

## PSS Flyback Controller Eyes Low-Cost Networking Adapters

Aiming to grab sockets in the growing market for low-cost networking adapters, [CamSemi](#) has released a new primary-side-sensing (PSS) flyback controller with a constant-power (CP) mode. Labeled the C2283, the controller offers fast voltage pull-up for electronic products with high input capacitance, such as modems and other networking devices. However, this chip is also for set-top boxes and other high-volume, energy-efficient universal-input adapter applications rated above 8 W and up to 18 W (Fig. 1.)

While it offers excellent light-load efficiency to enable IT equipment to meet the standby power requirements of the European Commission's EC 1275/2008 tier two, the new PSS flyback controller also allows designers to "right size" their networking adapter solutions for the first time. Besides lowering component count and system cost, the C2283 ensures designs are compatible with the "dying gasp" requirement in the ITU-T G.991.2 standard. Currently, the standby power requirement for EC 1275/2008 tier two is 1 W. Effective January 2013, it will go down to 0.5 W. The C2283 can deliver power supply operating efficiencies of 75% at 1 W and at least 65% at 0.5 W.

In essence, CamSemi's C2283 controller is cost optimized for voltage regulated supplies. "Our patented PSS controller architecture has been further developed in C2283 to boost light load efficiency, improve performance and integrate a novel constant-power mode to improve system-level costs," said David Baillie, CEO of CamSemi.

According to CamSemi, the PSS eliminates the need for expensive optocouplers between the high- and low-voltage sides as well as 5 to 10 secondary-side feedback components. It also improves the isolation and safety in flyback SMPS designs. A common problem with PSS is that most approaches usually suffer from poor voltage and virtually no current regulation. CamSemi's PSS technology alleviates this problem by delivering better than  $\pm 5\%$  voltage and current regulation (Fig.2.)

In addition, the C2283 delivers many of the same key design benefits as the company's existing PSS controller families including very accurate voltage regulation across the entire load range, allowing use of lower-cost components elsewhere in the system; and quasi-resonant switching to improve efficiency and reduce EMI. Plus, the controller is fully protected against single fault and overtemperature, output overvoltage and short-circuit and input overvoltage and undervoltage conditions. Sampling now, the 0.35- $\mu\text{m}$  CMOS-based C2283 comes in a SOT23-6 package (Fig.3.) In quantities of 10,000, the C2283 costs \$0.295 each.

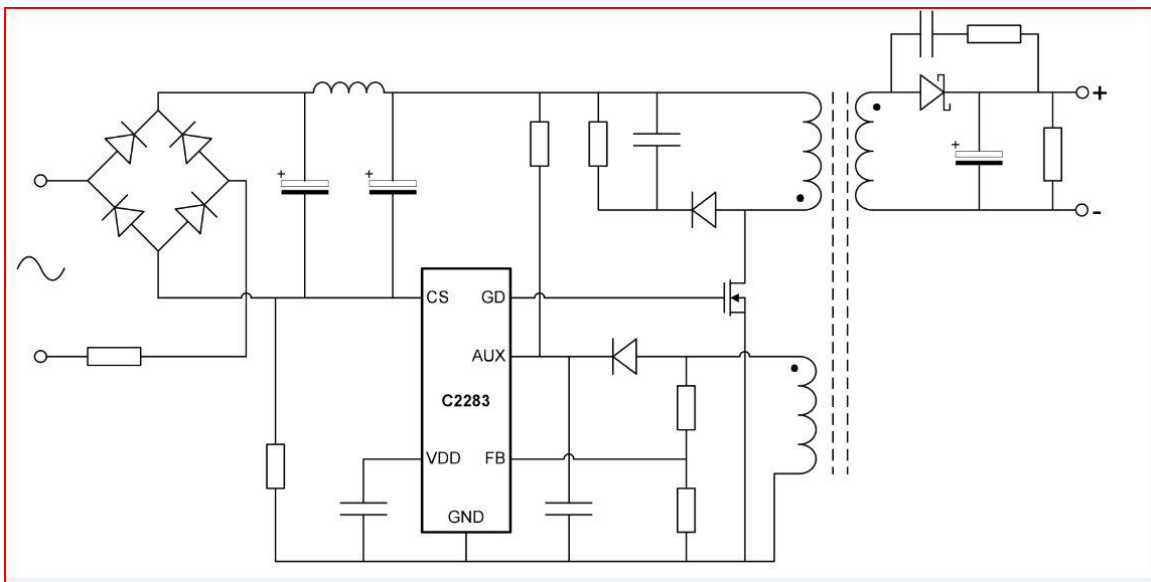


Fig. 1. Typical application circuit for a 12-V, 1-A networking adapter using the C2283.

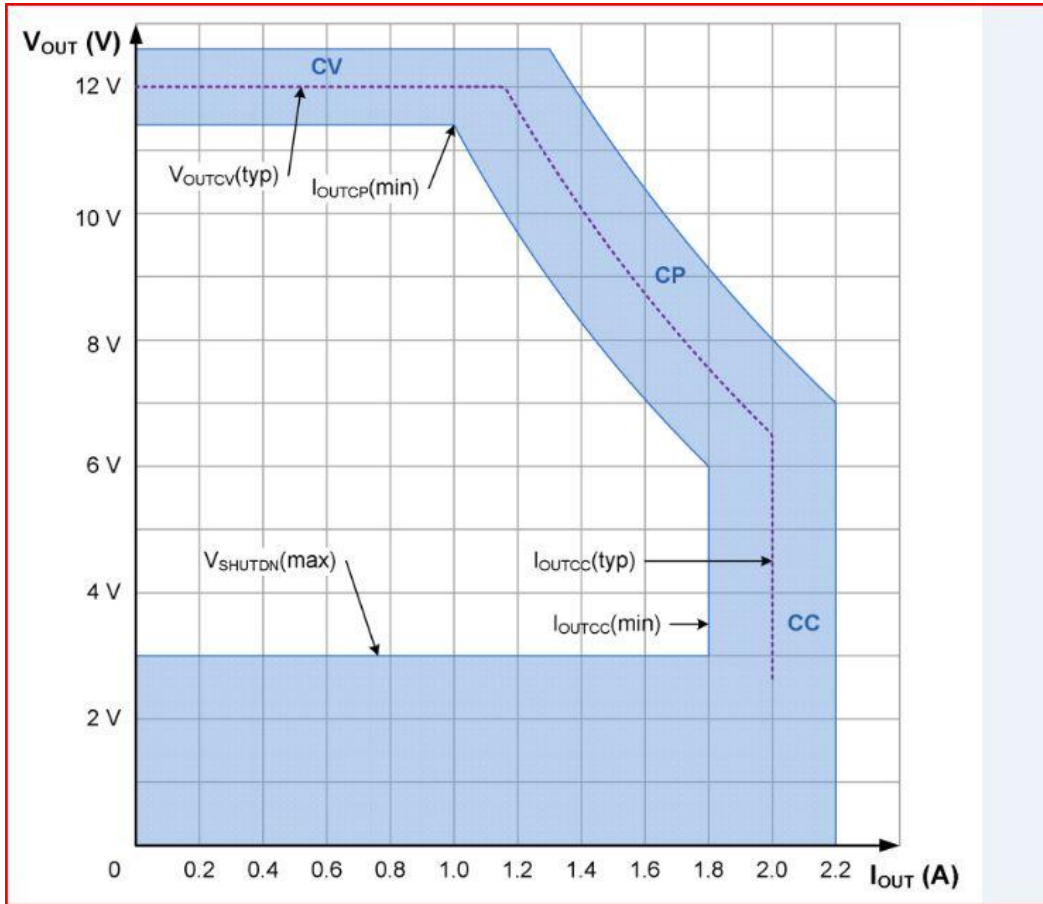


Fig 2. V-I output characteristics of a typical 12-V, 1-A adapter. The controller regulates in constant-current mode when the output voltage is above  $V_{SHUTDOWN(max)}$  and until it is above approximately 50% of the programmed constant-voltage regulation point.

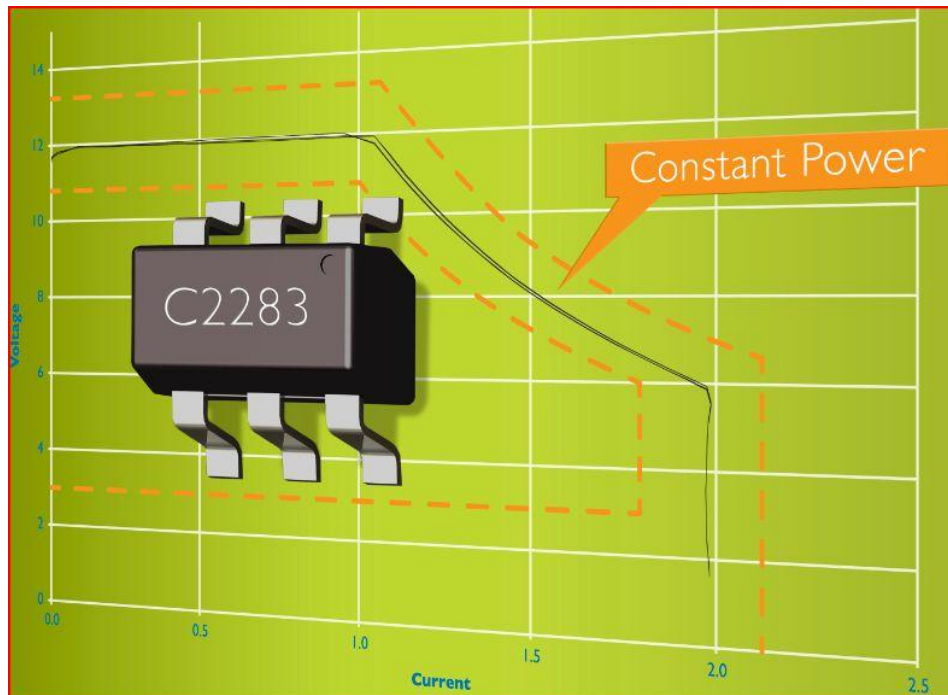


Fig.3. The C2283 comes in a surface-mount SOT23-6 package.