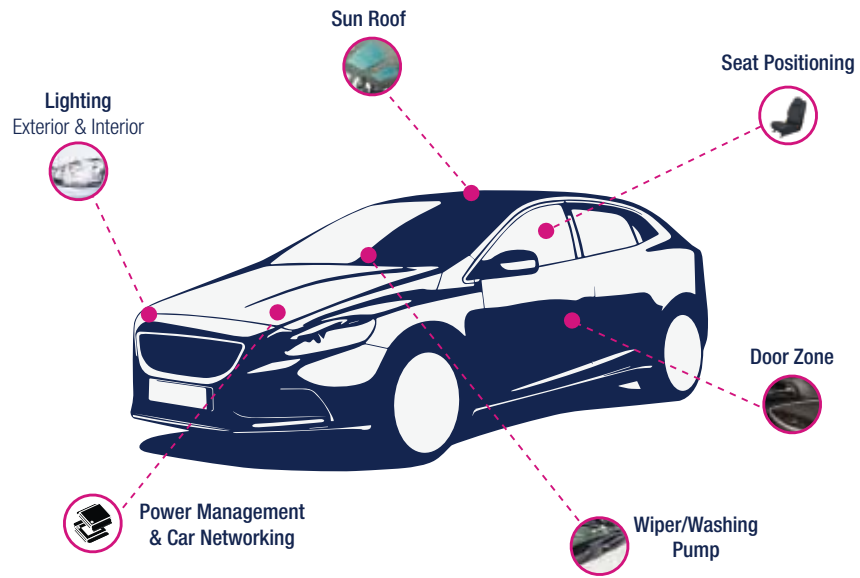


Smart power solutions for car body applications



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Packages



Note: All packages are lead-free compliant

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Note: M0-7 High-side switches and OMNIFET III are to be preferred for new design-ins.

High-side switches

Fully-protected, high-side switches safely drive resistive, inductive and capacitive grounded loads in compliance with the stringent safety and reliability requirements of automotive applications.

ST's offer of automotive high-side switches is the broadest in the market, with an unmatched range of packages, on-resistances, number of output channels and diagnostic options. 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 MOSFETs 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
- Best-in-class short circuit protections 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)

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 plus control and diagnostic functionalities in one single chip and are available both in 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 folding, 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.

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 $R_{DS(on)}$ (m Ω)	Drain current limit (I_{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
VIpower™ M0-7 series (to be preferred for new developments)								
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
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
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
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

HIGH-SIDE SWITCHES – SINGLE-CHANNEL

Part number	Package	Supply voltage (V_{cc})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (m Ω)	Drain current limit (I_{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
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	P ² PAK	5.5	36	41	16	45	Analog Current Sense	Autorestart
VN920DB5-E	P ² PAK	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	P ² PAK	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	P ² PAK	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)	Drain current limit (I _{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
VIpower™ M0-7 series (to be preferred for new developments)								
VND7004AY (*)	PowerSSO-36	4	28	38	4	12	Analog Multi-Sense	Autorestart & Latch-off
VND7012AY	PowerSSO-36	4	28	38	12	30	Analog Multi-Sense	Autorestart & Latch-off
VND7020AJ	PowerSSO-16	4	28	38	20	30	Analog Current Sense	Autorestart & Latch-off
VND7030AJ	PowerSSO-16	4	28	38	30	12	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	PowerSSO-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	PowerSSO-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	PowerSO-12	4.5	28	41	50	27	Digital Status	Autorestart

HIGH-SIDE SWITCHES – DUAL-CHANNEL

Part number	Package	Supply voltage (V_{CC})		Absolute max supply voltage (V)	On-state resistance $R_{DS(on)}$ (m Ω)	Drain current limit (I_{lim}) (A)	Diagnostic feedback	Short-circuit protection
		Min (V)	Max (V)					
VND5E050ACK-E	PowerSSO-24	4.5	28	41	50	27	Analog Current Sense	Autorestart
VND5E050ACJ-E	PowerSO-12	4.5	28	41	50	27	Analog Current Sense	Autorestart
VND5E160J-E	PowerSO-12	4.5	28	41	160	10	Digital Status	Autorestart
VND5E160AJ-E	PowerSO-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
VND600PEP-E	PowerSO-24	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
VND830PEP-E	PowerSO-24	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 $R_{DS(on)}$ (m Ω)	Drain 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	PowerSS0-36	4	28	38	40	34	Analog Multi-Sense	Autorestart & Latch-off
VNQ7050AJ	PowerSS0-16	4	28	38	50	27	Analog Current Sense	Autorestart & Latch-off
VNQ7140AJ	PowerSS0-16	4	28	38	140	12	Analog Multi-Sense	Autorestart & Latch-off
VIpower™ M0-5Enhanced (M vers.) series								
VNQ5E050MK-E	PowerSS0-24	4.5	28	41	50	27	Analog Current Sense	Autorestart
VNQ5E160MK-E	PowerSS0-24	4.5	28	41	160	10	Analog Current Sense	Autorestart
VIpower™ M0-5Enhanced series								
VNQ5E050K-E	PowerSS0-24	4.5	28	41	50	27	Digital Status	Autorestart
VNQ5E050AK-E	PowerSS0-24	4.5	28	41	50	27	Analog Current Sense	Autorestart
VNQ5E160K-E	PowerSS0-24	4.5	28	41	160	10	Digital Status	Autorestart
VNQ5E160AK-E	PowerSS0-24	4.5	28	41	160	10	Analog Current Sense	Autorestart
VNQ5E250AJ-E	PowerSS0-16	4.5	28	41	250	5	Analog Current Sense	Autorestart
VIpower™ M0-5 series								
VNQ5027AK-E	PowerSS0-24	4.5	36	41	27	40	Analog Current Sense	Autorestart
VNQ5050K-E	PowerSS0-24	4.5	36	41	50	18	Digital Status	Autorestart
VNQ5050AK-E	PowerSS0-24	4.5	36	41	50	18	Analog Current Sense	Autorestart
VNQ5160K-E	PowerSS0-24	4.5	36	41	160	5	Digital Status	Autorestart
VIpower™ M0-3 series								
VNQ600P-E	S0-28	5.5	36	41	35	40	Analog Current Sense	Autorestart
VNQ600AP-E	S0-28	5.5	36	41	35	40	Analog Current Sense	Autorestart
VNQ660SP	PowerSS0-10	6	36	41	50	10	Digital Status	Autorestart
VNQ830PEP-E	PowerS0-24	5.5	36	41	60	18	Digital Status	Autorestart
VNQ830P-E	S0-28	5.5	36	41	65	9	Digital Status	Autorestart
VNQ690SP-E	PowerS0-10	6	36	41	90	14	Digital Status	Autorestart
VNQ05XSP16-E	PowerSS0-16	5.5	36	41	110	7.5	Analog Current Sense	Autorestart
VNQ810PEP-E	PowerS0-24	5.5	36	41	160	7.5	Digital Status	Autorestart
VNQ810P-E	S0-28	5.5	36	41	160	5	Digital Status	Autorestart
VNQ500PEP-E	PowerS0-12	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 $R_{DS(on)}$ (m Ω)	Drain current limit (I_{lim}) (A)	Current sense	SPI	Description
		min (V)	max (V)						
VNQ7003SY (*)	PowerSSO-36	4.0	28	38	2x7	35			Output power: 2 x 65 W and 2 x 32 W
VNQ6040S-E	PowerSSO-36	4.5	28	40	2x25	80	•	•	Output Power: 4x 32W
VNQ6004SA-E	PowerSSO-36	4.5	28	40	4x40	25	•	•	Output Power: 2x 65W + 2x 32W
					2x10	50			
					2x30	25			

(*) 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 $R_{DS(on)}$ (m Ω)	Drain current limit (I_{lim}) (A)	Current sense
		min (V)	max (V)				
VN5T006ASP-E	PowerSSO-10	8	36	58	6	115	•
VND5T016ASP-E	PowerSSO-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	PowerSO-12	8	36	58	100	22	Optimized for LED applications
VND5T100AJ-E	PowerSO-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	D ² PAK	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	D ² PAK	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	D ² PAK	1	70	35	28
VNV20N07-E	PowerSO-10	1	70	20	50
VNP20N07-E	TO-220	1	70	20	50
VNB20N07-E	D ² PAK	1	70	20	50
VNP10N07-E	TO-220	1	70	10	100
VNB10N07-E	D ² PAK	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) (μ A)	Quiescent current at low load typ (μ A)
						Typ (mV)	Max (mV)							
L4925PD	PowerSO-20	1	5	500	\pm 2	300		•						190
L4938ED-E	SO-20	2	5 Adj	100	\pm 2	300		•	•	•				210
L4938EPD	PowerSO-20	2	5 Adj	400	\pm 2	300		•	•	•				210
L4949ED-E	SO-8	1	5	100	\pm 1	300		•		•				200
L4949EP-E	SO-20	1	5	100	\pm 1	300		•		•				200
L4979D-E	SO-8	1	5	150	\pm 2	200		•	•		•		6	200
L4979MD	SO-20	1	5	150	\pm 2	200		•	•		•		6	100
L4988D	SO-8	1	5	200	\pm 2	270		•			•	•		130
L4988MD	SO-20	1	5	200	\pm 2	270		•			•	•		130
L4989D	SO-8	1	5	150	\pm 3	180		•			•	•		110
L4989MD	SO-20	1	5	150	\pm 3	180		•			•	•		110
L4993D	SO-8	1	5	150	\pm 2	200		•			•	•		100
L4993MD	SO-20	1	5	150	\pm 2	200		•			•	•		100
L4995RJ	PowerSSO-12	1	5	500	\pm 2	270		•						90
L4995RK	PowerSSO-24	1	5	500	\pm 2	270		•						90
L4995AJ	PowerSSO-12	1	5	500	\pm 2	270		•	•				3	90
L4995AK	PowerSSO-24	1	5	500	\pm 2	270		•	•				3	90
L4995J	PowerSSO-12	1	5	500	\pm 2	270		•	•		•		3	90
L4995K	PowerSSO-24	1	5	500	\pm 2	270		•	•		•		3	90
L5150BNTR	SOT-223	1	5	150	\pm 2									38
L5150CJ	PowerSSO-12	1	5	150	\pm 2		500	• (1)		•				55
L5150CS	SO-8	1	5	150	\pm 2		500	• (1)		•				55
L5150GJ	PowerSSO-12	1	5	150	\pm 2		500	• (1)	•	•			5	55
L5300AH7	HPAK	1	5	300	\pm 2		500	•	•				5	55
L5300GJ	PowerSSO-12	1	5	300	\pm 2		500	•	•	•			5	55
L5300EPT	PPAK	1	5	300	\pm 2		500	•	•				5	55
L5300RPT	PPAK	1	5	300	\pm 2		500	•					5	55

(1) Adjustable threshold

Door modules

Part number	Package	Driver stages	Max on-state resistance $R_{DS(on)}$ (m Ω)	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											
L9951XP	PowerSSO-36	1 high-side switch	100	6	7 to 28	•	•	•	•	•	SPI	-			Rear-door module
		1 half bridge	150	7.4											
		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	500	1.5											
		1 high-side switch	100	6											
L9953LXP	PowerSSO-36	3 half bridges	800	1.5	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	500	1.5											
		1 high-side switch	100	6											
L9954LXP	PowerSSO-36	3 half bridges	800	1.5	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											

Part number	Package	Driver stages	Max on-state resistance $R_{DS(on)}$ (m Ω)	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
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											
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											
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	0.75											
		1 high-side switch	90	6											
		1 configurable high-side switch	600/1800	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	S0-20	125 kbaud	Fault-tolerant low-speed CAN transceiver	5 V @ 200 mA	$\pm 2\%$	250 @ $I_{LOAD} = 100$ mA	•	•				Basic system chip
L9952GXP	PowerSS0-36	20 kbaud	LIN transceiver	5 V @ 250 mA	$\pm 2\%$	300 @ $I_{LOAD} = 100$ mA	•	•	4	HSD 1 Ω @ 120 mA	<ul style="list-style-type: none"> • 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	$\pm 4\%$	400 @ $I_{LOAD} = 50$ mA			1	HSD 1 Ω @ 400 mA		
									2	Relay drivers (2 Ω)		
L99PM62GXP	PowerSS0-36	20 kbaud	LIN and HS CAN transceivers	5 V @ 250 mA	$\pm 2\%$	300 @ $I_{LOAD} = 100$ mA	•	•	4	HSD 1 Ω @ 120 mA	<ul style="list-style-type: none"> • 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
				5 V @ 100 mA	$\pm 4\%$ (3% @ 50 mA)	400 @ $I_{LOAD} = 50$ mA			1	HSD 1 Ω @ 400 mA		
									2	Relay drivers (2 Ω)		
L99PM60J	PowerSS0-16	20 kbaud	LIN transceiver	5 V @ 100 mA	$\pm 2\%$	300 @ $I_{LOAD} = 100$ mA	•	•	2	HSD 7 Ω @ 60 mA	<ul style="list-style-type: none"> • 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)		

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		
L99PM72GXP	PowerSS0-36	20 kbaud	LIN and HS CAN transceivers	5 V @ 250 mA	$\pm 2\%$	$300 @ I_{LOAD} = 100 \text{ mA}$	•	•	4	HSD 1 Ω @ 120 mA	<ul style="list-style-type: none"> • 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
				5 V @ 100 mA	$\pm 4\%$ (3% @ 50 mA)	$400 @ I_{LOAD} = 50 \text{ mA}$			1	HSD 1 Ω @ 400 mA		
								2	Relay drivers (2 Ω)			

Motor control ICs

Part number	Package	Device description	On-state resistance per leg $R_{DS(on)}$ (m Ω)	Current limitation (I_{lim}) typ (A)	Supply voltage (V_{cc})		Absolute max supply voltage (V)	Highlights
					min (V)	max (V)		
VNH7 Series								
VNH7100AS	SO-16N	Full bridge	100	18	4	28	38	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Cross-conduction protection • PWM operations up to 20 kHz • Multisense output • Output protected against short-to-ground and short-to-Vcc
VNH5 Series								
VNH5200AS-E	SO-16N	Full bridge	200	12	5.5	18	40	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Cross-conduction protection • PWM operations up to 20 kHz • Current sense • Charge pump output for reverse-polarity protection

(*) In development.

Part number	Package	Device description	On-state resistance per leg $R_{DS(on)}$ (m Ω)	Current limitation (I_{lim}) typ (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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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
L99H01QF	LQFP-32	Full bridge driver	-	-	6	28	35	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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			<ul style="list-style-type: none"> SPI interface Programmable LED current Dithering 	LED driver
L99CL01XP	PowerSS0-36	8-channel high-side LED driver	6 to 24	40			<ul style="list-style-type: none"> Programmable over-current SPI interface Configurable $R_{DS(on)}$ 	LED driver
L99MC6GJ	PowerSS0-16	3 configurable HSD/LSD	6 to 28	40			<ul style="list-style-type: none"> $R_{DS(on)} = 0.7 \Omega$ at $T_J = 25^\circ C$ 	Various loads driver H-bridge configuration
		3 low-side switches						
VN1160-E	DPAK	Power switch for motorbike direction indicator	9 to 16	40			<ul style="list-style-type: none"> Lamp-failure detection Indicator reverse-battery protected 	Motorbike indicator driver
VN1160-1-E	IPAK	Power switch for motorbike direction indicator	9 to 16	40			<ul style="list-style-type: none"> Lamp-failure detection Indicator reverse-battery protected 	Motorbike indicator driver
VN1160C-E	DPAK	Power switch for motorbike direction indicator	9 to 16	40			<ul style="list-style-type: none"> Lamp-failure detection Indicator reverse-battery protected 	Motorbike indicator driver
VN1160C-1-E	IPAK	Power switch for motorbike direction indicator	9 to 16	40			<ul style="list-style-type: none"> Lamp-failure detection Indicator reverse-battery protected 	Motorbike indicator driver
VN5MB02-E	S0-16	Smart power driver for motorbike direction indicator	9 to 16	40	+/- 5%	+/- 8%	<ul style="list-style-type: none"> 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) (m Ω)	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 $R_{DS(on)}$ (m Ω)		I _{peak} (A)	Clamp voltage (min) (V)	Description
				Excitation path	Recirculation path			
L99SD01-E	PowerSS0-36	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
VBG08H-E	OCTAPAK	360	10.5	1.8 @ 6.5 A		6	28	-	Slow turn-on Soft shutdown Coil current limiter Current flag

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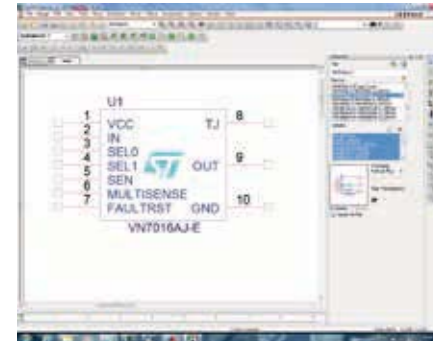
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EZ-BOARDS FOR 12 V SMART SWITCHES (M0-7)

Part Number	Channels	$R_{DS(on)}$ max @25 °C	Voltage (Vmax, operating range)	Package	Current sense	Multi sense
EV-VN7004CH (*)	1	4.9 mΩ	38 V, 4 V to 28 V	Octapak	X	
EV-VN7007AH (*)	1	7 mΩ	38 V, 4 V to 28 V	Octapak	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-VND7012AY	2	12mΩ	38 V, 4 V to 28 V	PowerSSO-36		X
EV-VND7020AJ	2	20 mΩ	38 V, 4 V to 28 V	PowerSSO-16		X
EV-VND7030AJ	2	30 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-VNQ7040AJ	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

(*) In development.

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-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	