

# L9953 and L9954: automotive dedicated door-actuator drivers

Advanced semiconductor solution for different car door variants



The L9953 and L9954 are part of **STMicroelectronics'** market-leading automotive door actuator driver family. They meet the requirements for centralized or de-centralized door-lock topologies, and so cover a wide range of car-door options.

These actuator drivers support all regular door-module loads such as mirror leveling, defrosters, lighting functions and lock or folder motors (L9953 only).

Following the evolutions in the automotive market, these devices are optimized for the new generation of motors and support LED lighting.

## General features

- Three half bridges for mirror adjustment
- One full bridge for door lock or folder (L9953 series only)
- One high-side driver for mirror defroster
- Two high-side drivers for lighting functions
- Programmable soft-start function to drive loads with high inrush currents
- Very low current consumption in standby mode ( $I_s < 6 \mu\text{A}$  typ.)
- Current monitor output for mirror axis, lock and defroster
- Temperature warning indication and thermal shutdown protection
- Overcurrent and open-load detection for all outputs
- PWM control of all outputs
- Charge pump output for reverse polarity protection
- Configurable high-side drivers in bulb or LED mode
- Standard serial peripheral interface

## Main application

- Front-door modules

## Reference table

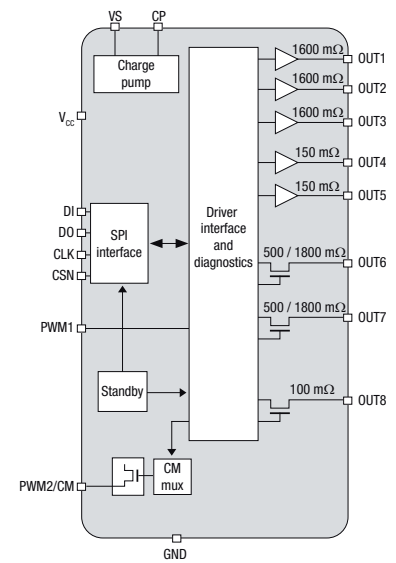
Features	L9953	L9953L	L9954	L9954L
PowerSO-36	• <sup>1</sup>	• <sup>1</sup>	• <sup>1</sup>	• <sup>1</sup>
PowerSSO-36	•	•	•	•
SPI	•	•	•	•
Reverse battery supply	•	•	•	•
PWM1	•	•	•	•
PWM2	•	•	•	•
Current monitor	Selected HS 4x	Selected HS 4x	Selected HS 4x	Selected HS 4x
Recovery mode	•	•	•	•
Heater control ( $R_{DS(on)}$ 1 limit)	100 mΩ 6 A	100 mΩ 6 A	100 mΩ 6 A	100 mΩ 6 A
Programmable HS bulb/LED control ( $R_{DS(on)}$ 1 limit)	2x 500 mΩ 1.5 A  <b>Bulb only</b>	2x 500 mΩ 1.5 A / 1800 mΩ 0.5 A	2x 500 mΩ 1.5 A  <b>Bulb only</b>	2x 500 mΩ 1.5 A / 1800 mΩ 0.5 A
Lock control ( $R_{DS(on)}$ 1 limit)	150 mΩ 6 A	150 mΩ 6 A	–	–
Mirror adjustment ( $R_{DS(on)}$ 1 limit)	800 mΩ 1.5 A	1600 mΩ 0.75 A	800 mΩ 1.5 A	1600 mΩ 0.75 A

1) on request only

## Door-module solutions for front car doors

Within ST's advanced door-module driver family, the L9953 is a practical solution for door modules equipped with on-board lock and folder drivers, while the L9954, with the 150 mΩ full bridge removed, is the right choice for cars adopting a centralized lock strategy. The devices are housed in PowerSSO-36 and PowerSO-36 packages.

## L9953LXP block diagram

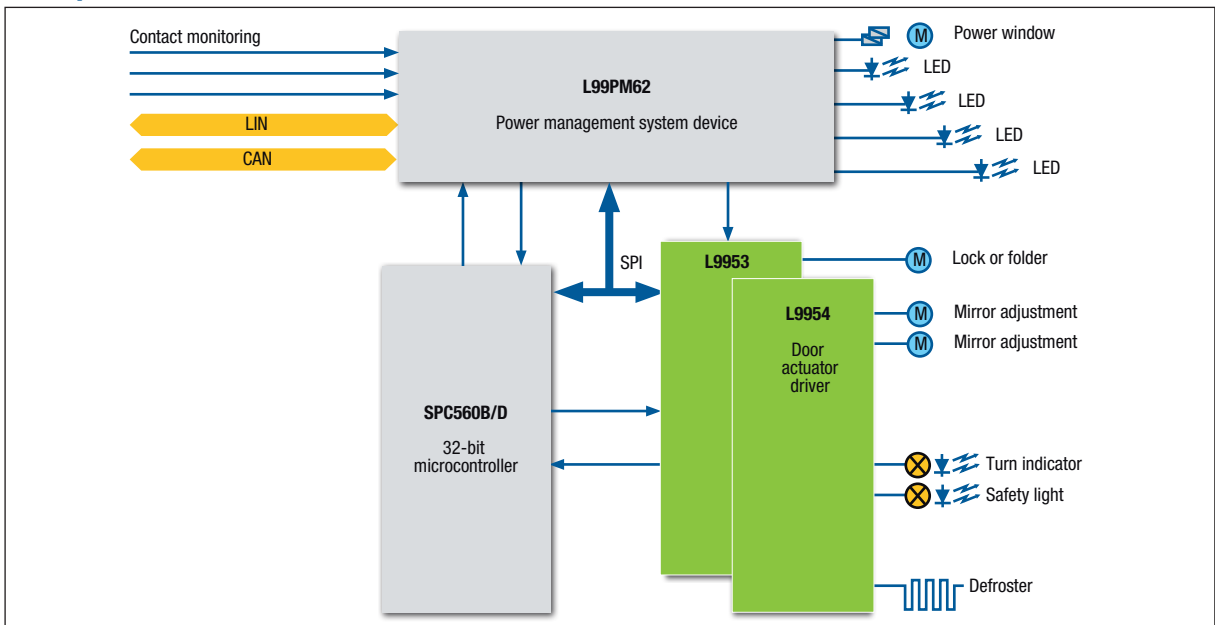


PowerSSO-36



PowerSO-36

## Example of door modules



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