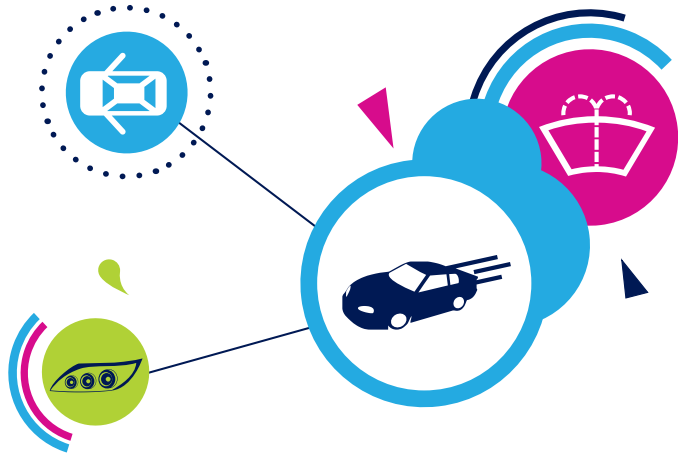


# Smart power solutions for car body applications



© STMicroelectronics - October 2013 - Printed in United Kingdom - All rights reserved  
The STMicroelectronics corporate logo is a registered trademark  
of the STMicroelectronics group of companies  
All other names are the property of their respective owners





Ignition drivers .....	19
Part numbering scheme .....	20
Get the right product for your needs .....	20
M0-5/M0-5Enhanced/M version part numbering scheme .....	20
M0-7 part numbering scheme .....	20
OMNIFET part numbering scheme .....	21
OMNIFET III part numbering scheme .....	21
Packages .....	22

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



# High-side switches

## HIGH-SIDE SWITCHES – SINGLE CHANNEL

Part number	Package	Technology	Supply voltage ( $V_{CC}$ )		Absolute max supply voltage (V)	Max on-state resistance $R_{DS(on)max}$ (m $\Omega$ )	Drain current limit ( $I_{lim}$ ) typ (A)	Digital status	Current sense	Multi-sense
			min (V)	max (V)						
VN7140AJ-E	PowerSSO-16	M0-7	4	28	38	140	12		•	
VN7140AS-E	SO-8	M0-7	4	28	38	140	12	•		
VN7050AJ-E	PowerSSO-16	M0-7	4	28	38	50	30		•	
VN7050AS-E	SO-8	M0-7	4	28	38	50	30	•		
VN7040AJ-E	PowerSSO-16	M0-7	4	28	38	40	34		•	
VN7040AS-E	SO-8	M0-7	4	28	38	40	34	•		
VN7020AJ-E	PowerSSO-16	M0-7	4	28	38	20	63		•	
VN7016AJ-E	PowerSSO-16	M0-7	4	28	38	16	77		•	
VN7010AJ-E	PowerSSO-16	M0-7	4	28	38	10	91		•	
VN7007AH-E (*)	Octapak	M0-7	4	28	38	7	110	•		
VN7004AH-E (*)	Octapak	M0-7	4	28	38	4.9	140	•		
VN5E160MS-E	SO-8	M0-5Enhanced (M vers.)	4.5	28	41	160	10	•		
VN5E050MJ-E	PowerSSO-12	M0-5Enhanced (M vers.)	4.5	28	41	50	27	•		
VN5E025MJ-E	PowerSSO-12	M0-5Enhanced (M vers.)	4.5	28	41	25	60	•		
VN5E016MH-E	HPAK	M0-5Enhanced (M vers.)	4.5	28	41	16	73	•		
VN5E010MH-E	HPAK	M0-5Enhanced (M vers.)	4.5	28	41	10	85	•		
VN5E160AS-E	SO-8	M0-5Enhanced	4.5	28	41	160	10	•		
VN5E160ASO-E	SO-16L	M0-5Enhanced	4.5	28	41	160	10	•		
VN5E160S-E	SO-8	M0-5Enhanced	4.5	28	41	160	10	•		
VN5E050AJ-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	50	27	•		
VN5E050ASO-E	SO-16L	M0-5Enhanced	4.5	28	41	50	27	•		
VN5E050J-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	50	27	•		
VN5E025AJ-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	25	60	•		
VN5E025ASO-E	SO-16L	M0-5Enhanced	4.5	28	41	25	60	•		
VN5E016AH-E	HPAK	M0-5Enhanced	4.5	28	41	16	73	•		
VN5E010AH-E	HPAK	M0-5Enhanced	4.5	28	41	10	85	•		
VN5160S-E	SO-8	M0-5	4.5	36	41	160	5	•		
VN5050AJ-E	PowerSSO-12	M0-5	4.5	36	41	50	18	•		
VN5050J-E	PowerSSO-12	M0-5	4.5	36	41	50	18	•		

## HIGH-SIDE SWITCHES – SINGLE CHANNEL

Part number	Package	Technology	Supply voltage ( $V_{CC}$ )		Absolute max supply voltage (V)	Max on-state resistance $R_{DS(on)}$ max (m $\Omega$ )	Drain current limit ( $I_{lim}$ ) typ (A)	Digital status	Current sense	Multi-sense
			min (V)	max (V)						
VN5025AJ-E	PowerSSO-12	M0-5	4.5	36	41	25	40		•	
VN5016AJ-E	PowerSSO-12	M0-5	4.5	36	41	16	60		•	
VN5012AK-E	PowerSSO-24	M0-5	4.5	36	41	12	65		•	
VN5010AK-E	PowerSSO-24	M0-5	4.5	36	41	10	65		•	
VN5E006ASP-E	PowerSO-10	M0-5	4.5	28	41	6	100		•	
VN800PS-E	SO-8	M0-3	5.5	36	41	135	1.3	•		
VN800PT-E	PPAK	M0-3	5.5	36	41	135	1.3	•		
VN750B5-E	P <sup>2</sup> PAK	M0-3	5.5	36	41	60	9	•		
VN750-E	PENTAWATT	M0-3	5.5	36	41	60	9	•		
VN750PS-E	SO-8	M0-3	5.5	36	41	60	9	•		
VN750PT-E	PPAK	M0-3	5.5	36	41	60	9	•		
VN750SMP-E	SO-8	M0-3	5.5	36	41	55	9	•		
VN820B5-E	P <sup>2</sup> PAK	M0-3	5.5	36	41	40	13	•		
VN820PT-E	PPAK	M0-3	5.5	36	41	40	13	•		
VN820SP-E	PowerSO-10	M0-3	5.5	36	41	40	13	•		
VN920DB5-E	P <sup>2</sup> PAK	M0-3	5.5	36	41	18	45	•		
VN920B5-E	P <sup>2</sup> PAK	M0-3	5.5	36	41	16	45		•	
VN920DSP-E	PowerSO-10	M0-3	5.5	36	41	16	45	•		
VN920-E	PENTAWATT	M0-3	5.5	36	41	16	45		•	
VN920PEP-E	PowerSSO-24	M0-3	5.5	36	41	15	45		•	
VN920SP-E	PowerSO-10	M0-3	5.5	36	41	15	45		•	
VN610SP-E	PowerSO-10	M0-3	5.5	36	41	10	75		•	

(\*) In development. Available in Q1/2014

## HIGH-SIDE SWITCHES – DUAL CHANNEL

Part number	Package	Technology	Supply voltage ( $V_{cc}$ )		Absolute max supply voltage (V)	Max on-state resistance $R_{DS(on)}$ max (m $\Omega$ )	Drain current limit ( $I_{DM}$ ) typ (A)	Digital status	Current sense	Multi-sense
			min (V)	max (V)						
VND7140AJ-E	PowerSSO-16	M0-7	4	28	38	140	12			•
VND7050AJ-E	PowerSSO-16	M0-7	4	28	38	50	30			•
VND7040AJ-E	PowerSSO-16	M0-7	4	28	38	40	34			•
VND7030AJ-E	PowerSSO-16	M0-7	4	28	38	30	56			•
VND7020AJ-E	PowerSSO-16	M0-7	4	28	38	20	63			•
VND7012AY-E (*)	PowerSSO-36	M0-7	4	28	38	12	75			•
VND7004AY-E (**)	PowerSSO-36	M0-7	4	28	38	4	100			•
VND5E160MJ-E	PowerSSO-12	M0-5Enhanced (M vers.)	4.5	28	41	160	10		•	
VND5E050MCJ-E	PowerSSO-12	M0-5Enhanced (M vers.)	4.5	28	41	50	27		•	
VND5E050MCK-E	PowerSSO-24	M0-5Enhanced (M vers.)	4.5	28	41	50	27		•	
VND5E050MJ-E	PowerSSO-12	M0-5Enhanced (M vers.)	4.5	28	41	50	27		•	
VND5E050MK-E	PowerSSO-24	M0-5Enhanced (M vers.)	4.5	28	41	50	27		•	
VND5E025MK-E	PowerSSO-24	M0-5Enhanced (M vers.)	4.5	28	41	25	60		•	
VND5E012MY-E	PowerSSO-36	M0-5Enhanced (M vers.)	4.5	28	41	12	74		•	
VND5E008MY-E	PowerSSO-36	M0-5Enhanced (M vers.)	4.5	28	41	8	85		•	
VND5E160AJ-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	160	10		•	
VND5E160ASO-E	S0-16L	M0-5Enhanced	4.5	28	41	160	10		•	
VND5E160J-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	160	10	•		
VND5E050ACJ-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	50	27		•	
VND5E050ACK-E	PowerSSO-24	M0-5Enhanced	4.5	28	41	50	27		•	
VND5E050AJ-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	50	27		•	
VND5E050AK-E	PowerSSO-24	M0-5Enhanced	4.5	28	41	50	27		•	
VND5E050ASO-E	S0-16L	M0-5Enhanced	4.5	28	41	50	27		•	
VND5E050J-E	PowerSSO-12	M0-5Enhanced	4.5	28	41	50	27	•		
VND5E050K-E	PowerSSO-24	M0-5Enhanced	4.5	28	41	50	27	•		
VND5E025AK-E	PowerSSO-24	M0-5Enhanced	4.5	28	41	25	60		•	
VND5E025AY-E	PowerSSO-36	M0-5Enhanced	4.5	28	41	25	47		•	
VND5E025AS-E	S0-16L	M0-5Enhanced	4.5	28	41	25	60		•	
VND5E025BK-E	PowerSSO-24	M0-5Enhanced	4.5	28	41	25	60		•	
VND5E025LK-E	PowerSSO-24	M0-5Enhanced	4.5	28	41	25	40		•	
VND5E025NAY-E	PowerSSO-36	M0-5Enhanced	4.5	28	41	25	60		•	

## HIGH-SIDE SWITCHES – DUAL CHANNEL

Part number	Package	Technology	Supply voltage ( $V_{cc}$ )		Absolute max supply voltage (V)	Max on-state resistance $R_{DS(on)}$ max (m $\Omega$ )	Drain current limit ( $I_{DM}$ ) typ (A)	Digital status	Current sense	Multi-sense
			min (V)	max (V)						
VND5E012AY-E	PowerSSO-36	M0-5Enhanced	4.5	28	41	12	74		•	
VND5E008ASP-E	PowerSO-16	M0-5Enhanced	4.5	28	41	8	85		•	
VND5E008AY-E	PowerSSO-36	M0-5Enhanced	4.5	28	41	8	85		•	
VND5E006ASP-E	PowerSO-16	M0-5Enhanced	4.5	28	41	6	100		•	
VND5E004A-E	PQFN	M0-5Enhanced	4.5	28	41	4	100		•	
VND5E004A30-E	MultiPowerSO-30	M0-5Enhanced	4.5	28	41	4	100		•	
VND5160AJ-E	PowerSSO-12	M0-5	4.5	36	41	160	5		•	
VND5160J-E	PowerSSO-12	M0-5	4.5	36	41	160	5	•		
VND5050AJ-E	PowerSSO-12	M0-5	4.5	36	41	50	18		•	
VND5050AK-E	PowerSSO-24	M0-5	4.5	36	41	50	18		•	
VND5050J-E	PowerSSO-12	M0-5	4.5	36	41	50	18	•		
VND5050K-E	PowerSSO-24	M0-5	4.5	36	41	50	18	•		
VND5025AK-E	PowerSSO-24	M0-5	4.5	36	41	25	40		•	
VND5012AK-E	PowerSSO-24	M0-5	4.5	36	41	12	60		•	
VND810P-E	SO-16	M0-3	5.5	36	41	160	5	•		
VND810PEP-E	PowerSSO-12	M0-3	5.5	36	41	160	5	•		
VND810SP-E	PowerSO-10	M0-3	5.5	36	41	160	5	•		
VND810MSP-E	PowerSO-10	M0-3	5.5	36	41	150	0.9	•		
VND830AEP-E	PowerSSO-24	M0-3	5.5	36	41	60	10		•	
VND830ASP-E	PowerSO-10	M0-3	5.5	36	41	60	9		•	
VND830LSP-E	PowerSO-10	M0-3	5.5	36	41	60	23	•		
VND830P-E	SO-16L	M0-3	5.5	36	41	60	9	•		
VND830MSP-E	PowerSO-10	M0-3	5.5	36	41	60	9	•		
VND830PEP-E	PowerSSO-24	M0-3	5.5	36	41	60	9	•		
VND830SP-E	PowerSO-10	M0-3	5.5	36	41	60	9	•		
VND600P-E	SO-16L	M0-3	5.5	36	41	35	40		•	
VND600PEP-E	PowerSSO-24	M0-3	5.5	36	41	30	40		•	
VND600SP-E	PowerSO-10	M0-3	5.5	36	41	30	40		•	
VND920P-E	SO-28	M0-3	5.5	36	41	16	45		•	

(\*) In development. Available in Q1/2014

(\*\*) In development. Available in Q4/2014

## HIGH-SIDE SWITCHES – QUAD CHANNEL

Part number	Package	Technology	Supply voltage (V <sub>CC</sub> )		Absolute max supply voltage (V)	Max on-state resistance R <sub>DS(on)</sub> max (mΩ)	Drain current limit (I <sub>lim</sub> ) typ (A)	Digital status	Current sense	Multi-sense
			min (V)	max (V)						
VNQ7140AJ-E	PowerSS0-16	M0-7	4	28	38	140	12			•
VNQ7050AJ-E (**)	PowerSS0-16	M0-7	4	28	38	50	27		•	
VNQ7040AY-E (*)	PowerSS0-36	M0-7	4	28	38	40	34			•
VNQ5E160MK-E	PowerSS0-24	M0-5Enhanced (M vers.)	4.5	28	41	160	10		•	
VNQ5E050MK-E	PowerSS0-24	M0-5Enhanced (M vers.)	4.5	28	41	50	27		•	
VNQ5E250AJ-E	PowerSS0 16	M0-5Enhanced	4.5	28	41	250	5		•	
VNQ5E160AK-E	PowerSS0-24	M0-5Enhanced	4.5	28	41	160	10		•	
VNQ5E160K-E	PowerSS0-24	M0-5Enhanced	4.5	28	41	160	10	•		
VNQ5E050AK-E	PowerSS0-24	M0-5Enhanced	4.5	28	41	50	27		•	
VNQ5E050K-E	PowerSS0-24	M0-5Enhanced	4.5	28	41	50	27	•		
VNQ5160K-E	PowerSS0-24	M0-5	4.5	36	41	160	5	•		
VNQ5050AK-E	PowerSS0-24	M0-5	4.5	36	41	50	18		•	
VNQ5050K-E	PowerSS0-24	M0-5	4.5	36	41	50	18	•		
VNQ5027AK-E	PowerSS0-24	M0-5	4.5	36	41	27	40		•	
VNQ500PEP-E	PowerSS0-12	M0-3	5.5	36	41	500	0.6	•		
VNQ810P-E	SO-28	M0-3	5.5	36	41	160	5	•		
VNQ810PEP-E	PowerSS0-24	M0-3	5.5	36	41	160	7.5	•		
VNQ05XSP16-E	PowerSO-16	M0-3	5.5	36	41	110	7.5		•	
VNQ690SP-E	PowerSO-10	M0-3	6	36	41	90	14	•		
VNQ830P-E	SO-28	M0-3	5.5	36	41	65	9	•		
VNQ830PEP-E	PowerSS0-24	M0-3	5.5	36	41	60	18	•		
VNQ660SP	PowerSO-10	M0-3	6	36	41	50	10	•		
VNQ600AP-E	SO-28	M0-3	5.5	36	41	35	40		•	
VNQ600P-E	SO-28	M0-3	5.5	36	41	35	40		•	

(\*) In development. Available in Q1/2014

(\*\*) In development. Available in Q4/2014



## HIGH-SIDE SWITCHES WITH SPI AND ASYMMETRICAL OUTPUT

Part number	Package	Technology	Supply voltage ( $V_{CC}$ )		Absolute max supply voltage (V)	Max on-state resistance $R_{DS(on)}$ max (m $\Omega$ )	Drain current limit ( $I_{lim}$ ) typ (A)	Current sense	SPI	Description
			min (V)	max (V)						
VNQ6040S-E	PowerSS0-36	M0-6	4.5	28	40	4x40	25	•	•	Rear corner lights
VNQ6004SA-E	PowerSS0-36	M0-6	4.5	28	40	2x10	50	•	•	Front corner lights
						2x30	25			

## HIGH-SIDE SWITCHES FOR 24 V APPLICATIONS – TRUCK DEVICES

Part number	Package	Technology	Supply voltage ( $V_{CC}$ ) min (V)	Supply voltage ( $V_{DD}$ ) max (V)	Absolute max supply voltage (V)	Max on-state resistance $R_{DS(on)}$ max (m $\Omega$ )	Drain current limit ( $I_{lim}$ ) typ (A)	Current sense
VND5T100A-E (*)	SO-16N	M0-5T	8	36	58	100	22	•
VND5T100AJ-E	PowerSS0-12	M0-5T	8	36	58	100	22	•
VND5T100LAJ-E	PowerSS0-12	M0-5T	8	36	58	100	22	Optimized for LED applications
VND5T050AK-E	PowerSS0-24	M0-5T	8	36	58	50	34	•
VND5T035AK-E	PowerSS0-24	M0-5T	8	36	58	35	42	•
VND5T035LAK-E	PowerSS0-24	M0-5T	8	36	58	35	42	Optimized for LED applications
VN5T016AH-E	HPAK	M0-5T	8	36	58	16	67	•
VND5T016ASP-E	PowerSO-16	M0-5T	8	36	58	16	60	•
VN5T006ASP-E	PowerSO-10	M0-5T	8	36	58	6	84	•

(\*) In development. Available in Q4/2013

## SMART POWER LOW-SIDE SWITCHES

Part number	Package	Technology	Number of Channels	Clamp Voltage typ (V)	Drain Current limit ( $I_{lim}$ ) typ [A]	Max on-state resistance $R_{DS(on)}$ (max) [mΩ]
VND1NV04-E	DPAK	MO-3	1	45	2.6	250
VND1NV04-1-E	IPAK	MO-3	1	45	2.6	250
VNN1NV04P-E	SOT-223	MO-3	1	45	2.6	250
VNS1NV04P-E	SO-8	MO-3	1	45	2.6	250
VND3NV04-E	DPAK	MO-3	1	45	5	120
VNN3NV04P-E	SO-8; SOT-223	MO-3	1	45	5	120
VNS3NV04P-E	SO-8	MO-3	1	45	5	120
VNN7NV04P-E	SOT-223	MO-3	1	45	9	65
VNS7NV04P-E	SO-8	MO-3	1	45	9	65
VND7NV04-E	DPAK	MO-3	1	45	9	60
VNB14NV04-E	D2PAK	MO-3	1	45	18	35
VND14NV04-E	DPAK	MO-3	1	45	18	35
VND14NV04-1-E	IPAK	MO-3	1	45	18	35
VNS14NV04P-E	SO-8	MO-3	1	45	18	35
VNB35NV04-E	D2PAK	MO-3	1	45	45	10
VNV35NV04-E	PowerSO-10	MO-3	1	45	45	10
VNS1NV04DP-E	SO-8	MO-3	2	45	2.6	250
VNS3NV04DP-E	SO-8	MO-3	2	45	5	120

## SMART POWER LOW-SIDE SWITCHES

Part number	Package	Number of channels	Technology	Clamp voltage typ (V)	Drain current limit ( $I_{lim}$ ) typ (A)	Max on-state resistance $R_{DS(on)max}$ (mΩ)	Digital status
VNL5300S5-E	S0-8	1	M0-5	46	2	300	•
VNL5160N3-E	SOT-223	1	M0-5	46	5	160	
VNL5160S5-E	S0-8	1	M0-5	46	5	160	•
VNL5090N3-E	SOT-223	1	M0-5	46	18	90	
VNL5090S5-E	S0-8	1	M0-5	46	18	90	•
VNL5090S5-E	S0-8	1	M0-5	46	18	90	•
VNL5050N3-E	SOT-223	1	M0-5	46	27	50	
VNL5050S5-E	S0-8	1	M0-5	46	27	50	•
VNL5030J-E	PowerSS0-12	1	M0-5	46	35	30	•
VNL5030S5-E	S0-8	1	M0-5	46	35	30	•
VNLD5300-E	S0-8	2	M0-5	46	2	300	•
VNLD5160-E	S0-8	2	M0-5	46	5	160	•
VNLD5090-E	S0-8	2	M0-5	46	18	90	•

# 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	Supply current (standby) typ ( $\mu$ A)	Quiescent current at low load typ ( $\mu$ 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 $\Omega$ )	Current limitation $I_{lim}$ (A)	Operating range $V_s$ (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											
L9950 L9950XP	PowerSO-36 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											
L9951 L9951XP	PowerSO-36 PowerSSO-36	4 high-side switches	800	1.5	7 to 28	•	•	•	•	•	SPI	-			Rear-door module
		1 high-side switch	100	6											
		1 half bridge	150	7.4											
L9953 L9953XP	PowerSO-36 PowerSSO-36	2 half bridges	200	5	7 to 28	•	•	•	•	•	SPI	-			Mid-end front-door module
		2 high-side switches	800	1.25											
		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											
L9954 L9954XP	PowerSO-36 PowerSSO-36	1 high-side switch	100	6	7 to 28	•	•	•	•	•	SPI	-			Mid-end front-door module without door lock
		3 half bridges	800	1.5											
		2 high-side switches	500	1.5											
L9954LXP	PowerSSO-36	1 high-side switch	100	6	7 to 28	•	•	•	•	•	SPI	-	2x		Mid-end front-door module without door lock compatible with bulbs/LEDs
		3 half bridges	800	1.5											
		2 high-side switches	500/1800	1.5/0.35											

Part number	Package	Driver stages	Max on-state resistance $R_{DS(on)}$ (m $\Omega$ )	Current limitation $I_{lim}$ (A)	Operating range Vs (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 1.2V/1.5V	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	2 high-side switches	1600	0.5	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 to negative discharge. H-Bridge control, for external MOSFETs, with adjustable slew-rate
		1 full bridge	150	6											
		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	2 high-side switches	1600	0.5	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 full bridge	150	6											
		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											

# 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	$\pm 2\%$	$250 @ I_{LOAD} = 100 \text{ mA}$	•	•				Basic system chip
L4969UR-E	PowerS0-20	125 kbaud	Fault tolerant low-speed CAN transceiver	5 V @ 200 mA	$\pm 2\%$	$400 @ I_{LOAD} = 150 \text{ mA}$	•	•				Basic system chip
L9952GXP	PowerSS0-36	20 kbaud	LIN transceiver	5 V @ 250 mA	$\pm 2\%$	$300 @ I_{LOAD} = 100 \text{ mA}$	•	•	4	HSD $1 \Omega @ 120 \text{ mA}$	<ul style="list-style-type: none"> <li>• 4 wake-up inputs for contact monitoring</li> <li>• Fail-safe output</li> <li>• Two op-amps for current sense interfacing</li> <li>• Inhibit input for wake-up from external CAN</li> </ul>	Power management IC with LIN
				5 V @ 100 mA	$\pm 4\%$	$400 @ I_{LOAD} = 50 \text{ mA}$			1	HSD $1 \Omega @ 400 \text{ mA}$		
2	Relay drivers (2 $\Omega$ )											
L99PM62GXP	PowerSS0-36	20 kbaud	LIN and HS CAN transceivers	5 V @ 250 mA	$\pm 2\%$	$300 @ I_{LOAD} = 100 \text{ mA}$	•	•	4	HSD $1 \Omega @ 120 \text{ mA}$	<ul style="list-style-type: none"> <li>• Complete 3-channel contact monitoring interface with programmable cyclic sense functionality</li> <li>• 4 internal PWM timers</li> <li>• Two op-amps with rail-to-rail outputs (VS) and low-voltage inputs</li> <li>• Programmable periodic system wake-up feature</li> </ul>	Power management IC with LIN and high-speed CAN
				5 V @ 100 mA	$\pm 4\%$ (3% @ 50 mA)	$400 @ I_{LOAD} = 50 \text{ mA}$			1	HSD $1 \Omega @ 400 \text{ mA}$		
2	Relay drivers (2 $\Omega$ )											
L99PM60J	PowerSS0-16	20 kbaud	LIN transceiver	5 V @ 100 mA	$\pm 2\%$	$300 @ I_{LOAD} = 100 \text{ mA}$	•	•	2	HSD $7 \Omega @ 60 \text{ mA}$	<ul style="list-style-type: none"> <li>• Configurable fail-safe output</li> <li>• ST SPI interface for mode control and diagnostics</li> <li>• Direct drive feature for HSD</li> </ul>	Power management IC with LIN
				2	Relay drivers (2 $\Omega$ )							

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		
L99PM72PXP	PowerSS0-36	20 kbaud	LIN and HS CAN transceivers	5 V @ 250 mA	$\pm 2\%$	$300 @ I_{LOAD} = 100 \text{ mA}$	•	•	4	HSD 1 $\Omega$ @ 120 mA	<ul style="list-style-type: none"> <li>Complete 3-channel contact monitoring interface with programmable cyclic sense functionality</li> <li>4 internal PWM timers</li> <li>Two operational amps with rail-to-rail outputs (VS) and low-voltage inputs</li> <li>Programmable periodic system wake-up feature</li> </ul>	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)	$400 @ I_{LOAD} = 50 \text{ mA}$			2	Relay drivers (2 $\Omega$ )		
L99PM80EP(*)	TQFP 48	20 kbaud	LIN and HS CAN Transceivers	5 or 3.3 V @ 400 mA	$\pm 2\%$	$300 @ I_{LOAD} = 200 \text{ mA}$	•	•	1	HSD 7 $\Omega$ @ 60 mA	<ul style="list-style-type: none"> <li>Integrated Boost controller for sustaining low-power conditions</li> <li>Integrated Buck converter for preregulated supply of low drop voltage regulators</li> <li>Programmable periodic system wake-up feature</li> <li>Direct drive feature for HSD</li> </ul>	Power management IC with 4 LIN and high-speed CAN according to ISO 11898-5
				5 V @ 50 mA	$\pm 2\%$	$300 @ I_{LOAD} = 25 \text{ mA}$			3	Fail safe outputs (7 $\Omega$ , low side)		
				5 V @ 80 mA	$\pm 2\%$	$300 @ I_{LOAD} = 40 \text{ mA}$						

(\*) In development. Available in Q2/2014



# Motor drivers

Part number	Package	Technology	Output mode	Max on-state resistance $R_{DS(on)}$ max (m $\Omega$ )	Current limitation ( $I_{lim}$ ) typ (A)	Supply voltage (V <sub>CC</sub> )		Absolute max supply voltage (V)	Highlights
						min (V)	max (V)		
L9997ND	S0-20	BCD	2 half bridge	700	1.6	7	16.5	26	<ul style="list-style-type: none"> <li>Short-circuit and over-temperature protected</li> </ul>
L99ASC03	TQFP-48 ExPad	BCD6	3x half-bridges driver	-	-	6	28	40	<ul style="list-style-type: none"> <li>3 half-bridges driver to control external MOSFET</li> <li>5 V voltage regulator (200 mA continuous)</li> <li>Watchdog and fail-safe functionality</li> <li>PWM up to 80 kHz</li> <li>Configurable current sense amplifier</li> <li>Advanced BEMF detection IP</li> <li>Programmable overcurrent protection</li> <li>Drain-source monitoring and openload detection</li> </ul>
L99H01XP	PowerSS0-36	BCD5	H-bridge	280	-	6	28	35	<ul style="list-style-type: none"> <li>Programmable free wheeling</li> <li>Current-sense amplifier/free configuration</li> <li>Sensing circuitry of external MOSFET with embedded thermal sensor</li> </ul>
L99H01QF	LQFP-32	BCD5	H-bridge	280	-	6	28	35	<ul style="list-style-type: none"> <li>Programmable free wheeling</li> <li>Current-sense amplifier/free configuration</li> <li>Sensing circuitry of external MOSFET with embedded thermal sensor</li> </ul>
L99MD01XP	PowerSS0-36	BCD5	Half bridge	1600	1.1	6	28	40	<ul style="list-style-type: none"> <li>Optimized for H-VAC flaps</li> <li>DC-stepper motor driver</li> <li>8 H-bridge driver</li> <li>Intrinsic DC-DC step-up converter</li> <li>2 current monitor outputs</li> <li>All outputs short-circuit protected</li> </ul>
L99MD02XP	PowerSS0-36	BCD5	Half bridge	1600	1.1	6	28	40	<ul style="list-style-type: none"> <li>Optimized for H-VAC flaps</li> <li>DC-motor driver</li> <li>6 H-bridge driver</li> <li>2 current monitor outputs</li> <li>All outputs short-circuit protected</li> </ul>
VN5770AKP-E	S0-28	M0-5, M0-3	2 HSD and 2 LSD	280	8.5	4.5	36	41	<ul style="list-style-type: none"> <li>Active power limitation (patent IP) on high side</li> <li>Thermal shutdown</li> </ul>
VN5772AK-E	S0-28	M0-5	2 HSD and 2 LSD	100	18	4.5	36	41	<ul style="list-style-type: none"> <li>Active power limitation (patent IP) on both high and low side</li> <li>Thermal shutdown</li> </ul>
VN770KP-E	S0-28	M0-3	2 HSD and 2 LSD	225	9	5.5	36	41	<ul style="list-style-type: none"> <li>Short-circuit and over-temperature protected</li> </ul>

Part number	Package	Technology	Output mode	Max on-state resistance $R_{DS(on)}$ max (m $\Omega$ )	Current limitation ( $I_{lim}$ ) typ (A)	Supply voltage ( $V_{cc}$ )		Absolute max supply voltage (V)	Highlights
						min (V)	max (V)		
VN771KP-E	S0-28	M0-3	2 HSD and 2 LSD	95	9	5.5	36	41	<ul style="list-style-type: none"> <li>Short-circuit and over-temperature protected</li> </ul>
VN772KP-E	S0-28	M0-3	2 HSD and 2 LSD	125	9	5.5	36	41	<ul style="list-style-type: none"> <li>Short-circuit and over-temperature protected</li> </ul>
VNH2SP30-E	MultiPowerS0-30	M0-4	Full bridge	19	50	5.5	16	41	<ul style="list-style-type: none"> <li>Cross-conduction protection</li> <li>PWM operations up to 20 kHz</li> <li>Current sense</li> </ul>
VNH3ASP30-E	MultiPowerS0-30	M0-4	Full bridge	42	50	5.5	16	41	<ul style="list-style-type: none"> <li>Cross-conduction protection</li> <li>PWM operations up to 20 kHz</li> <li>Current sense</li> </ul>
VNH3SP30-E	MultiPowerS0-30	M0-3	Full bridge	45	50	5.5	36	40	<ul style="list-style-type: none"> <li>Cross-conduction protection</li> <li>PWM operations up to 10 kHz</li> <li>Current sense</li> </ul>
VNH5019A-E	MultiPowerS0-30	M0-5	Full bridge	18	50	5.5	24	41	<ul style="list-style-type: none"> <li>Cross-conduction protection</li> <li>PWM operations up to 20 kHz</li> <li>Current sense</li> <li>Charge pump output for reverse-polarity protection</li> </ul>
VNH5050A-E	PowerSS0-36	M0-5	Full bridge	50	42	5.5	18	41	<ul style="list-style-type: none"> <li>Cross-conduction protection</li> <li>PWM operations up to 20 kHz</li> <li>Current sense</li> <li>Output protected against short-to-ground and short-to-<math>V_{cc}</math></li> </ul>
VNH5180A-E	PowerSS0-36	M0-5	Full bridge	180	12	5.5	18	41	<ul style="list-style-type: none"> <li>Cross-conduction protection</li> <li>PWM operations up to 20 kHz</li> <li>Current sense</li> <li>Output protected against short-to-ground and short-to-<math>V_{cc}</math></li> </ul>
VNH5200AS-E (*)	S0-16	M0-5	Full bridge	200	12	5.5	18	41	<ul style="list-style-type: none"> <li>Cross-conduction protection</li> <li>Current sense</li> <li>Output protected against short-to-ground and short-to-<math>V_{cc}</math></li> </ul>

(\*) In development. Available in Q1/2014

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"> <li>• SPI interface</li> <li>• Programmable LED current</li> <li>• Dithering</li> </ul>	LED driver
L99CL01XP	PowerSS0-36	8 Channels high-side LED driver	6 to 24	40			<ul style="list-style-type: none"> <li>• Programmable over-current</li> <li>• SPI interface</li> <li>• Configurable <math>R_{DS(on)}</math></li> </ul>	LED driver
L99MC6	PowerSS0-16	3 configurable HSD/LSD	6 to 28	40			<ul style="list-style-type: none"> <li>• <math>R_{DS(on)} = 0.7 \Omega</math> at <math>T_j = 25^\circ C</math></li> </ul>	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"> <li>• Lamp-failure detection</li> <li>• Indicator reverse-battery protected</li> </ul>	Motorbike indicator driver
VN1160-1-E	IPAK	Power switch for motorbike direction indicator	9 to 16	40			<ul style="list-style-type: none"> <li>• Lamp-failure detection</li> <li>• Indicator reverse-battery protected</li> </ul>	Motorbike indicator driver
VN1160C-E	DPAK	Power switch for motorbike direction indicator	9 to 16	40			<ul style="list-style-type: none"> <li>• Lamp-failure detection</li> <li>• Indicator reverse-battery protected</li> </ul>	Motorbike indicator driver
VN1160C-1-E	IPAK	Power switch for motorbike direction indicator	9 to 16	40			<ul style="list-style-type: none"> <li>• Lamp-failure detection</li> <li>• Indicator reverse-battery protected</li> </ul>	Motorbike indicator driver
VN5MB02-E (*)	SO-16	Smart power driver for motorbike direction indicator	9 to 16	40	+/- 5%	+/- 8%	<ul style="list-style-type: none"> <li>• High accuracy in setting operating frequency and low-load detection</li> <li>• Maximum current detection with latch</li> <li>• Cycle by cycle thermal limitation</li> </ul>	Motorbike indicator driver

(\*) In development. Available in Q1/2014

## SPECIAL DEVICES – 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 $\Omega$ )	Description
VN5R003H-E	HPAK	4.5 to 28	41	3	Reverse-battery protection for an electronic control unit

## SPECIAL DEVICES – 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 $\Omega$ )		I <sub>peak</sub> (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	Technology	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	M1	380	11	2		4.5	5.5	40	Quasi proportional current driving Current flag
VB526SP-E	PowerSO-10	M1	360	11	2		4.5	5.5	40	Quasi proportional current driving Current flag
VBG08H-E	OCTAPAK	BCD5S + IGBT	360	10.5	1.8 @ 6.5 A		6	28	-	Slow turn-on Soft shutdown Coil current limiter Current flag

# Part numbering scheme

## GET THE RIGHT PRODUCT FOR YOUR NEEDS

### MO-5 standard version

MO-5 standard series is a complete product portfolio intended for typical loads in automotive applications, such as a high beam, low beam, turn indicator, interior lighting. For each  $R_{DS(on)}$  rating, single-, dual- and quad-channel options are available. Moreover, the devices are equipped with digital diagnostics or with analog current sense.

### MO-5Enhanced version

In addition to the standard protection and diagnostic features, MO-5Enhanced products offer:

- Extended load compatibility due to higher current limitation
- Immediate diagnosis reaction over short-to-ground or overload (power limitation detection)
- Open-load/short-to- $V_{CC}$  detection in off-state for the analog current sense option as well

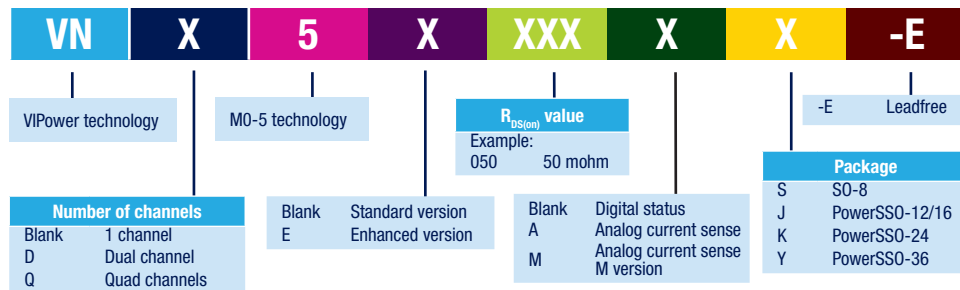
### MO-5Enhanced M version

The M versions complete the product portfolio with devices having the same specification as MO-5Enhanced except for the open-load detection in off-state.

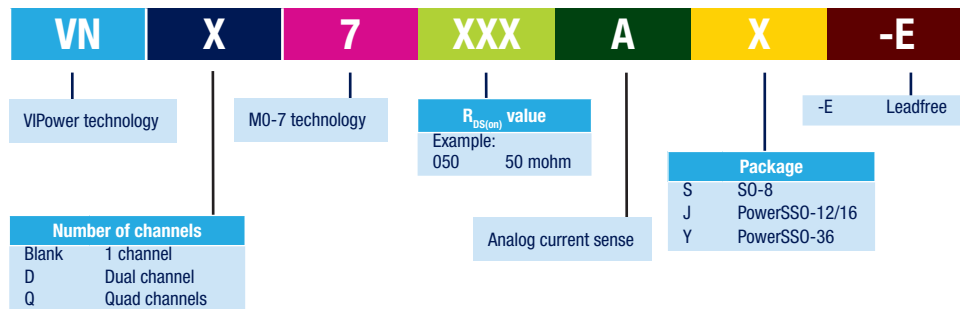
### MO-7 version

The brand new MO-7 Product Family further extends the wide range of  $R_{DS(on)}$  for optimal device-load pairing in smaller packages and with full pin-to-pin compatibility.

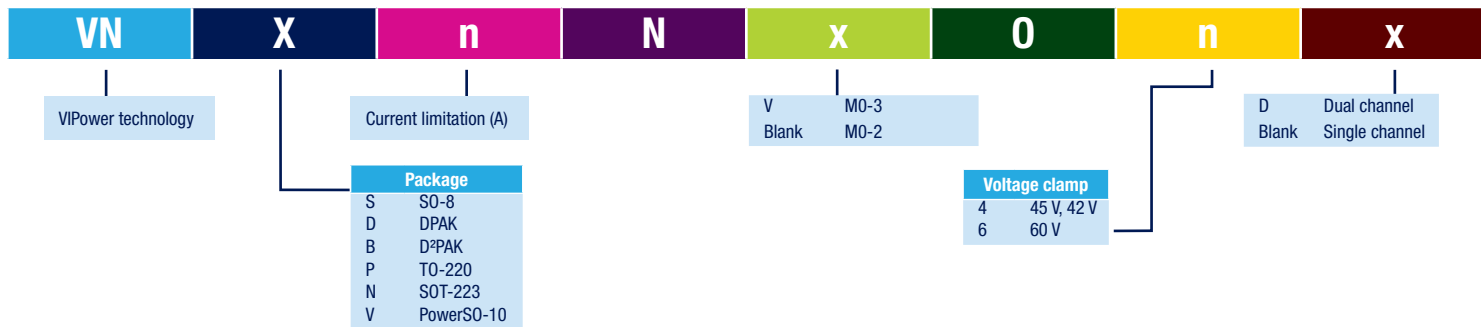
## MO-5/MO-5ENHANCED/M VERSION PART NUMBERING SCHEME



## MO-7 PART NUMBERING SCHEME



## OMNIFET PART NUMBERING SCHEME



## OMNIFET III PART NUMBERING SCHEME

