C2183 Datasheet

Primary Sensing SMPS Controller for Offline Applications

KEY FEATURES AND ADVANTAGES

- Advanced primary sensing control circuitry achieves accurate voltage and current (CV and CC) regulation without an opto-coupler
- 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
- 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

C2183PX2
SOT23-6

APPLICATIONS

Adapters for networking and media tablet products up to 18 W

Universal standby and auxiliary power supplies up to 18 W

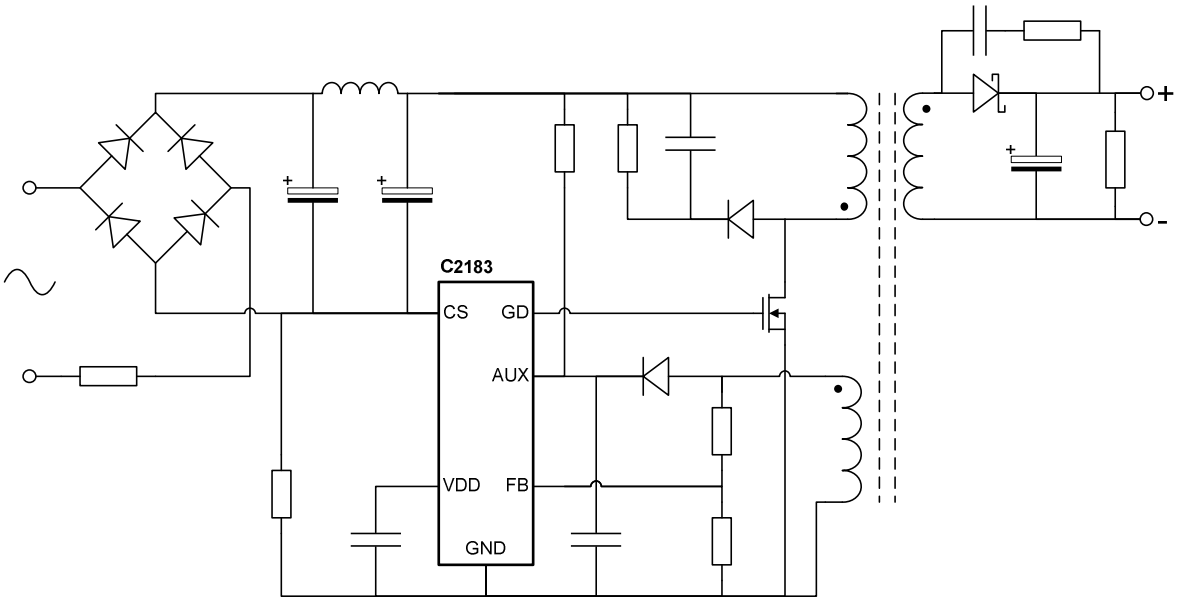


Figure 1: Typical Application Circuit

BLOCK DIAGRAM

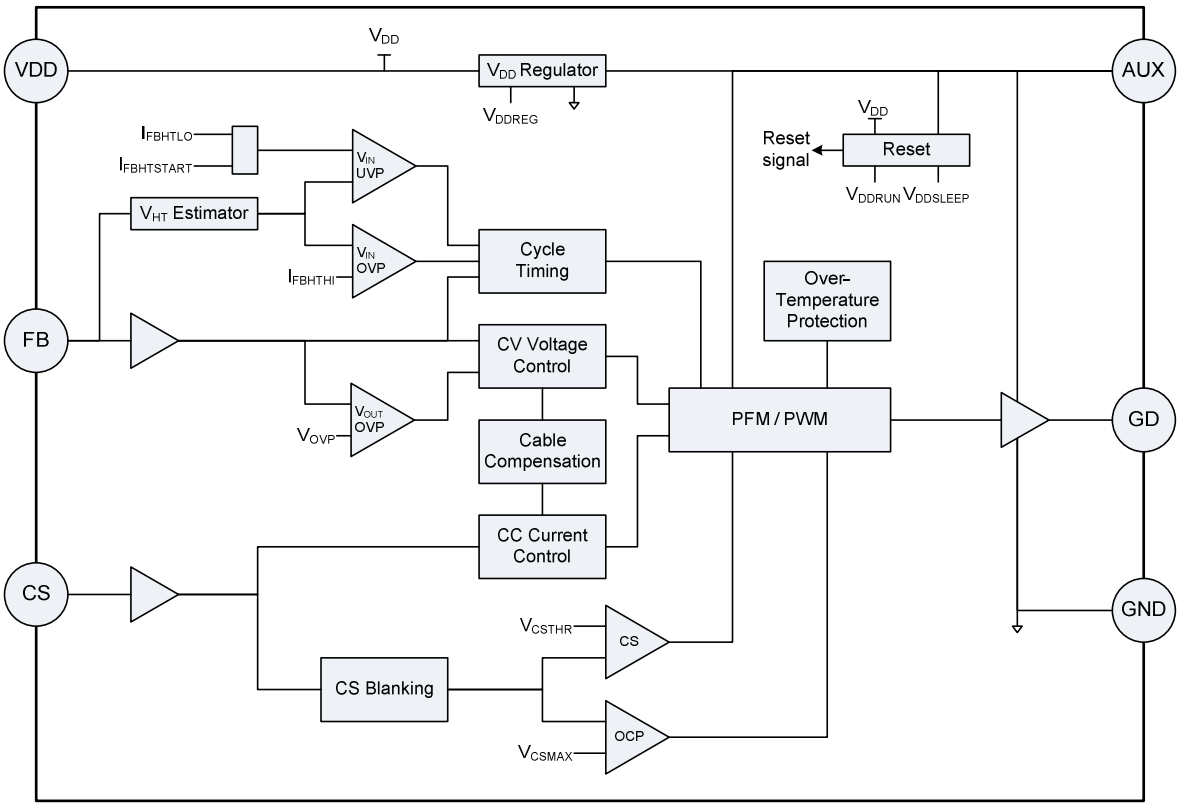


Figure 2: C2183 Block Diagram

PIN DEFINITIONS

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

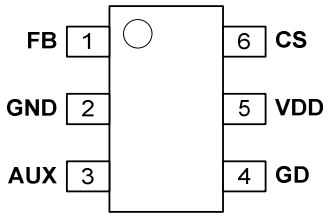
GD Gate drive for an external MOSFET

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

VDD Connection for capacitive decoupling of the C2183 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}	5.0 ± 5%	V	Constant voltage mode, at the load
Output current	I_{OUTCC}	1.0 – 1.1	A	Constant current mode
Transformer	T1	EFD15	-	
Switching frequency at full load	f_{MAX}	80	kHz	Determined by the chosen variant
Output ripple	V_{RIPPLE}	60	mV	Peak to peak, switching frequency
Cable compensation	G_{CAB}	8.0	%	Determined by the chosen variant
No-load power	P_{NL}	85	mW	Energy Star test method
Average efficiency	η	> 75	%	Energy Star test method (minimum is 68.2%)
Start-up delay	T_{ON}	< 1	s	
Undershoot voltage	$V_{UNDERSHT}$	> 4.3	V	Load step from 0 to 0.5 A

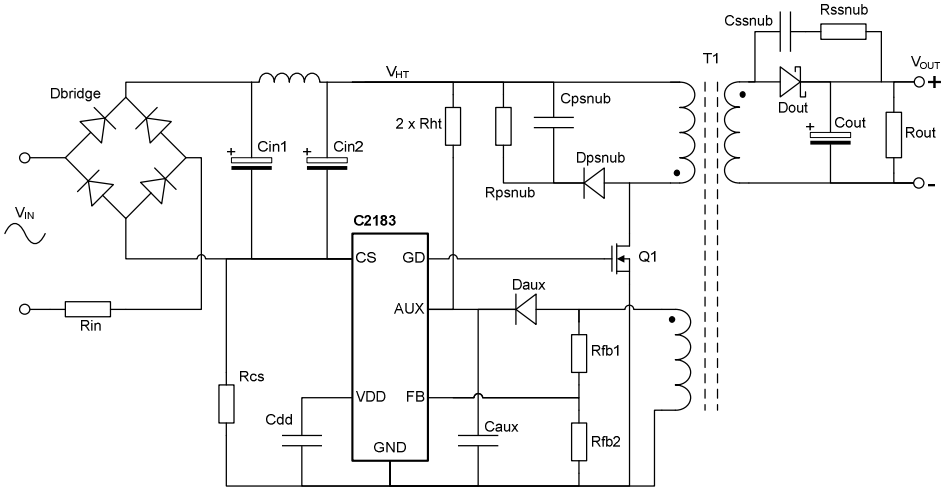


Figure 3: Typical Universal Input 5 W, Four Star USB Charger

By sensing the primary-side waveforms of the transformer voltage and primary current, the C2183 achieves constant voltage and constant current output within tight limits without the need for any secondary-side sensing components. Figure 4 shows the output characteristics of a typical charger implemented with the C2183.

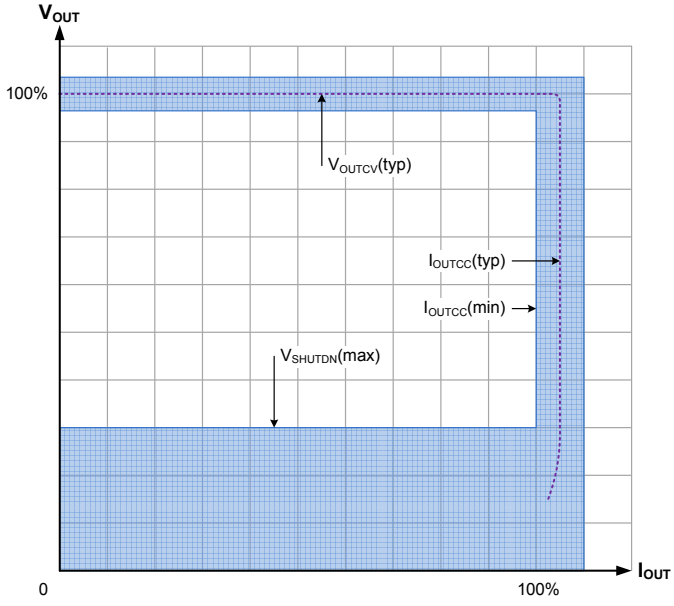


Figure 4: Typical CV/CC Output Characteristic Achieved Using C2183

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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