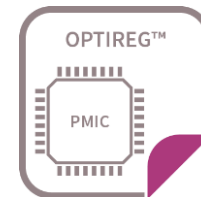


# TLF11251LD/EP

## Integrated Half-Bridge for AURIX™-μC's Embedded Core Controller (EVRC)

Ralph M. Trunk (IFAG ATV PS PSS PM)  
October 2020

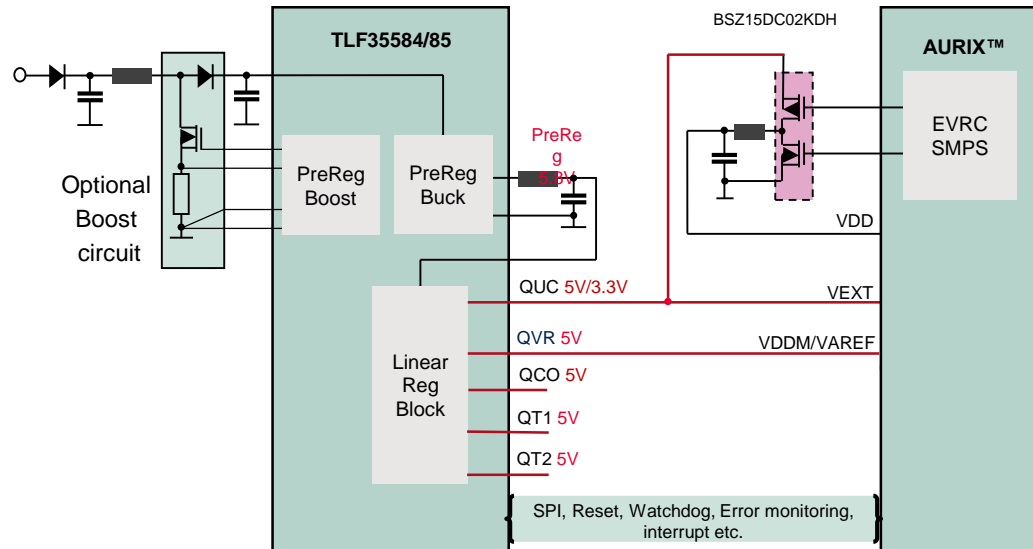


# System Power Management

## Current Solution AURIX™ 1G/2G

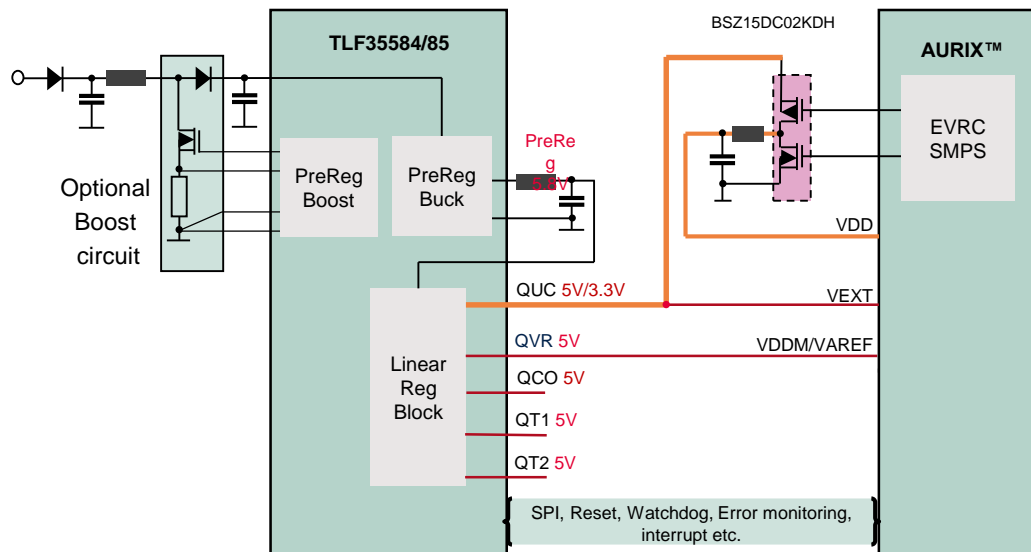


- › Currently the AURIX™  $\mu$ C is supplied e.g. from TLF35584/85 (5V or 3V3)
- › The core voltage of several AURIX™ versions (mid-range to high-end) is generated with an **E**MBEDDED **V**OLTAGE **R**EGULATOR for **C**ORE-SUPPLY (EVRC) which consists of controller + driver
- › To complete the loop of LC-DC/DC, a pair of external p/n-MOS is needed



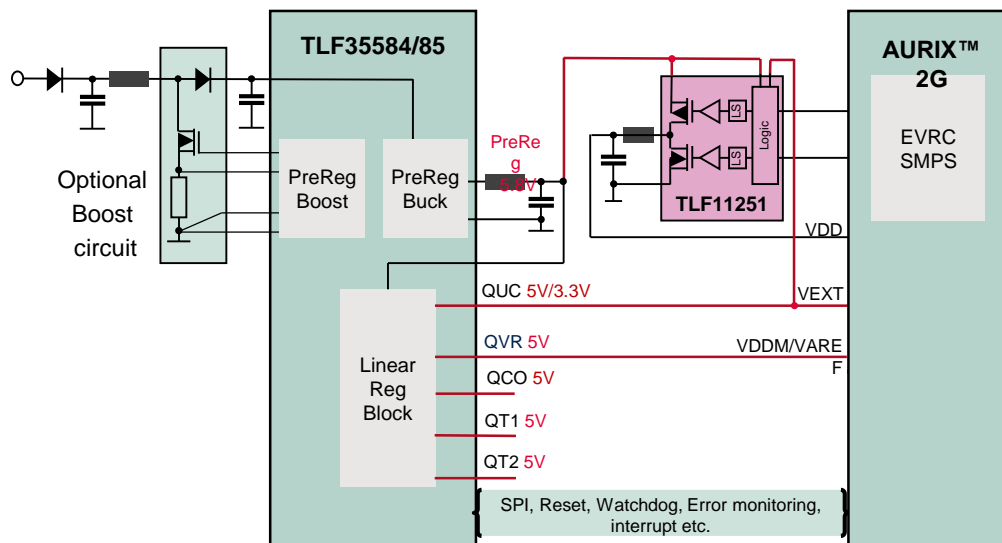
## Limitation Of Current Approach

- › In order to use the internal driver of the AURIX™ **E**Embedded **V**oltage **R**egulator for **C**ore-Supply (EVRC) the external switches need to be connected to QUC, the main  $\mu$ C-supply
- › **Efficiency Penalty:** at system level QUC linear post regulator in the TLF35584 has to dissipate more than needed



## Solution Proposed

- › Connect the external High-side switch of the EVRC-Supply directly to the pre-regulator. For this an increase of the driver-domain is needed.
- › Build output stage (Level-Shifter, Driver, and Switches) of the AURIX™ EVRC in a single, dedicated device, the TLF11251



# TLF11251LD/EP - Integrated Half-Bridge for Embedded Core Controller (EVRC)



## Key Features

- › Integrated PMOS and NMOS complementary output bridge
- › Current capability 2.5 A
- › Integrated gate drivers
- › Integrated level shifter
- › Single control input with an integrated dead-time logic allows for optimized control and high efficiency
- › Output current sensing and limitation
- › Over-temperature protection
- › Low quiescent current
- › No external dead-time adjustment required
- › Packages:
  - PG-TSON-10 (Grade 1)
  - PG-TSDSO-14 (Grade 0)

## Package



PG-TSON-10



PG-TSDSO-14

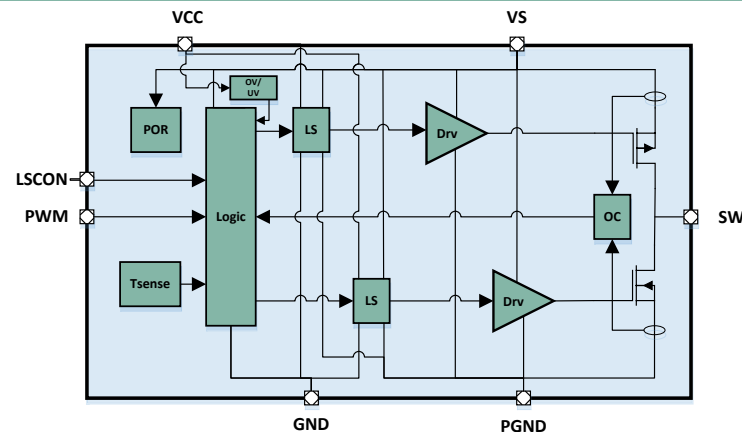


RoHS

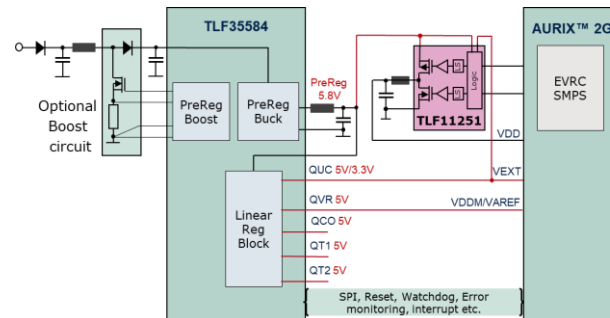
## Applications

- › Core-Supply Switch for Embedded Core Controller

## Block Diagram

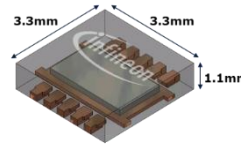
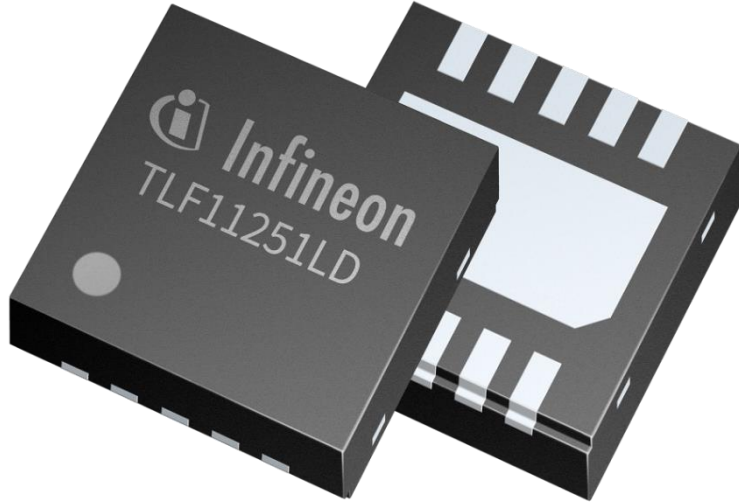


## Application Diagram



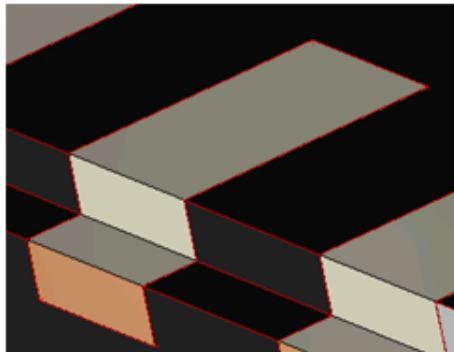
# TLF11251LD

## Package PG-TSON-10

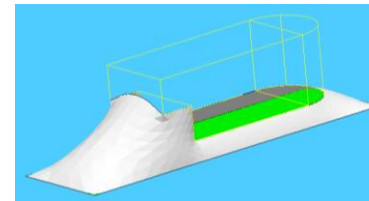


- > Pitch: 0.5mm
- > Grade 1

Pin	Symbol	Function
1, 2	SW	Switch node
3, 8	PGND	Power ground
4	GND	Ground
5	LSCON	Bridge control scheme
6	PWM	Control input
7	VCC	Supply voltage input
9, 10	VS	HS source input
EP	Heat Sink	



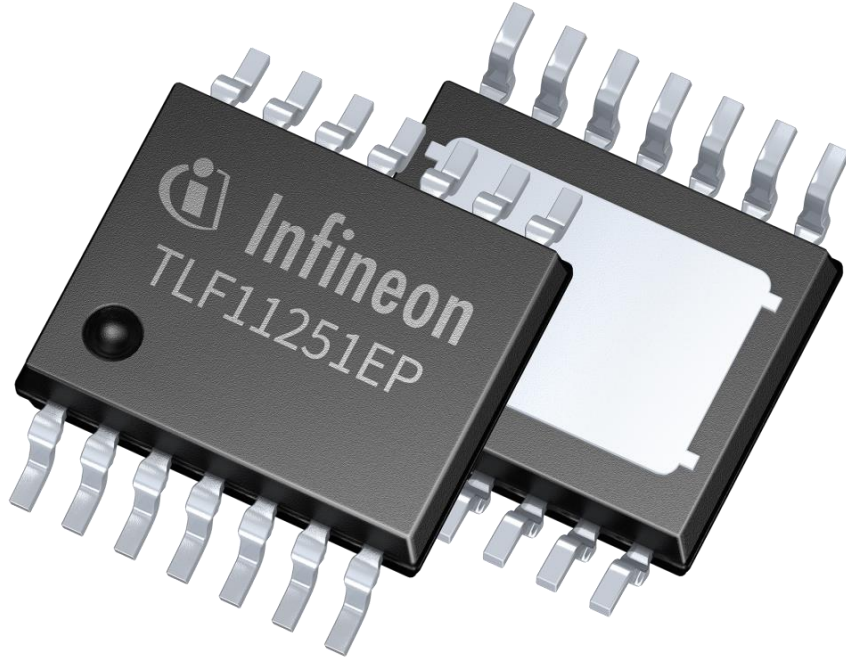
- Clear meniscus
- AOI capable
- No X-RAY



- Solder Quality
- Easy Monitoring
- Cost saving in production

# TLF11251EP

## Package PG-TSDSO-14



Pin	Symbol	Function
2, 3	SW	Switch node
4, 10	PGND	Power ground
5	GND	Ground
6	LSCON	Bridge control scheme
8	PWM	Control input
9	VCC	Supply voltage input
12, 13	VS	HS source input
1, 7, 11, 14	NC	Not Connected
EP	Heat Sink	

- › Grade 0
- › Benefits
  - Usage for extended mission profiles
  - Improved TCoB

# TLF35584\* / TLF35585\*

## Supply for AURIX™ 1G/2G



- 1) no Synchronization
- 2) depending on AURIX™ load profile

	AURIX 1G TC22x-TC29x	AURIX 2G (Low-/Mid-range) TC32x-TC37x	AURIX 2G (High-end) TC38x/TC39x
TLF35584* / TLF35585*	✓	✓	na <sup>2)</sup>
TLF35584* / TLF35585* with TLF11251	✓ <sup>1)</sup>	✓	✓

TLF35584\* and TLF35585\*  
can be used for both AURIX™ 1G and 2G





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