

5.0 V / 0.3 A step down DC/DC converter ($V_{IN} = 5$ to 60 V) based on the L7983PU50R regulator



Features

- 5 V to 60 V operating input voltage
- Step-down (buck) conversion
- 5 V output voltage
- 300 mA DC max. output current
- 1 MHz selected switching frequency
- Dynamic Low Consumption Mode to Low Noise Mode selection
- Internal soft-start
- Synchronization to external clock
- Internal compensation network
- Auto recovery overcurrent, overvoltage and thermal protection
- RoHS and China RoHS compliant
- WEEE compliant (2012/19/UE RAEE II)

Description

The **STEVAL-L7983V50** step-down switching power supply evaluation board is based on the **L7983PU50R** regulator in an DFN10 3x3 mm package with 5 V set output voltage. The selected switching frequency is 1 MHz and it can be adjusted by applying an external clock on the LNM/LCM pin or by changing the frequency programming resistor.

The step-down monolithic switching regulator can deliver up to 300 mA DC based on peak current mode architecture. The wide input voltage range and adjustable UVLO threshold meet the specification for 12 V, 24 V and 48 V industrial bus standards.

L7983 supports dynamic Low Consumption Mode (LCM) to Low Noise Mode (LNM) transition. LCM is designed for applications with active idle mode to maximize the efficiency at light load with controlled output voltage ripple, while LNM keeps the switching frequency constant over the load current range for low noise applications.

The soft start time is internally fixed and the output voltage supervisor manages the reset phase for any digital load (MCU, FPGA, etc.).

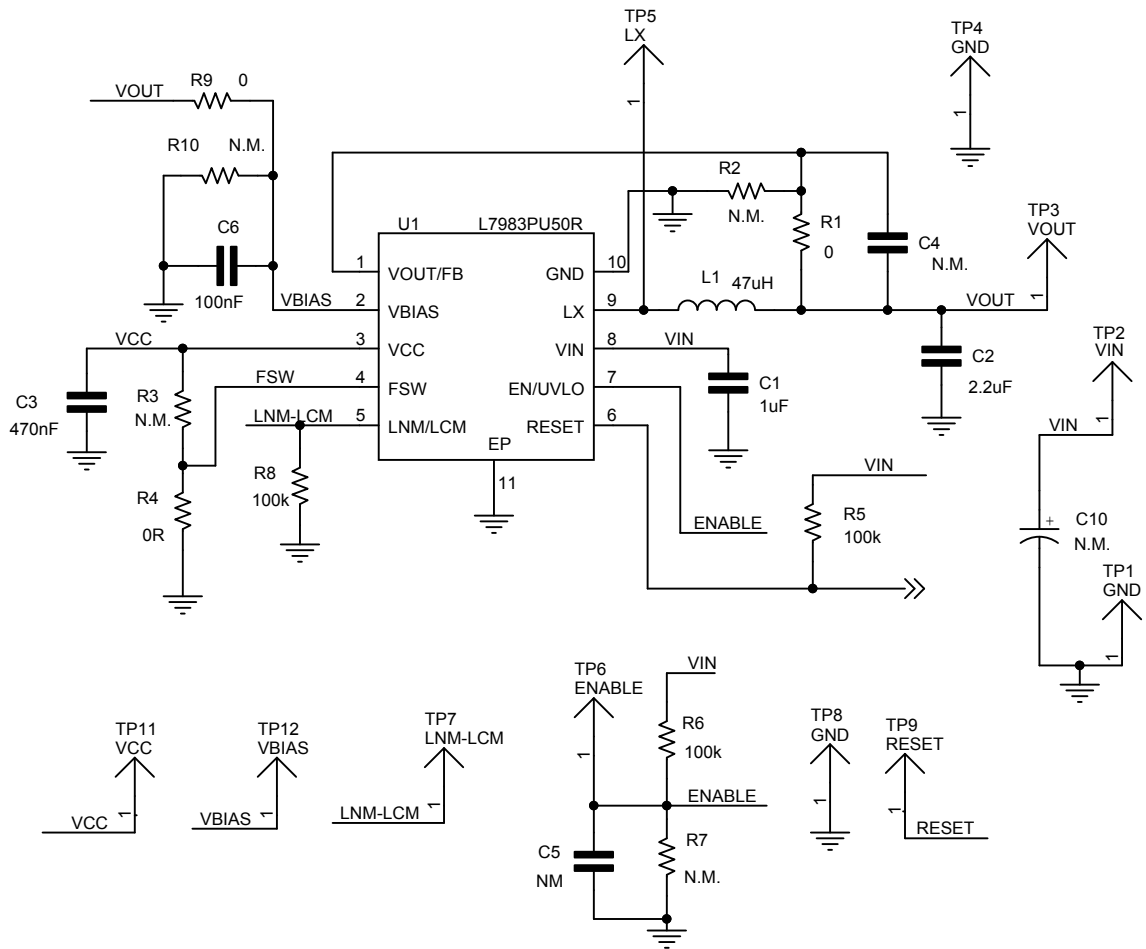
The internal compensation network features high noise immunity, simple design and component cost savings. The RST open collector output can also implement output voltage sequencing during the power-up phase.

The synchronous rectification, designed for high efficiency at medium to heavy loads, and the high switching frequency capability contribute to size reduction in final application designs. Pulse-by-pulse current sensing on both power elements implements effective constant current protection.

| Product summary | |
|--|---------------------------------|
| 5 V/0.3 A step down DC/DC converter ($V_{IN} = 5$ to 60 V) based on the L7983PU50R | STEVAL-L7983V50 |
| 60 V, 300 mA synchronous step-down switching regulator with 10 μ A quiescent current | L7983PU50R |
| Applications | Buck Converter |

1 Schematic diagrams

Figure 1. STEVAL-L7983V50 board schematic



Revision history

Table 1. Document revision history

| Date | Version | Changes |
|-------------|---------|------------------|
| 30-Sep-2020 | 1 | Initial release. |

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