

PI37xx Series

ZVS Regulators: Buck-Boost

High-Performance Buck-Boost Regulators

For Communications and Industrial, 12, 24 and 48V_{IN} Bus, 24V_{IN} Line Stabilization and Automotive Accessories

Description

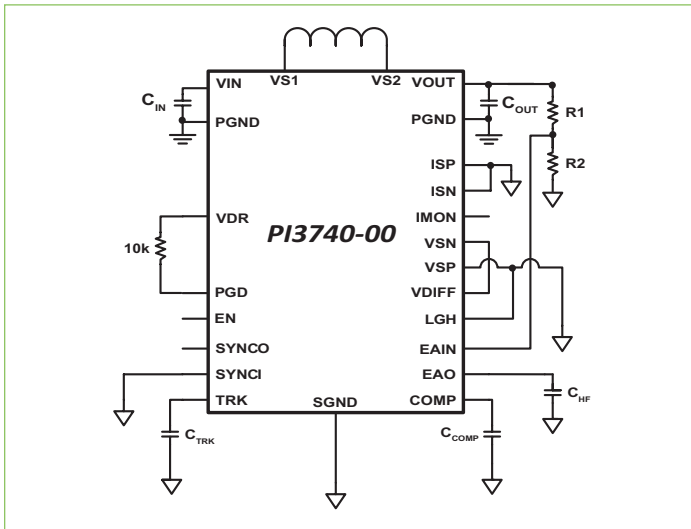
The PI37xx is a series of high-efficiency, wide-input-range DC-DC ZVS Buck-Boost regulators integrating controller, power switches and support components, all within a high-density System-in-Package (SiP). The integration of a high-performance Zero-Voltage Switching (ZVS) topology, within the PI37xx increases point-of-load performance providing best-in-class power efficiency. The PI37xx requires only an external inductor and minimal capacitors to form a complete DC-DC switching mode buck-boost regulator.

The ZVS architecture enables high-frequency operation while minimizing switching losses and maximizing efficiency. The high switching frequency operation reduces the size of the external filtering components, improves power density and enables very fast dynamic response to line and load transients. The PI37xx regulator sustains high switching frequency up to the rated input voltage without sacrificing efficiency and supports large conversion ratios.

Features

- Up to 97% efficiency at >800kHz F_{SW}
- Fast transient response
- Parallel capable
- External frequency synchronization / interleaving
- High-Side current sense amplifier
- General-purpose amplifier
- Input over / undervoltage lockout (OVLO/UVLO)
- Output overvoltage protection (OVP)
- Overtemperature protection (OTP)
- Fast and slow current limits
- -40 to 115°C operating range (T_J), -xGIZ models
- -55 to 115°C operating range (T_J), -BGMx models

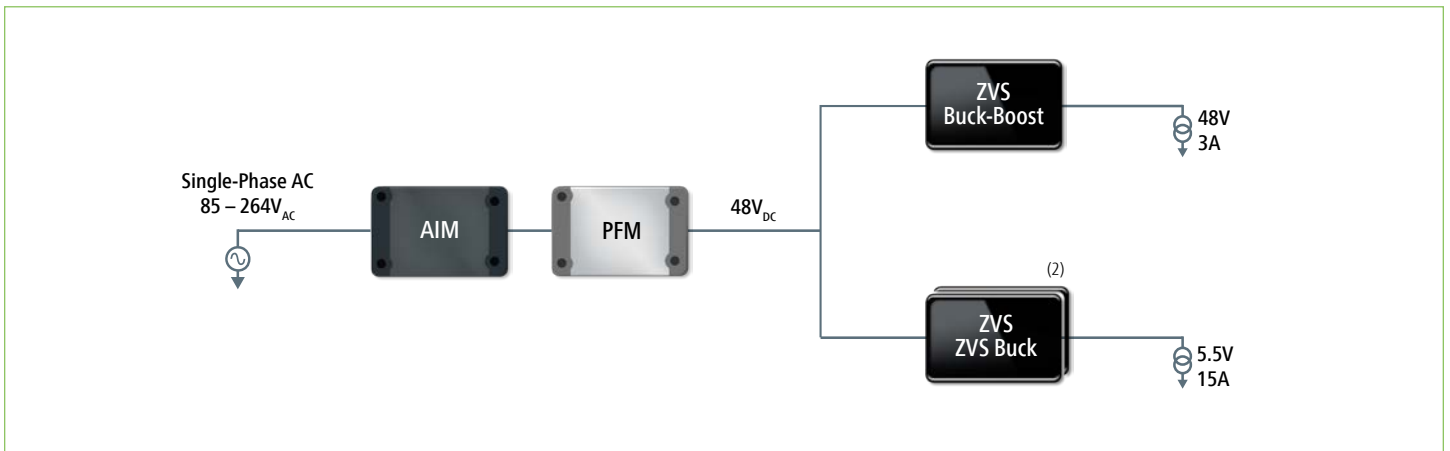
PI37xx Typical Application



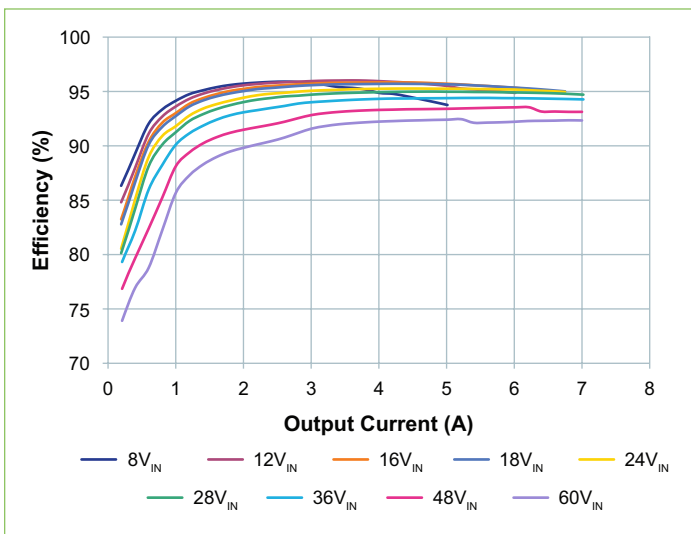
Part Numbering

| Part Number | Input (V) | Output (V) | Power (W) | Package | Temperature |
|------------------------------------|-----------|------------|-----------|--|---|
| High-Performance Buck-Boost | | | | | |
| PI3741-00-LGIZ | 21 – 60 | 21 – 36 | 140 | LGA SiP: 10 x 14 x 2.5mm | -40 to 115°C operating range (T _J) |
| PI3741-01-LGIZ | 21 – 60 | 36 – 54 | 150 | | |
| PI3740-00-LGIZ | 8 – 60 | 10 – 50 | 140 | | |
| PI3740-00-BGIZ | | | | Lead-solder BGA SiP: 10.5 x 14.5 x 3.05mm | |
| PI3740-00-BGMZ | | | | | |
| PI3740-00-BGMP | | | | | -55 to 115°C operating range (T _J) |

Example Powerchain



Efficiency PI3740, 12V_{OUT}



Efficiency PI3741-01, 48V_{OUT}

