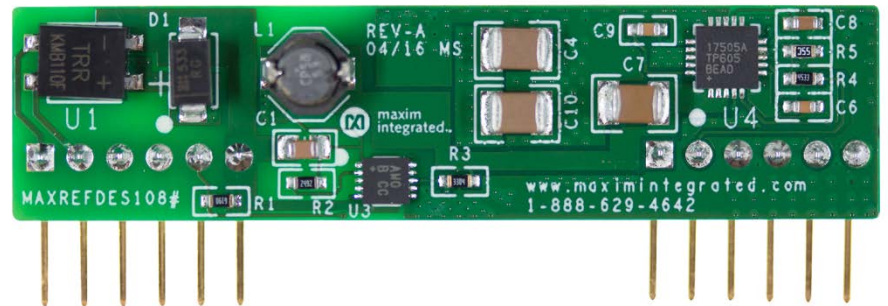


Non-Isolated PoE Powered Device Power Supply

Maxim's non-isolated PoE powered device power supply features robust operation in adverse environments

Many PoE applications are isolated to protect both people and systems from voltage and current transients. However, many applications do not require isolation such as LED lighting and other equipment generally out of range for human touch. In these cases, eliminating the isolation circuitry further reduces cost and power dissipation at the PoE point-of-load.



To meet the increasing demands for non-isolated Power over Ethernet (PoE) power solutions, Maxim has developed innovative, non-isolated PoE powered device (PD) power solutions. These non-isolated PoE power solutions efficiently convert high-voltage PoE power into 5 V or 12 V outputs. Each design was tested for load and line regulation as well as efficiency and transient performance. As with all Maxim reference designs, the BOM, schematics, layout files, and Gerber files are all available. In addition, boards are available for purchase. These boards feature a module architecture with through-hole pins for immediate board placement and accelerated prototyping.

MAXREFDES98# and MAXREFDES108# combines the PD controller and the step-down converter on a 14.0 mm (0.55 in.) x 55.9 mm (2.2 in.) board. The module accepts input voltages ranging from 36 V to 57 V, and provides an output voltage of 5 V with current capacity of 2.5 A or 12 V with current capacity of 1 A, respectively. Both products feature twelve through-hole pins spaced at a 2.54 mm pitch standard. This modular architecture allows MAXREFDES108# or MAXREFDES98# to be soldered into a PCB or inserted into the MAXREFDES98EV# for evaluation.

The reference designs contain all the control circuitry and electric components required for designing a 36 V to 57 V wide-input, 5 V / 2.5 A (12.5 W)(MAXREFDES98#) or 12 V / 1 A (12 W)(MAXREFDES108#) output, non-isolated, step-down converter power supply.

The circuit consists of two function blocks: the PD controller and the step-down DC-DC converter. The PD controller section employs the MAX5969A. Following the PD controller is the step-down DC-DC converter. This circuit employs the MAX17505 (MAXREFDES108#) or MAX17503 (MAXREFDES98#), Maxim's high-efficiency, synchronous, step-down DC-DC converter with internal compensation.

Features

- 36 V to 57 V input voltage
- Compact and flexible
- Minimal external components
- Robust operation in adverse environments
- 12 W output capacity
- $\pm 3\%$ output accuracy

Applications

- Lighting
- IP cameras
- Sensors
- Non-isolated Ethernet equipment