VND5004B: dual 4 mΩ smart high side switch

VIPower™ M0-5 solution for power management in automotive applications



The VND5004B from **STMicroelectronics** is a dual-channel low $R_{DS(ON)}$ device (4 mΩ per channel) in VIPower™ M0-5 technology.

Part of the intelligent power switch family, this device is equipped with several diagnostic functions, able to protect itself and the load against hazardous conditions. Moreover, under reverse battery conditions, the dissipated power is limited by power stage self turn-on.

Specifically intended for power management, the VND5004B is suitable to automotive applications requiring high operating current.

Key features

- Dual high side for automotive application
- Low on-state resistance (4 mΩ per channel)
- Only 2 µA of standby current
- Proportional load-current sense output with thermal shutdown indication
- Very low electromagnetic susceptibility and optimized electromagnetic emission

Embedded protections

- Reverse battery protection by automatic PowerMOS switch-on
- Active management of hazardous conditions by power limitation
- Load-current limitation (100 A typ.)
- Thermal shutdown
- Under-voltage shutdown
- Over-voltage clamp
- Protection against loss of ground and loss of V_{cc}
- Electrostatic discharge protection

Main applications

- Power management
- Diesel glow plugs
- Seat heating
- Multi-bulb loads (lighting)
- Most high-current resistive, inductive and capacitive loads

Package options

- MultiPowerSO-30
- Power QFN (12 x 12 power lead less package)

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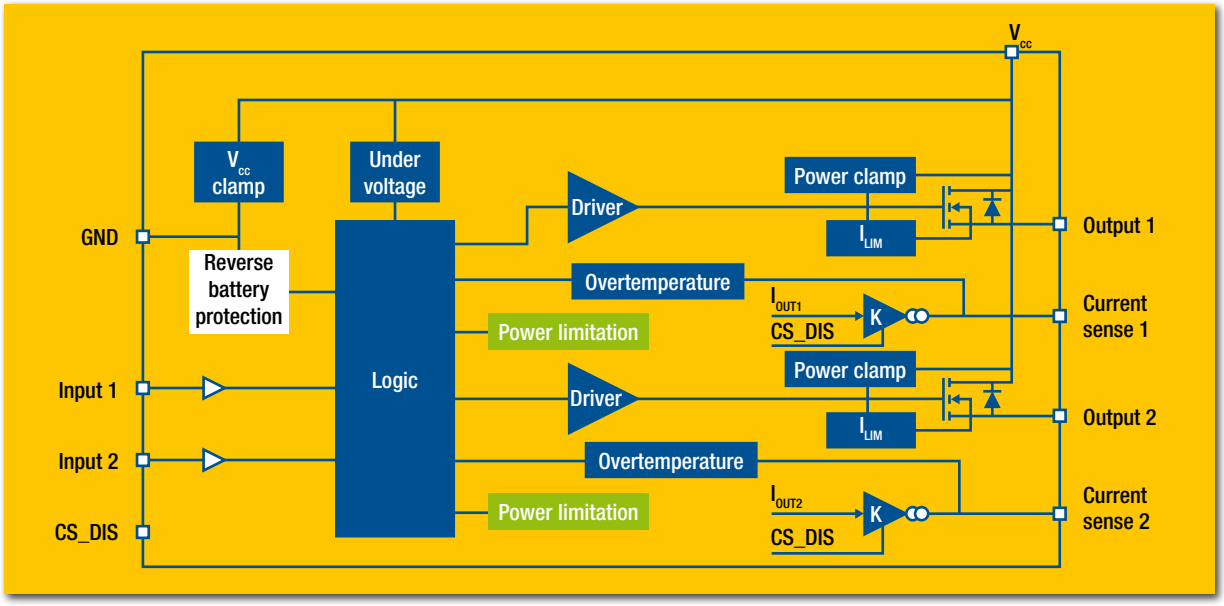
VND5004B block diagram



According to the innovative protection strategy introduced in VIPower™ M0-5 technology, the VND5004B is equipped with power limitation control removing the thermal fatigue, main cause of silicon degradation. Moreover, under reverse battery condition the device is protected by PowerMOS reactivation.

Applications powered by the VND5004B



Features summary

Parameter	Symbol	Value
Max on-state resistance (per channel)	R_{on}	4 mΩ
Current limitation (typ)	I_{lim}	100 A
Operating voltage range	V_{cc}	4.5 to 28 V
Maximum transient supply voltage	V_{cc}	41 V
Off-state supply current	I_s	2 µA

Part number options

Package	Packing		
	Tube	Type and reel	Tray
PQFN – 12 x 12 power lead less	–	VND5004BTR-E	VND5004B-E
MultiPowerSO-30	VND5004BSP30-E	VND5004BSP30TR-E	–



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