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
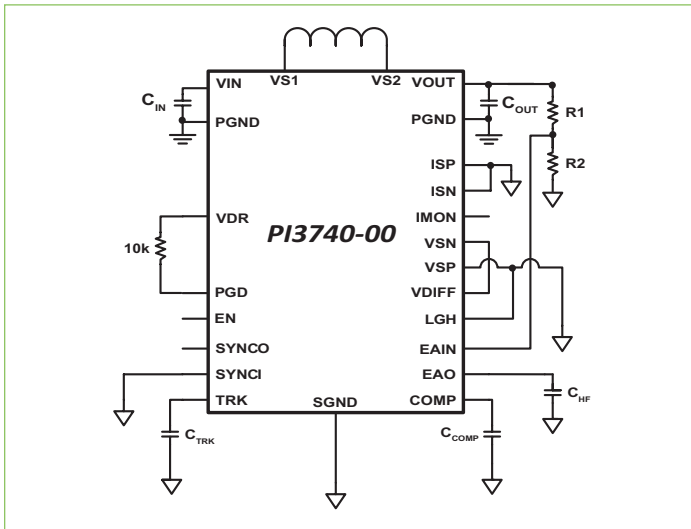
Description

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), -LGIZ models
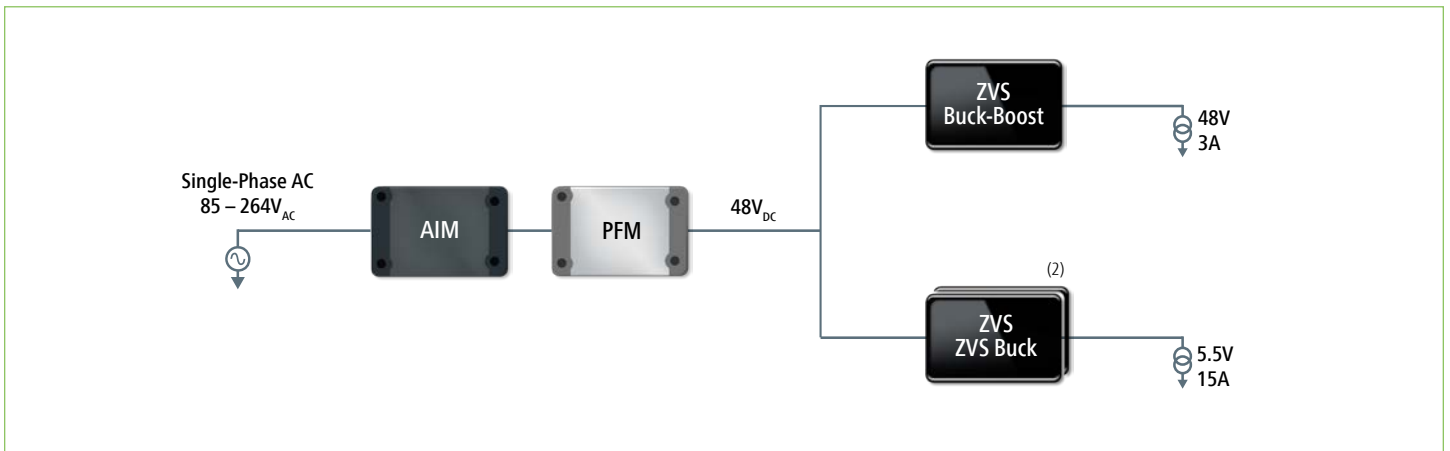- –55 to 115°C operating range (T_J), -LGMZ models
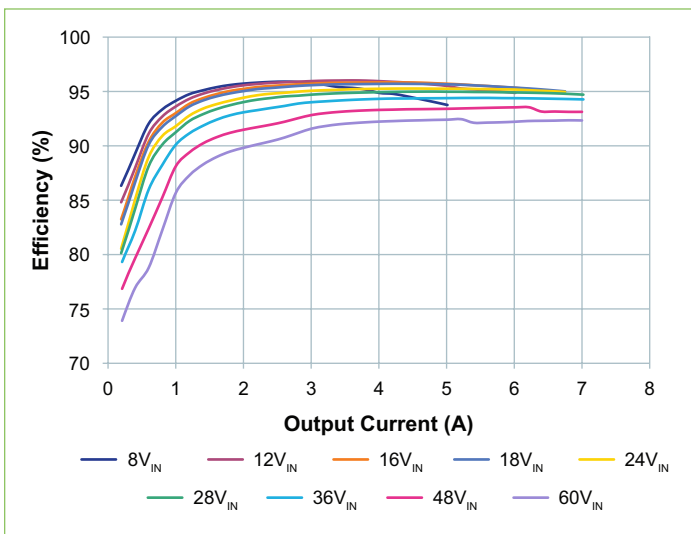
PI37xx Typical Application

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-LGMZ					–55 to 115°C operating range (T_J)

Example Powerchain

Efficiency PI3740, 12V_{OUT}

Efficiency PI3741-01, 48V_{OUT}