# C2283 Datasheet

## Primary Side Sensing SMPS Controller with MOSFET Drive

## KEY FEATURES AND ADVANTAGES

C2283PX2
SOT23-6

- Advanced primary sensing controller achieves accurate regulation without an opto-coupler
- Constant power feature
  - Optimised for fast start-up in to constant power loads with large capacitance
  - Supports motor drive applications
- Compensates for output cable voltage drop
- Optimised PWM/PFM with quasi resonant switching enables efficiency standards compliance with margin
- Switching frequency dither eases design for low EMI
- Inherently low ripple
- Best in class load-transient performance and no-load power less than 100 mW
- Enables consumer appliance low load (stand-by) requirements such as EC 1275/2008 tier two
- Full featured protection includes
  - Single fault and over-temperature
  - Output over-voltage and short-circuit
  - Input over-voltage and under-voltage
- Convenient surface mount SOT23-6 package for small size and low cost manufacture

## APPLICATIONS

Adapters for networking products up to 18 W

Universal standby and auxiliary power supplies up to 18 W

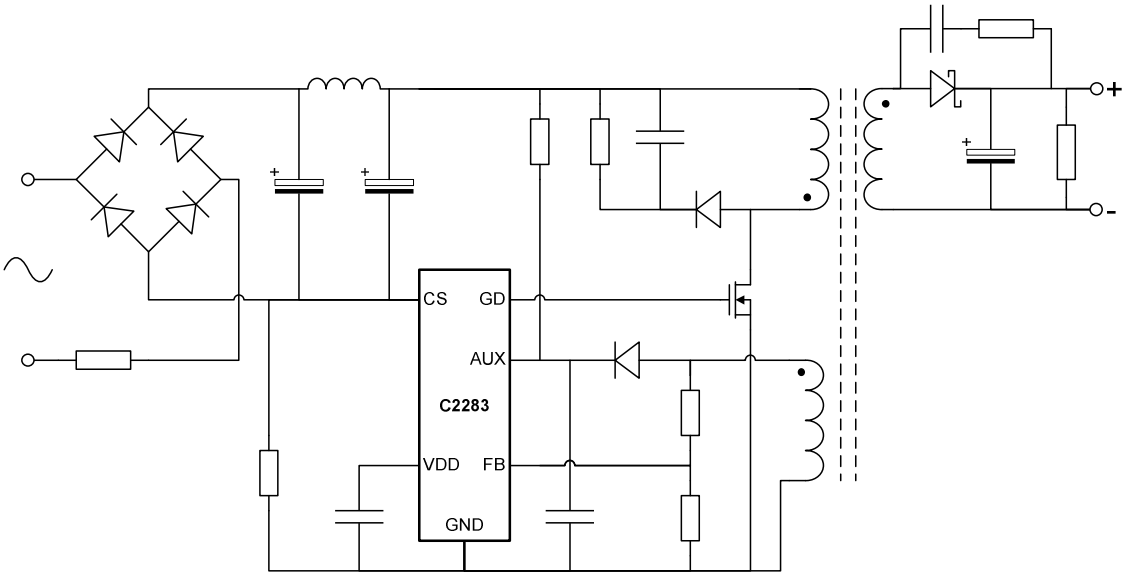



Figure 1: Typical Application Circuit

## BLOCK DIAGRAM

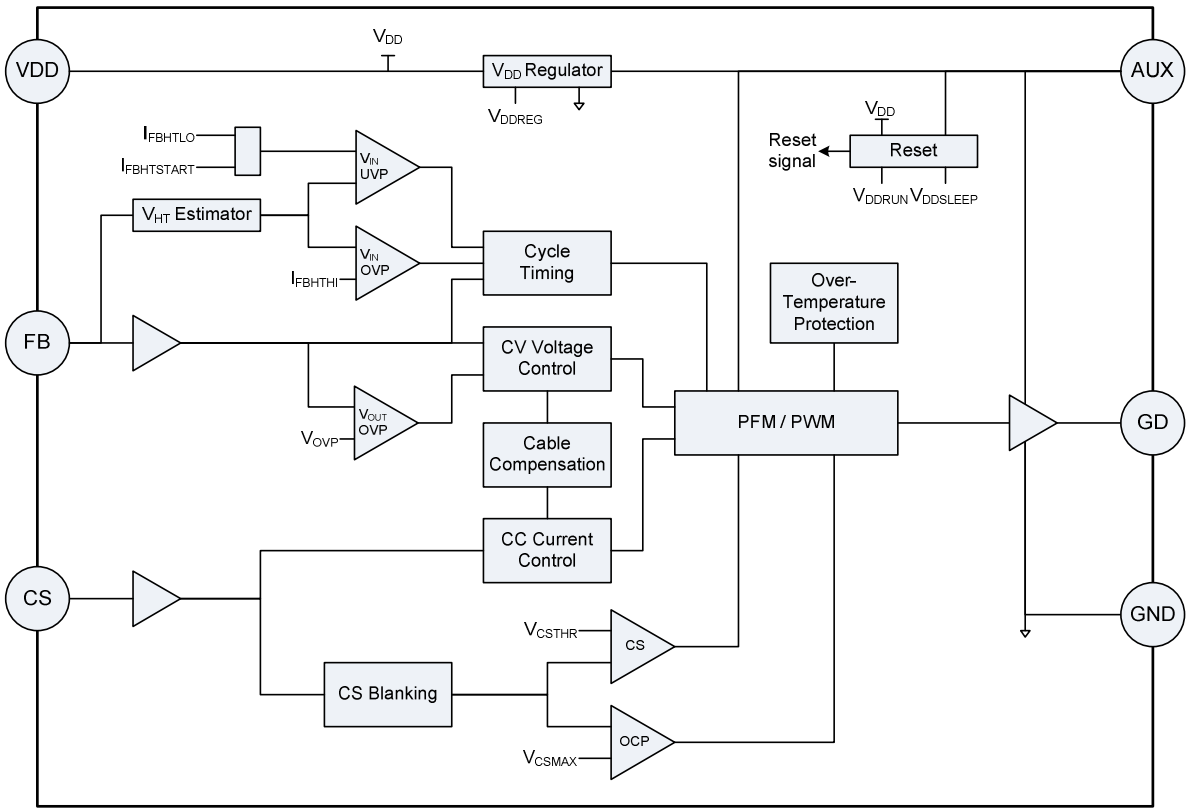



Figure 2: C2283 Block Diagram

## PIN DEFINITIONS

**AUX** During Run mode, power derived from the transformer auxiliary winding is fed to the control circuitry via the AUX pin.

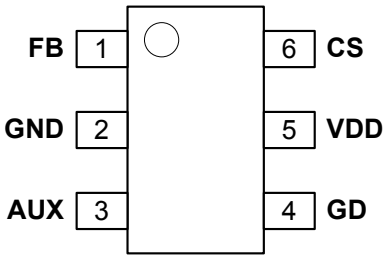
**GD** Gate drive for an external MOSFET.

**FB** The FB input provides feedback to the control circuitry by monitoring the transformer voltage waveform.

**VDD** Connection for capacitive decoupling of the C2283 internal power supply.

**GND** Power and signal ground.

**CS** Primary current sense, via Rcs (see Figure 1).



## TYPICAL APPLICATION

| Parameter | Symbol | Range or Value | Units | Comment |
|---|---|---|---|---|
| Supply voltage | $V_{IN}$ | 85 - 264 | Vac | Universal mains |
| Output voltage | $V_{OUTCV}$ | 12 ± 5% | V | Constant voltage (CV) mode, at the load |
| Load pull-up current | $I_{OUTCC}$ | 2.0 ± 10% | A | Constant current (CC) mode |
| Transformer | T1 | EE19 | - | |
| Switching frequency at full load | $f_{MAX}$ | 80 | kHz | Determined by the chosen C2283 variant |
| Output cable resistance | $R_{CAB}$ | 0.16 | Ω | Typical of a 1.5 m, 22 AWG output cable |
| Cable compensation | $G_{CAB}$ | 2.0 | % | Determined by the chosen C2283 variant |
| No-load power | $P_{NL}$ | 90 | mW | Energy Star test method |
| Average efficiency | η | 79 | % | Energy Star test method |
| Turn-on delay | $T_{ON}$ | < 1 | s | |

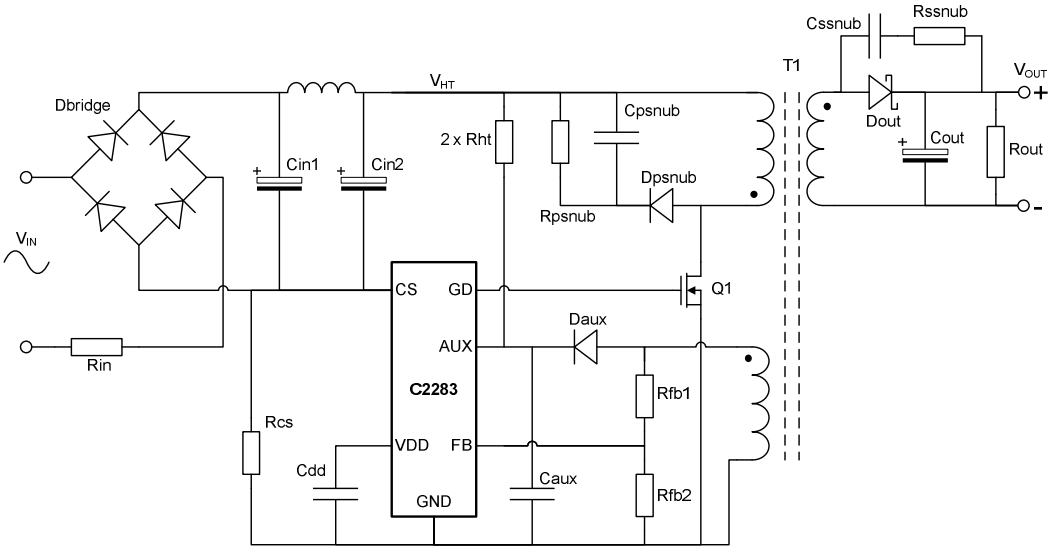



Figure 3: Typical Universal Input, 12 W, Adapter

The C2283 controller is optimised for fast start-up in to loads with large capacitance. The constant current (CC) pull-up set point of the VI characteristic is determined by the value of Rcs. The controller regulates in CC mode when the output voltage is above $V_{SHUTDN}$(max) and until it is above approximately 50% of the programmed constant-voltage (CV) regulation point (set by the values of Rfb1 and Rfb2). It then regulates in a power limited or "constant power" (CP) mode until the output voltage reaches the CV set point, at which point it changes to CV mode regulation. $I_{OUT}$ at the point of transition between CP and CV modes, $I_{OUTCP}$(min), will be greater than 50% of $I_{OUTCC}$(typ).

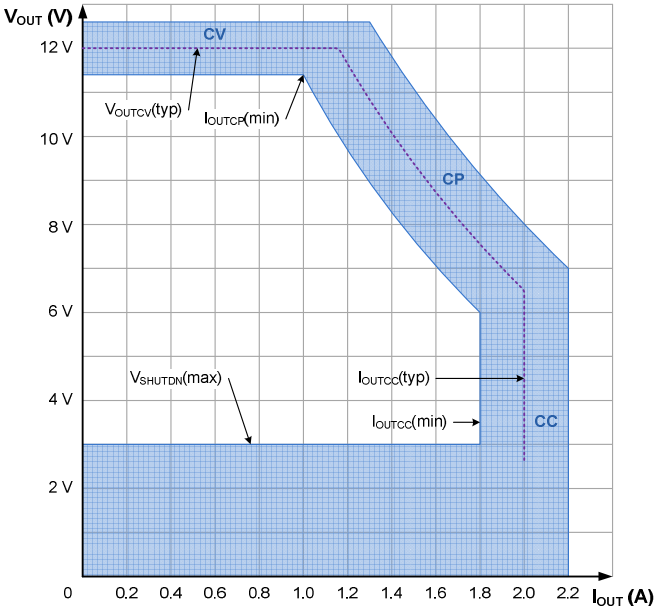



Figure 4: VI Output Characteristic of a Typical 12 V, 1 A adapter Implemented using C2283.

## DATASHEET STATUS

The status of this Datasheet is shown in the footer.

| Datasheet Status | Product Status | Nature of Datasheet Content |
|---|---|---|
| Product preview | In definition and design | Target specifications for design and development of the described product. |
| Preliminary | In prototyping and pre-qualification | Preliminary specifications of functionality and performance which are supported by results from testing of initial prototypes. |
| Pre-production | In pre-production and qualification | Specifications of functionality and performance which are supported by results from testing of pre-production units. |
| Product data | In production | Specifications relating to functionality and performance which are supported by results from testing of pre-production and production units. |

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