

elmos[®]



Product Catalog

2013/2014

Our Profile

Elmos is a developer and manufacturer of semiconductor based system solutions. We always offer the one product to the customer that is just the right answer to his challenges. Be it a chip tailored to specific requirements, a standard product ready for use in a short amount of time, or a complete microsystem as a symbiosis of sensor and read-out electronics. This product catalog contains an excerpt of our standard products to deliver insight into our capabilities. Feel free to contact us with any specific requirements which we will be happy to fulfill with a customized solution.

Our more than 500 successful products are proof of a job well done. Ever since 1984 it has been our profession to come up with complex semiconductors that facilitate intelligent and cost-efficient solutions based on their robustness and diversity of functions. We have sales offices on four continents and guarantee fast support to our customers with local presence. Our formula for success is based on three pillars: our own CMOS technology, our own chip design, and our own production. All of this is combined under one roof, with our outstanding application know-how.

With our ideas we are always a step ahead: We provide more functions which require less space. The outcome is daily innovation, which makes us achieve the most important thing: a chip that just works better and provides the ideal solution to your challenge.



Elmos products are in conformity with the Directive 2002/95/EC of the European Parliament and of the Council of 27th January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

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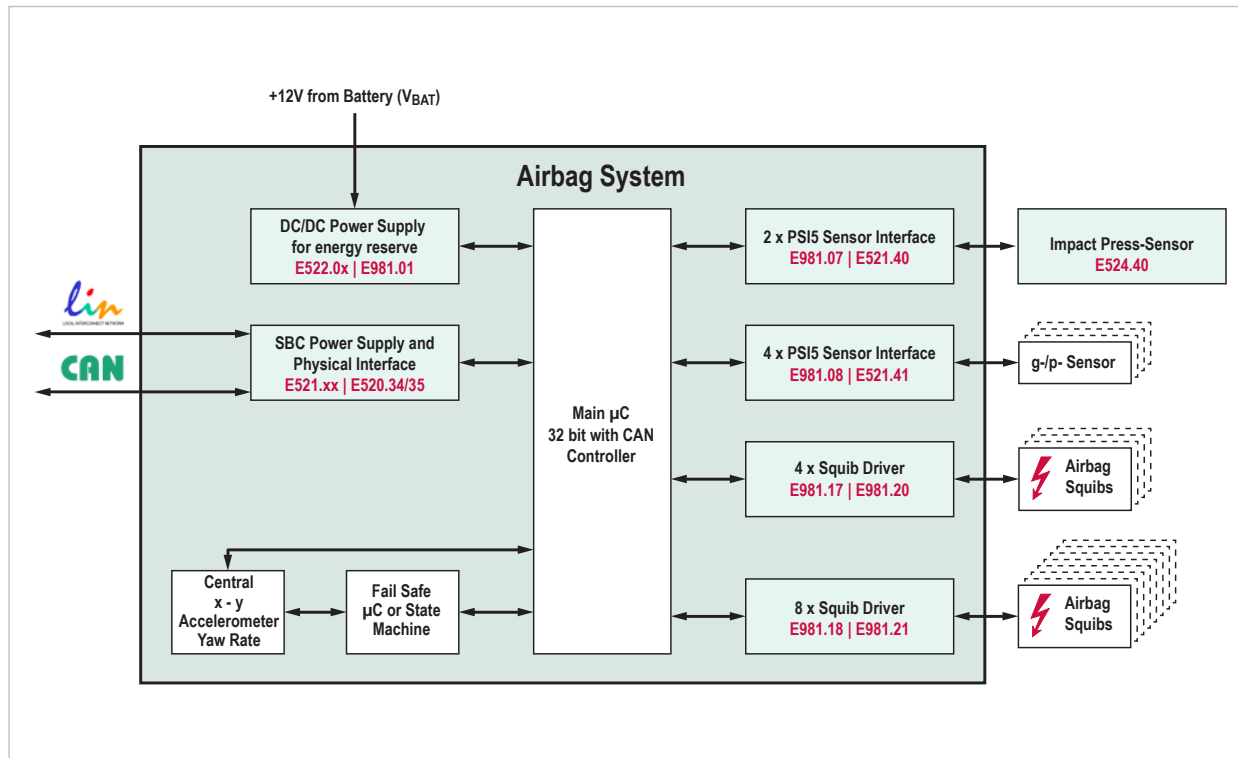
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Airbag System Chip Set Application



System Benefits

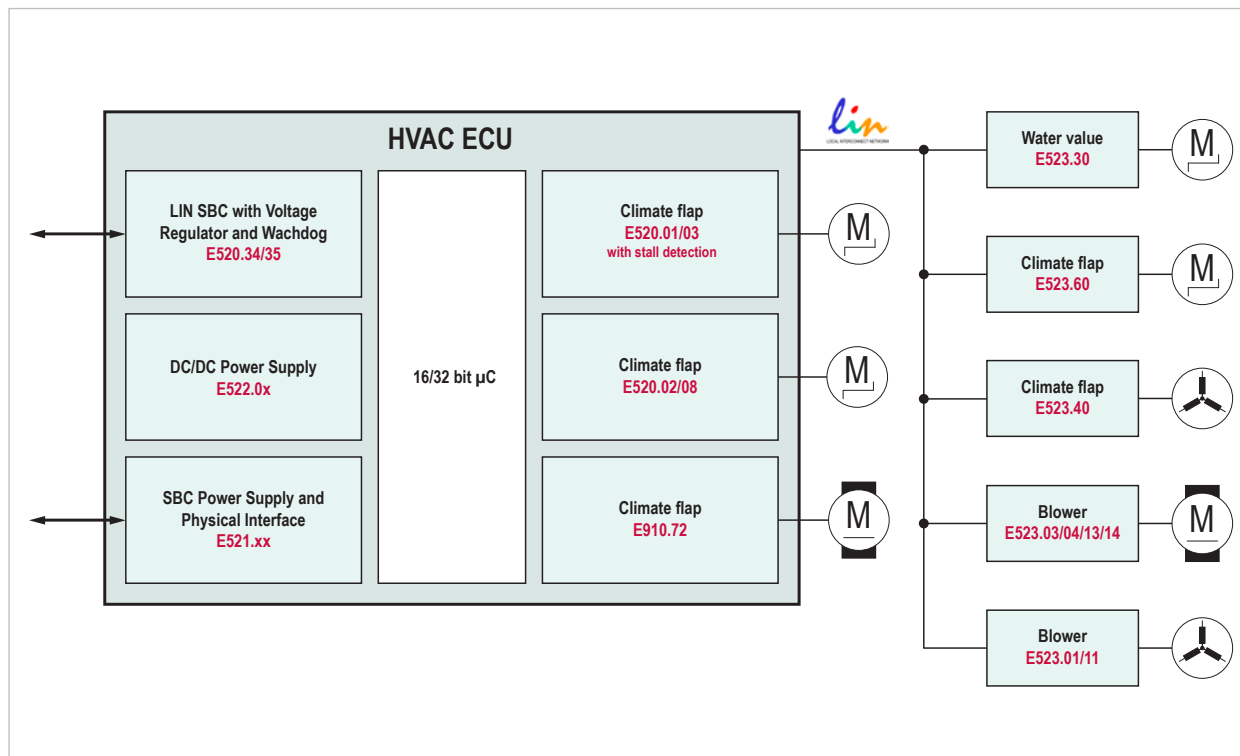
- > Enables versatile Airbag Safety System architectures
- > Scaling of squib channels using multiple quad- and octal-driver modules
- > State-of-the-art PSI5 interface ICs (dual and quad channel) to include multiple sensor inputs
- > Versatile supply architecture using DC/DC supply regulators for μ P and squib energy reserve
- > Compact QFN package enables smallest PCB area

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HVAC ECU Application



System Benefits

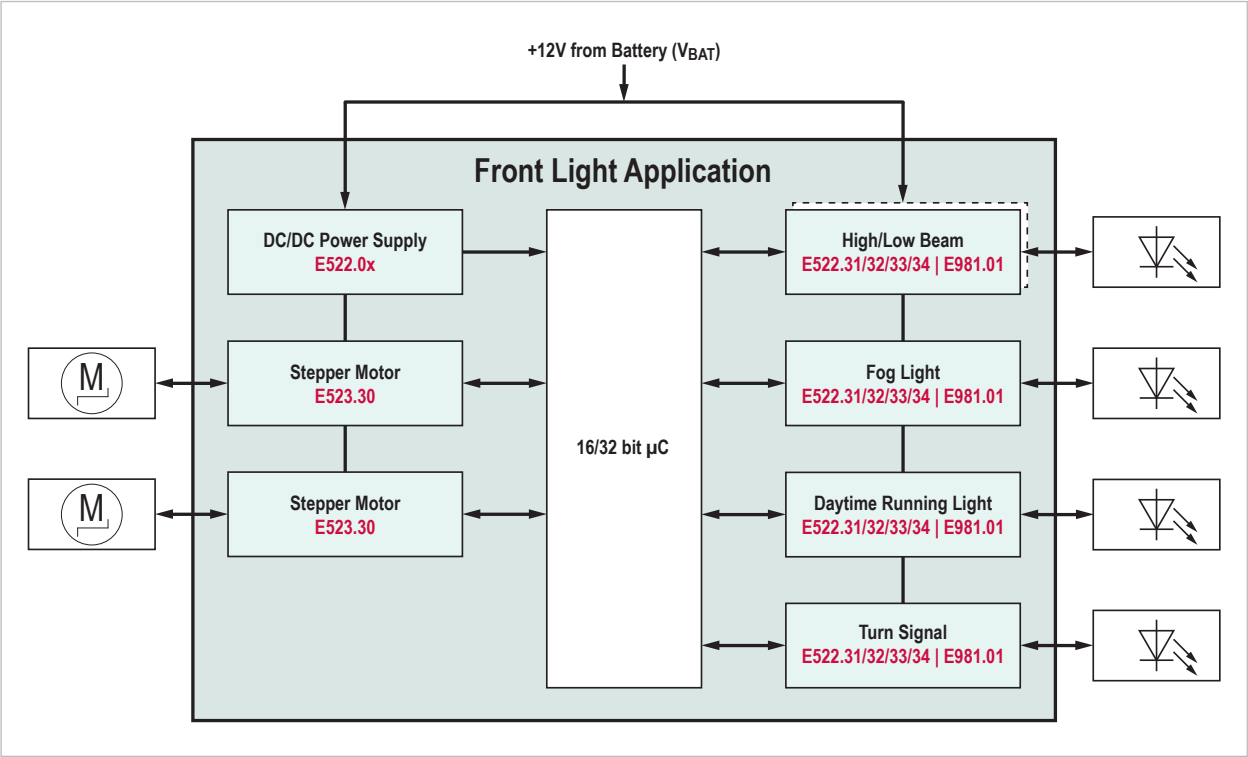
- > High flexibility by embedded µController
- > Fast design-in by firmware support
- > Long experience in the HVAC sector
- > Exclusive sensorless stall detection / position-control for HVAC, Stepper and DC Motors
- > Noise reduced drive for Stepper Motors with Microstepping
- > State of the art LIN / Autoaddressing
- > Sensorless BEMF sinus- and space-vector-commutation for HVAC blowers and other BLDC Motors

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Front Light Application



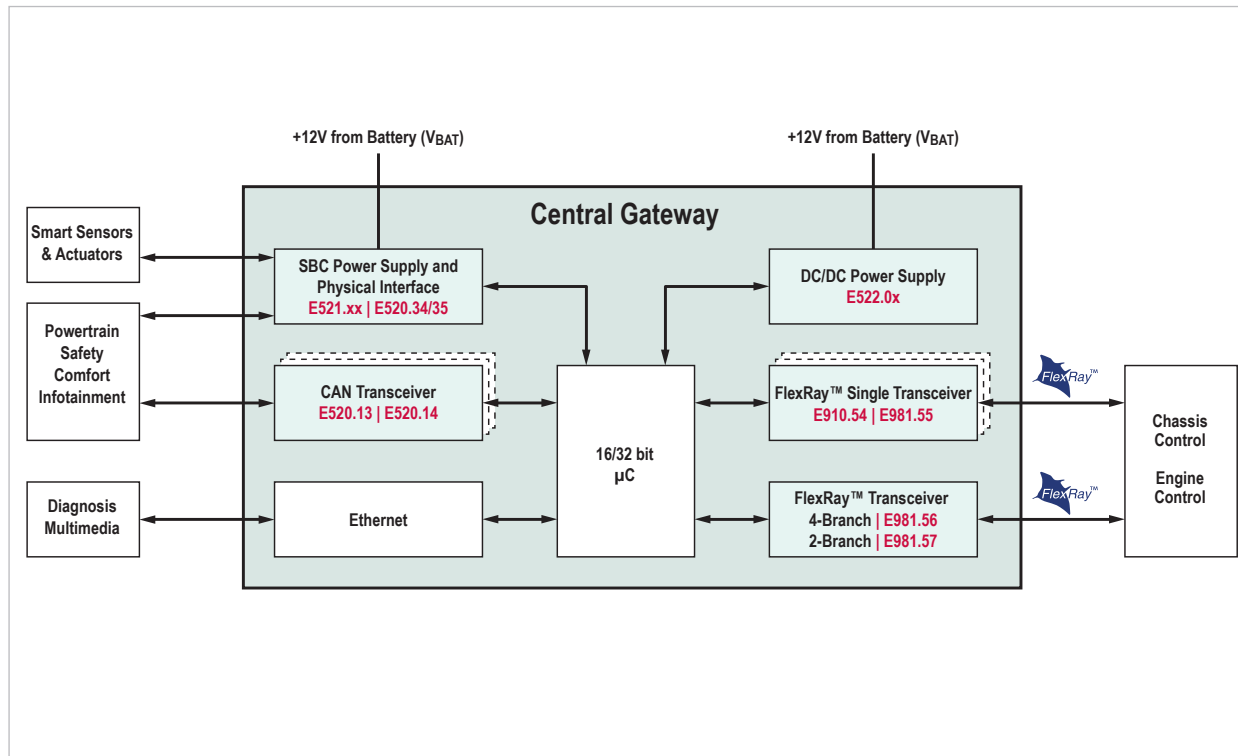
System Benefits

- > Supply from one single source
- > LED String voltage up to 80V
- > LED current up to 1.5A
- > Enhanced diagnostic functionality
- > 5% current accuracy
- > High-frequency PWM dimming capability
- > Very low sleep mode currents of typ. 8µA for E522.3x devices

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Central Gateway Application



System Benefits

- > Broad portfolio of silicon solutions for CAN, LIN, and FlexRay™ in-vehicle networks
- > Focus on energy efficient solutions anticipating upcoming trends like partial networking
- > ICs offer low-power modes, sophisticated diagnostics and protection mechanism
- > Highly integrated system-basis chips (SBCs) combine physical interfaces with efficient power management solutions including DC/DC switched-mode power supply
- > Optional boost functionality improves the system availability at cranking
- > High system integration combined with small packages reduce space consumption on printed circuit boards
- > Support of flexible and scalable in-vehicle networking architectures by pin and package compatible FlexRay™ active star and SBC families

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Interface | IO-Link[®] Transceiver

Part No. / Function	V _{SUPPLY}	I _q (mA)	V _{DD}	ESD (kV)	Bitrate	Package	Status ¹⁾
E981.10 Basic IO-Link [®] Transceiver	8V to 36V	1.5	5V	2	up to 230.4 Kbit/s	QFN20L4	-> Production
E981.12 Dual IO-Link [®] Master Transceiver	8V to 32V	3	3.3V	6	up to 230.4 Kbit/s	QFN44L7	-> Production

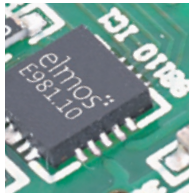
E981.10 | Basic IO-Link® Transceiver

Key Features

- > Integrated 5V voltage regulator
- > Wake-up detection
- > Driver capability up to 200mA
- > C/Q reverse polarity protection
- > 3.3V/5V compatible digital interface
- > Baud rate selection up to 230.4kBaund
- > Load current monitor and over current protection
- > Over temperature protection

Board

- > Order No. see page 19



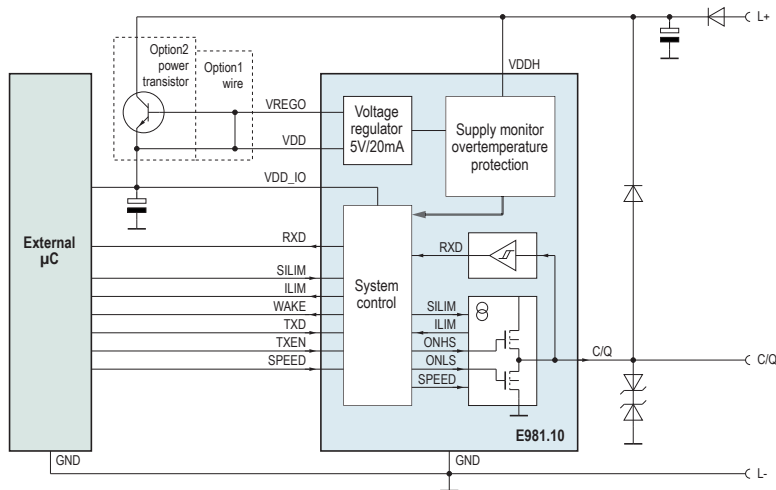
Applications

- > IO-Link® is a point-to-point interface between existing field busses and sensor/actuator devices. IO-Link® serves the transmission of specific parameters or data, like diagnosis information.

Packages

- > QFN20L4

Application Diagram



E981.12 | Dual IO-Link® Master Transceiver

Key Features

- > 2-port IO-Link® master transceiver
- > Integrated UART interface for each port
- > Supporting external PMOS switches for IO-Link supply
- > Support of wake-up generation
- > Supply voltage range, V_{VDDH} : 8V to 32V / V_{VDD} : 3.15V to 3.45V
- > Monitoring under-voltage at V_{VDDH} and V_{VDD}
- > Over-current & short-circuit protection of output stages
- > SPI™ interface for configuration, programming and diagnosis

Board

- > Order No. see page 19



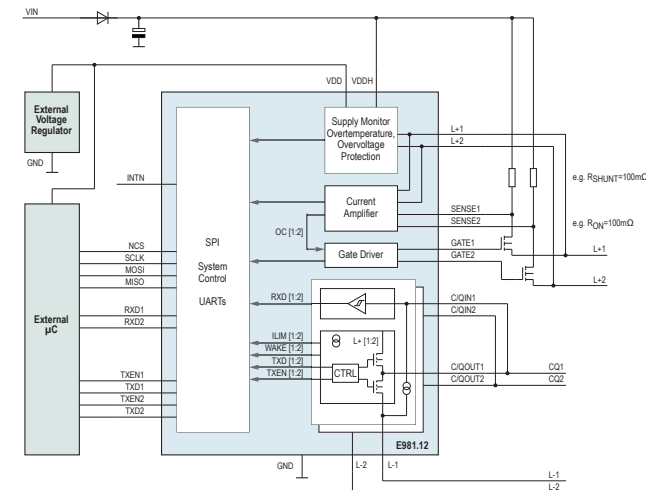
Applications

- > IO-Link® Master application in modular SP5
- > Gateway applications

Packages

- > QFN44L7

Application Diagram





Interface | KNX/EIB Transceiver

Part No. / Function	V _{SUPPLY}	I _q (mA)	V _{DD}	ESD (kV)	Bitrate	Package	Status ¹⁾
E981.03 KNX/EIB Transceiver	19V to 33V	3	3.3V/5V	2	9.6 Kbit/s	QFN32L7	-> Production

E981.03 | KNX/EIB Transceiver

Key Features

- > KNX/EIB transceiver, certified according to KNX TP1-256
- > Analog mode supported
- > Configurable bus current (maximum current and slew rate)
- > Voltage regulators
 - 20V: current capability up to 20mA
 - 3.3V or 5V DC/DC converter: current capability up to 50mA
- > UART host interface (data rate up to 115 Kbit/s)

Board

- > Order No. see page 19



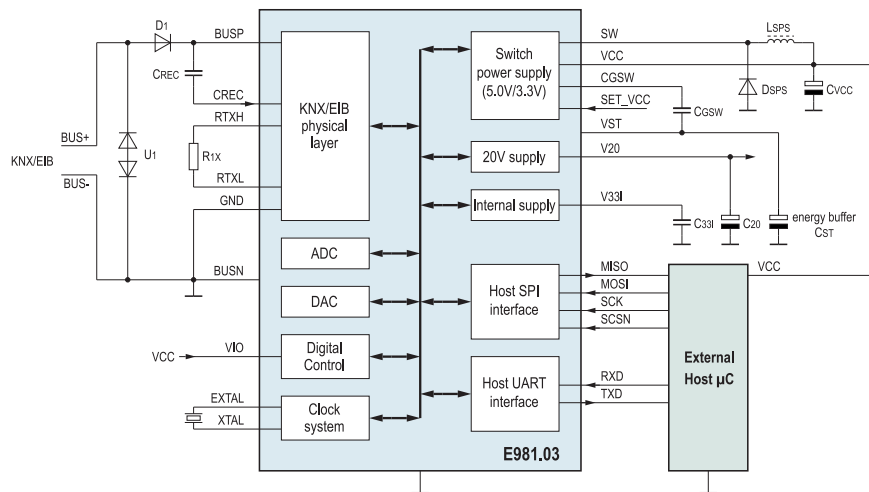
Applications

- > Sensors, actuators, routers, gateways, Bus-powered or externally supplied
- > Security applications

Packages

- > QFN32L7

Application Diagram





Interface | PSI5 Transceiver

Part No. / Function	V _{SUPPLY}	I _q (mA)	ESD (kV)	Bitrate	Package	Status ¹⁾
E521.40 2-Channel Multi-Mode PSI5 Transceiver	5.3V to 19V	tbd.	4	up to 189 Kbit/s	-> QFN20L5 -> SOIC20	-> Development
E521.41 4-Channel Multi-Mode PSI5 Transceiver	5.3V to 19V	tbd.	4	up to 189 Kbit/s	-> QFN20L5 -> SOIC20	-> Development
E981.07 2-Channel Master PSI5 Transceiver	8.5V to 25V	1	4	125 Kbit/s	QFN20L5	-> Production
E981.08 4-Channel Master PSI5 Transceiver	8.5V to 25V	1	4	125 Kbit/s	QFN32L7	-> Production

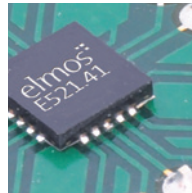
E521.40/41 | 2-Channel Multi-Mode PSI5 Transceiver

Key Features

- > Provides two respective, four master channels compliant with PSI5 standard v1.3 and v2.0
- > Support 125 Kbit/s, 189 Kbit/s, synchronous and asynchronous modes
- > Internal sync-voltage generation
- > Programmable bus-voltage 4.6V to 11V
- > Automatic threshold adaption to sensor quiescent current
- > Reverse polarity protected bus outputs up to 40V

Board

- > Order No. see page 19



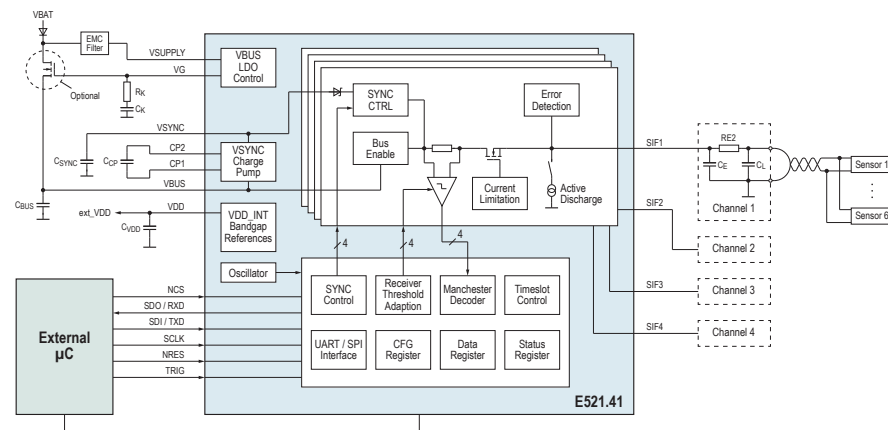
Applications

- > Safety (airbag) control systems
- > Powertrain control systems
- > Vehicle dynamics control system

Packages

- > QFN20L5
- > SOIC20

Application Diagram



E981.07/08 | 2-/4-Channel Master PSI5 Transceiver

Key Features

- > Two respective, four independent operating channels
- > Device parameters comply with PSI5-P10P-500/3L (PSI5 spec 1.3)
- > Applicable for parallel and universal mode (standard) as well as daisy chain mode (increased)
- > Channel output short circuit protected against 40V and GND

Board

- > Order No. see page 19



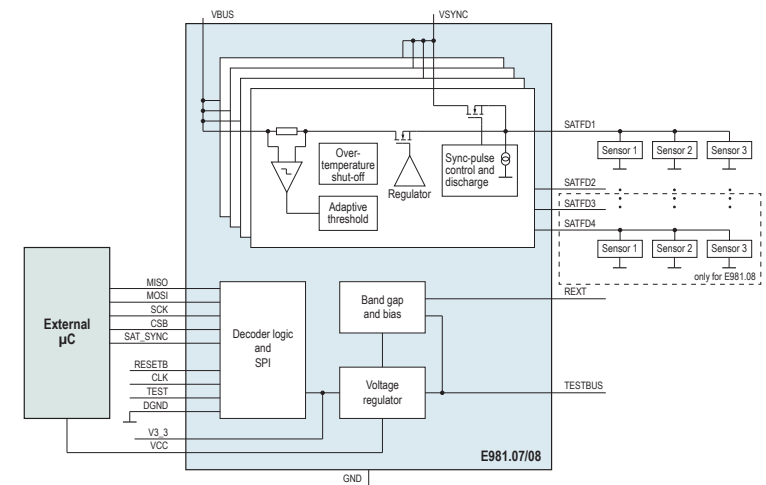
Applications

- > Passenger restraint systems

Packages

- > QFN32L7
- > QFN20L5 respective

Application Diagram





Interface | CAN Transceiver and System Basis Chip

Part No. / Function	Interface	V _{SUPPLY}	I _q (μA)	V _{DD}	ESD (kV)	Bitrate	Cranking support	Package	Status ¹⁾
E520.13 HS-CAN Transceiver for Partial Networking	11898-2/-5/-6	5.5V to 27V	15	5V	8	up to 1 Mbit/s	no	SOIC14N	-> Production
E520.14 Quad CAN Transceiver	11898-2/-5	5.5V to 30V	30	5V	6	up to 1 Mbit/s	no	QFN32L5	-> Production
E521.xx CAN / LIN SBC Family with DC/DC Converter									
E521.02	11898-2/-5 2x LIN 2.1 - 2.2 SAE-J2602	5V to 40V	50	5V	6	up to 1 Mbit/s up to 20 Kbit/s	no	QFN44L7	-> Production
E521.03	11898-2/-5 3x LIN 2.1 - 2.2 SAE-J2602	5V to 40V	50	5V	6	up to 1 Mbit/s up to 20 Kbit/s	no	QFN44L7	-> Production
E521.04	11898-2/-5 4x LIN 2.1 - 2.2 SAE-J2602	5V to 40V	50	5V	6	up to 1 Mbit/s up to 20 Kbit/s	no	QFN44L7	-> Production
E521.12 Booster included	11898-2/-5 2x LIN 2.1 - 2.2 SAE-J2602	3.25V to 40V	50	5V	6	up to 1 Mbit/s up to 20 Kbit/s	yes	QFN44L7	-> Production
E521.13 Booster included	11898-2/-5 3x LIN 2.1 - 2.2 SAE-J2602	3.25V to 40V	50	5V	6	up to 1 Mbit/s up to 20 Kbit/s	yes	QFN44L7	-> Production
E521.14 Booster included	11898-2/-5 4x LIN 2.1 - 2.2 SAE-J2602	3.25V to 40V	50	5V	6	up to 1 Mbit/s up to 20 Kbit/s	yes	QFN44L7	-> Production

E520.14 | Quad CAN Transceiver

Key Features

- > Operating voltage range 5.5V to 30V
- > Compliant with ISO 11898-2 and ISO 11898-5
- > Supports local and remote wake-up
- > Supports low-power modes like sleep and stand-by
- > Sleep current consumption typ. 30µA with all wake-up sources enabled
- > SPI-compatible interface for configuration and diagnosis
- > Three independent voltage monitors
- > Fault monitor configurable for each branch

Boards

- > Order No. see page 20



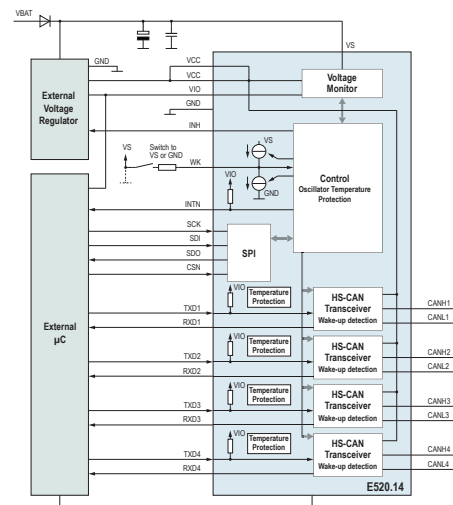
Applications

- > Body Domain Controller
- > Gateways

Packages

- > QFN32L5

Application Diagram



E521.02/03/14 | CAN/LIN SBC Family with DC/DC Buck Converter

Key Features

- > Efficient 5V Switch Mode Power Supply, 500mA capability
- > Linear voltage regulator offering 5V, 50mA capability
- > Pin compatible variant with boost function to ensure system availability during cranking pulses
- > HS-CAN transceiver compliant with ISO 11898-2/-5
- > Pin compatible variant with 2,3 or 4 LIN transceivers compliant with LIN 2.1, LIN 2.2 and SAE-J2602
- > Configurable µC watchdog (cycle time and type)

Boards



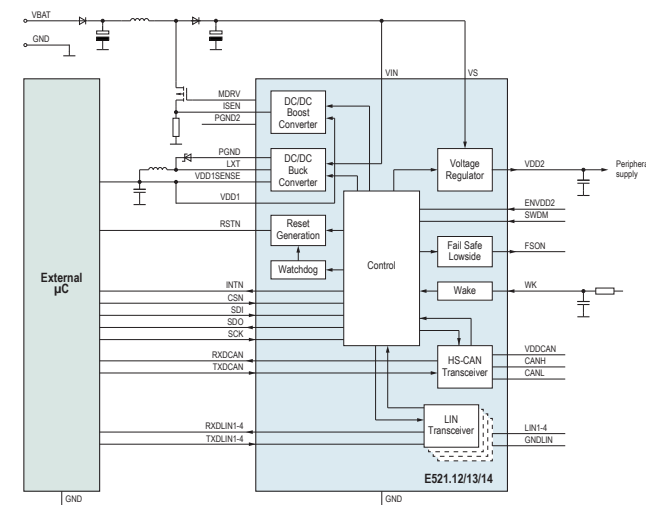
Applications

- > Body control units, gateways

Packages

- > QFN44L7

Application Diagram





Interface | LIN Transceiver and System Basis Chip

Part No. / Function	Interface	V _{SUPPLY}	I _q (μA)	V _{DD}	ESD (kV)	Bitrate	Package	Status ¹⁾
E520.34 LIN SBC with Voltage Regulator and Watchdog	LIN 2.1 LIN 2.2 SAE-J2602	5V to 28V	10	3.3V	8	up to 20 Kbit/s	QFN20L5	-> Production
E520.35 LIN SBC with Voltage Regulator and Watchdog	LIN 2.1 LIN 2.2 SAE-J2602	5V to 28V	10	5V	8	up to 20 Kbit/s	QFN20L5	-> Production



Interface | FlexRay™ Transceiver and Active Star Device

Part No. / Function	FlexRay™ Standard	V _{BAT}	I _q (μA)	V _{DD}	ESD (kV)	Bitrate	Package	Status ¹⁾
E910.54 BASIC FlexRay™ Transceiver	EPL v2.1	n/a	n/a	5V	8	up to 10 Mbit/s	TSSOP14	-> Production
E981.55 FlexRay™ Transceiver	EPL v3.0.1	5.5V to 18V	20	5V	6	up to 10 Mbit/s	SSOP16	-> Engineering Samples
E981.56 4-branch FlexRay™ Active Star Device	EPL v3.0.1	7V to 18V	65	5V	6	up to 10 Mbit/s	QFN44L9	-> Production
E981.57 2-Branch FlexRay™ Active Star Device	EPL v3.0.1	7V to 18V	65	5V	6	up to 10 Mbit/s	QFN44L9	-> Production

E520.34/35 | LIN SBC with Voltage Regulator and Watchdog

Key Features

- > Transceiver compliant with LIN 2.1, LIN 2.2 and SAE-J2602
- > Linear voltage regulator with 3.3V (E520.34) or 5V (E520.35), 100mA
- > Voltage regulator accuracy $\pm 2\%$ in active mode
- > μ C window watchdog
- > BUS pin ESD-protected ± 8 kV according to IEC-61000-4-2
- > Fast flash mode, configurable watchdog, V_{BAT} divider
- > Typical current: standby mode 70 μ A and sleep mode 10 μ A

Board

- > Order No. see page 20



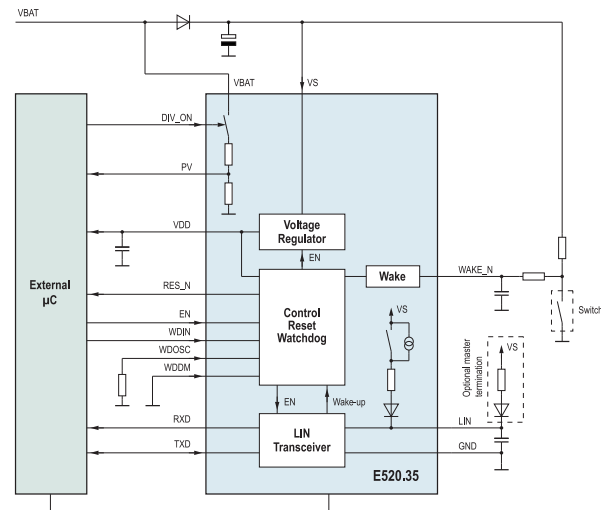
Applications

- > Smart applications connected to the LIN bus

Packages

- > QFN20L5

Application Diagram



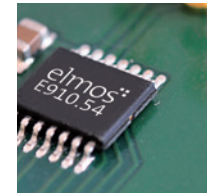
E910.54 | BASIC FlexRay™ Transceiver

Key Features

- > Compatible to EPL 2.1, physical layer
- > Supports data rates up to 10 Mbit/s
- > Enhanced diagnosis capability provided via SPI with interrupt generation
- > Overload damage by current and over temperature detection
- > Bus driver outputs withstand $-27V/+40V$ DC voltage
- > Low EME due to balanced differential transmission

Board

- > Order No. see page 20



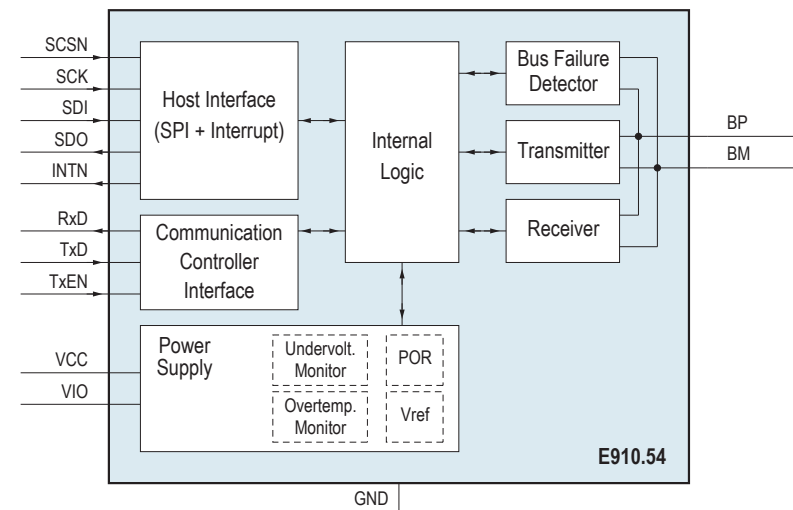
Applications

- > Transceiver in FlexRay™ nodes (ECUs)

Packages

- > TSSOP14

Application Diagram



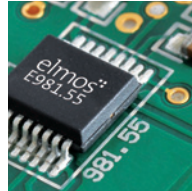
E981.55 | FlexRay™ Transceiver

Key Features

- > Compliant with FlexRay™ EPL v3.0.1
- > Supports data rates up to 10 Mbit/s
- > Available interfaces
 - Host: mode control and diagnosis
 - Bus guardian // - Communication controller
- > Very low leakage current at bus lines
- > Support of low power modes: standby and sleep
- > Remote and local wake-up capability

Board

- > Order No. see page 20



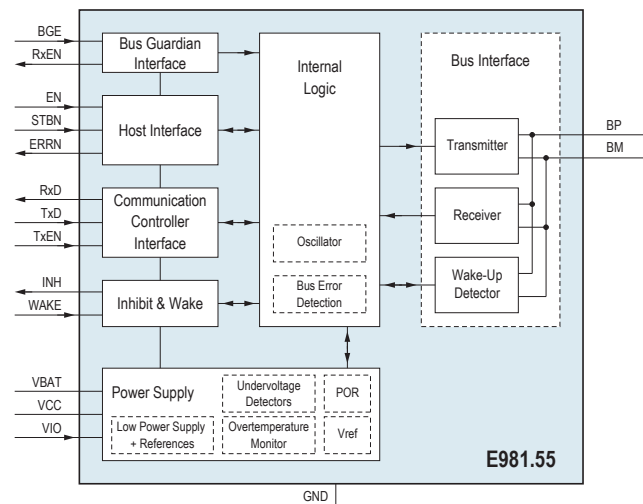
Applications

- > ECUs in a FlexRay™ network that are permanently connected to the battery

Packages

- > SSOP16

Application Diagram



E981.56/57 | 4-/2-Branch FlexRay™ Active Star Device

Key Features

- > Active star for coupling 2 or 4 branches (pin compatible)
- > Compliant with FlexRay™ EPL v3.0.1
- > Available Interfaces
 - Host interface (configuration, diagnosis, mode control)
 - Intra-star interface (banking of several devices)
 - Bus guardian interface (transmitter control)
 - Communication controller interface
- > Support of arbitrary network architectures by banking

Board

- > Order No. see page 20



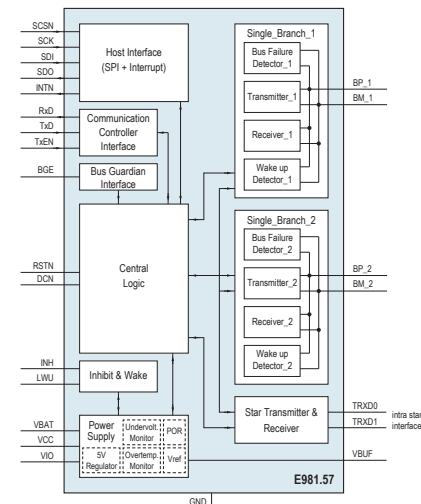
Applications

- > Star coupler and additionally usable as transceiver in FlexRay™ nodes (ECUs)

Packages

- > QFN44L9

Application Diagram





IO-Link® Transceiver

Part No.	Function	Board type	Description	Order No.
E981.10	Basic IO-Link® Transceiver	Evaluation Kit	IO-Link® Transceiver Evaluation Kit	K98110-0001
E981.12	Dual IO-Link® Master Transceiver	Evaluation Board	Evaluation Board for 2-Channel IO-Link® Master Transceiver	K98112-0001

KNX/EIB Transceiver

Part No.	Function	Board type	Description	Order No.
E981.03	KNX/EIB Transceiver	Demoboard	Demoboard for KNX TP1 Transceiver	K98103-0001
E981.03	KNX/EIB Transceiver	Evaluation Board	Evaluation Board for KNX TP1 Transceiver	K98103-0002

PSI5 Transceiver

Part No.	Function	Board type	Description	Order No.
E521.41	4-Channel Multi-Mode PSI5 Transceiver	Demoboard	Eva-/Demo- Board 4-Channel Multi Mode PSI5 Transceiver	K52141-0001
E981.07	2-Channel Master PSI5 Transceiver	Evaluation Board	Small Evaluation Board for 2-Channel PSI5 Master	K98107-0001
E981.07	2-Channel Master PSI5 Transceiver	Adapter Board	Adapter Board E981.07 for Evaluation Board	K98107-0002



CAN Transceiver and System Basis Chip

Part No.	Function	Board type	Description	Order No.
E520.13	HS-CAN Transceiver for Partial Networking	Evaluation Board	Evaluation Board for CAN Partial Network Transceiver	K52013-0001
E521.14	CAN/LIN SBC Family with DC/DC Converter	Evaluation Board	Extended Evaluation Board for CAN/4xLIN SBC with DC/DC	K52114-0001

LIN Transceiver and System Basis Chip

Part No.	Function	Board type	Description	Order No.
E520.34	LIN SBC with Voltage Regulator and Watchdog	Evaluation Board	Evaluation Board for LIN SBC (3.3V Variant)	K52034-0001
E520.35	LIN SBC with Voltage Regulator and Watchdog	Evaluation Board	Evaluation Board for LIN SBC (5.0V Variant)	K52035-0001

FlexRay™ Transceiver and Active Star Device

Part No.	Function	Board type	Description	Order No.
E910.54	Basic FlexRay™ Transceiver	Demoboard	Evaluation and Demo Board for EPL2.1 compatible FlexRay™ Transceiver	K91054-0001
E981.55	FlexRay™ Transceiver	Evaluation Board	Evaluation and Demo Board for EPL3.0 compatible FlexRay™ Transceiver	K98155-0001
E981.56	4-branch FlexRay™ Active Star Device	Evaluation Board	Evaluation and Demo Board for EPL3.0 compatible four Branch active FlexRay™ Star	K98156-0001
E981.57	2-Branch FlexRay™ Active Star Device	Evaluation Board	Evaluation and Demo Board for EPL3.0 compatible two Branch active FlexRay™ Star	K98157-0001



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E981.12 IO LINK[®] ICs

Basic and Dual Master Transceiver
for Easy System Intergration

elmos[®]



E981.03 KNX Transceiver

New, Innovative and
System Cost Efficient



Part No. / Function	Recommended Max Power / I_{MAX}	Efficiency	V_{SUPPLY}	V_{OUT}	Package	Status ¹⁾	Comment / Converter Topology
E522.31/33 Single Channel Constant Current PWM LED Controllers	-	>90%	5V to 55V	up to 80V	QFN32L5	-> Engineering Samples	-> Boost, SEPIC, Buck-Boost or Buck
E522.32/34 Dual Channel Constant Current PWM LED Controllers	-	>90%	5V to 55V	up to 80V	QFN32L5	-> Engineering Samples	-> Boost, SEPIC, Buck-Boost or Buck
E981.01 Multiphase Controller 9 Phases with 3 Regulation Loops	up to several kW	>95%	5V to 60V	>6V	QFN64L9	-> Engineering Samples	-> 4 multiphase modes (1x9, 3x3, 2x4+1 or 6+3phases) -> Undervoltage lockout, thermal shutdown, auto restart -> Boost, flyback, SEPIC, mixable -> 3 references (1.2V, 0.2V, external)

E522.31/33 | Single Channel Constant Current PWM LED Controllers

Key Features

- > 5.0V to 55V input, up to 80V boosted output voltage
- > Boost-, SEPIC, Buck-Boost- or Buck-topology
- > Constant current regulation implemented
- > Analog dimming down to 10:1 and digital dimming down to 3000:1 at 100Hz PWM
- > Advanced In-System Diagnostic (e.g. GND loss, output-overload and highside-feedback diagnostics)
- > Very low sleep mode currents of typ. 8 μ A

Board

- > Order No. see page 28



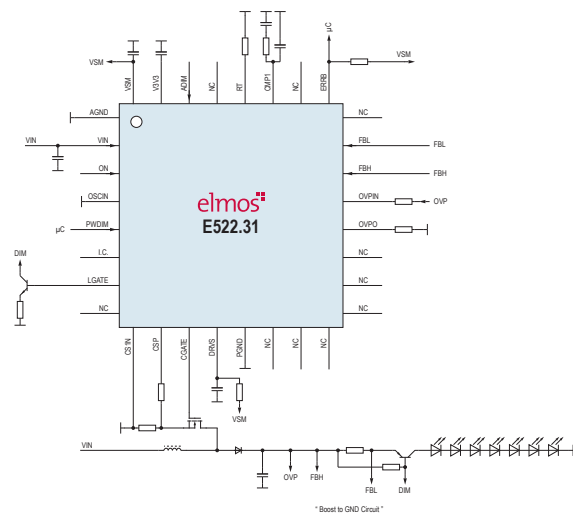
Applications

- > Automotive LED lighting applications
- > General indoor and outdoor lighting and signals
- > TFT backlighting
- > General current driven applications

Packages

- > QFN32L5

Application Diagram



E522.32/34 | Dual Channel Constant Current PWM LED Controllers

Key Features

- > 5.0V to 55V input voltage range, up to 80V boosted output voltage
- > Boost-, SEPIC, Buck-Boost- or Buck-topology
- > Constant current regulation implemented
- > Analog dimming down to 10:1 and digital dimming down to 3000:1 at 100Hz PWM
- > Advanced In-System Diagnostic (e.g. GND loss, output-overload and highside-feedback diagnostics)

Board

- > Order No. see page 28



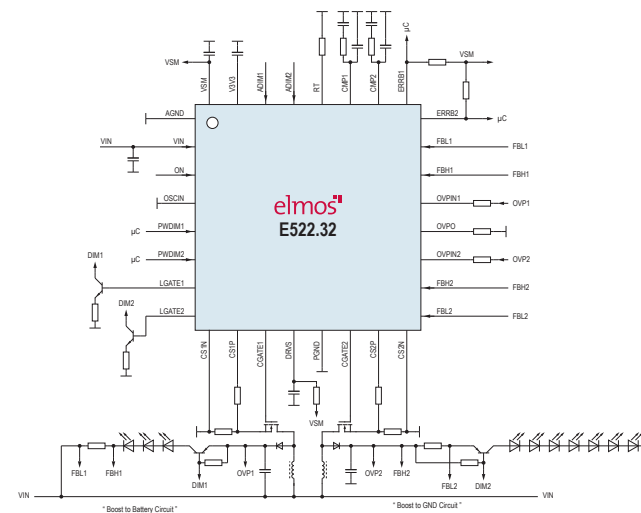
Applications

- > Automotive LED lighting applications
- > General indoor and outdoor lighting and signals
- > TFT backlighting
- > General current driven applications

Packages

- > QFN32L5

Application Diagram





Power | DC/DC Converter

Part No. / Function	Recommended Max Power / I _{MAX}	Efficiency	V _{SUPPLY}	V _{OUT}	Package	Status ¹⁾	Comment / Converter Topology
E522.0x Low Quiescent Current PFM Step Down Converters							
E522.01	500mA	>92%	5.5V to 40V	5V	QFN20L4 / TSSOP16	-> Production	-> Idle current of 12µA typ. -> Sleep current of 8µA typ. -> Input voltage up to 40V -> Up to 100% duty cycle -> Undervoltage lockout
E522.02	500mA		3.8V to 40V	3.3V			
E522.03	350mA		5.5V to 40V	5V			
E522.04	350mA		3.8V to 40V	3.3V			
E522.05	500mA		4.5V to 40V	1.5V to 40V			
E522.06	350mA		4.5V to 40V	1.5V to 40V			
E522.07	1000mA		5.5V to 40V	5V	QFN20L4	-> Production	
E522.08	1000mA		3.8V to 40V	3.3V		-> Engineering Samples	
E522.09	1000mA		4.5V to 40V	1.5V to 40V			
E522.10	2000mA	>90%	3.8V to 40V	0.8V to 40V	QFN20L4 SOIC8-EP		-> Idle current of 15µA typ. -> Sleep current of 10µA typ. -> Input voltage up to 40V -> Up to 100% duty cycle -> Undervoltage lockout
E981.01 Multiphase Controller 9 Phases with 3 Regulation Loops	up to several kW	<95%	5V to 60V	>6V	QFN64L9	-> Engineering Samples	-> 4 multiphase modes (1x9, 3x3, 2x4+1 or 6+3 phases) -> Undervoltage lockout, thermal shutdown, auto restart -> Boost, flyback, SEPIC, mixable -> 3 references (1.2V, 0.2V, external)

E522.0x Family | Low Quiescent Current PFM Step Down Converters

Key Features

- > Wide input voltage range 4.5V to 40V
- > PFM regulator up to 1.33MHz
- > Up to >92% efficiency
- > Very low 8 μ A sleep mode current
- > Ultra low 12 μ A standby current
- > 100% duty cycle capability
- > AEC-Q100 qualification
- > Junction temperature range -40°C to +150°C

Board

- > Order No. see page 28



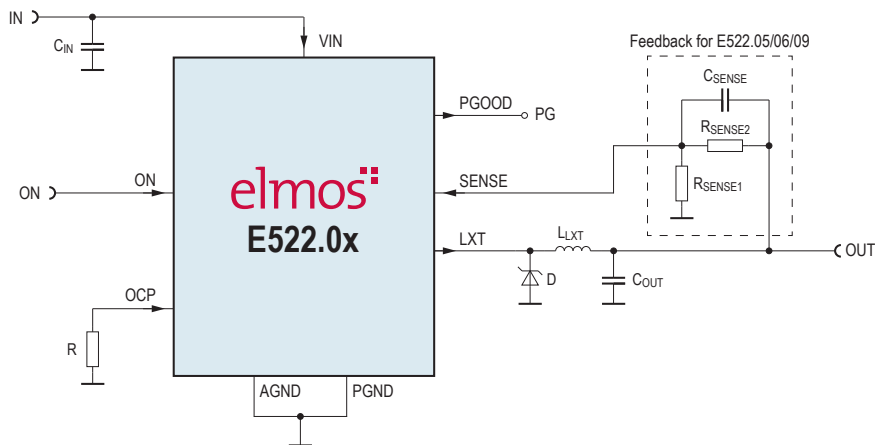
Applications

- > Micro Controller Systems
- > Automotive Telematics, Dashboards
- > Partial Networking
- > Peripheral Control Systems

Packages

- > Small QFN20L4
- > TSSOP16

Application Diagram



E981.01 | Multiphase Controller 9 Phases with 3 Regulation Loops

Key Features

- > Scalable 9 phase boost controller for high power application
- > Input voltage range 5V to 60V
- > Efficiency up to 95%
- > Three independent CMOS compatible PWM inputs
- > Only SMD parts needed for high output power application
- > Operating temperature range -40°C to +125°C

Board

- > Order No. see page 28



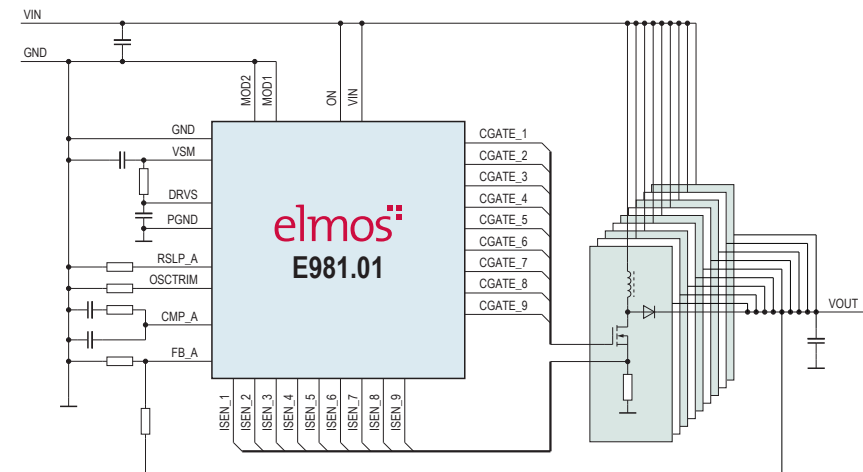
Applications

- > Industrial high power supplies
- > High efficiency multiple string Power-LED drivers
- > Wide range constant color PWM LED dimming
- > Motor, actuator and valve driving
- > Point-of-Load Power Supplies

Packages

- > Small QFN64L9

Application Diagram





Power | DC/DC Converter

Part No. / Function	Recommended Max Power / I _{MAX}	Efficiency	V _{SUPPLY}	V _{OUT}	Package	Status ¹⁾	Comment / Converter Topology
E522.7x Low Power Step Down Converters							
E522.71	500mA	>90%	5.5V to 40V	5V	SOIC8-EP	-> Production	-> Idle current of 12µA typ. -> Sleep current of 8µA typ. -> Input voltage up to 40V -> Up to 100% duty cycle -> Undervoltage lockout
E522.72	500mA		3.8V to 40V	3.3V			
E522.73	350mA		5.5V to 40V	5V			
E522.74	350mA		3.8V to 40V	3.3V			
E522.75	500mA		4.5V to 40V	1.5V to 40V			
E522.76	350mA		4.5V to 40V	1.5V to 40V			
E522.77	1000mA		5.5V to 40V	5V			
E522.78	1000mA		3.8V to 40V	3.3V			
E522.79	1000mA		4.5V to 40V	1.5V to 40V			

E522.7x Family | Low Power Step Down Converter

Key Features

- > 4.5 to 40V Input voltage
- > Minimum number of external components
- > Internal PMOS high side switch
- > High frequency advanced PFM regulation principle
- > Up to >90% efficiency with small external components
- > Ultra low standby and sleep mode current 12μA/8μA
- > Ambient temperature up to +105°C

Board

- > Order No. see page 28



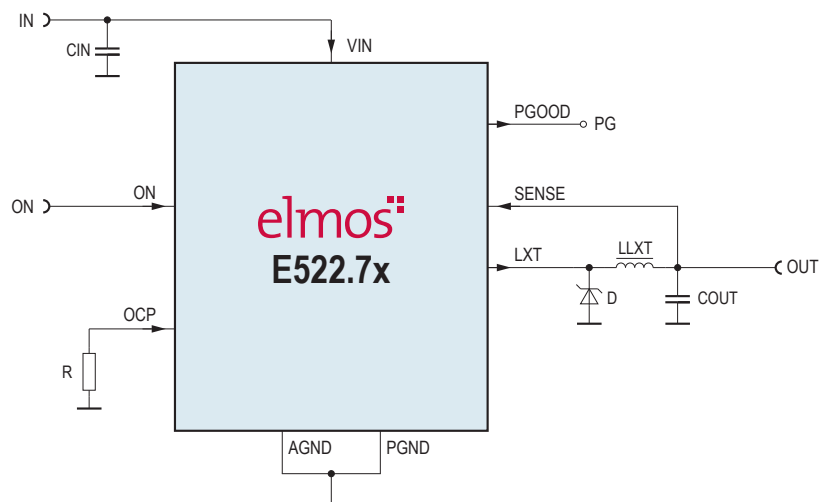
Applications

- > Industry
- > Consumer

Packages

- > SOIC8-EP

Application Diagram



E522.7x Family | Low Cost Constant Current Driver

Key Features

- > Switch mode, single LED controller
- > Input voltage up to 40V
- > Buck topology
- > Extremely few external components
- > Very high efficiency, >90%

Board

- > Order No. see page 28



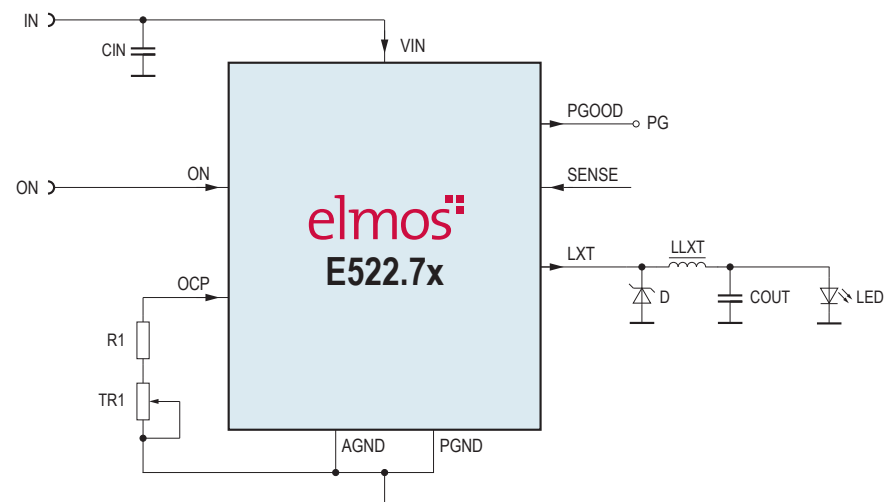
Applications

- > Industry
- > Consumer

Packages

- > SOIC8-EP

Application Diagram





Lighting

Part No.	Function	Board type	Description	Order No.
E522.31	Single Channel Constant Current PWM LED Controllers	Demoboard	Demoboard Boost-to-GND and Boost-to-Battery Topologies	K52231-0001
E522.32	Dual Channel Constant Current PWM LED Controllers	Demoboard	Demoboard Boost-to-GND and Boost-to-Battery Topologies	K52232-0001
E981.01	Multiphase Controller 9 Phases with 3 Regulation Loops	Evaluation Board	Demoboard Constant Voltage/Current	K98101-0001

DC/DC Converter

Part No.	Function	Board type	Description	Order No.
E522.01	Low Quiescent Current PFM Step Down Converters	Evaluation Board	Evaluation Kit 5.0V/500mA, Replacable to 78x05 Linear Regulator	K52201-0001
E522.02	Low Quiescent Current PFM Step Down Converters	Evaluation Board	Evaluation Kit 3.3V/500mA, Replacable to 78x03 Linear Regulator	K52202-0001
E522.03	Low Quiescent Current PFM Step Down Converters	Evaluation Board	Evaluation Kit 5V/350mA	K52203-0001
E522.04	Low Quiescent Current PFM Step Down Converters	Evaluation Board	Evaluation Kit 3.3V/350mA	K52204-0001
E522.05	Low Quiescent Current PFM Step Down Converters	Evaluation Board	Evaluation Kit Variable Output Voltage, 500mA, Replacable to 78xXX Linear Regulator	K52205-0001
E522.06	Low Quiescent Current PFM Step Down Converters	Evaluation Board	Evaluation Kit Variable Output Version, 350mA	K52206-0001
E522.07	Low Quiescent Current PFM Step Down Converters	Demoboard	Evaluation Kit 5.0V/1A	K52207-0001
E522.09	Low Quiescent Current PFM Step Down Converters	Demoboard	Evaluation Kit Variable Output Voltage, 1A	K52209-0001
E522.10	Low Quiescent Current PFM Step Down Converters	Demoboard	Demoboard Adjustable Voltage Regulator	K52210-0001
E522.71	Low Power Step Down Converter	Demoboard	Demo Voltage Regulator Topology and 25AN0061E.XX, Shuntless RGB LED Driving	K52271-0001
E981.01	Multiphase Controller 9 Phases with 3 Regulation Loops	Evaluation Board	Demoboard Constant Voltage/Current	K98101-0001



elmos[®]



Low Quiescent Current PFM Step Down Converters

Low Standby Current and High Efficiency



elmos[®]



Industrial Step-Down Converter IC Family

Low Standby Current and High Efficiency



Motor Control | DC Motor

Part No. / Function	V _{SUPPLY}	I _{OUT}	RDS _{ON}	Interface	Package	Status ¹⁾	Comment
E523.02 2x Half-Bridge Driver/ 1x Full-Bridge Driver	(5V) 7V to 28V (42V)	400mA	20Ω (on) 10Ω (off)	LIN 2.x (1.3 comp.) or PWM bidirectional, SPI™ for configuration (3.3/5V)	QFN44L7 QFN48L7 QSOP44	-> Production	-> Voltage Regulator (3.3V/5V) -> Precise deadtime generation -> Watchdog/Reset
E523.12 2x Half-Bridge Driver/ 1x Full-Bridge Driver	(5V) 7V to 28V (42V)	400mA	20Ω (on) 10Ω (off)	PWM bidirectional , SPI™ for configuration (3.3/5V)	QFN44L7 QFN48L7 QSOP44	-> Production	-> Voltage Regulator (3.3V/5V) -> PWM-Interface -> Watchdog/Reset
E910.72 6x Half-Bridge Controller with Pulse Count	6V to 28V (40V)	540mA	1.25Ω	SPI™-compatible (3.3/5V)	QFN32L5	-> Production	-> Sensorless motor control -> 3 independent pulse (ripple) detectors -> Excellent positioning performance



Motor Control | BLDC Motor

Part No. / Function	V _{SUPPLY}	I _{OUT}	RDS _{ON}	Interface	Package	Status ¹⁾	Comment
E523.01 3x Half-Bridge Driver for System Optimization	(5V) 7V to 28V (42V)	400mA	20Ω (on) 10Ω (off)	LIN 2.x (1.3 comp.) or PWM bidirectional SPI™ for configuration	QFN44L7 QFN48L7 QSOP44	-> Production	-> Voltage Regulator (3.3V/5V) -> Precise deadtime generation -> Watchdog/Reset
E523.11 3x Half-Bridge Driver for System Optimization	(5V) 7V to 28V (42V)	400mA	20Ω (on) 10Ω (off)	PWM bidirectional SPI™ for configuration	QFN44L7 QFN48L7 QSOP44	-> Production	-> Voltage Regulator (3.3V/5V) -> PWM-Interface -> Watchdog / Reset
E523.50 72V Brushless Motor Gate Driver	7V to 72V	200mA	20Ω (on) 10Ω (off)	PWM for motor control Diagnosis PIN	QFN36L7	-> Engineering Samples	-> DC/DC converter for gate supply -> 3.3V/20mA supply for external μC -> Usable for 48V Board Net
E910.87 3x Half-Bridge Driver Universal Performance	6.5V to 27V	300mA	-	PWM bidirectional SPI™ for configuration	QFN44L7	-> Production	-> 3 or 6 channel PWM control mode -> Adjustable slew rate -> Extensive protection system -> Auto dead time generation

E523.02/12 | 2x Half-Bridge Driver / 1x Full-Bridge Driver

Key Features

- > Precise, dynamical dead-time generation
- > IC supply voltage range 7 to 28V (peak 42V)
- > STOP/START-systems: limited operation down to 5V
- > Sleep mode current 20µA (typ.)
- > µC supply 3.3V or 5V, up to 70mA direct load, higher loads with external boost transistor possible

Board



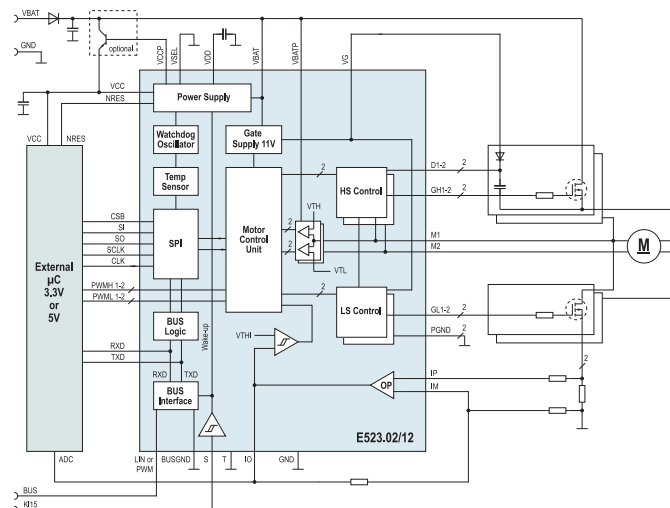
Applications

- > Wiper, throttle valve, egr, parking-brake, power closure system, turbo charger adjustment

Packages

- > QFN44L7
- > QFN48L7
- > QSOP44

Application Diagram



E910.72 | 6 x Half Bridge with Sensorless Positioning

Key Features

- > Operating supply voltage range 6V to 19V
- > 6 half bridges to drive 3, 4, or 5 DC motors
- > $R_{DS,ON}$ of one half bridge typ. 1.25Ω
- > Three independent pulse detectors
- > Adjustable parameters to drive a high number of different motor types
- > Diagnostic data via SPI

Board

- > Order No. see page 37



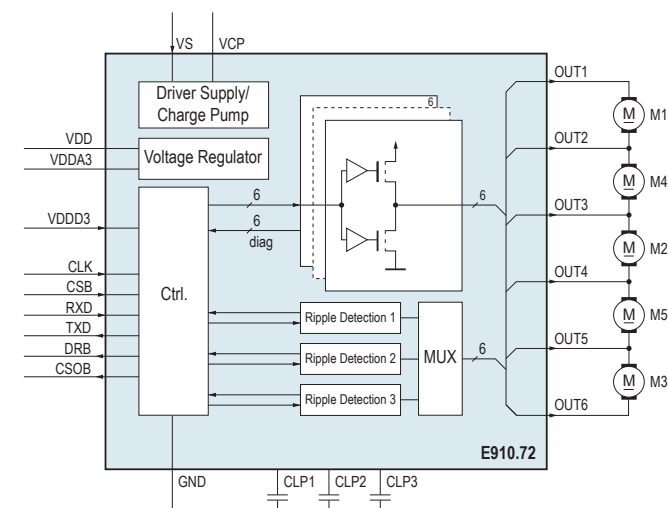
Applications

- > Automotive HVAC systems
- > DC motor servo systems

Packages

- > QFN32L5

Application Diagram



E523.01/11 | 3x Half-Bridge Driver for System Optimization

Key Features

- > Precise, dynamical dead-time generation
- > IC supply voltage range 7 to 28V (peak 42V)
- > STOP/START-systems: limited operation down to 5V
- > Sleep mode current 20µA (typ.)
- > µC supply 3.3V or 5V, up to 70mA direct load, higher loads with external boost transistor possible

Board

- > Order No. see page 37



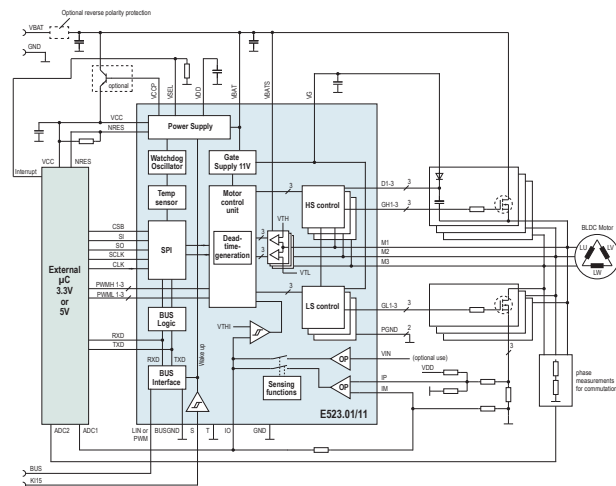
Applications

- > BLDC(EC) motor control, multiple DC motor control
- > Fuel, Hydraulic, Oil and Water pumps
- > Cooling fans, HVAC fans, positioning systems
- > Turbo charger adjustment

Packages

- > QFN44L7
- > QSOP44
- > QFN48L7

Application Diagram



E523.50 | 72V Brushless Motor Gate Drive

Key Features

- > Supply voltage range from (7) 12V to 72V
- > DC/DC converter for 11V/100mA
- > µC supply 3.3V up to 20mA direct load, higher loads with external boost transistor possible
- > 200mA gate drivers including protection features
- > Integrated back EMF detection

Board

- > Order No. see page 37



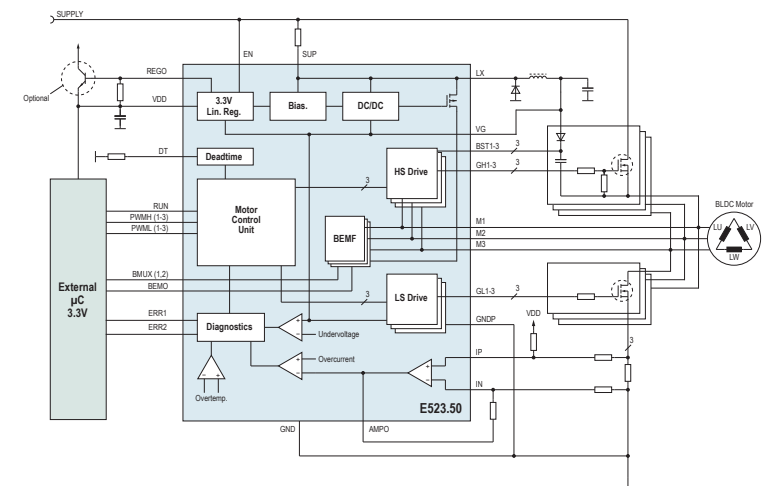
Applications

- > BLDC(EC) motors in industrial 24V to 60V applications
- > Commercial vehicles
- > 48V Telecom

Packages

- > QFN36L7

Application Diagram



E910.87 | 3x Half-Bridge Driver Universal Performance

Key Features

- > Supply voltage range 6.5V to 27V
- > Adjustable slew rate control
- > Charge pump 100% PWM
- > Gate driver current up to 300mA
- > Power FET monitoring and protection
 - Cross conduction protection
 - Current overload and short circuit protection
 - Over-/undervoltage protection

IC



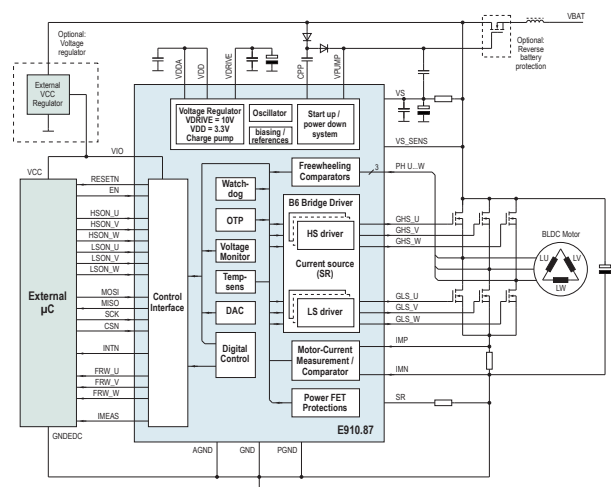
Applications

- > Pumps, HVAC systems
- > Compressors, Fans
- > Automotive applications
- > Industrial machines

Packages

- > QFN44L7

Application Diagram





Motor Control | Stepper Motor

Part No. / Function	V _{SUPPLY}	I _{OUT}	RDS _{ON}	Interface	Package	Status ¹⁾	Comment
E520.01 12x Low-Side Driver with Stall Detection	3V to 25V	350mA	1.5Ω	SPI™-compatible (3.3/5V)	QFN32L5 SOIC28	-> Production	-> Stall detection for stepper motors suitable for Full Step, Half Step, Wave Drive -> 245Hz LED mode -> 25kHz relay mode -> 25kHz linear PWM
E520.02 12x Low-Side Driver	3V to 25V	350mA	1.5Ω	SPI™-compatible (3.3/5V)	QFN32L5 SOIC28	-> Production	-> 245Hz LED mode -> 25kHz relay mode -> 25kHz linear PWM
E520.03 8x Low-Side Driver with Stall Detection	3V to 25V	350mA	1.5Ω	SPI™-compatible (3.3/5V)	SOIC20 QFN20L5 QFN32L5	-> Production	-> Stall detection for stepper motors suitable for Full Step, Half Step, Wave Drive -> 245Hz LED mode -> 25kHz relay mode -> 25kHz linear PWM
E520.08 8x Low-Side Driver	3V to 25V	350mA	1.5Ω	SPI™-compatible (3.3/5V)	SOIC20 QFN20L5 QFN32L5	-> Production	-> 245Hz LED mode -> 25kHz relay mode -> 25kHz linear PWM
E523.30 Power Stepper Controller with Stall Detection	5.5V to 20V (42V)	2x 800mA H-Bridge	0.5Ω	LIN 2.x PWM	QFN32L6	-> Production	-> LIN autoaddressing -> LIN autobaud -> Embedded 8bit µC -> 8k FLASH memory
E523.31 Power Stepper Controller with Stall Detection	5.5V to 20V (42V)	2x 800mA H-Bridge	0.5Ω	LIN 2.x PWM	QFN32L6	-> Production	-> LIN autobaud -> Embedded 8bit µC -> Ready to use (with firmware)
E523.34 Power Stepper Controller with Stall Detection	5.5V to 20V (42V)	2x 800mA H-Bridge	0.5Ω	PWM	QFN32L6	-> Production	-> LIN autobaud -> 8k FLASH memory -> 32k EEROM
E523.37 Power Stepper Controller with Stall Detection	5.5V to 20V (42V)	2x 800mA H-Bridge	0.5Ω	LIN 2.x PWM	QFN32L6	-> Production	-> LIN autobaud -> Embedded 8bit µC -> 8k FLASH memory
E523.60 Stepper Motor Driver with Stall Detection	5.5V to 20V (42V)	2x 190mA H-Bridge	1.0Ω	LIN 2.x	QFN32L6	-> Engineering Samples	-> LIN autobaud -> Embedded 8bit µC -> 8k FLASH memory

E520.01/02/03/08 | 12/8x Low-Side Driver with Stall Detection

Key Features

- > 12 high current outputs (RDS_{ON} typ. 1.5Ω / $I_{MAX} = 350mA$)
- > Digital voltage VDD 3.3V or 5.0V
- > Low standby current (typically $<1\mu A$)
- > Serial interface for direct μC interfacing
- > Open load detection
- > Short circuit limitation/detection, diagnosis

Board

- > Order No. see page 37



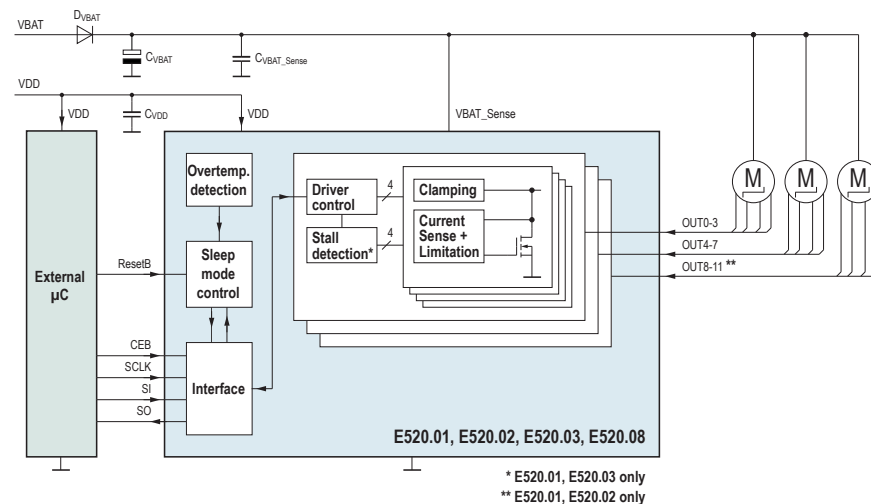
Applications

- > Stepper Motor Driver with/without Stall Detection
- > DC Motor Driver with PWM
- > Relay Driver with VBAT- automatically PWM
- > LED Driver with 3 logarithmic PWM sources

Packages

- > E520.01/02
QFN32L5, SOIC28
- > E520.03/08
QFN32L5, QFN20L5, SOIC20

Application Diagram



E523.30 | Power Stepper Controller with Stall Detection

Key Features

- > Drives a bipolar stepper motor
- > Sensorless "stall detection"
- > I - Coil current up to $2 \times 800mA$ (prog. chopper)
- > 5.5V - 20V supply voltage (load dump 42V)
- > Sleep mode current typically $30\mu A$
- > Embedded 8bit μC 256 Byte RAM, 8k FLASH, 8k ROM, 32 Byte E2
- > LIN/PWM Interface, optional LIN Auto-Addressing

Board

- > Order No. see page 37



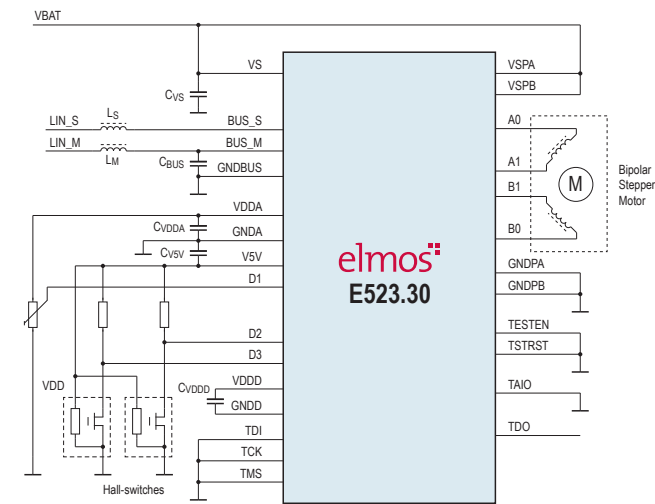
Applications

- > Stepper or DC Motor Actuators
- > Grill-Shutter
- > Head-Light Adjust
- > Water valve

Packages

- > QFN32L6

Application Diagram



E523.60 | Stepper Motor Driver with Stall Detection

Key Features

- > Drives one bipolar stepper motor
- > Sensorless stall detection
- > I - Coil current up to $2 \times 190\text{mA}$ (prog. chopper)
- > Supply voltage 5.5V to 20V (42V)
- > 8 bit micro-controller with 256 Byte RAM

Board

- > Order No. see page 37



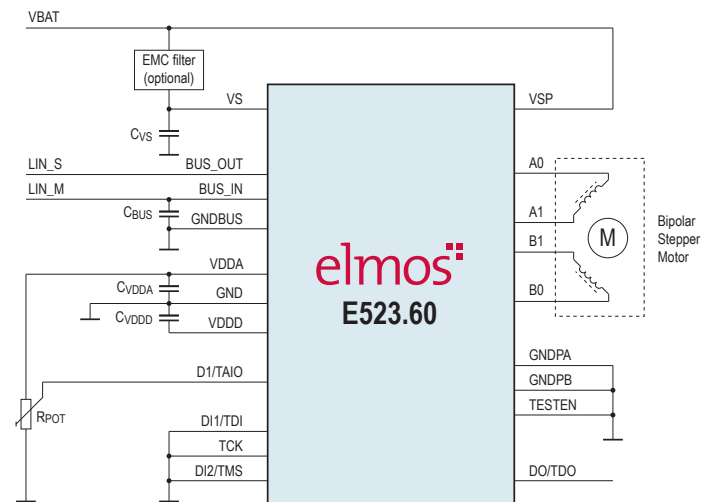
Applications

- > Universal bipolar stepper motor actuators
- > HVAC flap actuator
- > Small grill shutter
- > Water valve actuator

Packages

- > QFN32L6

Application Diagram





Motor | Boards

DC Motor

Part No.	Function	Board type	Description	Order No.
E910.72	6x Half-Bridge Controller with Pulse Count	Demoboard	DC Motor 6x Half-Bridge with Sensorless Positioning	K91072-0001

BLDC Motor

Part No.	Function	Board type	Description	Order No.
E523.01	3x Half-Bridge Driver for System Optimization	Evaluation Board	3x Half-Bridge Controller for System Optimization	K52301-0001
E523.01 V1 Fan	3x Half-Bridge Driver for System Optimization	Controller Board	Block Commutation, Wind Mill Effect Capability (Commutation Start with Passive Driven Motor)	K52301-0002
E523.01 V2 Pump	3x Half-Bridge Driver for System Optimization	Controller Board	Fast Start and Stop, Block Commutation	K52301-0003
E523.01 V3 HVAC	3x Half-Bridge Driver for System Optimization	Controller Board	Noise Reduced Sinusoidal or Space Vector Commutation, Smooth Start and Stop	K52301-0004
E523.50	72V Brushless Motor Gate Driver	Evaluation Board	72V 3x Half-Bridge Driver with Integrated Power Supplies	K52350-0001

Stepper Motor

Part No.	Function	Board type	Description	Order No.
E520.01	12x Low-Side Driver with Stall Detection	Demoboard	12-/8-Channel Low Side Driver with Stall Detection	K52001-0001
E523.30	Power LIN2.x or PWM-Interface Stepper with Stall Detection	Evaluation Kit	Power LIN2.1 or PWM-Interface Stepper with Stall Detection	K52330-0001
E523.60	LIN2.x or PWM-Interface Stepper with Stall Detection	Evaluation Kit	Power LIN2.1 or PWM-Interface Stepper with Stall Detection	K52360-0001



Sensor | Ultrasonic

Part No. / Function	V _{SUPPLY}	Transducer frequency	Driver current	Memory	Interface	Package	Status ¹⁾	Comment
E524.14 LIN Smart Ultrasonic Parking Assist	8V to 18V	30kHz to 80kHz	160mA to 496mA	8k Byte FLASH EEPROM for calibration	LIN 2.1 SNPD (auto-addressing)	QFN20L5	-> Production	-> 8 bit CPU with 16MHz -> Digital filtering and signal processing -> Short/long range extension
E524.24 LIN Smart Ultrasonic Parking Assist	8V to 18V	30kHz to 80kHz	160mA to 496mA	8k Byte ROM EEPROM for calibration	LIN 2.1 SNPD (auto-addressing)	QFN20L5	-> Engineering Samples, customer ROM version on request	-> 8 bit CPU with 16MHz -> Digital filtering and signal processing -> Short/long range extension
E524.02 Digital Ultrasonic Parking Assist	7V to 18V	40kHz to 58kHz	108mA to 310mA	EEPROM for calibration	2-wire	QFN20L4	-> Production	-> Programmable gain and driver current -> Digital echo signal evaluation -> Single wire interface for evaluated echo signal transmission
E524.03 Digital Ultrasonic Parking Assist	7V to 18V	40kHz to 58kHz	108mA to 310mA	EEPROM for calibration	3-wire	QFN20L4	-> Production	
E524.04 Digital Ultrasonic Parking Assist	7V to 18V	40kHz to 58kHz	108mA to 310mA	EEPROM for calibration	3-wire with SPI™	QFN20L4	-> Production	



Sensor | Magnetic

Part No. / Function	V _{SUPPLY}	Output	Range	Package	Status ¹⁾	Comment
E524.50 Integrated AMR Current Sensor	5V ±0.25V	Analog: ± 2mA (absolute level) 3-times overdrive range	Typical Sensitivity: ±(0...20)A up to ±(0...400)A depending on conductor rail geometry	SOIC16 (300 mil)	-> Engineering Samples	-> Uses anisotropic effect for contactless current measurement -> High precision, fast response time -> Single wire calibration interface Applications: - 3-phase motor control - Battery management for e-vehicle, Hybrid Car

E524.14 | LIN Smart Ultrasonic Parking Assist

Key Features

- > Stand-alone Ultrasonic Park Assist Solution
- > Measurable distance from 15cm to 6m and beyond
- > Adjustable burst length and filter bandwidth
- > Short/Long Distance Range Modes
- > 8Bit CPU with 16MHz, 8KByte FLASH
- > EEPROM for calibration data
- > LIN 2.1 Interface with Auto-Addressing

Board

- > Order No. see page 53



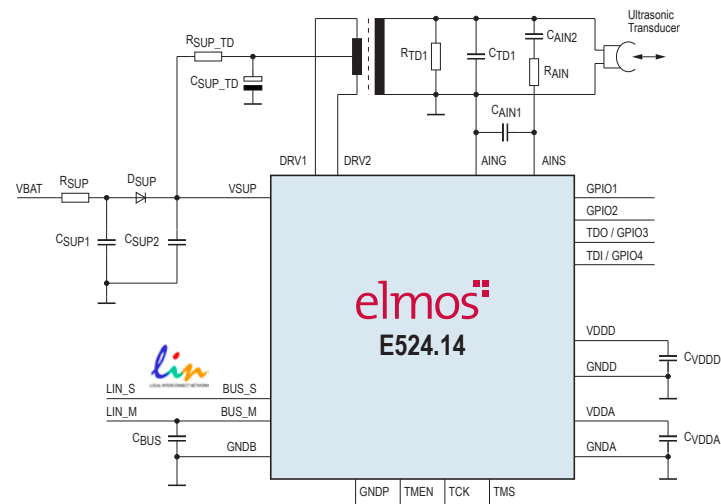
Applications

- > Ultrasonic Park Assist (USPA/PDS/UPA)
- > Automatic Parking (SPAS/APA)
- > Blind Spot Detection
- > Industrial Distance Measurement
- > Robotics

Packages

- > QFN20L5

Application Diagram



E524.24 | LIN Smart Ultrasonic Parking Assist

Key Features

- > Electrical and Pin compatible to E524.14
- > Stand-alone Ultrasonic Park Assist Solution
- > Measurable distance from 15cm to 6m and beyond
- > Build In Functions
 - Direct and Indirect measurements
 - Sensitivity Time Control
 - Adaptive Threshold Generation

Board



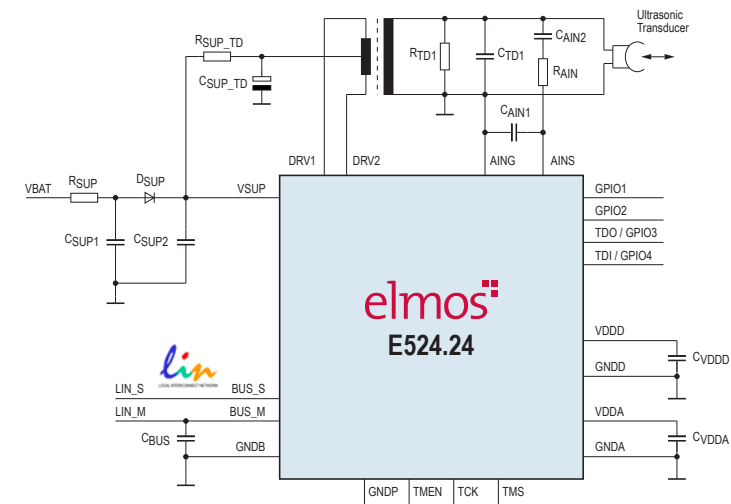
Applications

- > Ultrasonic Park Assist (USPA/PDS/UPA)
- > Automatic Parking (SPAS/APA)
- > Blind Spot Detection
- > Industrial Distance Measurement
- > Robotics

Packages

- > QFN20L5

Application Diagram



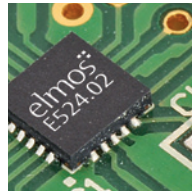
E524.02 | Digital Ultrasonic Parking Assist

Key Features

- > Stand-alone Ultrasonic Park Assist Solution
- > Programmable transducer frequencies 40kHz to 58kHz
- > Programmable driver current and receiver sensitivity
- > 14 programmable threshold/time settings
- > One wire I/O interface for programming and communication
- > 2-wire Interface
- > EEPROM for calibration data

Board

- > Order No. see page 51



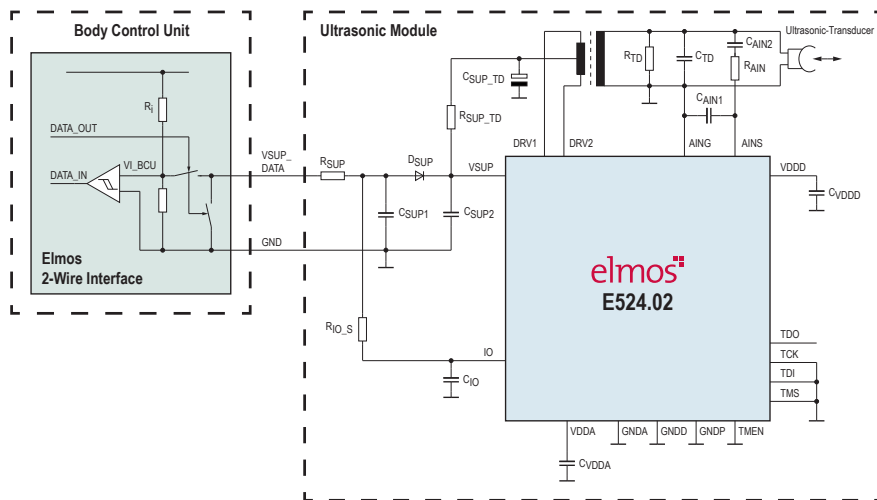
Applications

- > Ultrasonic Park Assist (USPA/PAS/UPA)
- > Distance Measurement

Packages

- > QFN20L4

Application Diagram



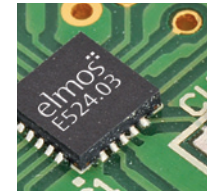
E524.03 | Digital Ultrasonic Parking Assist

Key Features

- > Stand-alone Ultrasonic Park Assist Solution
- > Programmable transducer frequencies 40kHz to 58kHz
- > Programmable driver current and receiver sensitivity
- > 14 programmable threshold/time settings
- > One wire I/O interface for programming and communication
- > 3-wire Interface
- > EEPROM for calibration data

Board

- > Order No. see page 53



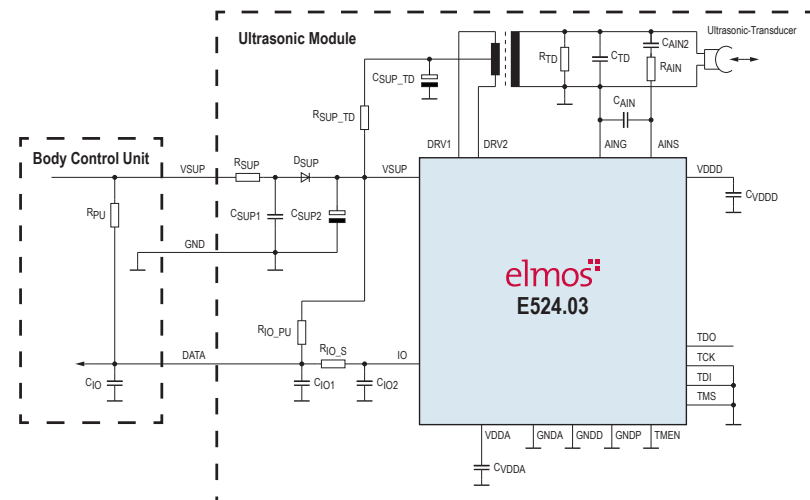
Applications

- > Ultrasonic Park Assist (USPA/PAS/UPA)
- > Distance Measurement

Packages

- > QFN20L4

Application Diagram



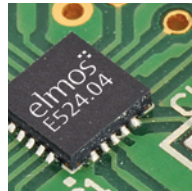
E524.04 | Digital Ultrasonic Parking Assist

Key Features

- > Ultrasonic Park Assist Solution
- > Programmable transducer frequencies 40kHz to 58kHz
- > Programmable driver current and receiver sensitivity
- > I/O interface for programming and communication
- > 3-wire Interface with SPI
- > Signal evaluation by external μ C

Board

- > Order No. see page 53



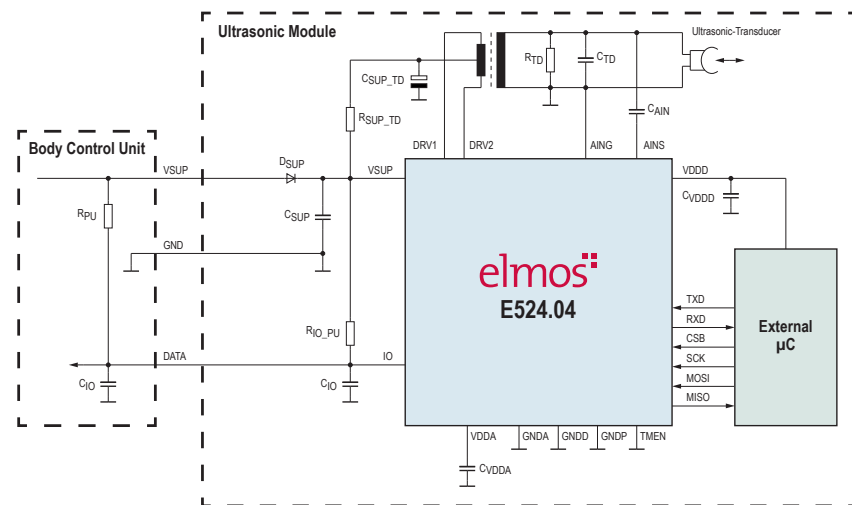
Applications

- > Ultrasonic Park Assist (USPA/PAS/UPA)
- > Industrial Distance Measurement

Packages

- > QFN20L4

Application Diagram



E524.50 | Integrated AMR Current Sensor

Key Features

- > Contactless current measurement based on AMR-effect
- > High precision sensor readout using closed-loop amplifier system
- > High bandwidth measurement: DC to 500kHz
- > Analog current output, used with external feedback resistor for
- > Over-current alarm output with tunable threshold

Board

- > Order No. see page 53



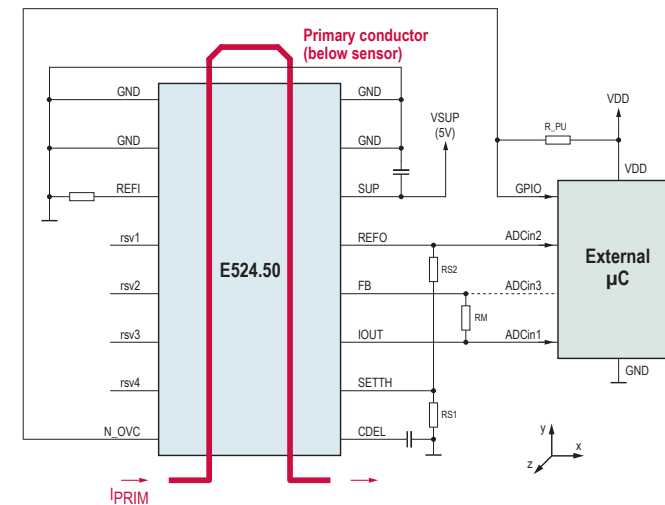
Applications

- > Power inverters
- > Electrical motor controls
- > Switch mode power supplies

Packages

- > SOIC16 (300 mil)

Application Diagram





Sensor | Passive Infrared Sensor

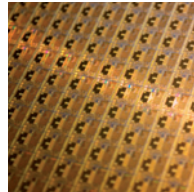
Part No. / Function	V _{SUPPLY}	I _{SUPPLY}	Output	Package	Status ¹⁾	Comment
E910.62 Integrated Circuit for Digital PIR Detectors	2.7V to 3.6V	15µA	PIR Signal and Temperature (DOCI™)	Bare-Die	-> Production	-> Dual Channel -> Digital Signal Processing -> Single Wire Interface(DOCI™)
E910.97 Integrated Circuit for Smart PIR Detectors	2.7V to 3.6V	15µA	PIR Signal, digital	Bare-Die	-> Production	-> Outputs for Motion Detect -> Insensitive to RF interference -> Inputs for sensitivity and on time
E931.06 Integrated Circuit for Digital PIR Detectors	2.7V to 3.6V	15µA	PIR Signal and Temperature (DOCI™)	Bare-Die	-> Production	-> Digital Signal Processing -> Single Wire Interface(DOCI™)
E931.08 Single Channel Sensors Signal Processor	2.7V to 3.6V	15µA	Sensor Signal and Temperature (DOCI™)	SOIC8	-> Production	-> Digital Signal Processing -> Single Wire Interface(DOCI™) -> 17 Bit ADC
E931.97 PIR Controller Integrated Circuit	2.7V to 3.6V	12µA	Motion DETECT, Threshold	SOIC14N TSSOP14 plastic package Bare-Die	-> Production	-> Outputs for Relay and LED -> Insensitive to RF interference -> Instantaneous settling after power up
E931.98 PIR Controller IC for AC load switch	2.7 to 3.6V	70µA	Motion DETECT, Threshold	SOIC14N TSSOP14	-> Production	-> Insensitive to RF interference -> Instantaneous settling after power up -> Adaptive mains zero cross switching

E910.62 | Integrated Circuit for Digital PIR Detectors

Key Features

- > Direct connection to PIR sensor elements
- > Temperature measurement
- > Differential PIR input
- > Low Current Consumption
- > Excellent power supply rejection
- > High dynamic range

Bare-Die



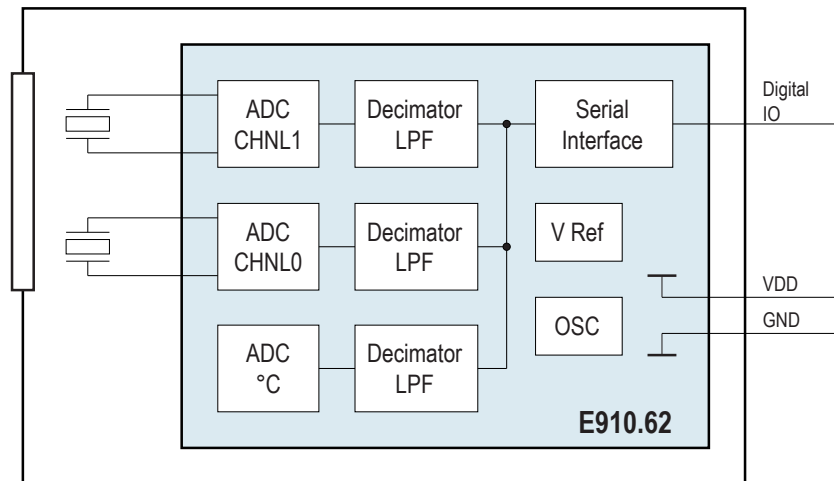
Applications

- > Integration with PIR sensor elements
- > Gas sensors
- > High end PIR systems

Packages

- > Bare-Die

Application Diagram

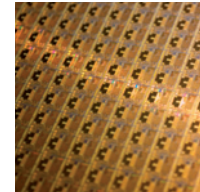


E910.97 | Integrated Circuit for Smart PIR Detectors

Key Features

- > Digital Signal Processing
- > On chip shunt regulator
- > Low Power Consumption
- > Differential PIR sensor input
- > Excellent power supply rejection
- > Inputs for sensitivity and on time

Bare-Die



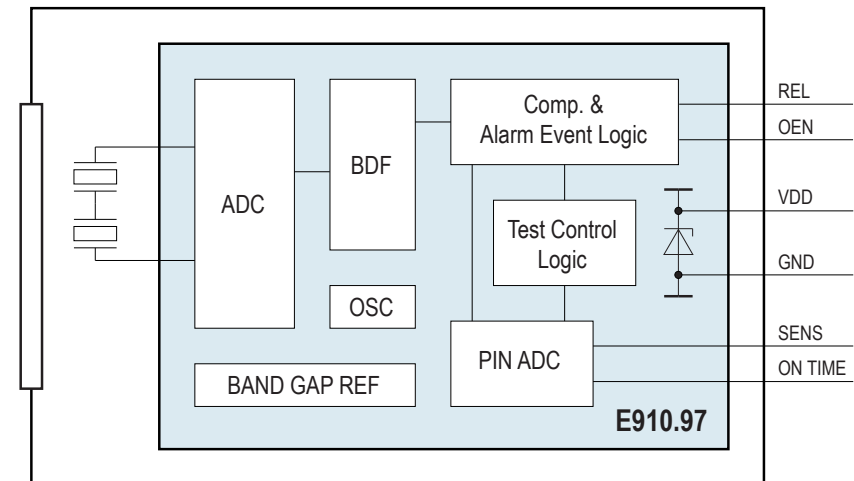
Applications

- > PIR motion detection
- > Intruder detection
- > Occupancy detection
- > Motion sensor lights

Packages

- > Bare-Die

Application Diagram

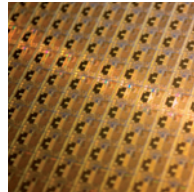


E931.06 | Integrated Circuit for Digital PIR Detectors

Key Features

- > Direct connection to PIR sensor elements
- > Temperature measurement
- > Differential PIR sensor input
- > Low Current Consumption
- > Excellent power supply rejection
- > High dynamic range

Bare-Die



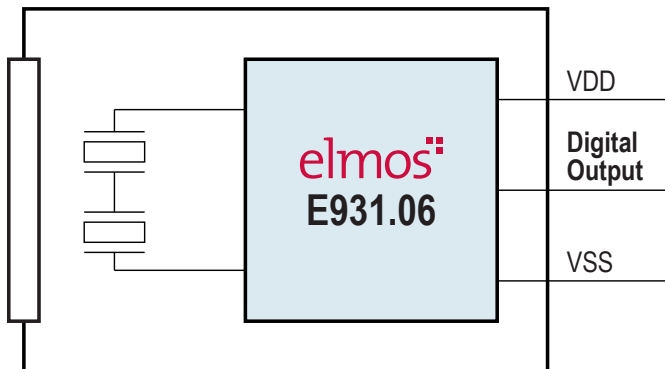
Applications

- > Integration with PIR sensor elements
- > High end PIR systems
- > Building management

Packages

- > Bare-Die

Application Diagram



E931.08 | Single Channel Thermopile Signal Sensor

Key Features

- > Direct connection to PIR sensor elements
- > Temperature measurement
- > Differential analog input
- > Low Current Consumption
- > Excellent power supply rejection
- > High dynamic range

IC



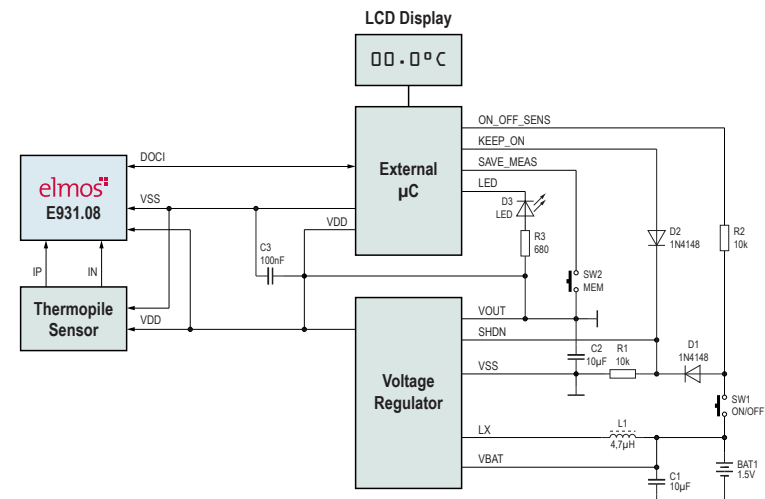
Applications

- > Compact ear thermometer
- > High precision remote temperature sensing
- > Infrared pyrometers

Packages

- > SOIC08

Application Diagram



E931.97 | PIR Controller Integrated Circuit

Key Features

- > Digital Signal Processing
- > On chip shunt regulator
- > Low Power Consumption
- > Differential PIR sensor input
- > Excellent power supply rejection
- > Outputs for relay and LED

Board

- > Order No. see page 53



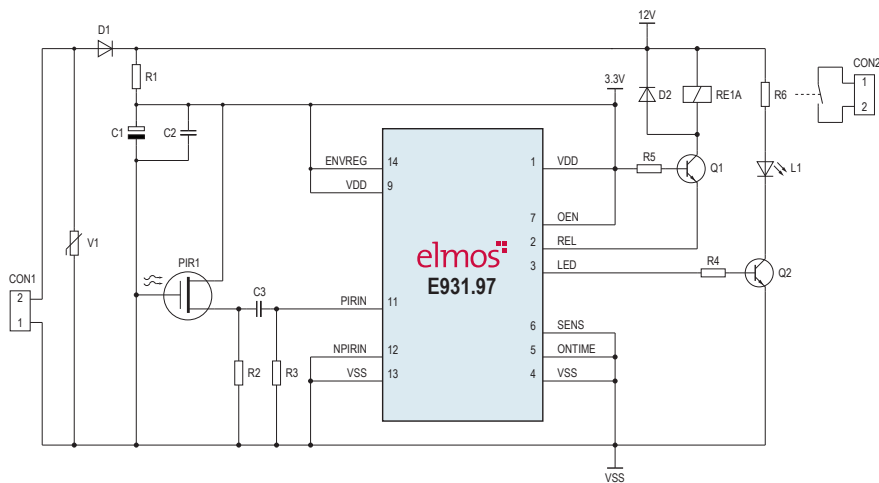
Applications

- > PIR motion detection
- > Intruder detection
- > Occupancy detection
- > Motion sensor lights

Packages

- > SOIC14
- > TSSOP14
- > Bare-Die

Application Diagram



E931.98 | PIR Controller IC for AC Load Switch

Key Features

- > One pulse trigger
- > Adaptive zero crossing switching
- > On chip shunt regulator
- > Low power consumption
- > Differential PIR sensor input
- > Excellent power supply rejection

Board



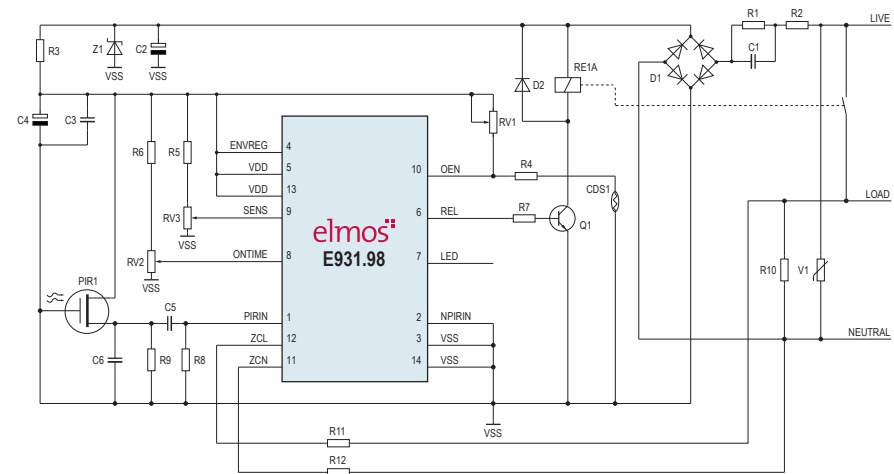
Applications

- > PIR motion detection
- > Intruder detection
- > Occupancy detection
- > Motion sensor lights

Packages

- > SOIC14
- > TSSOP14

Application Diagram





Part No. / Function	V _{SUPPLY}	I _q	Detection	Package	Status ¹⁾	Comment
E527.16 HALIOS® Gesture Switch	2.25V to 2.75V 3.3V (periphery)	3.5mA (typical)	Proximity Awareness	QFN32L5	-> Production	-> Advanced ready-to-use function -> Implemented gesture recognition -> PWM-Output for innovative motion-controlled lighting application
E909.05 HALIOS® multi-purpose Sensor IC for Various Applications	2.25V to 2.75V 1.5V to 2.8V (GPIO)	2.5mA (typical) <50µA (stop mode)	Proximity 1...3 dimensional input devices Touch	QFN32L5	-> Production	-> Optical sensor IC for gesture control and object detection -> 5 LED drivers, 6x GPIO -> 16 bit µC with flash -> SPI™-compatible and I²C Interface -> Standard Firmware implemented
E909.06 HALIOS® multi-purpose Sensor IC for Automotive	2.25V to 2.75V 3.3V (GPIO)	2.5mA (typical) <50µA (stop mode)	Proximity 1...3 dimensional input devices Touch	QFN32L5	-> Production	-> Optical/capacitive sensor IC for gesture control and object detection -> 5 LED drivers, 8x GPIO -> 16 bit µC with flash -> SPI™-compatible, I²C Interface, LIN UART -> Internal temp. compensation -> Standard Firmware implemented
E909.11 Low Power HALIOS®	2.2V to 3.6V	10µA (typical) 4.5µA (idle) 0.4µA (sleep)	Proximity 1...3 dimensional input devices Ambient Light Measurement	QFN20L4 Bare-Die	-> Production	-> IC for gesture control solutions, proximity and ambient light measurements -> Adaptive power saving control -> Self-calibration -> I²C Interface

Part No. / Function	V _{SUPPLY}	I _q	Sensitivity	Bandwidth	Package	Status ¹⁾	Comment
E909.07 Transimpedance Amplifier with High Sensitivity	3V to 3.5V	3mA (typical) <1µA (sleep)	172dBOhm	500kHz	QFN20L4	-> Production	-> Enlarges detection range of HALIOS® ICs E909.05 and E909.06 -> Limiting amplifier output -> High resistive output stage

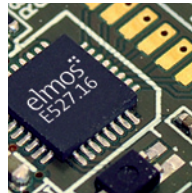
E527.16 | HALIOS® Gesture Switch

Key Features

- > Ready-to-use functions
- > Implemented gesture recognition
- > Detection approx. 25cm
- > Direct light control possible
- > PWM-Output (125 Hz, 8 Bit)
- > Reference schematics and reference layout are available

Board

- > Order No. see page 54



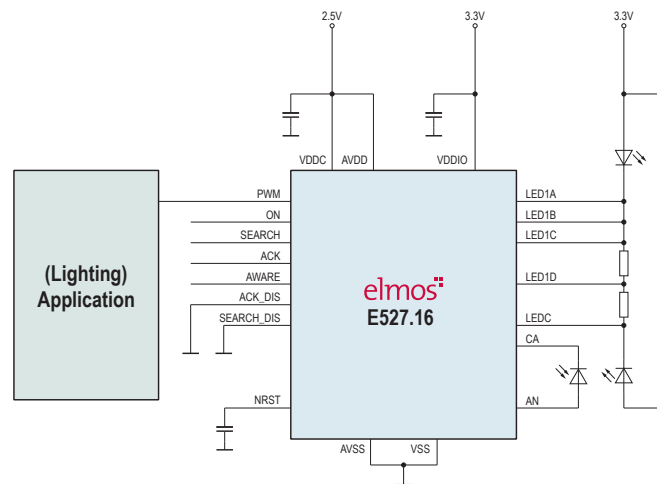
Applications

- > Innovative motion controlled light
- > Optical push buttons and controls
- > Wake-up function for saving energy
- > Pre-selection to simplify menu structures

Packages

- > QFN32L5

Application Diagram



E909.05 | HALIOS® Multi-Purpose Sensor IC for Various Applications

Key Features

- > Optical/capacitive sensor IC for gesture control and object detection
- > Controls up to 4 LED sending channels
- > 16Bit µC with up to 60k FLASH
- > SPI, I²C and LIN-SCI Interfaces
- > Standard Firmware implemented

Board



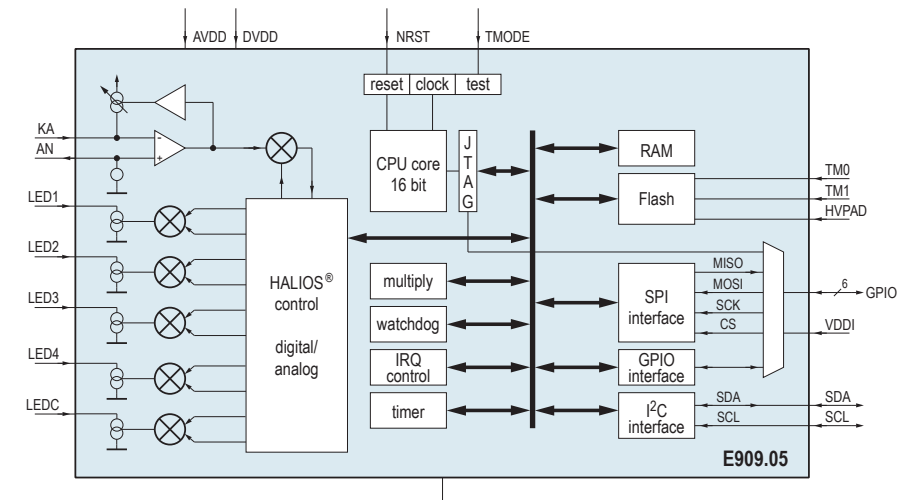
Applications

- > Gesture Control
- > Proximity and Touch Control
- > Capacitive Liquid Level Control

Packages

- > QFN32L5

Application Diagram



E909.06 | HALIOS® Multi-Purpose Sensor IC for Automotive

Key Features

- > Optical/capacitive sensor IC for gesture control and object detection
- > Controls up to 4 LED sending channels
- > 16Bit μ C with up to 60k FLASH
- > SPI, I²C and LIN-SCI Interfaces
- > Standard Firmware implemented

Board

- > Order No. see page 54



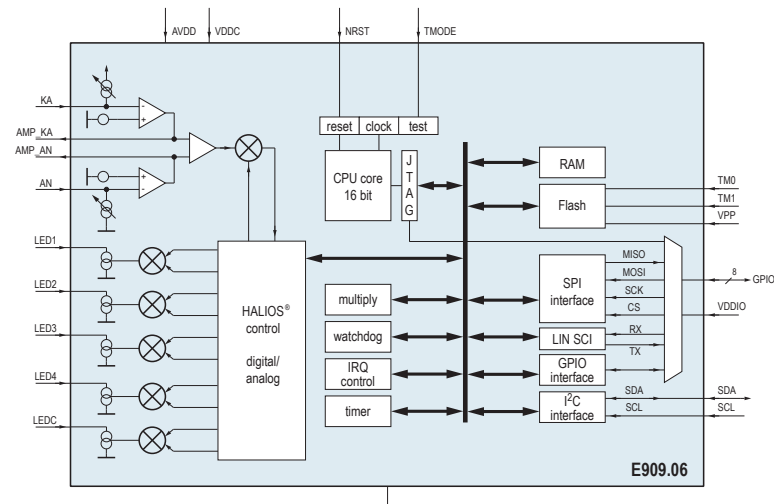
Applications

- > Gesture Control
- > Proximity and Touch Control
- > Capacitive Liquid Level Control

Packages

- > QFN32L5

Application Diagram



E909.11 | Low Power HALIOS®

Key Features

- > Lowest stand by current of 0.4 μ A
- > Up to 1MHz HALIOS® frequency
- > Controls up to 3 LED sending channels
- > Ambient Light Measurement
- > High Speed 3.4MHz I²C Interface
- > New electro-optical basic coupling implemented
- > Standard Firmware implemented

IC



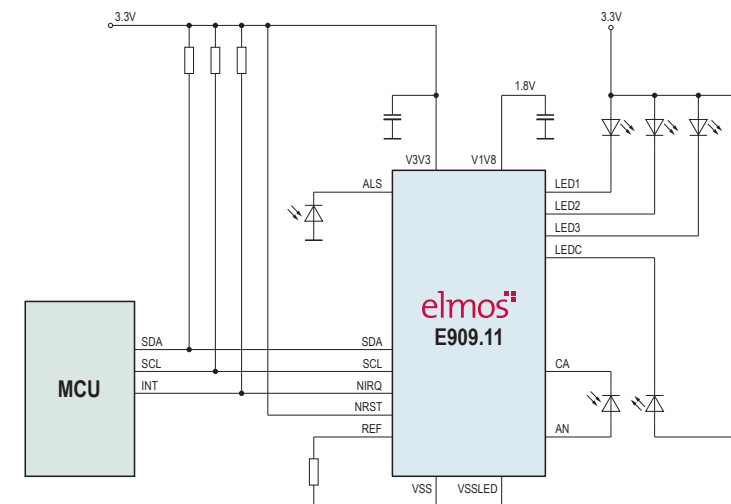
Applications

- > High performance proximity detection up to 500mm
- > Fast and reliable 3D gesture control solution for mobile and industrial devices

Packages

- > QFN20L4
- > Bare-Die

Application Diagram



E909.07 | Transimpedance Amplifier with High Sensitivity

Key Features

- > Increases proximity range of E909.05/E909.06 by a factor 5
- > Limiting amplifier output
- > High resistive output stage
- > No current consumption in standby mode

IC



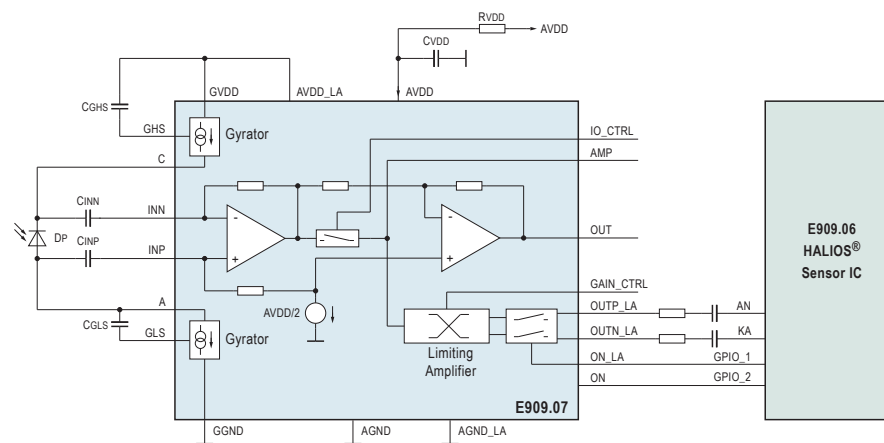
Applications

- > Optical receivers
- > Transimpedance amplifiers
- > Multiplex function for channel expander of chip set

Packages

- > QFN20L4
- > Bare-Die

Application Diagram





Sensor | Pressure Sensor

Part No. / Function	V _{SUPPLY}	Output	Range	Package	Status ¹⁾	Comment
E520.17 Low Voltage Sensor Signal Processor	2.7 to 3.6V	PWM, SPI™, I²C	Sensor Sensitivity 1mV/V to 130mV/V	QFN20L5 Bare-Die	-> Engineering Samples	-> In-circuit system calibration via SPI™ or I²C -> Built-in self test capability and self diagnostics during operation
E520.18 Advanced Versatile Sensor Signal Processor for Resistive Bridges	3.3V to 16V, up to 36V with external transistor	Analog voltage, PWM, SPI™, I²C	Sensor Sensitivity 1mV/V to 130mV/V	QFN32L5 Bare-Die	-> Engineering Samples	-> In-Circuit system calibration via OWI, SPI™ or I²C -> Built-in self test capability and self diagnostics during operation -> Direct supply from car battery
E520.33 Sensor Signal Processor with SENT Interface	5V ±0.25V	Digital: SENT data interface	Sensor Sensitivity 1mV/V to 130 mV/V	TSSOP20 Bare-Die	-> Production	-> Automotive protection (±18V) -> Single wire interface for calibration -> Extended self diagnostics -> SENT interface acc. SAE J2716, Jan2010



Sensor | Smoke Detector Controller

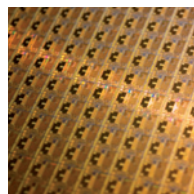
Part No. / Function	V _{SUPPLY}	Protection	I _{SUPPLY}	Package	Status ¹⁾	Comment
E520.32 Programmable Smoke Detector Controller	8V to 50V	60V	Configurable: Down to 88µA	SOIC14N	-> Engineering Samples	-> For network addressable, optical smoke detectors -> 1.5 to 45nA photo current input range -> 8bit µC, 4kB FLASH, 32B EEPROM, 128B RAM -> Configurable/programmable loop interface

E520.17 | Low Voltage Sensor Signal Processor

Key Features

- > Sensor signal processor for resistive bridges
- > PGA with gain 4...400, adjustable offset: $\pm 250\%$ FS, 16-bit ADC
- > Digital compensation of offset- and gain drift to 3rd order and gain nonlinearity
- > Digital outputs: SPI or I²C, PWM via GPIO (pressure, temperature, alarm, ...)
- > Low voltage supply 2.7 to 3.6V
- > In-circuit system calibration via single wire interface

Bare Die



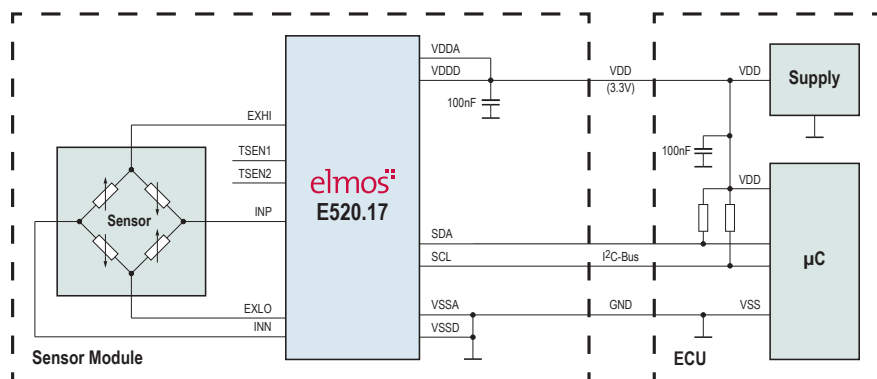
Applications

- > Pressure Sensors
- > Strain gauge transducers (force, torque, strain; ...)
- > Weight scales
- > MR Sensor bridge readout

Packages

- > QFN20L5
- > Bare-Die

Application Diagram



E520.18 | Advanced Versatile Sensor Signal Processor for Resistive Bridges

Key Features

- > Sensor signal processor for resistive bridges
- > PGA with gain 4...400, adjustable offset: $\pm 250\%$ FS, 16-bit ADC
- > Digital compensation of offset- and gain drift to 3rd order and gain nonlinearity
- > Versatile outputs: Analog (12-bit DAC), PWM, SPI or I²C, GPIOs
- > Supply options from 3.3V to 36V with over-voltage and reverse polarity protections
- > In-circuit system calibration via single wire interface

Board

- > Order No. see page 54



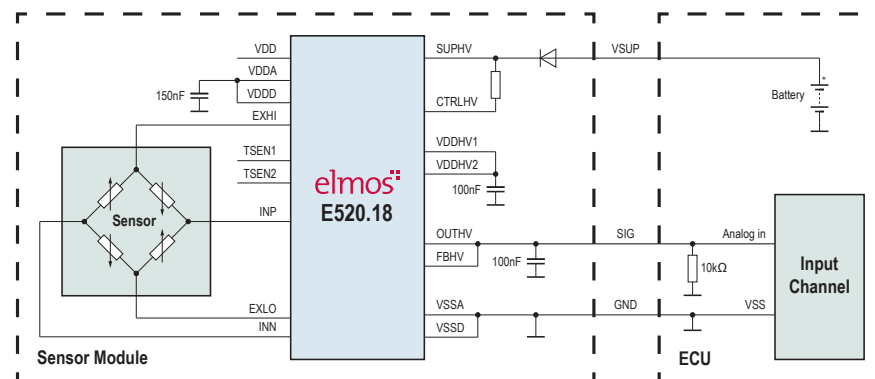
Applications

- > Pressure Sensors
- > Strain gauge transducers (force, torque, strain; ...)
- > Weight scales
- > MR Sensor bridge readout

Packages

- > QFN32L5
- > Bare-Die

Application Diagram



E520.33 | Sensor Signal Processor with SENT Interface

Key Features

- > Sensor signal processor for resistive bridges
- > PGA with gain 4 ... 400, adjustable offset: +/- 250% FS, 16-bit ADC
- > Digital compensation of offset- and gain drift to 3rd order and gain nonlinearity
- > SENT data interface according to SAE J2716, JAN2010
- > Supply 5.0V $\pm$ 0.25V with over-voltage and reverse polarity protection ($\pm$ 18V)
- > In-circuit system calibration via single wire interface

Board

- > Order No. see page 54



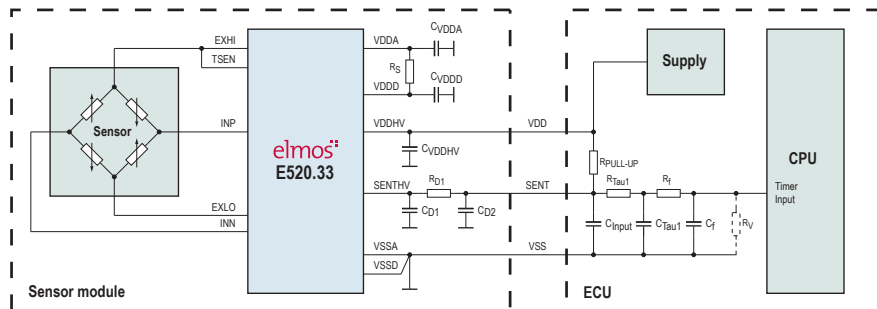
Applications

- > Pressure Sensors
- > Strain gauge transducer
- > Automotive or industrial products using resistive sensor bridges

Packages

- > TSSOP20
- > Bare-Die

Application Diagram



E520.32 | Programmable Smoke Detector Controller

Key Features

- > 2-Wire bus operation with 8 to 0 V supply, low supply current down to 88 μ A
- > Configurable bus transceiver
- > Embedded 8-bit μ C with 4kByte Flash-ROM
- > Sensitive input for photo diode and programmable LED driver
- > Thermistor input for separate temperature surveillance
- > 4 GPIOs combined with programming interface for factory configuration

Board



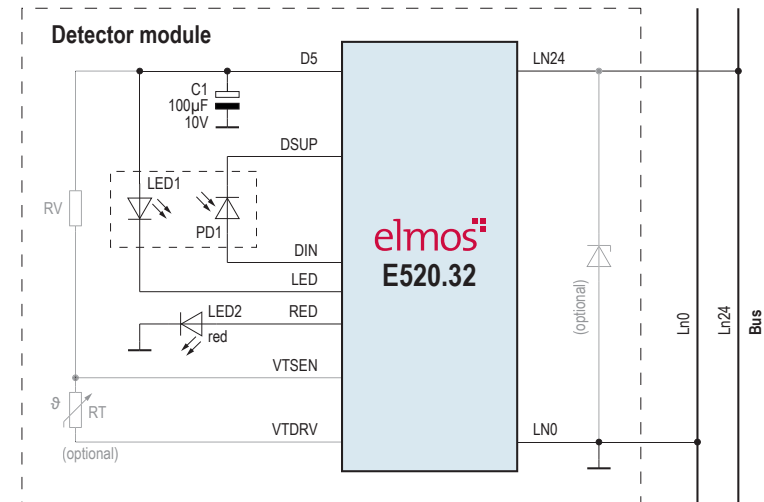
Applications

- > Bus connected, network addressable smoke-detectors

Packages

- > SOIC14 (150 mil)

Application Diagram





Ultrasonic

Part No.	Function	Board type	Description	Order No.
E524.02	Digital Ultrasonic Parking Assist	Evaluation Kit	Evaluation Kit for Ultrasonic Sensor Systems with 2 Wire Interface	K52402-0001
E524.03	Digital Ultrasonic Parking Assist	Evaluation Kit	Evaluation Kit for Ultrasonic Sensor Systems with 3 Wire Interface	K52403-0001
E524.04	Digital Ultrasonic Parking Assist	Evaluation Kit	Evaluation Kit for Ultrasonic Sensor Systems with SPI Interface	K52404-0001
E524.14	LIN Smart Ultrasonic Parking Assist	Evaluation Kit	Development Kit for LIN Ultrasonic Park Assist Systems	K52414-0001

Magnetic

Part No.	Function	Board type	Description	Order No.
E524.50	Integrated AMR Current Sensor	1-Phase-Board	20A Demonstration Board for AMR Current Sensor	K52450-0001
E524.50	Integrated AMR Current Sensor	ASIF-Prog.-Interface	Supplementary Programming Kit for AMR Current Sensor	K52450-0002
E524.50	Integrated AMR Current Sensor	3-Phase-Board	3-Phase 200A Evaluation Board for AMR Current Sensor	K52450-0003

Passive Infrared Sensor

Part No.	Function	Board type	Description	Order No.
E931.97 LED2	Integrated Circuit for Smart PIR Sensors	Demoboard	Demoboard for PIR Controller E910.97 with LED Control	K93197-0001
P931.97 Alarm Eval4	Integrated Circuit for Smart PIR Sensors	Demoboard	Demoboard for PIR Controller E910.97 with Alarm Evaluation	K93197-0002
P931.97 AC REL2	Integrated Circuit for Smart PIR Sensors	Demoboard	Demoboard for PIR Controller E910.97 with Relay Control	K93197-0003



Sensor | Boards

HALIOS®

Part No.	Function	Board type	Description	Order No.
E527.16	HALIOS® Gesture Switch	Demoboard	Reference Design Board for HALIOS® Gesture Control	RD 1210001
E909.06	Gesture Reference HALIOS® Board	Demoboard	Reference Board for 3D HALIOS® Gesture Control	RD 1210005
E909.06	HALIOS® COM Board	Com Board	HALIOS® Communication Board	AC 1210001

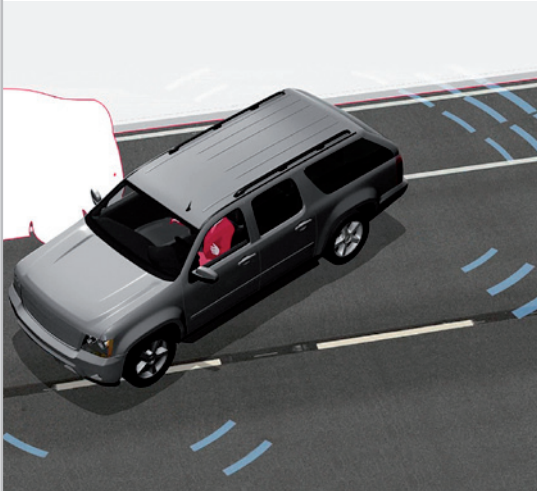
Pressure Sensor

Part No.	Function	Board type	Description	Order No.
E520.18	Advanced Versatile Sensor Signal Processor for Resistive Bridges	Evaluation Kit	Evaluation Kit for Versatile Sensor Signal Processors with Analog or PWM Outputs	K52018-0001
E520.33 ZELOS	Sensor Signal Processor with SENT Interface	Evaluation Kit	Evaluation Kit for Sensor Signal Processor E520.33 (SENT output)	K52033-0001



Sensor | Product-Flyer

elmos[®]



Ultrasonic Solutions

Unrivalled detection range
and reliability

mechaless[®]
member of the elmos group



Innovation in Gesture Control

...appearing in today's products.



Safety

Part No. / Function	V _{SUPPLY}	V _{ER}	Output	Range	Package	Status ¹⁾	Comment
E524.40 Safety Pressure Sensor with PSI5 Interface	5V to 18V	-	PSI5	400...1500hPa/ 400...1900hPa	SOIC20 (cavity)	-> Engineering Samples	-
E981.07 2 Channel Master Transceiver PSI5	8.5V to 25V	-	PSI5	-	QFN20L5	-> Production -> Evaluation Board	-
E981.08 4 Channel Master Transceiver PSI5	8.5V to 25V	-	PSI5	-	QFN32L7	-> Production	-
E981.17 4 Channel Squib Driver	4.5V to 5.5V	8V to 35V	-	-	QFN44L7	-> Production	-
E981.18 8 Channel Squib Driver	4.5V to 5.5V	8V to 35V	-	-	QFN44L7	-> Production	-
E981.20 4 Channel Squib Driver	4.5V to 5.5V	8V to 35V	-	-	QFN44L7	-> Production	-
E981.21 8 Channel Squib Driver	4.5V to 5.5V	8V to 35V	-	-	QFN44L7	-> Production	-

E524.40 | Safety Pressure Sensor with PSI5 Interface

Key Features

- > Standard pressure sensor for crash detection (side impact, pedestrian protection) according to specification AK-LV29 (VDA)
- > PSI5 data interface using synchronous or asynchronous transmission modes
- > Pressure sensor cell integrated with the signal processing IC
- > Input precision amplifier and signal chain:
 - Range 1: 400...1500 hPa, for "side impact detection"
 - Range 2: 400...1900 hPa, for "pedestrian protection"

Board

- > Order No. see page 59



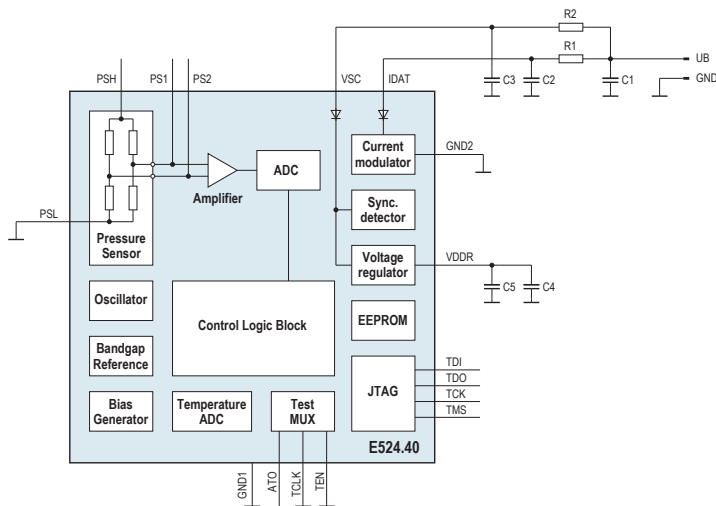
Applications

- > Crash pressure sensor for passive safety
- > Active pedestrian protection safety systems

Packages

- > SOIC20 (cavity)

Application Diagram



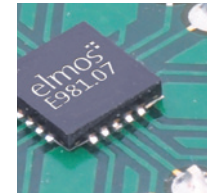
E981.07/08 | 2-/4-Channel Master PSI5 Transceiver

Key Features

- > Two respective, four independent operating channels
- > Device parameters comply with PSI5-P10P-500/3L (PSI5 spec 1.3)
- > Applicable for parallel and universal mode (standard) as well as daisy chain mode (increased)
- > Channel output short circuit protected against 40V and GND

Board

- > Order No. see page 19



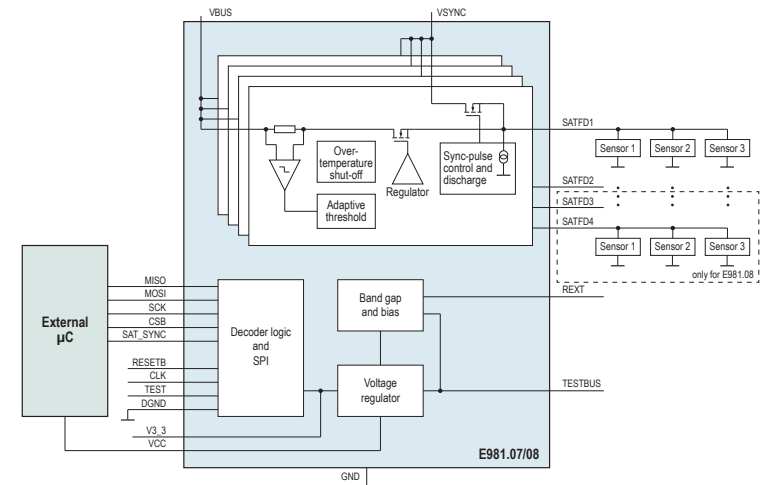
Applications

- > Passenger restraint systems

Packages

- > QFN32L7
- > QFN20L5 respective

Application Diagram





Safety | Boards

Part No.	Function	Board type	Description	Order No.
E981.07	2-Channel Master PSIS Transceiver	Evaluation Board	Small Evaluation Board for 2-Channel PSIS Master	K98107-0001
E981.07	2-Channel Master PSIS Transceiver	Adapter Board	Adapter Board E981.07 for Evaluation Board	K98107-0002



Engine Management

Part No. / Function	V _{SUPPLY}	I _{OUT}	RDS _{ON}	Interface	Package	Status ¹⁾	Comment
E910.89 IGBT Driver for Spark Plugs	6V to 26V	-	Drives gate of external IGBT	Digital, level controlled	SOIC8N	-> Production	-> Slew rate controlled gate driver -> Soft switch-on/-off, safety-timer -> Differential input -> Operating temperature range -40°C to +140°C
E525.01 IGBT Driver for Spark Plugs	5.5V to 28V	-	Drives gate of external IGBT	Digital, level controlled	SOIC8N	-> Production -> Demoboard	-> Slew rate controlled gate driver -> Soft switch-on/switch-off, safety timer -> Operating temperature range -40°C to +140°C

E910.89 | IGBT Driver for Spark Plugs

Key Features

- > Slew rate controlled gate drive voltage for IGBT
- > Soft turn-on function
- > Soft switch-off function with safety timer
- > Differential input for optimum suppression of ground shift disturbances
- > Integrated power-on reset
- > Supply voltage range 6V to 26V
- > Operating temperature range -40°C to +140°C

IC



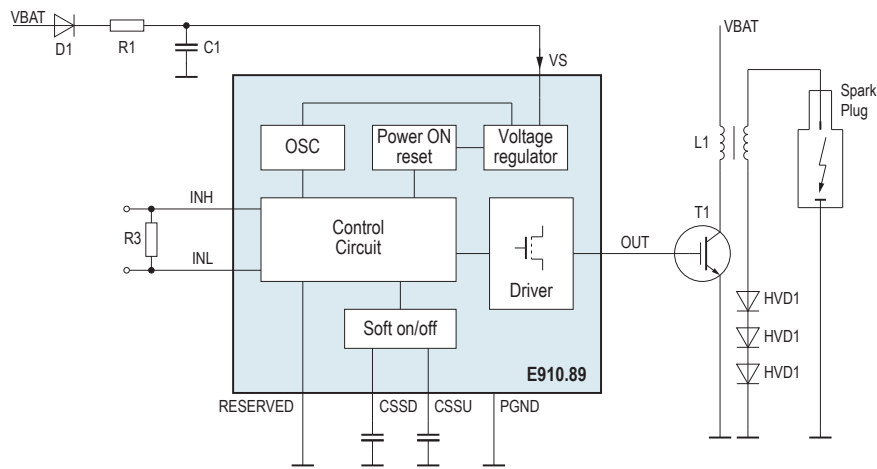
Applications

- > Ignition control for automotive spark plugs

Packages

- > SOIC8N

Application Diagram



E525.01 | IGBT Driver for Spark Plugs

Key Features

- > Slew controlled gate drive of IGBT
- > Soft switch-on of primary coil current
- > Self timed soft shut-down to prevent destruction of coil or IGBT due erroneous control input
- > Ground shift tolerant input: ± 1.5 V
- > Supply voltage: 5.5V to 28V
- > Compact assembly close to pencil coil due to few components
- > Qualified according to AEC-Q100

IC



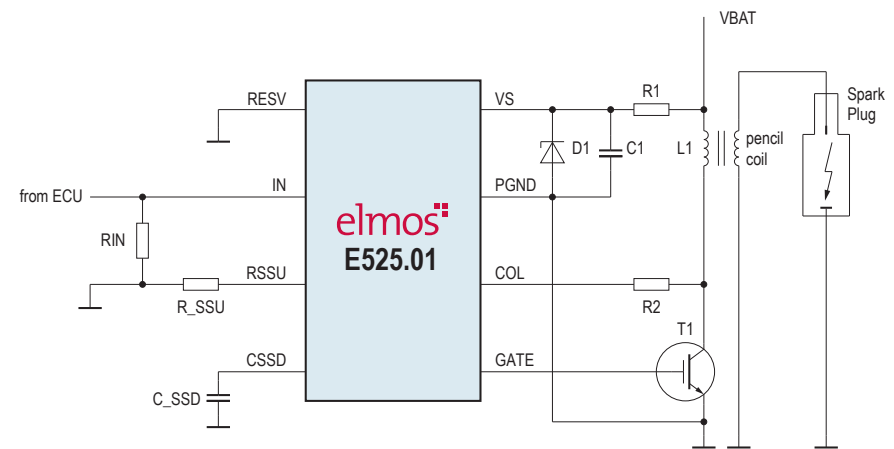
Applications

- > Ignition control for petrol engines

Packages

- > SOIC8N

Application Diagram



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		SOIC28	E52001A05aE	
E520.02	12x Low-Side Driver	QFN32L5	E52002A61aC	34
		SOIC28	E52002A05aE	
E520.03	8x Low-Side Driver with Stall Detection	SOIC20	E52003A55aE	34
		QFN20L5	E52003A62aC	
		QFN32L5	E52003A61aC	
		QFN32L5	E52008A61aC	
E520.08	8x Low-Side Driver	SOIC20	E52008A55aE	34
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		SOIC14N	E52013A54gD	
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