# PowerLab™ Connection

Your monthly update on Power Reference Designs

Texas Instruments

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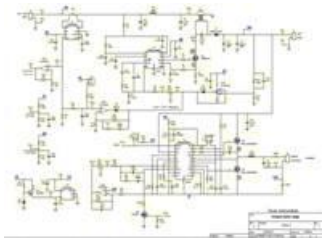
## In this issue



**Featured Video**


**Power Tip 1: Pick the right power supply operating frequency**

**Featured Reference Design**



**PMP6572.2: SEPIC and buck controller for LED strobe**

### PMP6572.2: 16Vdc-40Vdc input current/power regulated energy storage with high power LED drive

This month's featured power reference design is the PMP6572 which uses the TPS40210, TPS40170 and an MSP430 to create a high efficiency visual alert system for emergency exit signs used in industrial buildings. The circuit maximizes the number of units that can be connected to the 24V DC input rail.

The system fires an LED approximately once per second at a high power level; many times higher than what is instantaneously drawn off the input. To do so, a two stage approach was implemented. First, a SEPIC converter, controlled by a TPS40210, charges a bank of energy storage capacitors to a sufficiently high voltage over the full one second period of the LED. This allows the capacitors to slowly charge and store enough energy for firing the LED. The input power is regulated

by monitoring the input current and input voltage while the capacitor is charging. Once the capacitor voltage reaches 35V, a separate control loop regulates the voltage and halts charging. With the capacitors charged, a TPS40170 sync-buck converter configured to regulate output current is used to control the current in the LED.

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## TPS40210 REFERENCE DESIGNS

*Did you know that the TPS40210 has 60 power reference designs in PowerLab? Below is a list of 10 of the most popular!*

**PMP6943**: 18V-36V Input 28V/100W Flyback

**PMP6711:** 120VAC Input to 5V/1.25W Output, Ultra Compact Isolated SEPIC

**PMP4862:** 100VAC-265VAC 100W High Bay LED Lighting

**PMP6596:** 12V to 19V/0.5A boost converter

**PMP7279:** 18V-57V Input 24V/72W Flyback

**PMP5847.1:** 48Vdc Input, dual output (6V / 0.25A) Isolated Flyback

**PMP4936:** 50Vdc-60Vdc Input, 2-Channel, 350mA LED Driver (10V to 40V String)

**PMP6963:** 9Vdc-57Vdc Input, 56V/20W Isolated Flyback

**PMP5299:** Boost 55V / 0.48A for LCD TV LED Backlighting

**PMP6595:** 5V to 19V/0.5A boost converter

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## MOST POPULAR DESIGNS

**PMP4288:** AC/DC LED Drive for LED Street Lighting 54V / 3.7A

**PMP2000:** Isolated Flyback (48V / 500mA)

**PMP2552:** PFC Non-Isolated Flyback 390V / 2.56A and 12V / 250mA for Blower PSU

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## FEATURED DESIGNS FOR TPS40170

*This month features the top 5 designs for **TPS40170***

**PMP5959:** 174W sync buck converter achieves 98% efficiency

**PMP6867:** 9V - 32V input to -28V/1.5A negative output buck-boost LED current regulator

**PMP6795:** Positive 12V to -4.35V/15A buck-boost converter

**PMP6680:** 48Vin, 12Vout / 20A with 97% peak efficiency

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## TOPOLOGY ROUNDUP

*This month features the top 3 **Active Clamp** designs.*

**PMP6942:** 18V-36V Input 6V/100W 95% Efficient Active Clamp Forward

**PMP6797:** 18Vdc-30Vdc Input, 20V / 4.5A Output, 94% Efficient Active Clamp Forward

**PMP6753:** 18Vdc-60Vdc Input, 3.3V / 25A Output, 94% Efficient Active Clamp Forward

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## MORE INFORMATION

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