew-rate
		2 half bridges	300	3											
		2 half bridges	1600	0.5											
		1 high-side switch	100	5											
		1 configurable high-side switch	500/1600	1.5/0.35											
		1 configurable high-side switch	800/1600	0.7/0.35											
		2 high-side switches	1600	0.5											
L99DZ81EP	TQFP64	1 full bridge	150	6	7 to 28	•	•	•	•	•	SPI	-	4x	•	High-end front door module compatible with bulbs/LEDs. H-Bridge control, for external MOSFETs, with adjustable slew-rate
		1 half bridge	300	3											
		1 configurable high-side switch	500/1600	1.5/0.35											
		1 configurable high-side switch	800/1600	0.7/0.35											
		2 high-side switches	1600	0.5											
L99MM70XP	PowerSSO-36	1 full bridge	300	3	7 to 28	•	•	•	•	•	SPI	6-bit resolution 1.2 V/1.5 V	4x	•	High-end device supporting LIN driven Mechatronic Mirror
		3 half bridges	1600	0.50											
		1 high-side switch	90	6											
		1 configurable high-side switch	500/1800	1.5/0.35											
		2 high-side switches	1600/1800	0.5											

Power management for automotive systems

Part number	Package	Transceiver		Voltage regulators					Driver stages		On-board features	Description
		Transmission rate	Transceiver description	Outputs	Accuracy	Drop voltage V_{DP} (typ) (mV)	Reset	Watchdog	Outputs	Driver description		
L4969URD-E	SO-20	125 kbaud	Fault-tolerant low-speed CAN transceiver	5 V @ 200 mA	± 2 %	250 @ I_{LOAD} = 100 mA	•	•			• Wake-up via CAN for voltage regulator	Basic system chip
L9952GXP	PowerSSO-36	20 kbit/s	LIN transceiver	5 V @ 250 mA	± 2 %	300 @ I_{LOAD} = 100 mA	•	•	4	HSD 7 Ω @ 120 mA	• 4 wake-up inputs for contact monitoring • Fail-safe output • Two op amps for current sense interfacing • Inhibit input for wake-up from external CAN	Power management IC with LIN
				5 V @ 100 mA	± 4%	400 @ I_{LOAD} = 50 mA			1	HSD 1 Ω @ 400 mA		
									2	Relay drivers (2 Ω)		
L99PM62GXP	PowerSSO-36	LIN: 20 kbit/s CAN: 1 Mbit/s	LIN and HS CAN transceivers	5 V @ 250 mA	± 2%	300 @ I_{LOAD} = 100 mA	•	•	4	HSD 7 Ω @ 120 mA	• Complete 3-channel contact monitoring interface with programmable cyclic sense functionality • 4 internal PWM timers • Two op amps with rail-to-rail outputs (VS) and low-voltage inputs • Programmable periodic system wake-up feature	Power management IC with LIN and high-speed CAN
									1	HSD 1 Ω @ 400 mA		
				5 V @ 100 mA	±4 % (3% @ 50 mA)	400 @ I_{LOAD} = 50 mA			2	Relay drivers (2 Ω)		
L99PM60J	PowerSSO-16	20 kbit/s	LIN transceiver	5 V @ 100 mA	± 2 %	300 @ I_{LOAD} = 100 mA	•	•	2	HSD 7 Ω @ 60 mA	• Configurable fail-safe output • ST SPI interface for mode control and diagnostics • Direct drive feature for HSD	Power management IC with LIN
									2	Relay drivers (2 Ω)		
L99PM72GXP	PowerSSO-36	LIN: 20 kbit/s CAN: 1 Mbit/s	LIN and HS CAN transceivers	5 V @ 250 mA	± 2%	300 @ I_{LOAD} = 100 mA	•	•	4	HSD 7 Ω@ 120 mA	• Complete 3-channel contact monitoring interface with programmable cyclic sense functionality • 4 internal PWM timers • Two operational amps with rail-to-rail outputs (VS) and low-voltage inputs • Programmable periodic system wake-up feature	Power management IC with LIN and high-speed CAN supporting selective wake-up functionality according to ISO 11898-6
									1	HSD 1 Ω@ 400 mA		
				5 V @ 100 mA	±4 % (3% @ 50 mA)	400 @ I_{LOAD} = 50 mA			2	Relay drivers (2 Ω)		

Multifunctional voltage regulators

Part number	Package		V_{in} (V)	V_{OUT} (V)	I_{OUT} (A)	Frenquency	Topology	Other features
L4953G	Multiwatt15	ST-BY	11 to 18	5	0.1	-		• Enables • 2 x HSD • Warnings
		2 x LDOs		9.2/5	0.5/1	-		
L4954	Multiwatt15	ST-BY	11 to 16	5	0.1	-		• Enables • Reset • 3 x HSD • Warnings
		3 x LDOs		10/8.5/5	0.04/0.175/0.65	-		
L5950	Multiwatt15	5 x LDOs	9 to 18	10/8.5/5/5/8-10	0.35/0.175/0.35/0.25/1.0	-		• Enables • I²C interface • 3 x HSD
L5956	PowerSO20 Multiwatt15	ST-BY	9 to 18	5	0.3	-		• Enables • HSD
		LDOs		8.5	0.5	-		
		2 x LDO		6 to 18	5/3.3	0.8/0.8	-	
L5957	PowerSO20 Multiwatt15	ST-BY	9 to 18	5	0.3	-		• Enables • HSD
		2 x LDOs		8.5/3.3	0.5/0.8	-		
		LDO	6 to 18	5	0.8	-		
L5958	Flexiwatt27	2 x ST-BYs	9 to 18	3.3/1.8	0.1/0.1	-		• Reset • HSD
		4 x LDOs		8.5/5/3.3/1.8	0.2/0.3/0.25/0.35	-		
L5959	Multiwatt15	ST-BYs	9 to 18	3.3	0.1	-		• Reset • Voltage monitors • 2 x HSD • Enables
		3 x LDOs		8.5/8- 10/3.3	0.2/0.8	-		
L5962	PowerSO36	Buck	4.1 to 27	1.2 to 8	2.5	Up to 400 kHz	Internal power switches	• I²C bus for LDO2 • Reset • 2 x HSD • Enables for buck
		ST-BY		3.3/5	0.15	-		
		LDO1		5/8.5	0.35	-		
		LDO2		3.3 to 10	1	-		
L5963	PowerSSO36 VQFPN-48	Buck1	3.5 to 26	1 to Vin	2.5	Up to 2MHz	Monolithic synchronous, current mode, internal power switches	• Power goods • High side driver • Enables
		Buck2	3.5 to 26		3.0	Up to 2MHz		
		ST-BY/LDO	3.5 to 26		0.25			
L5964(*)	VQFPN-48 LQFP64	Buck1	3.3 to 26	0.9 to Vin	3.5	Up to 2.3MHz	Monolithic synchronous, voltage mode, internal power switches	• DC-DC parallel mode (7A) • Watchdog / Reset • Voltage supervisors • Enables
		Buck2	3.3 to 26	0.9 to Vin	3.5	Up to 2.3MHz		
		ST-BY/LDO	3.3 to 26	1 to 10	0.25			
L5965(*)	VQFPN-48	Buck1 controller	4 to 32	Adjustable by OTP	-	Up to 400kHz	Monolithic synchronous, voltage mode, internal power switches	• OTP programming • SPI interface • Diagnostics • Voltage supervisors • Designed for Advanced Driver Assistance Systems
		Buck2	4 to 32		3/1.5	Up to 2.4MHz		
		Buck3	3 to 5.5		1.5	Up to 2.4MHz		
		Buck4	3 to 5.5		1	Up to 2.4MHz		
		Boost	3 to 5.5		0.3			
		LDO	3 to 5.5		0.6			
		Vref	-		0.02			

(*). In develoment

Motor control ICs - DC motor drivers

Part number	Package	Device description	On-state resistance per leg $R_{DS(on)}$ (mΩ)	Current limitation (I_{lim}) typ (A)	Supply voltage (V_{CC})		Absolute max supply voltage (V)	Highlights
					min (V)	max (V)		
VNH9 Series								
VNH9013Y	PowerSSO-36	Full bridge Power Stage	13	-	7	28	80	• Temperature protected
VNH7 Series								
VNH7100AS	SO-16N	Full bridge	100	18	4	28	38	• Cross-conduction protection • PWM operations up to 20 kHz • Current sense output • Output protected against short-to ground and short-to-Vcc
VNH7070AS	SO-16N	Full bridge	70	22	4	28	38	• Cross-conduction protection • PWM operations up to 20 kHz • Current sense output • Output protected against short-to ground and short-to-Vcc
VNH7040AY(*)	PowerSSO-36	Full bridge	40	49	4	28	38	• Cross-conduction protection • PWM operations up to 20 kHz • Multisense output • Output protected against short-to ground and short-to-Vcc
VNHD7008AY(*)	PowerSSO-36	Full Bridge High Side driver	8 (per channel)	55	4	28	38	• Cross-conduction protection • PWM operations up to 20 kHz • Current sense output • Output protected against short-to ground and short-to-Vcc • Drain and source voltage monitoring of the LSD external power MOSFETs
VNH5 Series								
VNH5200AS-E	SO-16N	Full bridge	200	12	5.5	18	40	• Cross-conduction protection • Current sense • Output protected against short-to-ground and short-to-Vcc
VNH5180A-E	PowerSSO-36	Full bridge	180	12	5.5	18	41	• Cross-conduction protection • PWM operations up to 20 kHz • Current sense • Output protected against short-to-ground and short-to-Vcc
VNH5050A-E	PowerSSO-36	Full bridge	50	42	5.5	18	41	• Cross-conduction protection • PWM operations up to 20 kHz • Current sense • Output protected against short-to-ground and short-to-Vcc
VNH5019A-E	MultiPowerSO-30	Full bridge	19	50	5.5	24	41	• Cross-conduction protection • PWM operations up to 20 kHz • Current sense • Charge pump output for reverse-polarity protection
Others								
L9997ND	SO-20	2 x Half bridge	1400	1.6	7	16.5	26	• Short-circuit • Over-temperature protected

(*) In development

Motor control ICs - Application Specific Standard Product

Part number	Package	Device description	On-state resistance per leg $R_{DS(on)}$ (mΩ)	Over-current protection min(A)	Supply voltage (V_{CC})		Absolute max supply voltage (V)	Highlights
					min (V)	max (V)		
L99MD02XP	PowerSSO-36	6x Half bridge	1600	0.8	6	28	40	• Optimized for HVAC flaps • DC-motor driver • 6 H-bridge driver • 2 current monitor outputs • All outputs short-circuit protected
L99MD01XP	PowerSSO-36	8x Half bridge	1600	0.8	6	28	40	• Optimized for HVAC flaps • DC-stepper motor driver • 8 H-bridge driver • Intrinsic DC-DC step-up converter • 2 current monitor outputs • All outputs short-circuit protected
L99SM81VY	PSSO36	Dual H-bridge	1400	1.9	6	28	40	• Bipolar stepper motor driver • Up to 1.35 A current capability with equivalent 10bit resolution • 1/16th microstepping • Voltage regulator for sensors supply • Stall detection
L99SM81VQ6	QFN40L 6x6	Dual H-bridge	1400	1.9	6	28	40	• Bipolar stepper motor driver • Up to 1.35 A current capability with equivalent 10bit resolution • 1/16th microstepping • Voltage regulator for sensors supply • Stall detection

Motor Control ICs - Motor pre-drivers

Part number	Package	Device description	On-state resistance per leg $R_{DS(on)}$ (mΩ)	Current limitation (I_{lim}) typ (A)	Supply voltage (V_{CC})		Absolute max supply voltage (V)	Highlights
					min (V)	max (V)		
L99H01QF	LQFP-32	Full bridge driver	-	-	6	28	35	• Programmable free-wheeling • Current-sense amplifier/free configuration • Sensing circuitry of external MOSFET with embedded thermal sensor
L99H01XP	PowerSSO-36	Full bridge driver	-	-	6	28	35	• Programmable free-wheeling • Current-sense amplifier/free configuration • Sensing circuitry of external MOSFET with embedded thermal sensor
L99ASC03	TQFP-48 ExPad	3x half-bridges driver	-	-	6	28	40	• 3 half-bridges driver to control external MOSFET • 5 V voltage regulator (200 mA continuous) • Watchdog and fail-safe functionality • PWM up to 80 kHz • Configurable current sense amplifier • Advanced BEMF detection IP • Programmable overcurrent protection • Drain-source monitoring and openload detection

Special devices

Part number	Package	Driver stages	Operating range V_{CC} (V)	Max supply voltage V_{CC} (V)	Accuracy		Highlights	Description
					Oscillating frequency	Low load detection		
L99LD01	LQFP-32	High-efficiency constant-current LED driver	5.6 to 24	40			• SPI interface • Programmable LED current • Dithering	LED driver
L99CL01XP	PowerSSO-36	8-channel high-side LED driver	6 to 24	40			• Programmable over-current • SPI interface • Configurable $R_{DS(on)}$	LED driver
L99MC6GJ	PowerSSO-16	3 configurable HSD/LSD 3 low-side switches	6 to 28	40			• $R_{DS(on)}$ = 0.7 Ω at Tj = 25 °C	Various loads driver H-bridge configuration
VN5MB02-E	SO-16	Smart power driver for motorbike direction indicator	9 to 16	40	+/- 5%	+/- 8%	• High accuracy in setting operating frequency and low-load detection • Maximum current detection with latch • Cycle by cycle thermal limitation	Motorbike indicator driver

REVERSE BATTERY

Part number	Package	Operating range V_{CC} (V)	Max supply voltage V_{CC} (V)	Max on-state resistance $R_{DS(on)}$ (max) (mΩ)	Description
VN5R003H-E	HPAK	4.5 to 28	41	3	Reverse-battery protection for an electronic control unit

INTEGRATED SOLENOID DRIVER - INJECTION GAS SYSTEM

Part number	Package	Operating range V_{CC} (V)	Max supply voltage V_{CC} (V)	Max on-state resistance $R_{DS(on)}$ (mΩ)		Ipeak (A)	Clamp voltage (min) (V)	Description
				Excitation path	Recirculation path			
L99SD01-E	PowerSSO-36	6 to 28	40	60	60	14	44	Current-sense amplifier with internal sense resistor

Ignition drivers

Part number	Package	High voltage clamp (V_{CL}) typ (V)	Current limitation (I_{lim}) max (A)	Power stage saturation voltage ($V_{CE\ SAT}$)		Supply voltage (V_{CC}) min (V)	Supply voltage (V_{CC}) max (V)	Supply current on state (I_{CC}) max (mA)	Description
				(@ 6 A) max (V)	(@ 15 A) max (V)				
VB525SP-E	PowerSO-10	380	11	2		4.5	5.5	40	Quasi proportional current driving Current flag
VB526SP-E	PowerSO-10	360	11	2		4.5	5.5	40	Quasi proportional current driving Current flag

Development support tools

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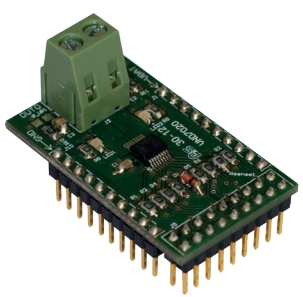
EZ-Boards



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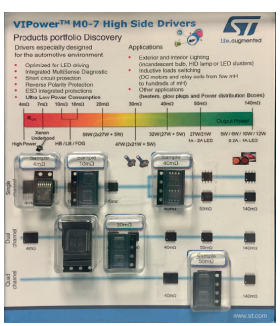
M0-7 sample kits



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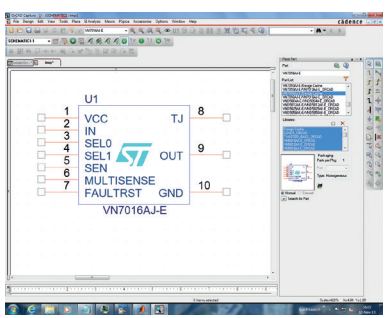

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EZ-BOARDS FOR 12 V HIGH SIDE SWITCHES (MO-7)

Part Number	Channels	$R_{DS(on)}$ max @25 °C	Voltage (Vmax, operating range)	Package	Current sense	Multi sense
EV-VN7003AH	1	3 mΩ		Octapak	X	
EV-VN7003ALH	1	3 mΩ		Octapak	X	
EV-VN7004CH	1	4 mΩ	38 V, 4 V to 28 V	Octapak	X	
EV-VN7004CLH	1	4 mΩ		Octapak	X	
EV-VN7007AH	1	7 mΩ	38 V, 4 V to 28 V	Octapak	X	
EV-VN7007ALH	1	7 mΩ		Octapak	X	
EV-VN7008AJ	1	8 mΩ	38 V, 4 V to 28 V	PowerSSO-16	X	
EV-VN7010AJ	1	10 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VN7016AJ	1	16 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VN7020AJ	1	20 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VN7040AJ	1	40 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VN7040AS	1	40 mΩ	38 V, 4 V to 28 V	SO-8	X	
EV-VN7050AJ	1	50 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VN7050AS	1	50 mΩ	38 V, 4 V to 28 V	SO-8	X	
EV-VN7140AJ	1	140 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VN7140AS	1	140 mΩ	38 V, 4 V to 28 V	SO-8	X	
EV-VND7004AY	2	4 mΩ		PowerSSO-36		X
EV-VND7012AY	2	12mΩ	38 V, 4 V to 28 V	PowerSSO-36		X
EV-VND7020AJ	2	22 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VND7030AJ	2	31 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VND7040AJ	2	40 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VND7050AJ	2	50 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VND7140AJ	2	140 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VNQ7040AY	4	40 mΩ	38 V, 4 V to 28 V	PowerSSO-36		X
EV-VNQ7050AJ	4	50 mΩ	38 V, 4 V to 28 V	PowerSSO-16	X	
EV-VNQ7140AJ	4	140 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X

EZ-BOARDS FOR 12 V FULL BRIDGES (VNH5/VNH7)

Part Number	Full Bridge	$R_{DS(on)}$ Per leg max @25 °C	Voltage (Vmax, operating range)	Package	PWM	Current Sense
EV-VNH5180A	X	180 mΩ	41 V, 5.5 V to 18 V	PowerSSO-36	X	X
EV-VNH5050A	X	50 mΩ	41 V, 5.5 V to 18 V	PowerSSO-36	X	X
EV-VNH5200AS	X	200 mΩ	41 V, 5.5 V to 18 V	SO-16N		X
EV-VNH7040(*)	X	40 mΩ	38 V, 4 V to 28 V	PowerSSO-36	X	X
EV-VNH7100AS	X	100 mΩ	41 V, 4 V to 28 V	SO-16N	X	X
EV-VNH7070AS	X	70 mΩ	41 V, 4 V to 28 V	SO-16N	X	X
STEVAL-VNH5180A	X	180 mΩ	41 V, 5.5 V to 18 V	PowerSSO-36	X	X
STEVAL-VNH5019A	X	18mΩ	41 V, 5.5 V to 18 V	MultiPowerSO-30	X	X
STEVAL-VNH5050A	X	50 mΩ	41 V, 5.5 V to 18 V	PowerSSO-36	X	X

EZ-BOARDS FOR 24 V SMART SWITCHES (M0-5T)

Part Number	Channels	$R_{DS(on)}$ max @25 °C	Voltage (Vmax, operating range)	Package	Current Sense	Digital Status
EV-VN5T006ASP(*)	1	6 mΩ	58 V, 8 V to 36 V	PowerSO-10	X	
EV-VND5T016ASP(*)	2	16 mΩ	58 V, 8 V to 36 V	PowerSO-16	X	
EV-VND5T035AK	2	35 mΩ	58 V, 8 V to 36 V	PowerSSO-24	X	
EV-VND5T050AK(*)	2	50 mΩ	58 V, 8 V to 36 V	PowerSSO-24	X	
EV-VND5T100AJ	2	100 mΩ	58 V, 8 V to 36 V	PowerSSO-12	X	

EVALUATION BOARDS FOR POWER MANAGEMENT AND SYSTEM BASIS ICS

Part Number	V_{IN} (V_{MAX}, Operating Range)	V_{OUT} (DC-DC1, DC-DC2, LDO)	Frequency (DC-DC1, DC-DC2)	Package
EVAL-L5963	40 V, 3.5 V to 26 V	1.2 V@2.5 V, 5 V@3 A, 3.3 V@250 mA adjustable	2 MHz, 250 kHz adjustable	PowerSSO-36 (exp. pad)
EVAL-L5963Q	40 V, 3.5 V to 26 V	1.2 V@2.5 V, 5 V@3 A, 3.3 V@250 mA adjustable	2 MHz, 250 kHz adjustable	VQFPN-48

(*) In development.

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