C6182 Datasheet

Primary Sensing SMPS Regulator for Offline Applications

KEY FEATURES AND ADVANTAGES

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- Advanced primary sensing control circuitry achieves accurate voltage and current (CV and CC) regulation without an opto-coupler
- Integrated primary switch and start-up device support application designs with very low component count
- Advanced insulated gate bipolar transistor (IGBT) technology provides a primary switch that is robust, reliable and avalanche-capable
- Integrated start-up switch enables very fast turn-on with no impact on no-load power
- Optimised PWM/PFM with quasi-resonant switching enables efficiency standards compliance with margin
- Enables fully compliant solutions for “MoU” Common External Power Supply universal USB chargers
    - Switching frequency dither and edge rate control of the primary switch gate drive ease design for low EMI and compliance to EN 301 489-34 with margin
    - Inherently low ripple and low EMI enable compliance with the interoperability standard, IEC 62684
- Best in class load-transient performance *and* no-load power less than 30 mW for five-star chargers
- Full featured protection includes
    - Single fault and over-temperature
    - Output over-voltage and short-circuit
    - Input under-voltage
- Convenient surface mount SOP-8 package for small size and low cost manufacture

APPLICATIONS

Universal input chargers for mobile phones, including “universal” USB and all major OEM specifications

Universal standby and auxiliary power supplies up to 3.5 W.

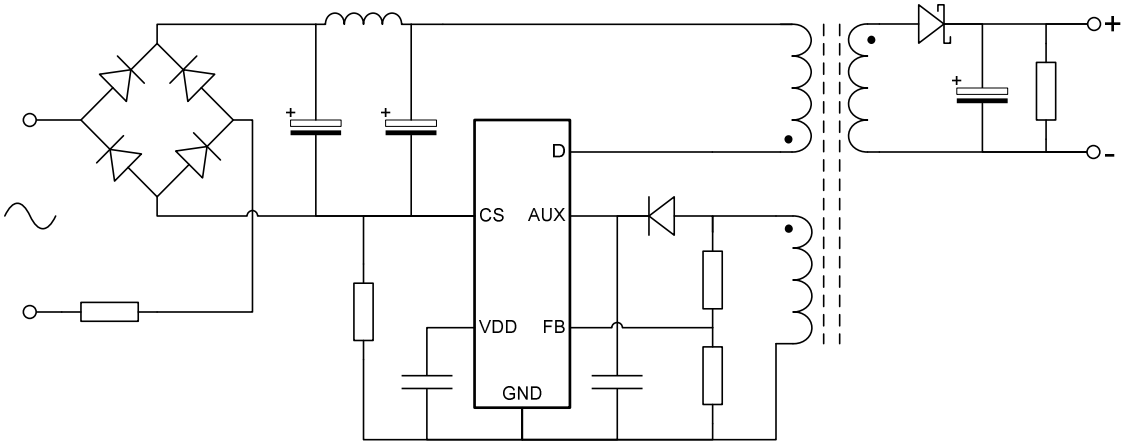


Figure 1: Typical Application Circuit

BLOCK DIAGRAM

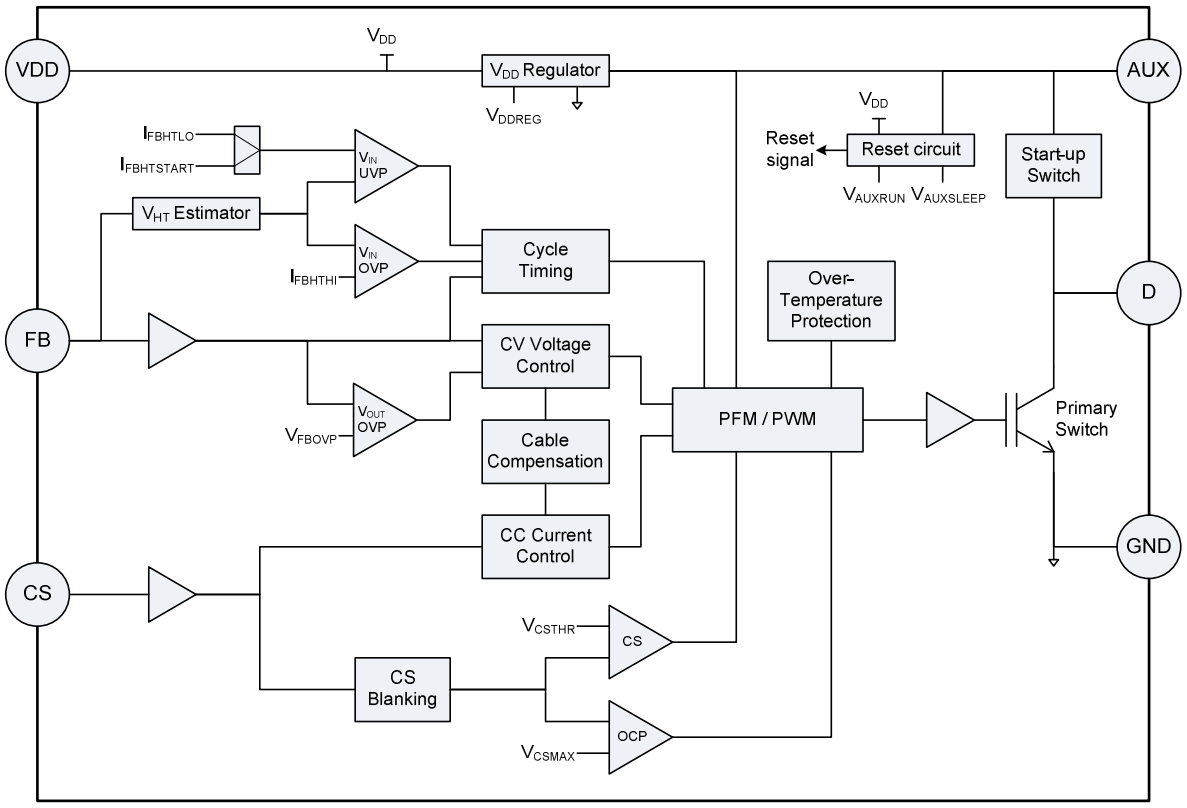


Figure 2: C6182 Block Diagram

PIN DEFINITIONS

D High voltage connection to the drain of the primary switch and the start-up switch.

NC Not connected.

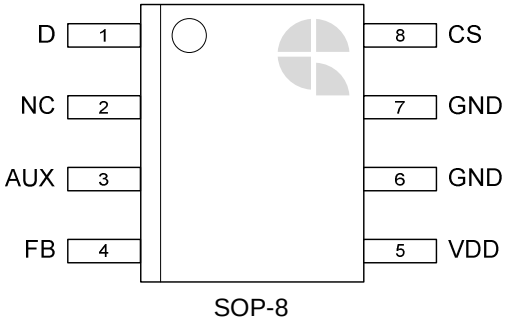
AUX During Run mode, power derived from the transformer auxiliary winding is fed to the control circuitry via the AUX pin.

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

VDD Connection for capacitive decoupling of the internal power supply.

GND Power and signal ground.

CS Primary current sense, via Rcs (see Figure 3).



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TYPICAL APPLICATION

Parameter	Symbol	Range or Value	Units	Comment
Supply voltage	V_{IN}	85 - 264	Vac	Universal mains
Output voltage	V_{OUTCV}	5	V	Constant voltage mode, at the load
Output current	I_{OUTCC}	630	mA	Constant current mode
Switching frequency at full load	f_{MAX}	65	kHz	Determined by the chosen variant
Output cable resistance	R_{CAB}	0.639	Ω	Typical of a 1.5 m, 28 AWG output cable
Cable compensation	G_{CAB}	6.7	%	Determined by the chosen variant
No-load power	P_{NL}	26	mW	
Average efficiency	η	> 70	%	Energy Star test method (minimum is 64.3%)
Turn-on delay	T_{ON}	< 0.1	s	Enabled by active start-up device
Undershoot voltage	$V_{UNDERSHT}$	> 4.3	V	Load step from 0 to 0.5 A

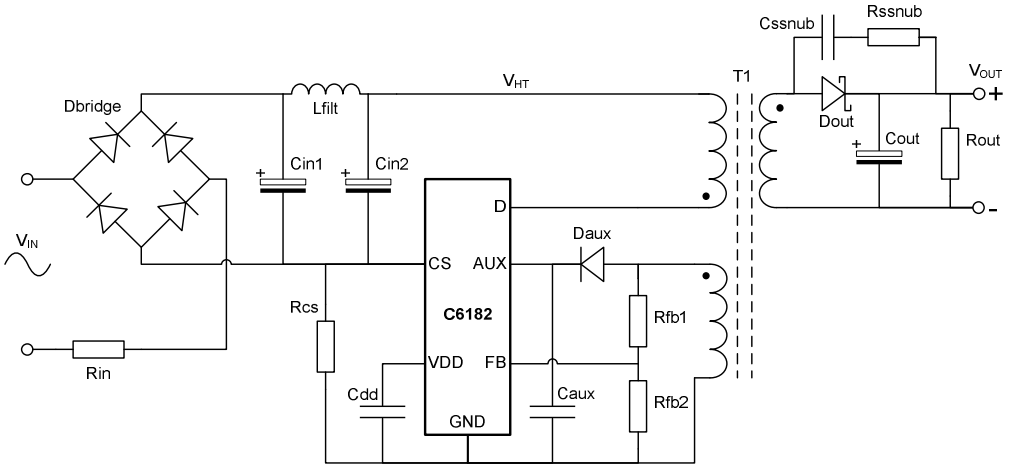

Figure 3: Typical Universal Input, Five Star USB Charger Using C6182

By sensing the primary-side waveforms of transformer voltage and primary current, the C6182 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 implementation.

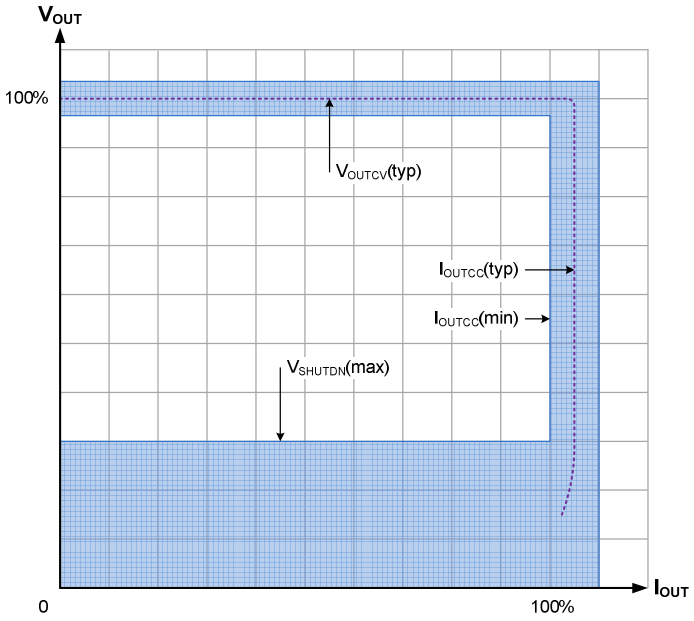

Figure 4: Typical CV/CC Output Characteristic Achieved Using C6182

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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