



## EVL185W-LEDTV

185 W power supply with PFC and standby supply for LED TV  
based on the L6564, L6599A and Viper27L

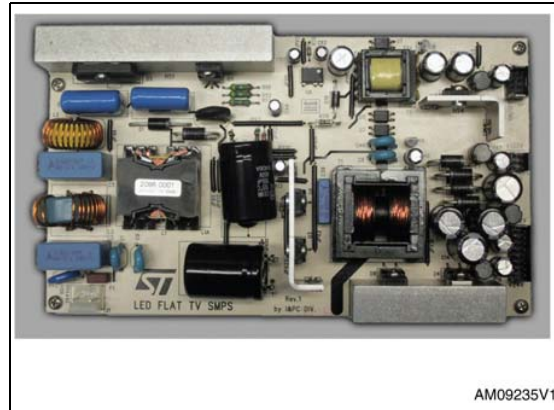
Data brief

### Features

- Universal input mains range: 90÷264 Vac - frequency 45÷65 Hz
- Output voltage 1: 130 V  $\pm 8\%$  at 620 mA for backlight
- Output voltage 2: 24 V  $\pm 8\%$  at 2 A for audio supply
- Output voltage 3: 12 V  $\pm 1\%$  at 4 A for panel supply
- Output voltage 4: 5 V  $\pm 2\%$  at 2 A for microprocessor supply
- Mains harmonics: acc. to EN61000-3-2 Class-D or JEITA-MITI Class-D
- Standby mains consumption: <170 mW at 230 Vac with 50 mW load
- Overall efficiency at full load: >90%
- EMI: according to EN55022-Class-B
- Safety: according to EN60065
- Dimensions: 115x204 mm, 25 mm maximum component height from PCB
- PCB: single side, 70  $\mu\text{m}$ , CEM-1, mixed PTH/SMT introduction
- RoHS compliant

### Description

The EVL185W-LEDTV is a high-end demonstration board tailored to the specifications of a typical LED TV application. The peculiarities of this design are the very high average efficiency of about 90%, without synchronous rectification, and very low no load consumption of 100 mW at 230 Vac. The result is that this converter is compliant to the most demanding ENERGY STAR<sup>®</sup> eligibility criteria. The architecture is made up of two sections, based on a three-stage approach: a 10 W standby supply using the new VIPer27L, which delivers the 5 V standby dedicated to supplying the microprocessor and



the logic circuitry, and a bigger section composed of a front-end PFC, using the new TM L6564 and an LLC resonant converter, using the L6599A, delivering three output voltages: 12 V dedicated to supplying the TV panel, 24 V to supplying the audio power amplifiers, and 130 V dedicated to the backlight.

The PFC stage delivers 400 V constant voltage and acts as the pre-regulator for both the LLC stage and the standby supply.

An external signal, referred to secondary ground, turns the PFC and the LLC stage on and off.

# 1 Efficiency

Thanks to the chipset used, the main peculiarities of this design are the very high efficiency as well as the very low input consumption during standby operation.

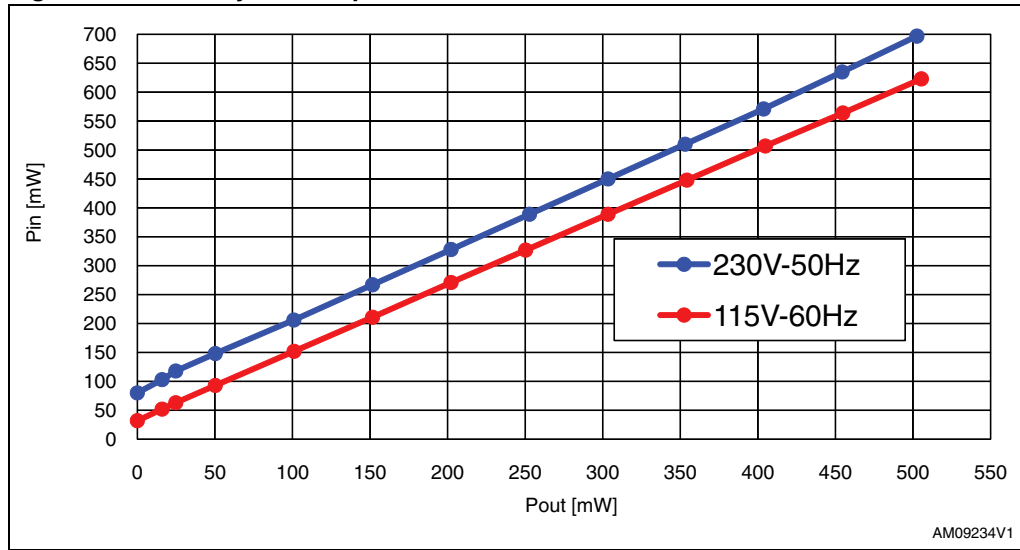
**Table 1. Overall efficiency measured at 230 Vac mains voltage**

Test	230 V - 50 Hz										
	12 V		24 V		130 V		5 V		Pout [W]	Pin [W]	Eff. [%]
	Vout [V]	Iout [A]	Vout [V]	Iout [A]	Vout [V]	Iout [A]	Vout [V]	Iout [A]			
25% load eff.	11.95	1.00	24.19	0.50	128.89	0.15	5.05	0.50	46.09	52.00	88.6
50% load eff.	11.93	2.01	24.28	1.00	129.95	0.31	5.04	1.00	93.30	101.50	91.9
75% load eff.	11.90	3.01	24.38	1.50	131.05	0.47	5.04	1.50	141.67	151.90	93.3
100% load eff.	11.88	3.99	24.48	2.00	132.18	0.62	5.04	2.00	187.96	201.50	93.3
Average eff.											91.8

**Table 2. Overall efficiency measured at 115 Vac mains voltage**

Test	115 V - 60 Hz										
	12 V		24 V		130 V		5 V		Pout [W]	Pin [W]	Eff. [%]
	Vout [V]	Iout [A]	Vout [V]	Iout [A]	Vout [V]	Iout [A]	Vout [V]	Iout [A]			
25% load eff.	11.95	1.00	24.19	0.50	128.89	0.15	5.05	0.50	46.09	52.35	88.0
50% load eff.	11.93	2.01	24.28	1.00	129.95	0.31	5.04	1.00	93.30	102.85	90.7
75% load eff.	11.90	3.01	24.38	1.50	131.05	0.47	5.04	1.50	141.67	154.92	91.4
100% load eff.	11.87	3.99	24.47	2.00	132.15	0.62	5.04	2.00	187.76	206.84	90.8
Average eff.											90.2

Figure 1. Standby consumption



## 2 Revision history

Table 3. Document revision history

Date	Revision	Changes
04-Apr-2011	1	Initial release.

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