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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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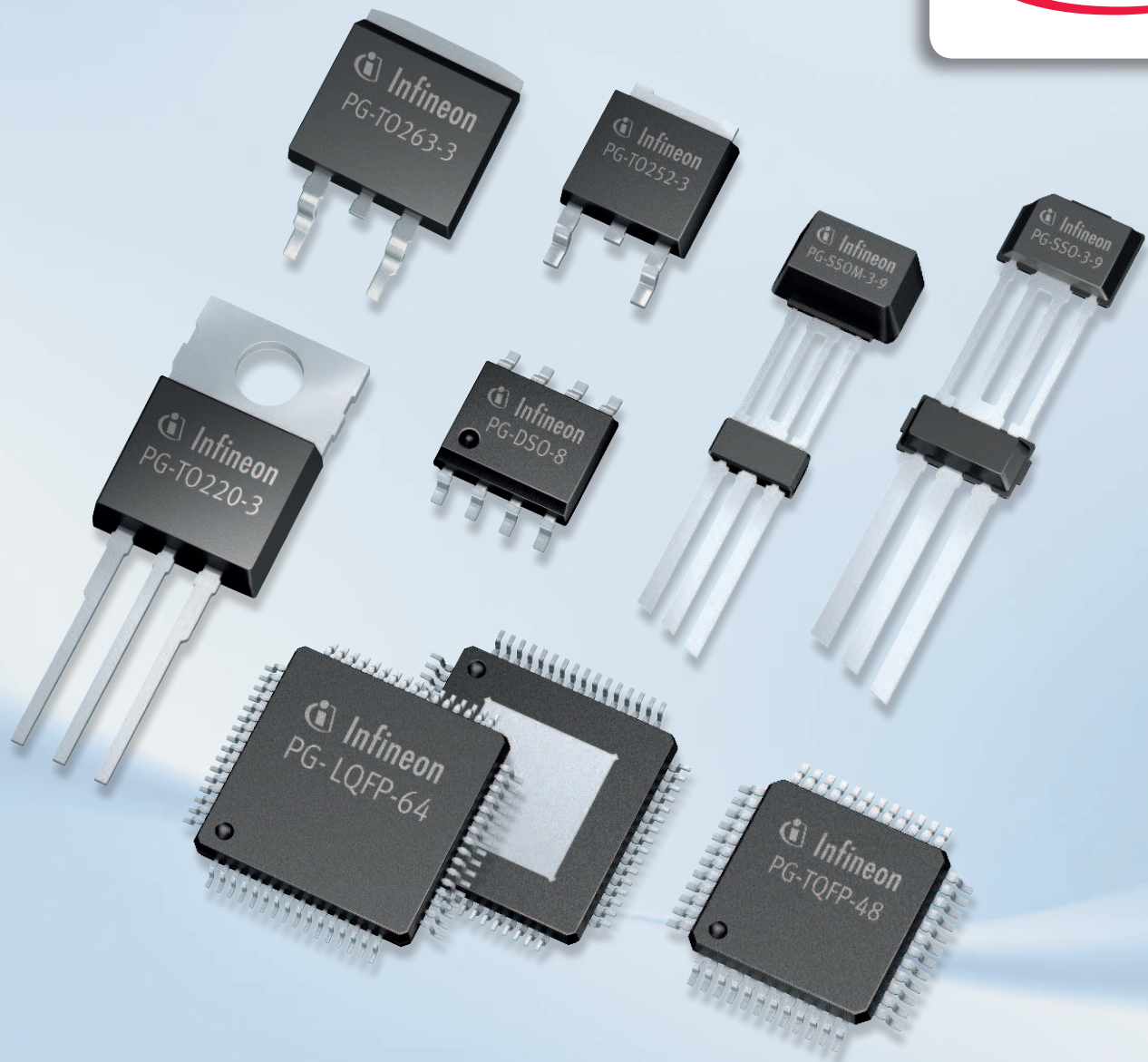
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# Infineon Solutions for Transportation

24V to 60V



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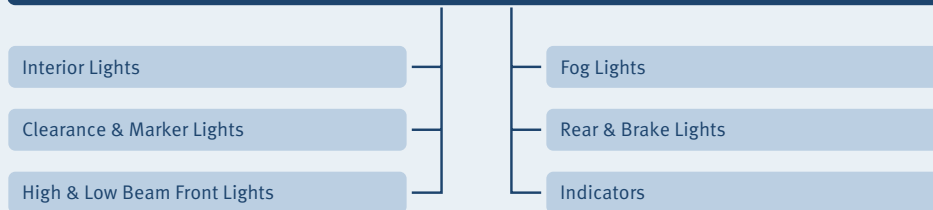
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## 24V – 60V Solutions for Transportation

Large trucks, campers and recreation vehicles are a common sight on today's roads and highways. And ever more people have hobbies requiring the transportation of equipment such as boats, snow mobiles, jet skis or other vehicles. There are many other examples of applications driven by 24V systems. In this brochure, you will find the complete portfolio of Infineon products specifically developed for this attractive and growing market. The products featured here encompass a complete range of microcontrollers, power and sensor devices. The other large market segment addressed in this brochure is that of smaller methods of transportation, examples of which include eScooters and eBikes.

### Application Overview

#### Exterior Truck Applications



#### Interior Truck Applications



# Trucks

## 24V Transport Applications

Infineon has seized the No. 1 spot in automotive power semiconductors by creating innovative power control solutions. Engineers highly value the reliability and versatility designed into these power products and have used them successfully in many automotive and non-automotive applications.

## Innovative Technologies, Advanced Techniques

Infineon leverages various technologies to create these innovations, such as N- and P-Channel MOSFETs, S-Smart power and logic, and Smart Power Technologies (SPT) featuring monolithic analog and digital power. We also use advanced assembly techniques such as chip-by-chip, chip-on-chip and power bond for high-current wire bonding.

## Step up to the Next Generation

By combining these technologies, Infineon produces forward-looking products designed to enable the next generation of innovative 24V solutions. Alongside a broad portfolio of products for 24V applications, we also offer the building blocks for all end-to-end 24V solutions, including voltage regulators, communication ICs, microcontrollers and Hall sensors.



# Construction and Agriculture Vehicles

24V systems are primarily integrated into systems for trucks, as well as for construction and agricultural vehicles. Infineon offers a broad range of power products, microcontrollers and sensors – all of which are qualified to automotive standards and benefit from the Zero Defect Quality Program – for this attractive and growing market.

Take a moment to look at our wide range of 24V products. You are sure to find the perfect solution among them. We look forward to helping you realize your next innovation.





## Sport and Alternative Vehicles

### Sport Vehicles, 24V Transport Applications

In many parts of the world, there is an ever-increasing demand for leisure vehicles. These include boats driven by diesel engines and 24V systems, ranging from small boats to large ships. This brochure is also aimed at applications such as snow mobiles and jet skis, and the broad range of vehicles serving the ever-expanding leisure market.

Infineon has a variety of products for these applications, all of which are based on our excellent quality and technologies. They have been developed to ensure our continued leadership in these markets and applications, and will enable you to design products to address any customer demand.



### Alternative Vehicles, Small Electrical Vehicles

Movement is one of those things that make people smile, bringing enjoyment to a very broad cross-section of society. There are many ways of appreciating movement – from exclusive, fast cars to convenient small electrical vehicles.

The market segment addressed by the range of products featured in this part of the brochure is that of small electrical vehicles. These include electric wheelchairs, golf carts and fork lift trucks, all of which are driven by battery-operated motors. Infineon has a large selection of products that have been developed for this ever-expanding market.



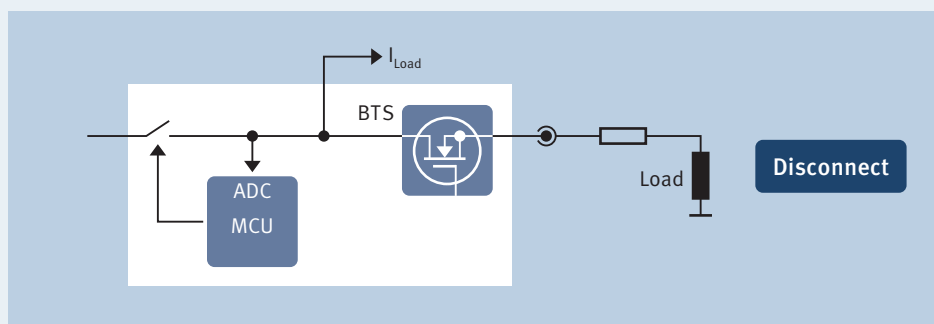
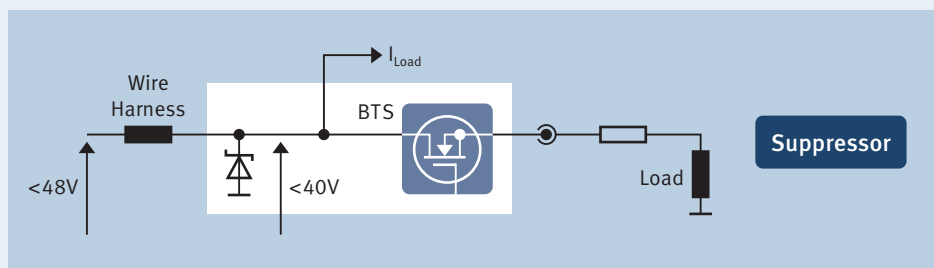
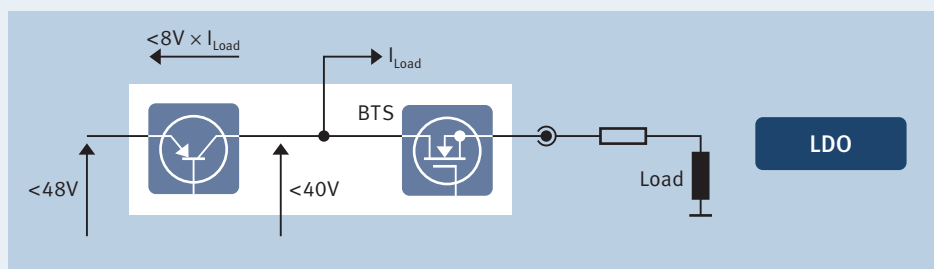
# 24V – 60V Requirements for Transportation Applications

Due to the longer running times, higher mileage and cranking cycles synonymous with the truck business, the associated requirements regarding quality, reliability and robustness are even more demanding.

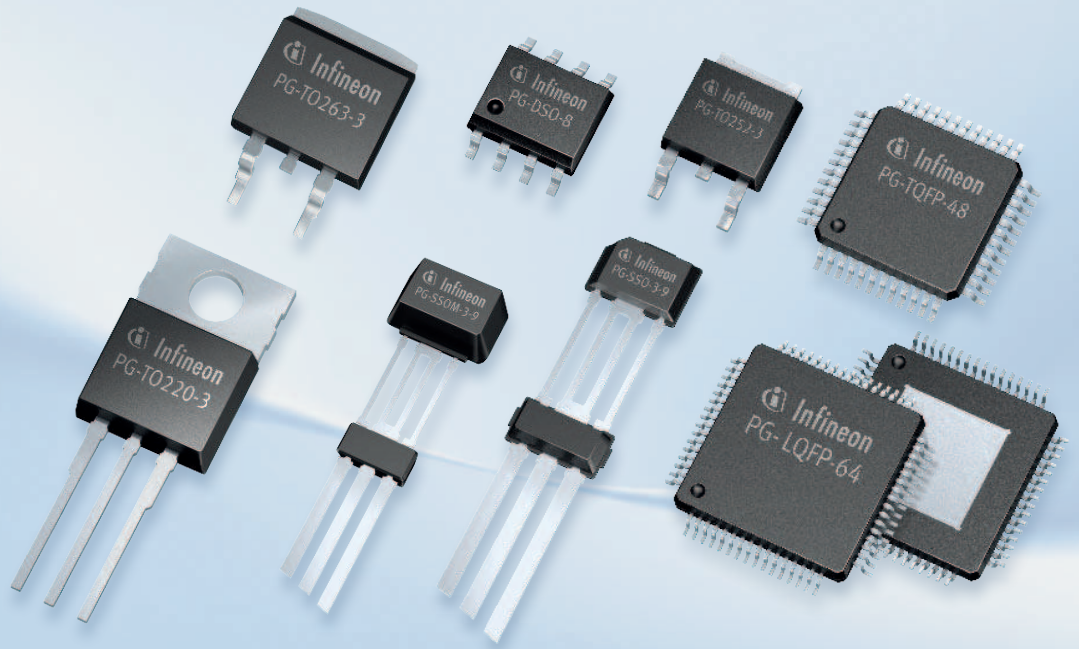
## Car and Truck Requirements Comparison

Parameter	Car	Truck
Running time	10,000 hours	50,000 hours
Idle time	76,000 hours	37,000 hours
Distance	250,000 km	2,000,000 km 4,000,000 km trailer
Average speed	25 km/h	40 km/h
Cranking/handbrake	100,000	300,000

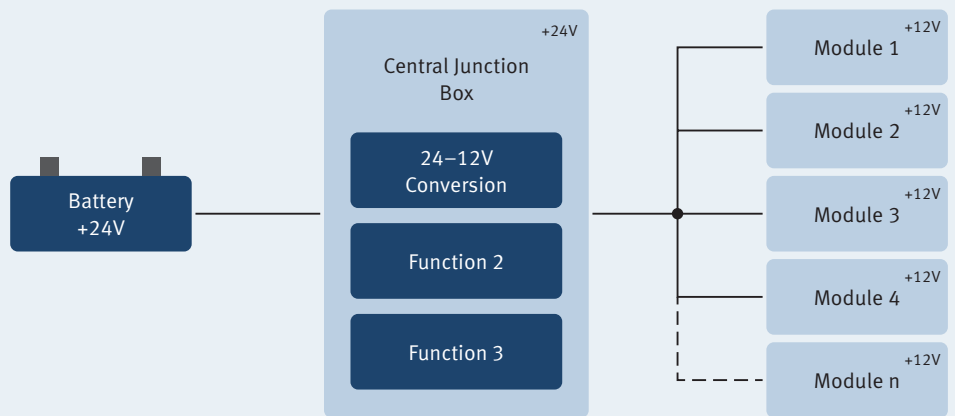
## Three Ways of Protecting Electrical Systems against Overvoltage



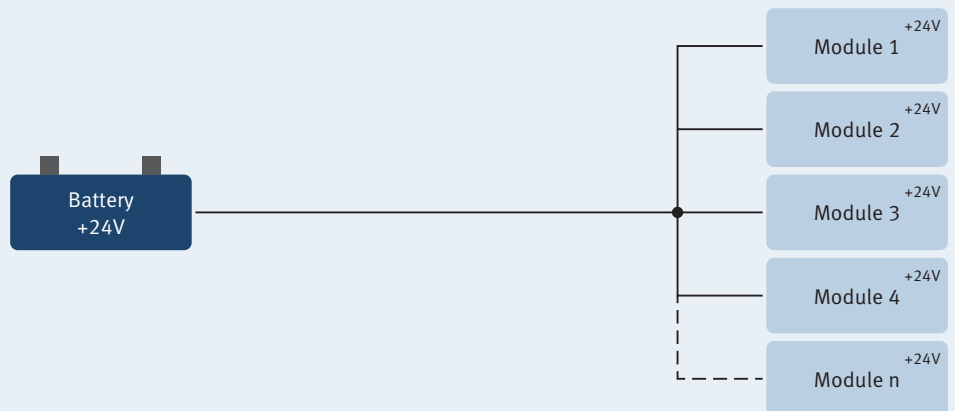




**Centralized Clamping/Overvoltage Protection – Overvoltage Protection via a Central Clamping Device in the Alternator**



**Decentralized Clamping/Overvoltage Protection (for parts < 58V voltage rating) – overvoltage protection in every single module**



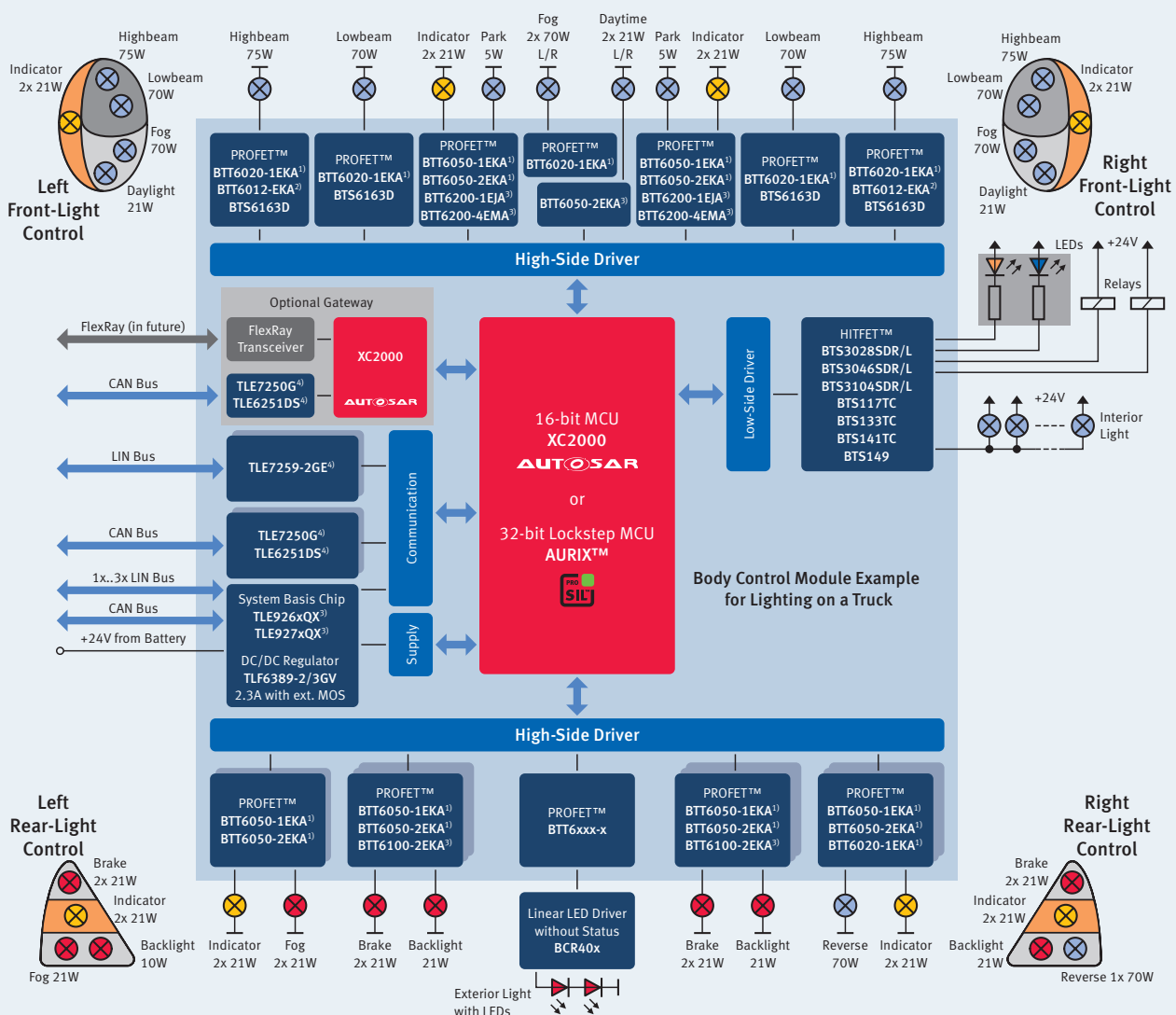


# Truck Body Control Module (BCM) Example for Lighting

The sample diagram below shows a typical central body control module, which is the central computing module for automotive lighting application. It consists of a microcontroller and power switches, as well as supply ICs and network transceivers.

### System Benefits

- 24V complete system solution: power supply, communication, sensors, microcontroller and power switches can be used without external protection.
- PROFET™+ 24V provides excellent diagnostics and protection features, and a high current sense accuracy even for the smallest loads as LEDs.
- 100% pin-to-pin compatibility between the 12V and 24V PROFET™ family.



1) In development, engineering samples available  
 2) In development, samples available soon  
 3) In development, samples available. With external protection against load dump 400ms above 40V. Pre-Regulation is important by using  $R_{th}$  for calculation of power loss for TLE926xQx devices.  
 4) If ECU permanently supplied, need to add external protection against load dump 400ms above 40V.

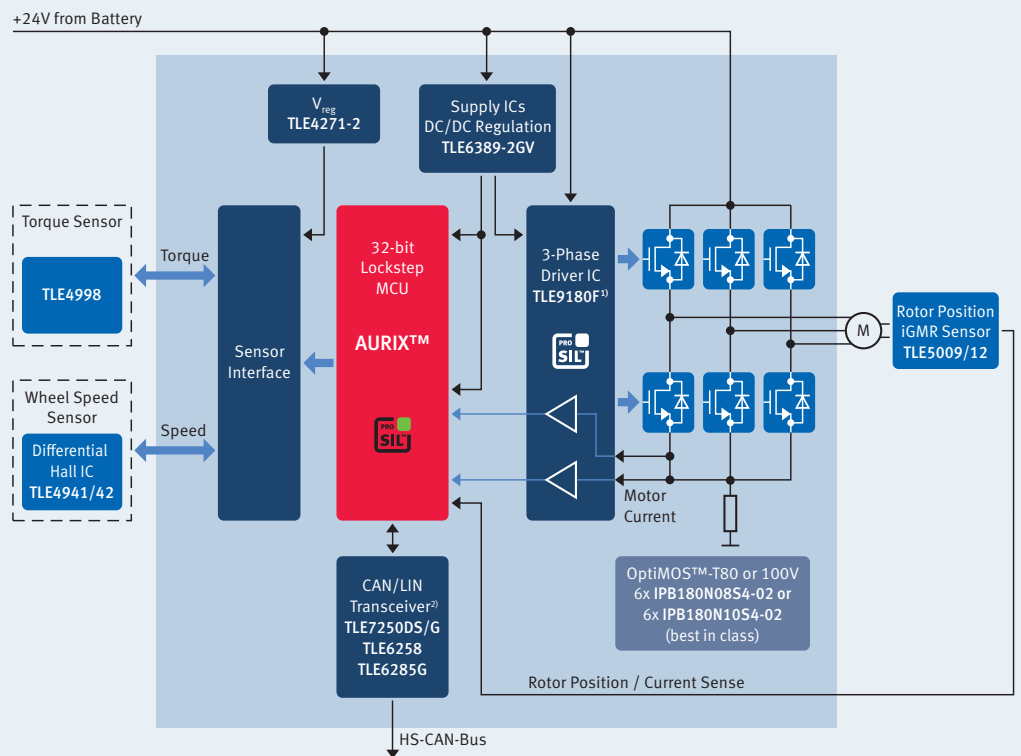


# Brushless DC (BLDC) Motor Control

A 24V complete system solution for a BLDC motor: power supply, sensors, microcontroller, driver (certified ISO26262) and MOSFETs can be used without external protection in a 24V system.

## System Benefits

- For 24V motor control application, Infineon can offer 60, 80 or 100V MOSFETs which can be used according to the application requirements.
- Lowest ohmic MOSFET on the market for higher current capability.
- Integrated MOSFET driver IC TLE9180 with diagnostics, compliant with ISO 26262.
- 24V complete system solution: power supply, communication, sensors, microcontroller and power switches can be used without external protection.



1) Product under development.

2) With external protection against load dump 400ms above 40V.  
Reverse polarity protection is not integrated on this diagram.

## Infineon's PRO-SIL™ Program, Designed to Protect

Infineon's PRO-SIL™ safety program is designed to ease and speed up your automotive and industrial design to comply with the above standards. Across the full certification spectrum from Safety Integrity Levels (SIL) 1 to 4 and Automotive Safety Integrity Levels (ASIL) A to D, our end-to-end PRO-SIL™ approach will help you select the right hardware, software and functional safety concepts to meet your design and compliance needs.

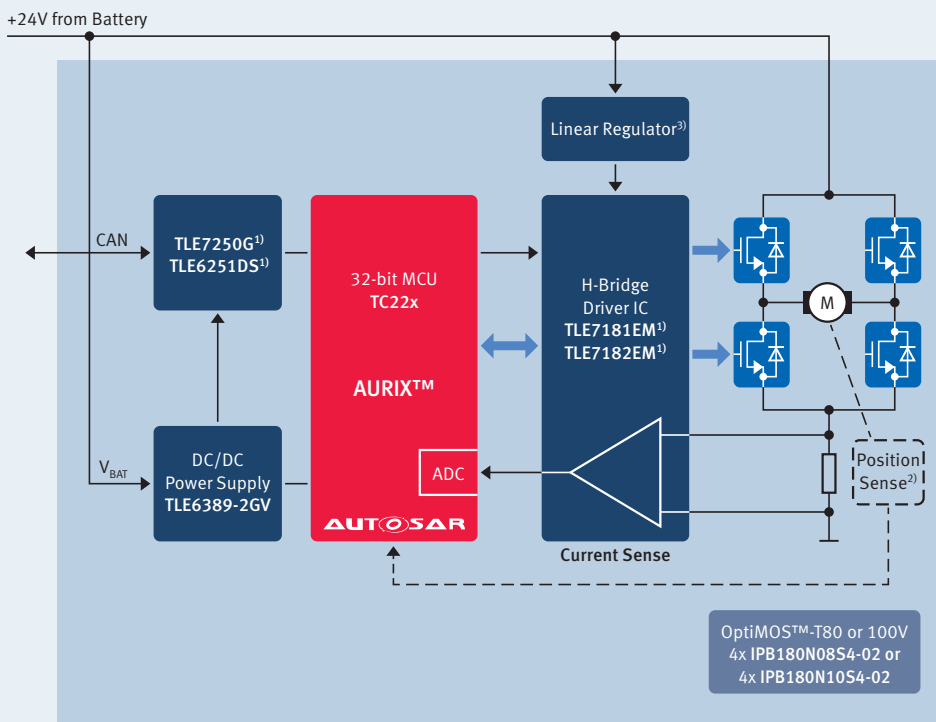
# DC Motor Control

The application below shows a typical system for 2-phase motor control. On one side, the communication interface ensures connection to other ECUs via CAN (TLE7250G or TLE6251DS). The new AURIX™ microcontroller family TC22x will adapt the output signals to control the motor based on the programmed algorithm. Finally, the H-bridge driver devices TLE7182EM or TLE7181EM will control the external MOSFETs (IPB180Nxx S4-02) modifying the speed or direction of the motor.

Furthermore, the TLE6389-2GV can ensure a reliable power supply for the full system. In the case of applications where voltages higher than 40V are expected (i.e. load dump), the maximum ratings and power consumption of the H-bridge supply may need to be analyzed. Depending on the final application, additional feedback paths – such as sensing devices for position control – might be required.

## System Benefits

- For 24V motor control application, Infineon can offer 60, 80 or 100V MOSFETs which can be used according to the application requirements.
- Lowest ohmic MOSFET on the market for higher current capability.
- 24V complete system solution: power supply, communication, sensors, microcontroller and power switches can be used without external protection.



- 1) If ECU permanently supplied, may need to add external protection against load dump 400ms above 40V.
- 2) Position sensing is optional depending on the final application.
- 3) Device may be optional depending on final application requirements (load dump and power dissipation). Reverse polarity protection is not integrated on this diagram. However, it might be required.

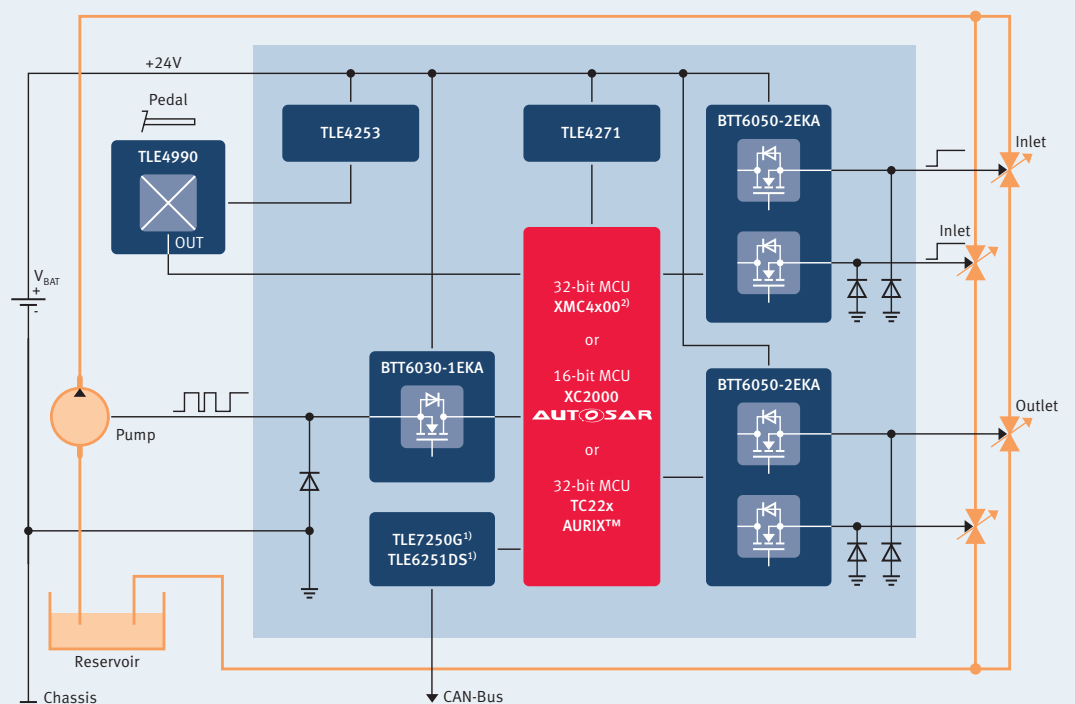


# Hydraulic Management System

A 24V complete system solution for hydraulic management systems: power supply, sensors, microcontroller and high-side switches can be used without external protection in a 24V system. Valves and pumps can be driven via linear activation or demand-controlled via PWM signals.

## System Benefits

- Valves and pumps can be driven via linear activation or demand-controlled via PWM signals.
- Quad and dual channels are optimized to reduce costs and space for these applications.
- Pin-to-pin and software compatibility.



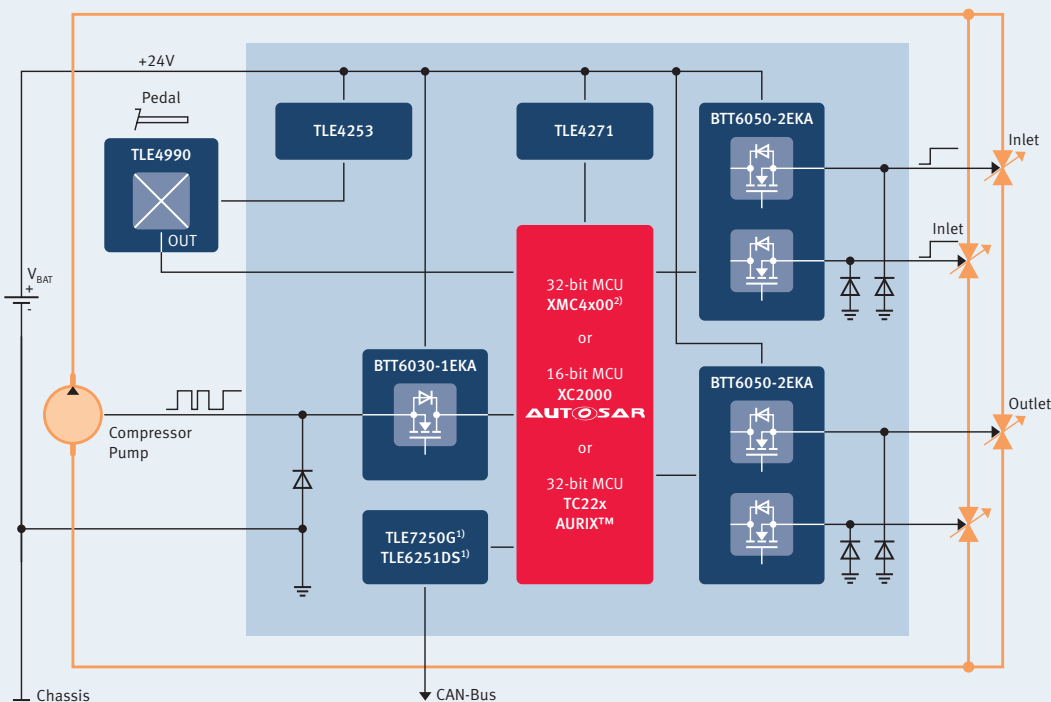
- 1) If ECU permanently supplied, may need to add external protection against load dump 400ms above 40V.
- 2) Not AEC-Q100 qualified

# Pneumatic Management System

A 24V complete system solution for pneumatic management systems: power supply, sensors, microcontroller and high-side switches can be used without external protection in a 24V system. Valves and pumps can be driven via linear activation or demand-controlled via PWM signals.

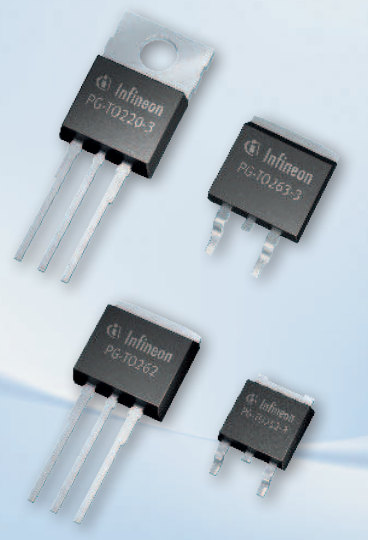
## System Benefits

- Valves and pumps can be driven via linear activation or demand-controlled via PWM signals.
- Quad and dual channels are optimized to reduce costs and space for these applications.
- Pin-to-pin and software compatibility.



1) If ECU permanently supplied, may need to add external protection against load dump 400ms above 40V.

2) Not AEC-Q100 qualified



# Infineon OptiMOS™ – Benchmark for Automotive MOSFETs

## OptiMOS™ Product Family 60V, 75V and 100V Single N-Channel

We offer a broad product portfolio of OptiMOS™ 60V in trench technology, OptiMOS™ 75V in planar technology and OptiMOS™ 100V in trench technology for various truck applications. Superior performance is guaranteed by our leading MOSFET technology combined with the unsurpassed quality of our robust package.

### Key Features

- OptiMOS™ 60V with
  - $R_{DS(on)}$ : 1.7–30m $\Omega$
  - Packages: PG-TDSON-8 (SuperSO8), PG-TO252, PG-TO263, PG-TO220-3
- OptiMOS™ 75V with
  - $R_{DS(on)}$ : 6.5–50m $\Omega$
  - Packages: PG-TO252, PG-TO263, PG-TO220-3
- OptiMOS™ 100V with
  - $R_{DS(on)}$ : 4.8–31m $\Omega$
  - Packages: PG-TO252, PG-TO263, PG-TO220-3, PGTO262-3

### Key Benefits

- High-current capability up to 180A
- Robust green packages for highest quality and reliability
- Low switching and conduction power losses

### Key Applications

- Daytime running light
- Fuel Injection
- ABS valves

Dual N-Channel OptiMOS™ Product Table

Product Type	Technology	$R_{DS(on)}$ (max.) @ 10V [m $\Omega$ ]/channel	$I_D$ [A]/channel	$R_{\theta(jc)}$ (max.) [K/W]	Package	LL/NL
IPG20N06S4-15	OptiMOS™-T2 60V	15.5	20	3.0	PG-TDSON-8-4	NL
IPG20N06S4L-26	OptiMOS™-T2 60V	26.0	20	4.5	PG-TDSON-8-4	LL
IPG20N06S4L-14	OptiMOS™-T2 60V	13.7	20	3.0	PG-TDSON-8-4	LL
IPG20N06S4L-11	OptiMOS™-T2 60V	11.2	20	2.3	PG-TDSON-8-4	LL
IPG20N06S2L-35	OptiMOS™ 55V	35.0	20	2.3	PG-TDSON-8-4	LL
IPG20N06S2L-50	OptiMOS™ 55V	50.0	20	2.9	PG-TDSON-8-4	LL
IPG20N06S2L-65	OptiMOS™ 55V	65.0	20	3.5	PG-TDSON-8-4	LL

OptiMOS™-T2 80V Product Table

Product Type	Technology	$R_{DS(on)}$ (max.) @ 10V [m $\Omega$ ]/channel	$I_D$ [A]/channel	Package	LL/NL
IPB180N08S4-02	OptiMOS™-T2, SFET4-80V	2.2	180	D <sup>2</sup> PAK	NL
IPB160N08S4-03	OptiMOS™-T2, SFET4-80V	3.1	160	D <sup>2</sup> PAK	NL
IPB140N08S4-04	OptiMOS™-T2, SFET4-80V	4.1	144	D <sup>2</sup> PAK	NL
IPB80N08S4-06	OptiMOS™-T2, SFET4-80V	5.5	80	D <sup>2</sup> PAK	NL
IPP120N08S4-04	OptiMOS™-T2, SFET4-80V	4.2	120	TO220	NL
IPP80N08S4-06	OptiMOS™-T2, SFET4-80V	5.8	80	TO220	NL
IPI80N08S4-06	OptiMOS™-T2, SFET4-80V	5.8	80	TO262	NL
IPD90N08S4-05	OptiMOS™-T2, SFET4-80V	5.3	90	DPAK	NL
IPD50N08S4-13	OptiMOS™-T2, SFET4-80V	13.2	50	DPAK	NL
IPG20N08S4-22	OptiMOS™-T2, SFET4-80V	25.0	20	DualSS08	NL



# HITFET™

## Innovative, Robust and High-Performance Switches

HITFET™ are MOSFETs with embedded protection functions. These devices are ideal for applications from 24V to 60V in which robustness, long life reliability and wide temperature ranges are required.

### Key Features

- Overcurrent protection
- Overtemperature protection
- Overvoltage protection
- ESD protection
- Diagnostic feedback
- Switching speed controlled by design

### Key Benefits

- Scalable portfolio from 30–550mΩ
- Packages: SO8, SOT223, DPAK, D<sup>2</sup>PAK
- Feature and pin-compatible family concept
- Reputation for quality, reliability and robustness
- Well designed for target application

### Key Applications

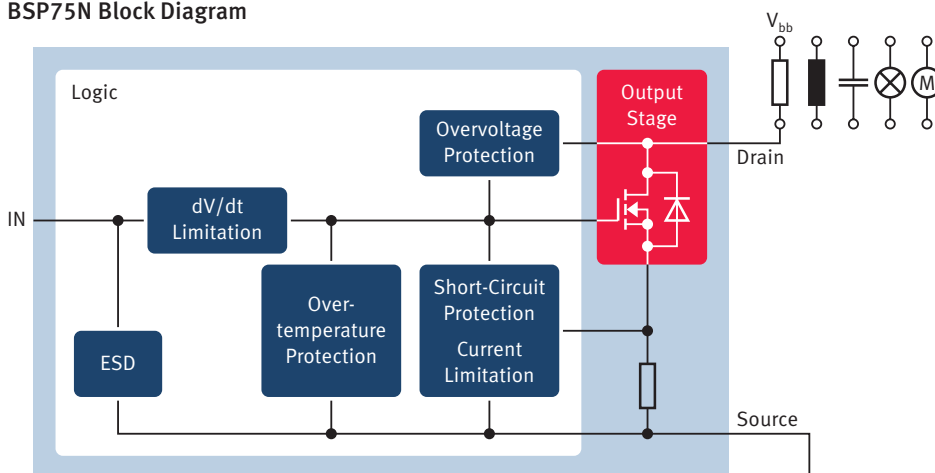
- Relay driver
- Small load driver



HITFET™ – Voltage Class 60V Product Table

Product Type	Channels	V <sub>DS(max.)</sub> [V]	I <sub>D(nom.)</sub> [A]	R <sub>DS(on)</sub> (max.) [mΩ]	I <sub>D(lim)</sub> (min.) [A]	Packages
BTS141TC	1	60	5.1	30	25	PG-T0263-3
BTS3028SDL	1	60	5.0	30	18	PG-T0252-3
BTS3028SDR	1	60	5.0	30	18	PG-T0252-3
BTS133TC	1	60	3.8	50	21	PG-T0263-3
BTS3046SDL	1	60	3.6	50	10	PG-T0252-3
BTS3046SDR	1	60	3.6	50	10	PG-T0252-3
BTS117TC	1	60	3.5	100	7	PG-T0263-3
BTS3104SDL	1	60	2.0	104	6	PG-T0252-3
BTS3104SDR	1	60	2.0	104	6	PG-T0252-3
BTS3408G	2	60	0.55	550	1	PG-DS0-8
BSP75N	1	60	0.7	550	1	PG-SOT223-4

BSP75N Block Diagram







# Multi-Channel Switches for Truck Applications

## Low-Side Switches for Powertrain Applications

Multi-channel low-side switches in Smart Power Technology (SPT) with two to eighteen open-drain DMOS output stages. The products are protected by embedded protection functions and designed for automotive applications. The output stages can be controlled directly by parallel inputs for PWM applications (e.g. gasoline port injection) and by SPI or by Micro Second Channel (MSC). Diagnosis can be read via serial communication or, in the case of some devices, by the external fault pin.

### Key Features

- Overvoltage protection with active clamping
- Undervoltage protection
  - Power-ON reset
  - Undervoltage shutdown
- Overcurrent protection
- Overtemperature shutdown protection
- Electrostatic Discharge (ESD) protection
- Low quiescent current mode
- Direct input control (for PWM)
- Communication interface (Control/Diagnosis)
  - Serial Peripheral Interface (SPI)
  - Micro Second Channel (MSC)
- 2-bit diagnosis feedback (and status flag)

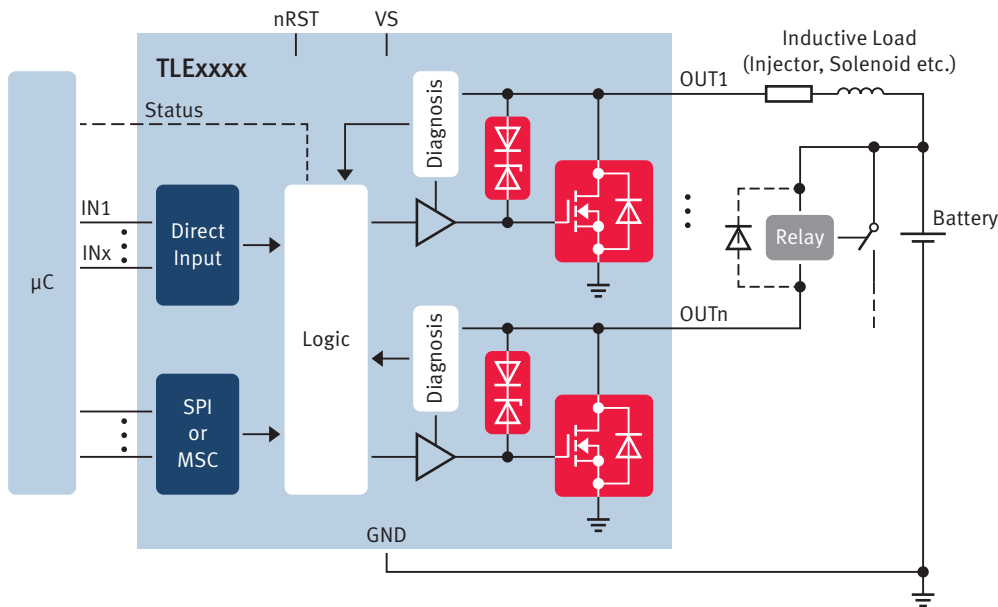
### Key Benefits

- Dedicated feature-set for engine management application
- Robust design
- Product family to adapt to various system requirements and partitioning

Multi-Channel Low-Side Switches for 24V Systems – Product Table

Product Type	Channels	Electrical Specifications				Interface			Status Flag	Package
		#	R <sub>DS</sub> (typ.) [Ω] @25°C	I <sub>LIM</sub> (min.) [A]	V <sub>CL</sub> (typ.) [V]	Direct Input Pins	SPI	MSC		
TLE8102SG <sup>1)</sup>	2	2x	0.18	5.0 (9.0)	54	2	8-bit		•	PG-DSO-12 (Heat Slug)
TLE6217G	4	2x 2x	0.20 0.35	5.0 3.0	53	4			•	PG-DSO-20 (Heat Slug)
TLE8108EM	8	8x	0.80	0.5	45	4	16-bit			PG-SSOP-24 (Exposed Pad)
TLE8110EE	10	4x 2x 4x	0.30 0.25 0.60	2.6 3.7 1.7	55	10	16-bit			PG-DSO-36 (Exposed Pad)
TLE8718SA <sup>2)</sup>	18	2x 2x 8x 2x 2x 2x	0.15 0.26 0.53 0.35 1.78 0.96	8.0 3.0 2.2 2.2 0.6 0.6	55			LVDS + LVTTTL		PG-DSO-36 (Heat Slug)
TLE6244X	18	6x 6x 2x 4x	0.32 0.30 0.22 0.62	2.2 2.2 3.0 1.1	70 45 45 45	16	16-bit <sup>3)</sup>			PG-MQFP-64 (Heat Slug)

- 1) Embedded current sense
- 2) Available on request
- 3) 1st generation MSC, High-speed down-stream + SPI up-stream





# PROFET™ for 24V Applications

## High-Side Switches Fulfilling 24V Requirements

As part of our successful PROFET™ (ProtectedFET) portfolio, we offer parts which are also suitable for driving loads in 24V applications. The devices come in robust green packages and offer complete protection against harsh environments, such as those required for truck applications. This includes protection against short-circuit through current limitation, as well as overtemperature protection via thermal shutdown. Thanks to overvoltage protection (such as load dump), no additional suppressor diode is needed to protect the device against abnormal voltage events which normally occur in 24V vehicles. In addition to the protection functions, diagnostic information provides the microcontroller with failure reports.

### Key Features

- > 58V voltage rating
- Current limitation
- Protection against loss of battery and GND
- Reverse battery protection
- Short-circuit protection
- Overtemperature protection
- Overvoltage protection
- ESD protection
- (Partially) Proportional load current sense

### Key Benefits

- Real 24V requirements fulfillment
- Benchmark energy robustness
- Vast product portfolio for high and low-current loads
- Integrated protection and diagnostic features
- Current sense with enhanced  $k_{ILIS}$  accuracy with calibration
- Robust green package
- Easy design-in
- Optimized electromagnetic compatibility

	1 Channel	2 Channels	4 Channels	8 Channels
1000mΩ	BTS4140N			
200mΩ	BTS452R/T, BSP752R/T, BSP452, BTS4141N, BTS4142N			BTS4880R
175mΩ	BTS4175SGA			
105mΩ		BTS723GW		
90mΩ			BTS724G	
50mΩ		BTT6050-2EKA		
38mΩ	BTS432E2			
30mΩ		BTS740S2		
20mΩ	BTS6163D, BTS442E2, BTS441RG/TG			
8.5mΩ	BTS5008-1TMA/B			
5mΩ	BTS550			
2.5mΩ	BTS555			





# Multi Half-Bridge Driver ICs for DC Brush Motors

## Voltage Class: 12V/24V

DC brush motor controls that drive low load currents (< 1A) are best implemented using cost-effective and PCB space-saving IC solutions. All Infineon products have protection features implemented and facilitate diagnostics either via a status flag or SPI.

### Key Features

- Product portfolio offers drivers with 2, 4, 6 and 10 half-bridge outputs
- Direct driving and SPI control are possible
- Optimized products for current saving are available
- Overtemperature protection

### Target Applications

- HVAC flap control
- Mirror x-y-adjustment
- Idle speed control
- DC brush motor with maximum currents below 1A

### Key Benefits

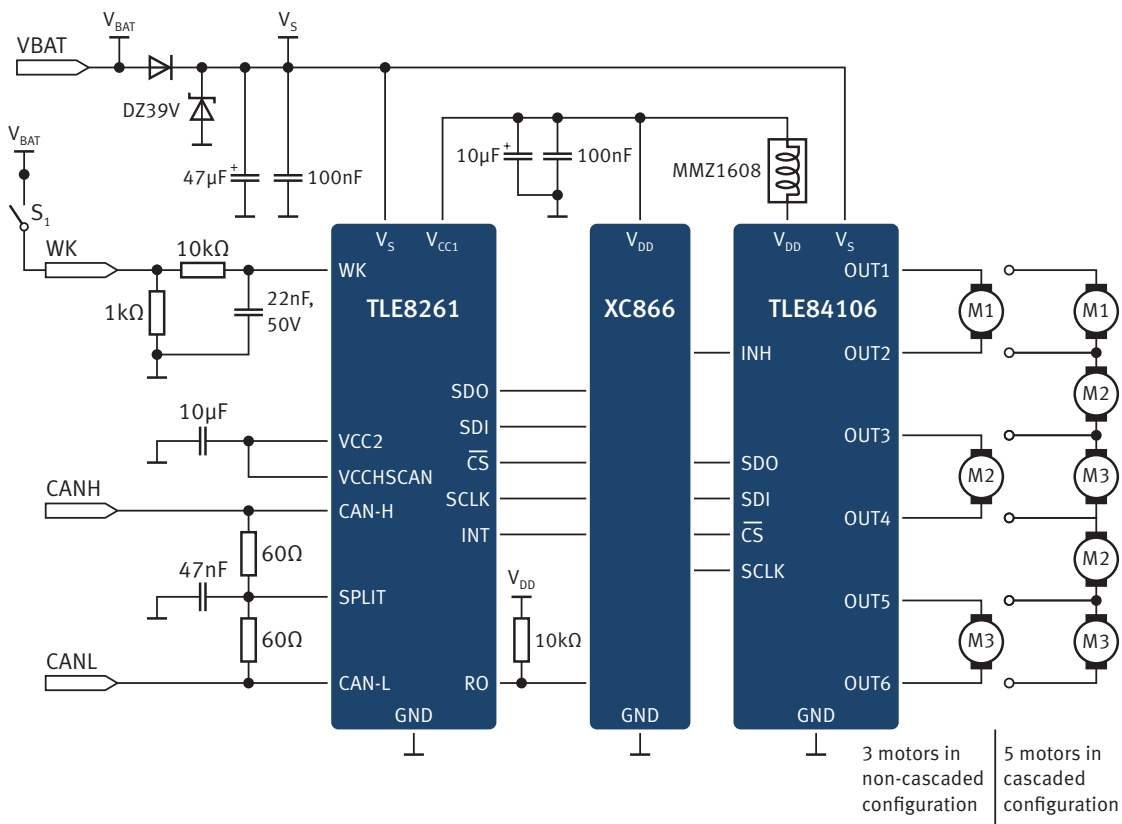
- Scalability for products with family concept (e.g. TLE841xxEL)
- Driver can be adapted to ECU concept (SPI vs. direct driving)
- Longer IC lifetime ensured by thermal shutdown

### Evaluation Boards available for Multi Half-Bridge Driver ICs

- TLE84106EL, TLE84110EL, TLE6208-3G, TLE6208-6G, TLE8444SL

Product Type	$I_{L(NOM)}$ [A]	$I_{L(LIM)}$ [A]	$I_q$ (max.) [μA]	$V_{S(OP)}$ [V]
<b>Multi Half-Bridge Driver IC</b>				
TLE4205G	1 x 1.0	1 x 1.5	100	6–32
TLE4207G	1 x 0.8	1 x 1.5	50	8–18
TLE4208G	2 x 0.8	2 x 1.5	100	8–18
TLE6208-3G	2 x 0.8	2 x 1.0	10	8–40
TLE6208-6G	3 x 0.8	3 x 1.0	12	8–40
TLE8444SL	2 x 0.8	2 x 0.9	5	8–18
TLE84106EL	3 x 0.5	3 x 0.8	4	8–18
TLE84110EL	5 x 0.5	3 x 0.8	4	8–18
<b>Servo Driver</b>				
TLE4206G	8	15	12	8–18
TLE4206-2G	8	15	12	8–18
TLE4206-4G	8	15	12	8–18
TLE4209G	8	15	12	8–18
TLE4209A	8	15	12	8–18

LO = Lockout, OV= Overvoltage, UV= Undervoltage, OT= Overtemperature, SC= Short-Circuit



Protection	Diagnostic Interface	$V_{SAT} (max.) / R_{DS(on)} (max.)$ @ $T_j = 150^\circ C$	Package
SC, OT	None	$V_{SAT\ upper} + V_{SAT\ lower} = 2.7V$ ( $I_{OUT} = 0.6A$ )	PG-DSO-20
SC, OT, OV, UV, LO	Status	$V_{SAT\ upper} + V_{SAT\ lower} = 2.5V$ ( $I_{OUT} = 0.8A$ )	PG-DSO-14
SC, OT, OV, UV, LO	Status flag	$V_{SAT\ upper} + V_{SAT\ lower} = 2.5V$ ( $I_{OUT} = 0.8A$ )	PG-DSO-28
SC, OT, OV, UV, LO	16-bit SPI	4.0Ω path	PG-DSO-14
SC, OT, OV, UV, LO	16-bit SPI	4.0Ω path	PG-DSO-28
SC, OT, OV, UV, LO	Status flag	2.6Ω path	PG-SSOP-24
SC, OT, OV, UV, LO	16-bit SPI	4.0Ω path	PG-SSOP-24 (Exposed Pad)
SC, OT, OV, UV, LO	16-bit SPI	4.0Ω path	PG-SSOP-24 (Exposed Pad)
OT, OV, UV, LO, SC	-	1.2V at 0.4A	PG-DSO-14
OT, OV, UV, LO, SC	-	1.2V at 0.4A	PG-DSO-14
OT, OV, UV, LO, SC	-	1.2V at 0.4A	PG-DSO-14
OT, OV, UV, LO, SC	-	1.2V at 0.4A	PG-DIP-8
OT, OV, UV, LO, SC	-	1.2V at 0.3A	PG-DSO-14



# Driver ICs for Bipolar Stepper Motors

## Voltage Class: 12V/24V

In body electronics, stepper motors are featured in headlight beam leveling and HVAC flap systems. They are also widely used in engine management systems. All drivers offer protection and diagnosis and can be used for small stepper motors up to 1A. Rpm management – where a motor-driven valve in the bypass air inlet controls idling speed – is also a typical application.

### Key Features

- Products for 12V and 24V applications are available
- Drivers feature full and half-step modes
- All drivers have integrated overtemperature protection
- Diagnosis possible via status pin

### Key Benefits

- Longer IC lifetime ensured by thermal shutdown
- Failure detection possible

### Target Applications

- Bipolar stepper motor driver for up to 1A
- Light adjustment
- Idle speed control for motorbikes or small cars

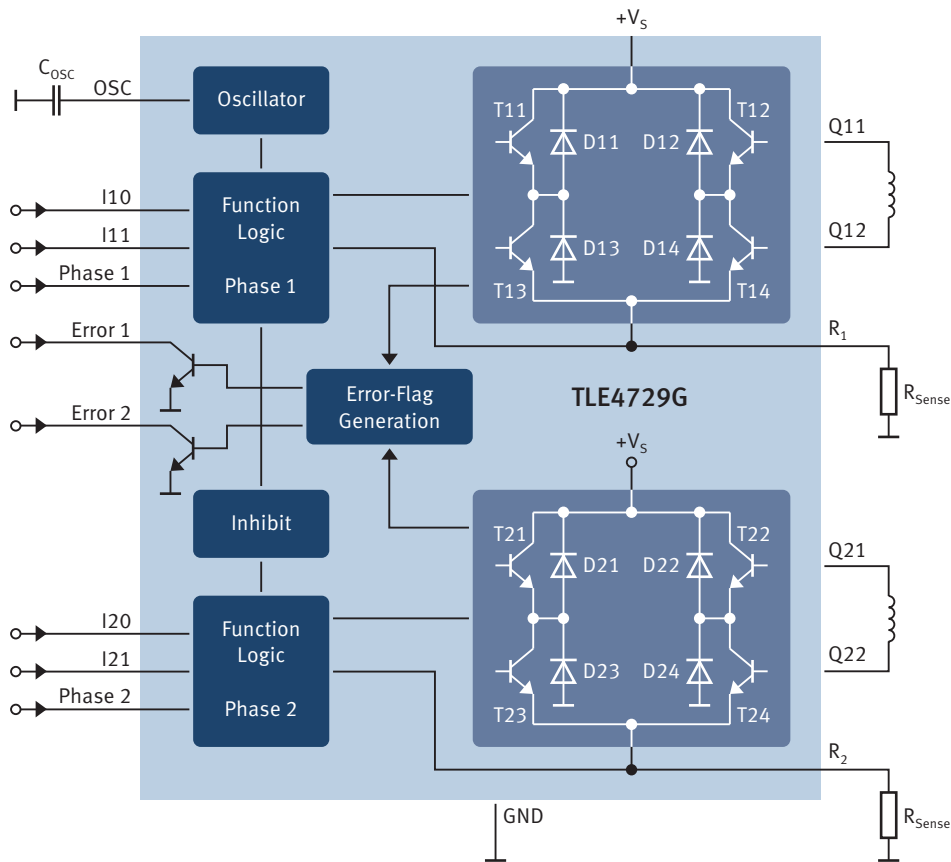
### Evaluation Boards available for Stepper Driver ICs

- TLE4729 Evaluation Kit V1.0

Product Type	$I_{L(NOM)}$ [A]	$I_{L(LIM)}$ [A]	$I_q$ (max.) [μA]	$V_{S(OP)}$ [V]
Stepper Driver IC				
TCA3727G	2 x 0.75	2 x 1.5	500	5–50
TLE4726G	2 x 0.75	2 x 1.5	500	5–50
TLE4729G	2 x 0.75	4 x 1.5	50	5–16

OL = Open-Load, OT= Overtemperature, SC= Short-Circuit





Protection	Diagnostic Interface	$V_{SAT} (max.) / R_{DS(on)} (max.)$ @ $T_j = 150^\circ C$	Package
OT	Status flag	$V_{SAT\ upper} + V_{SAT\ lower} = 2.4V$ ( $I_{OUT} = 0.75A$ )	PG-DSO-24
OT	Status flag	$V_{SAT\ upper} + V_{SAT\ lower} = 2.4V$ ( $I_{OUT} = 0.75A$ )	PG-DSO-24
OL, OT, SC	Status flag	$V_{SAT\ upper} + V_{SAT\ lower} = 2.4V$ ( $I_{OUT} = 0.75A$ )	PG-DSO-24







## Trilith IC Family – BTM77xxG(P)/BTM78xxK

### Motor Bridge with Protection and Diagnostics (operation up to 42V)

The Trilith IC devices combine two high-side and two low-side switches in one package. They are geared to drive high-current DC motors in an H-bridge configuration but can also be used as single independent switches. All Trilith ICs include overcurrent and overtemperature protection for the high-side switches. With regard to the low-side switches, the user can choose between fast unprotected MOSFETs for PWM applications as well as protected low-side switches for lower frequencies.

Product Type	V <sub>S(op)</sub> [V]	R <sub>DS(on)</sub> (typ.) @ 25°C [mΩ]			I <sub>lim</sub> (typ.) [A]	I <sub>q</sub> (typ.) [μA]	Freq. (typ.) [kHz]	Diagnosis	Protection	Package
		path	high-side	low-side						
BTM7740G	4.8–42	210	110	100	8.0	5	1	OT	OT, SC	PG-DSO-28
BTM7741G	4.8–42	210	110	100	10.0	5	1	OT, OL	OT, SC	PG-DSO-28
BTM7700G	4.8–42	190	110	80	9.5	5	1	OT	OT, SC	PG-DSO-28
BTM7750G	4.8–42	115	70	45	12.0	5	1	OT	OT, SC	PG-DSO-28
BTM7750GP <sup>1)</sup>	4.8–42	115	70	45	12.0	5	1	OT	OT, SC	PG-T0263-15
BTM7751G	4.8–42	115	70	45	14.0	5	1	OT, OL	OT, SC	PG-DSO-28
BTM7710G	4.8–42	110	70	40	15.0	5	1	OT	OT, SC	PG-DSO-28
BTM7710GP <sup>1)</sup>	4.8–42	110	70	40	15.0	5	1	OT	OT, SC	PG-T0263-15
BTM7810K <sup>1)</sup>	5.0–42	40	26	14	42.0	5	1	OT, OL	OT, SC	PG-T0263-15
BTM7811K <sup>1)</sup>	5.0–42	40	26	14	42.0	4	20	OT, OL	OT, SC	PG-T0263-15

1) AEC-grade 3 – T<sub>j</sub> = 110°C  
 UV = Undervoltage (high-side)  
 OT = Overtemperature  
 SC = Short-Circuit  
 OL = Open-Load

Please contact your sales-representative for further information on special peak voltage requirements such as jump-start and load dump.

### Key Features

- Quad D-MOS switch driver
- Configurable as quad-switch, dual half-bridge or full-bridge for motor control
- $R_{DS(on)}$  in PG-DSO28 package
  - Path: 110–210m $\Omega$  (typ. at  $T_j = 25^\circ\text{C}$ )
  - 260–500m $\Omega$  (max. at  $T_j = 150^\circ\text{C}$ )
- $R_{DS(on)}$  in PG-TO263-15 package ( $T_{jmax} = 110^\circ\text{C}$ )
  - Path: 40–115m $\Omega$  (typ. at  $T_j = 25^\circ\text{C}$ )
  - 93–265m $\Omega$  (max. at  $T_j = 110^\circ\text{C}$ )
- Peak current up to 42A (typ. at  $25^\circ\text{C}$ )
- Very low quiescent current of 5 $\mu\text{A}$  (typ. at  $25^\circ\text{C}$ )
- Operation up to 42V supply voltage
- PWM frequencies up to 1kHz (limited 20kHz)
- Status flag diagnosis
- Overcurrent limitation
- Overtemperature shutdown with hysteresis
- Short-circuit protection (up to 28V)
- Internal clamp diodes
- Undervoltage shutdown with hysteresis (high-side switch)

### Key Benefits

- Flexible 4-fold switch (two high and two low-side switches)
- Configurable as easy-to-use DC motor bridge in one package
- High peak current capability
- Scalable portfolio

### Applications

- Door lock
- Fuel flap lock
- Mirror flap
- Steering wheel lock
- Headrest adjustment

