





## **Product brief**

# TLF11251 EP/LD

# Integrated half-bridge

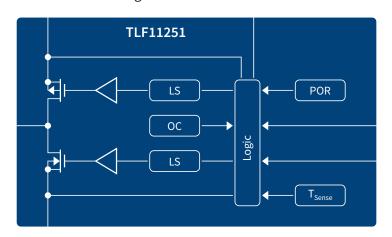
The TLF11251 is an integrated half-bridge capable for 2.5 A enabling the usage of OPTIREG™ PMIC TLF35584/85 with high-end 2<sup>nd</sup> generation TriCore™ AURIX™ 32-bit microcontrollers TC38x/TC39x.

The device is integrating high-side P-channel and low-side N-channel MOSFETs combined with respective drivers and level shifting stage which allows the conversion of the input logic signals of microcontroller's embedded core voltage controller to the supply voltage level of the gate drivers.

The integrated protection features like output current sensing and limitation and over-temperature protection are allowing system optimization. Central functions like Power-On-Reset is enabling proper start-up behavior.

The TLF11251EP is coming in a Grad 0-qualified TSDSO-14 for extended temperature range, the TLF11251LD is using a small, leadless TSON-10 capable for automated optical inspection. Both packages are thermally enhanced using an exposed pad and automotive qualified

## TLF11251 block diagram



### Key features

- Integrated half-bridge with drivers and level-shifters
- Integrated protection features (current limitation, over temperature protection)
- > Package line-up
  - Tiny leadless TSON-10
  - Grade 0 capable TSDSO-14

### Key benefits

- > Efficiency increase
- > Thermal optimization
- > Proven operation with high-end 2<sup>nd</sup> generation AURIX™
- > Package line-up for all use cases

### **Applications**

- > Enables efficient core supply for high-end 2<sup>nd</sup> generation TriCore<sup>™</sup> AURIX<sup>™</sup> 32-bit microcontrollers (TC38x/TC39x) with OPTIREG<sup>™</sup> PMIC TLF35584/85
- > Functional safety-relevant applications in
  - Powertrain (e.g. EMS)
  - Electrical drive train (e.g inverter)
  - Safety (e.g. sensor fusion)
  - Chassis (e.g. domain control)
  - Body (e.g. gateway)

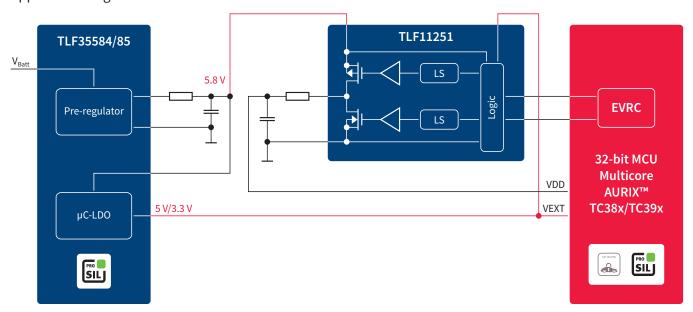
# TLF11251 EP/LD

# Integrated half-bridge

EVRC, the Embedded Voltage Regulator for the Core of 2<sup>nd</sup> generation TriCore<sup>™</sup> AURIX<sup>™</sup> 32-bit microcontroller is designed to drive a half-bridge consisting of a high-side P-channel and low-side N-channel MOSFET. As the driver is relying on the Vext-domain supplied by the 3.3 V- or 5 V-LDO of the PMIC, the half-bridge has to be sourced by the same domain. This is increasing the load current on the µC-LDO and the thermal budget of the PMIC.

Supplying high-end variants of 2<sup>nd</sup> generation TriCore™ AURIX™ 32-bit microcontrollers (TC38x/TC39x) with a device like TLF35584/85, the PMIC might come to its limits. The half-bridge should be connected to the output of the pre-regulator, de-loading the µC-LDO significantly to overcome this limitation and increase the system efficiency. To be compliant with the EVRC-concept, level-shifter and drivers have to be added. Those are integrated in TLF11251 together with additional logic and protection to ensure stable operation and enable system optimization.

### Application diagram



### Product table

Sales name	Orderable part number	Package	AEC-Q100
TLF11251EP	TLF11251EPXUMA1	TSDSO-14	Grade 0
TLF11251LD	TLF11251LDXUMA1	TSON-10	Grade 1

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