

YX2645 – 45V_{IN}, 40V_{OUT}, Synchronous Bidirectional Buck Controller

1 Features

- Synchronous bidirectional buck controller with wide input and output voltage range up to 45V
- Bi-directional buck operation
- Ultra-wide switching frequency: 50KHz to 3MHz
- Programmable output current limits, with load current sensing at ISMON
- 5V driver voltage for Si FETs or GaN FETs
- Gate driver: 0.6Ω pull-down, 1.2Ω pull-up resistance
- Drive supply rail UVLO protection
- Adjustable dead time control
- External compensation with user programmable soft-start
- Integrated high accuracy ($\pm 1\%$) 1.8V VREF
- Power good functional safety reporting
- 32-Lead QFN Package (5mmx5mm)
- 32-Lead QFN Package (4mmx4mm)

2 Applications

- Buck DC-DC regulator
- Industrial and Automotive power supply
- USB Type-C Power Delivery
- Power Interrupt Protection System

3 Description

The YX2645 is a synchronous bidirectional buck controller suited for driving silicon (Si) MOSFET or Gallium Nitride (GaN) power transistors in highly efficient DC-DC power converters. It supports a wide input ranges up to 45V with maximum 98% power efficiency. The YX2645 features bi-directional operations, which can change the power path bidirectionally by DIR pin. It provides programmable input current limit and output current limit functions with output instant current monitoring through ISMON. The YX2645 integrates both high side and low side gate drivers with UVLO protections. It also supports adjustable dead time control for optimal turn on/off of power switches to reduce switching loss for high efficiency.

The YX2645 supports ultra-wide switching frequency range from 50KHz up to 3MHz with frequency set pin (RT). It also features external compensation, programmable soft-start to reduce the inrush current during start up.

The YX2645 is available in 5mmx5mm or 4mmx4mm 32-lead QFN package.

[Ordering Information](#) appears at page2 of datasheet.

4 Device Information

PART NUMBER	PACKAGE	BODY SIZE (NOM)
YX2645CAHBE	32L QFN	4mm × 4mm

5 Typical Application for Buck Converter & Power Efficiency

