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# Automotive Door Zone Advanced Solutions for Door Zone Electronics

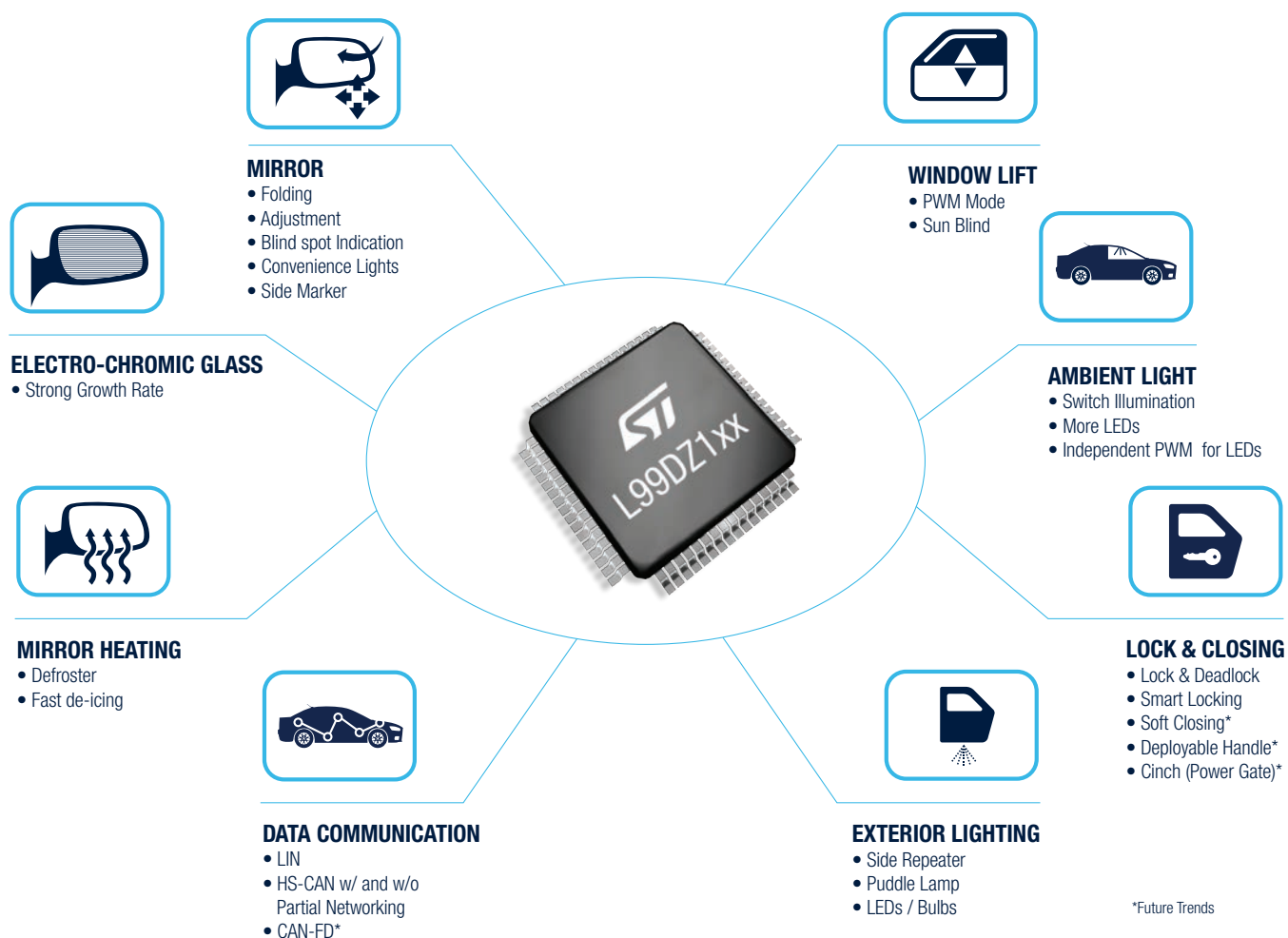




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# Door Zone System ICs



\*Future Trends

ST's next-generation Automotive Door Zone System ICs offer innovative solutions to boost power efficiency and enable tomorrow's car electrification. Much more than having pure electric vehicles, car electrification is about electricity being increasingly adopted to replace mechanical components/ relays by electronics or in some cases allowing new features. Moreover, trends show that tomorrow everything inside the

door will be automated based on new driving concepts like smart automatic door opening where sensors will detect approaching pedestrians or cyclists and automatically control the door opening. ST's new Door Zone family consists of a range of system ICs specifically designed to integrate in a single package all the main components and functions required to manage these new and advanced automotive door applications.

## A TYPICAL DOOR ZONE MODULE INCLUDES THREE KEY BLOCKS:

### 1. Actuator drivers

- Integrated half bridges for Motor Control (Mirror Folding & X-Y Adj, Lock & Dead-Lock)
- H-Bridge drivers for Window Lifter or Power Tail Gate, gate drivers for mirror heater and electrochromic glass
- High-side drivers for LEDs and bulb supplies

### 2. Data communication

- HS-CAN transceiver
- LIN transceiver

### 3. Power management

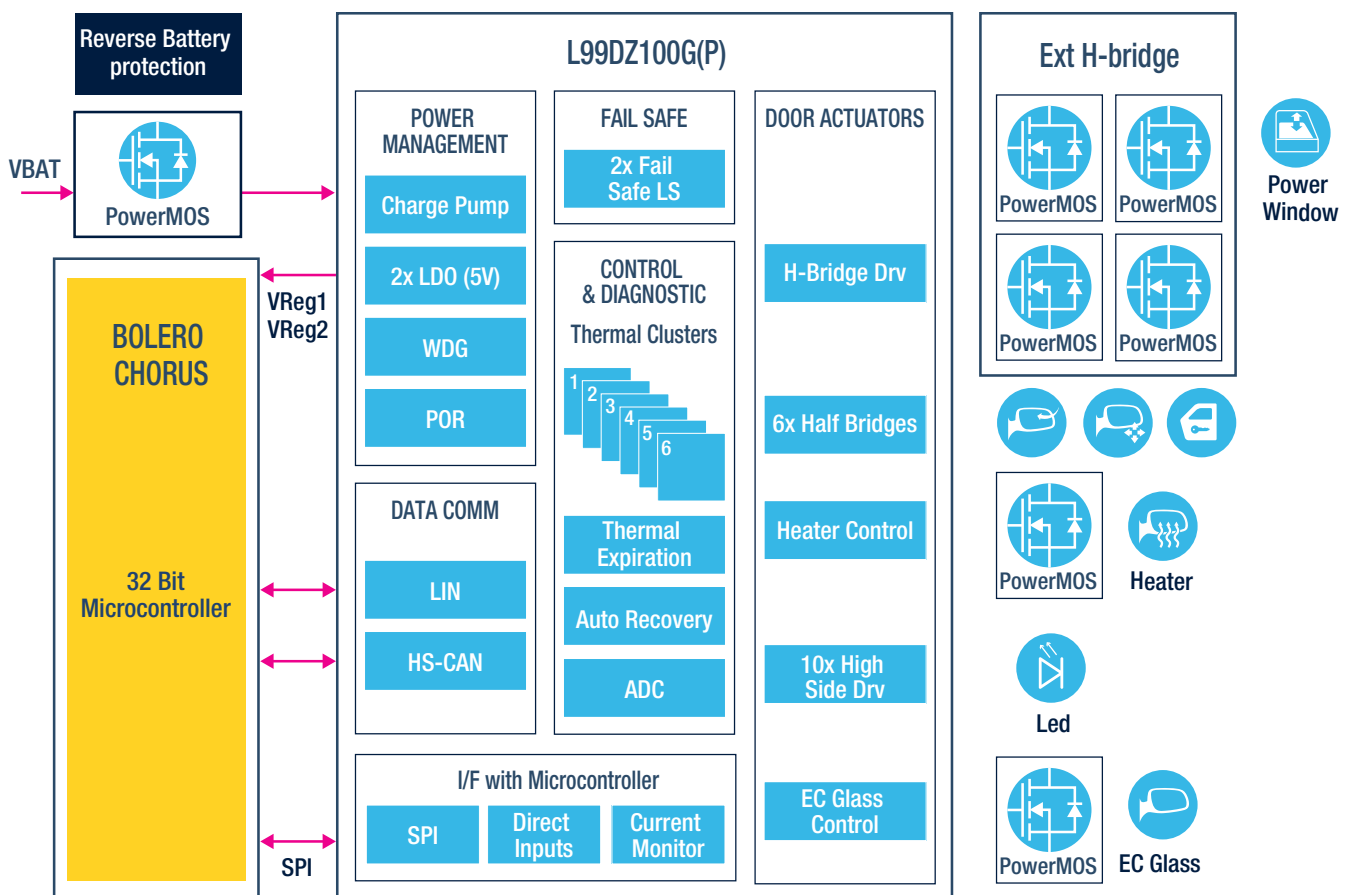
- Linear dropout regulators for external MCU and peripheral supply
- Wake-up Input
- Configurable watchdog
- Programmable reset

## DOOR ZONE SYSTEMS IC

Integrating all these functions inside a single die, ST's L99DZ100G(P) door zone system IC provides electronic control modules with enhanced power management functions, including various standby modes, as well as LIN and HS CAN physical communication layers.

The L99DZ200 and L99UDL01 door module ICs complete ST's Door Zone portfolio addressing respectively Power Trunk and Central Locking applications.

Thanks to ST's advanced, proprietary BCD8S automotive technology, these controller chips help designers save space while improving reliability and energy efficiency as they group together both the door actuator driver and power management device in to a single device.



## DOOR ZONE TOPOLOGIES

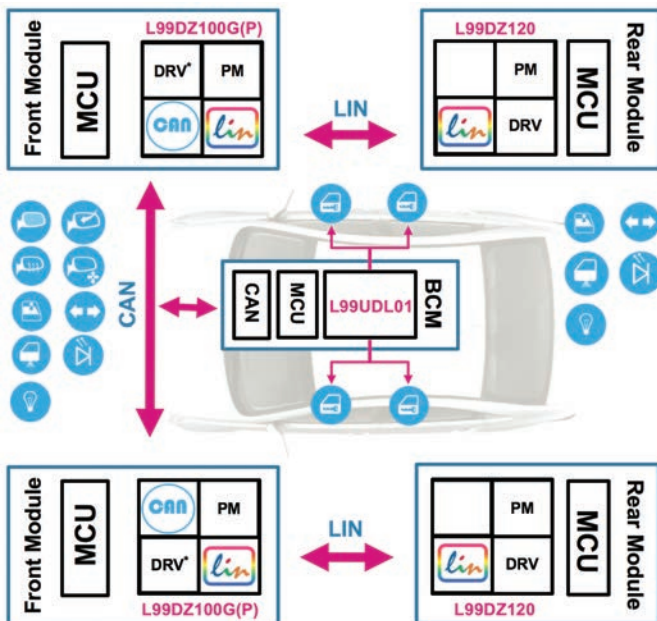
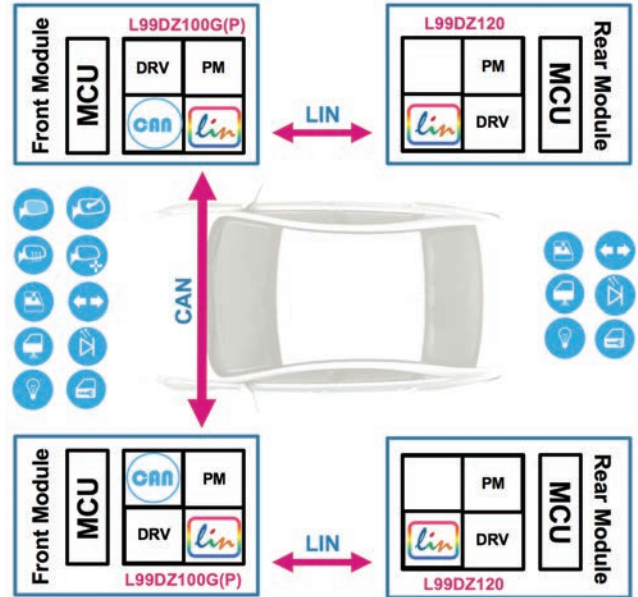
Different topologies can be covered by using the Door Zone devices

### KEY FEATURES

- Decentralized Single Chip Topology
- Centralized Lock Topology
- Front Drives Rear Topology
- Mechatronic Mirror Topology
- The Power Trunk Solution

### DECENTRALIZED SINGLE CHIP TOPOLOGY

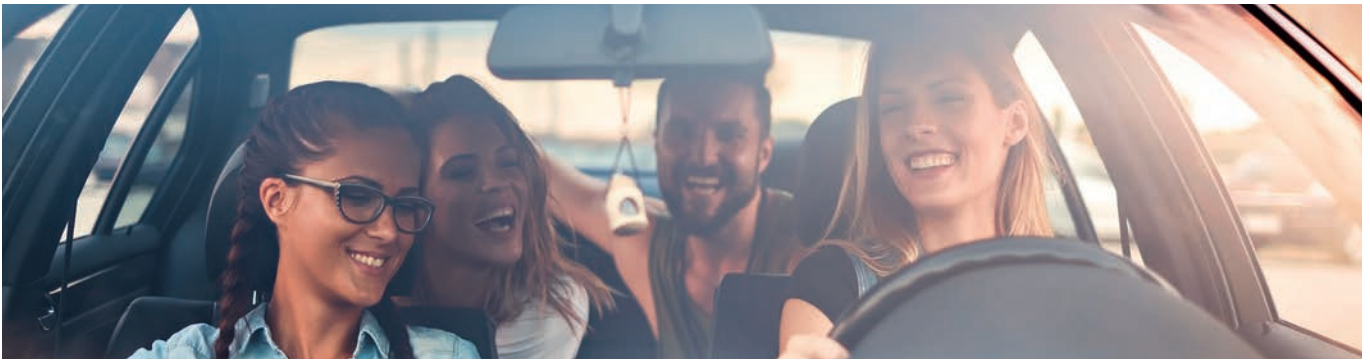
The Decentralized Single Chip Topology consists of a single chip dedicated to each of the doors in the car; the L99DZ100G(P) is designed for front doors while the L99DZ120 covers the typical loads required by rear doors.



### CENTRALIZED LOCK TOPOLOGY

The Centralized Lock Topology uses a single chip dedicated to each door, but all the locks in the car use our L99UDL01.

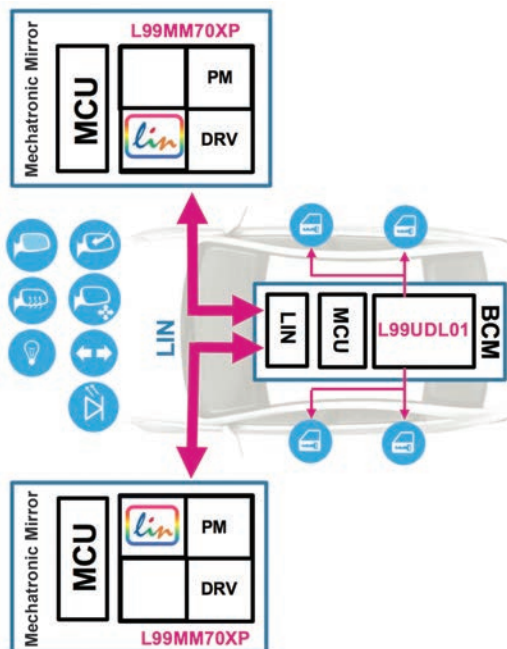
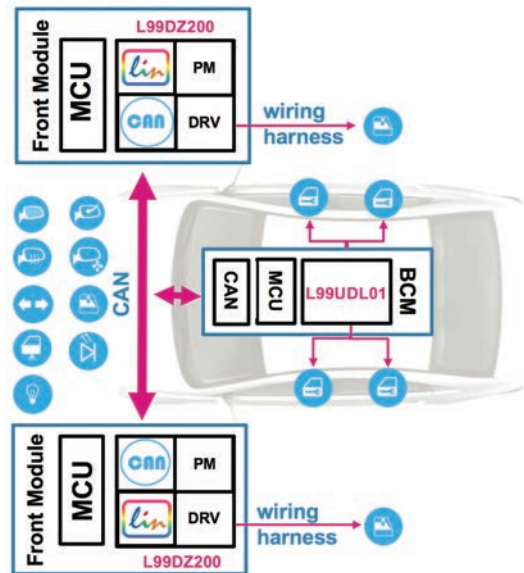
The L99DZ100G(P) outputs, typically dedicated to door locks, are used to drive high current (up to 7.5A) required to fold mirrors.



## FRONT DRIVE REAR TOPOLOGY

The Front Drive Rear Topology positions the main electronics of the front and rear doors inside the front door module (both driver and passenger sides). The L99DZ200 is developed for this particular topology being able to drive from the front position two window lifts, the one located in the front door and the one located in the rear one.

For this topology, the lock is centralized and can be driven by the L99UDL01 positioned in a centralized BCM.

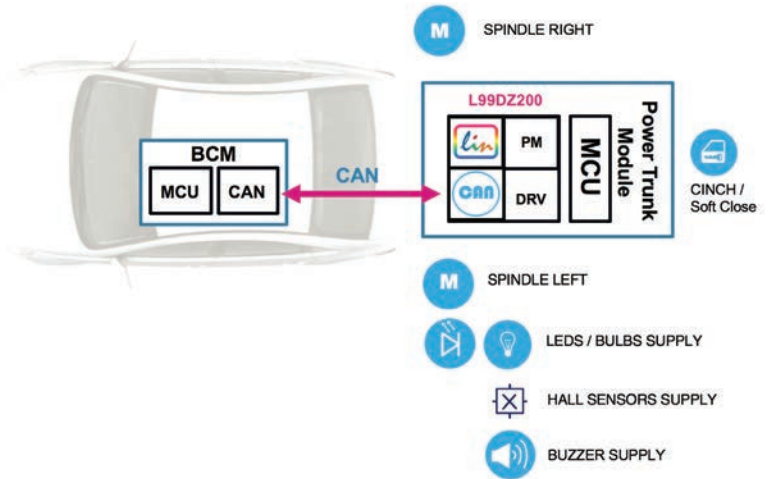


## MECHATRONIC MIRROR TOPOLOGY

The Mechatronic Mirror Topology embeds all the electronics needed by the mirror in a single device (the L99MM70XP) located inside the mirror itself. In a typical car architecture using the Mechatronic Mirror topology, the door lock management is centralized and can be addressed by means of the L99UDL01 which is able to drive all the locks of the car from its central position. The remaining part of the door electronics (mainly the window lift) is implemented by means of discrete devices.

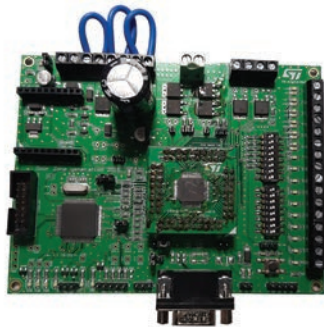
## POWER TRUNK SOLUTION

The Power Trunk Solution is powered by the L99DZ200 device. Thanks to its two integrated h-bridge drivers (configurable in Single or Dual mode), the L99DZ200 is able to manage both spindle motors used to raise and lower the Power Trunk as well as the e-latch that locks the Power Trunk itself. The L99DZ200 can also be used to manage the other typical loads located in the Power Trunk (buzzer, Hall-effect sensor supplies, LED and bulb supplies and more).



## DEVELOPMENT SUPPORT TOOL

### Evaluations kits



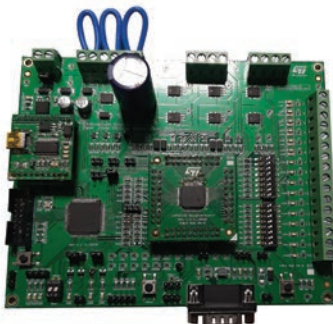
#### **EVAL-L99DZ100G:**

dedicated evaluation board with L99DZ100G(P) – L99DZ120 daughterboards, drivers & user-friendly GUI. Motherboard equipped with an SPC56 automotive MCU



#### **EVAL-L99UDL01:**

dedicated evaluation board with L99UDL01 daughterboard, drivers & user-friendly GUI. Motherboard equipped with an SPC56 automotive MCU



#### **EVAL-L99DZ200:**

dedicated evaluation board with daughterboard, drivers & user-friendly GUI. Motherboard equipped with an SPC58 automotive MCU



# Smart Selector and Finder mobile app

The best Door Zone solution for their applications can be found inside the VIPower-FINDER mobile app for Android™ and iOS™, which is available for free at [www.st.com/vipower-finder](http://www.st.com/vipower-finder)



## KEY FEATURES

- Smart parametric or part number search capability
- Technical datasheet download and off-line consulting
- Access to general descriptions, key features, electrical parameters, and product status
- “Add to favorites” selected products and datasheets
- Share technical documentation via social media or e-mail



## DOOR ZONE PRODUCT

Part number	Package	Mirror Adj. (RDSON, ILIMIT)	Mirror Fold (RDSON, ILIMIT)	Mirror Heater (RDSON, ILIMIT)	Lock (RDSON, ILIMIT)	Dead Lock (RDSON, ILIMIT)	EC Class	Window Lift (hbridge drv)	CAN Transceiver	LIN Transceiver	Power Mgmt.	SPI	Recovery Mode	LED / Bulbs Supply (HSD)
<b>Front Door</b>														
L99DZ100GP	LQFP64	● (2000mΩ, 0.5A)	● (300mΩ, 3A)	●	● (100mΩ, 7.5A)	● (300mΩ, 3A)	●	●	● (with P/N)	●	●	●	●	● (x10)
L99DZ100G	LQFP64	● (2000mΩ, 0.5A)	● (300mΩ, 3A)	●	● (100mΩ, 7.5A)	● (300mΩ, 3A)	●	●	●	●	●	●	●	● (x10)
L99DZ80EP	TQFP64	● (1600mΩ, 0.5A)	● (300mΩ, 3A)	● (100mΩ, 5A)	● (150mΩ, 6A)	● (300mΩ, 3A)	●	●				●	●	● (x3)
L99DZ70XP	Power SSO-36	● (1600mΩ, 0.75A)	● (300mΩ, 3A)	● (90mΩ, 6A)	● (150mΩ, 6A)	● (300mΩ, 3A)	●					●	●	● (x4)
L9950XP	Power SSO-36	● (800mΩ, 1.6A)	● (300mΩ, 3A)	● (100mΩ, 6A)	● (150mΩ, 6A)	● (800mΩ, 1.5A)						●	●	● (x4)
L9953LXP	Power SSO-36	● (800mΩ, 1.6A)	● (150mΩ, 6A)	● (100mΩ, 6A)								●		● (x2)
<b>Rear Door</b>														
L99DZ120	LQFP64				● (100mΩ, 7.5A)	● (300mΩ, 3A)		●		●	●	●	●	● (x10)
L99DZ81EP	TQFP64				● (150mΩ, 6A)	● (300mΩ, 3A)		●				●	●	● (x4)
L9951XP	Power SSO-36				● (150mΩ, 7.4A)	● (200mΩ, 5A)						●	●	● (x2)
<b>Front drives Rear Door &amp; Power Trunk</b>														
L99DZ200	LQFP64	● (2000mΩ, 0.5A)	● (150mΩ, 7.5A)	●			●	● (x2)	●	●	●	●	●	● (x7)
<b>Mechatronic mirror</b>														
L99MM70XP	Power SSO-36	● (1600mΩ, 0.5A)	● (300mΩ, 3A)	● (90mΩ, 6A)			●			●	●	●	●	● (x2)
<b>Central Lock</b>														
L99UDL01	TQFP64				●	●						●	●	
					6x (90mΩ, 5.3A)									



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Order code: BRDOORZONE0320

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