



STEVAL-ISV004V2

240 W PV converter for photovoltaic panels
based on the SPV1020

Data brief

Features

- Operating input voltage: 6.5 V to 45 V
- Max output voltage: 40 V
- Max input current: 8 A
- PWM mode DC-DC boost converter
- Duty cycle controlled by MPPT algorithm with 0.2% accuracy
- Protection against overvoltage, overcurrent and overtemperature
- Built-in soft-start
- Up to 98% efficiency
- Automatic transition to burst mode for improved efficiency during low solar radiation
- SPI interface
- RoHS compliant

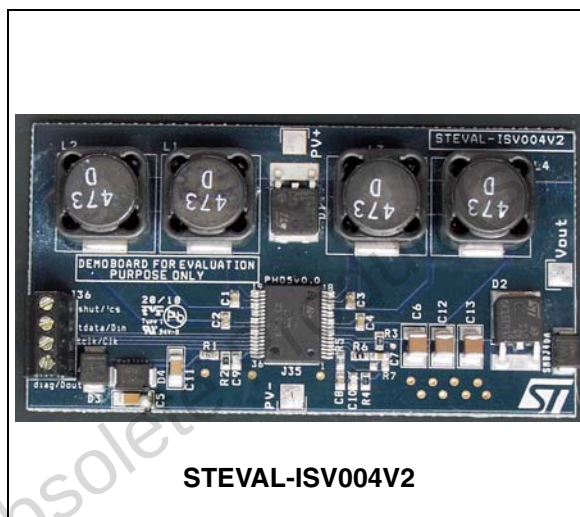
Description

The STEVAL-ISV004V2 demonstration board is based on the SPV1020 monolithic DC-DC boost converter in a PSSO36 package designed to maximize the power generated by photovoltaic panels, independent of temperature and amount of solar radiation.

Optimization of power conversion is obtained through embedded logic, which performs the MPPT (max power point tracking) algorithm based on monitoring of the voltage and current supplied by the PV cells.

The precision of the algorithm is guaranteed by a 10-bit ADC for current and voltage sensing.

For cost-effectiveness and miniaturization of the application, the SPV1020 embeds 8 power MOSFETs for active switching and synchronous rectification, minimizing the number of external components required. The 4-phase interleaved topology of the DC-DC converter means that electrolytic capacitors can be avoided, which would otherwise severely limit system lifetime.

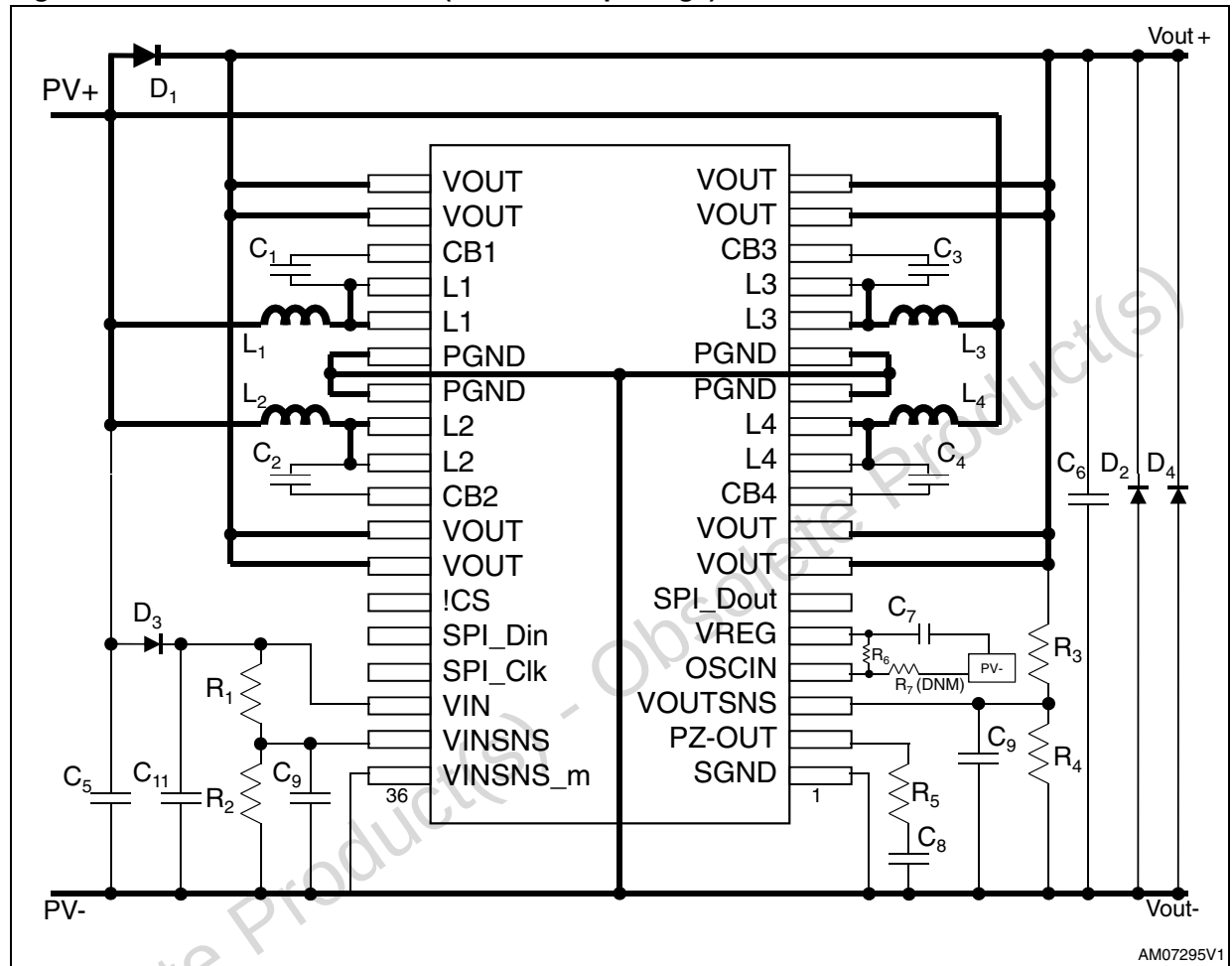


PWM switching (duty cycle varies between 5% and 90%, with 0.2% accuracy) is regulated by default at 100 kHz by an internal oscillator, but is programmable between 50 kHz and 200 kHz via an external resistor.

Application safety is ensured by stopping the PWM switching in case of output overvoltage (set by external trimming), overcurrent (internally regulated at 4 A for each channel) and over-temperature (160 °C).

1 Connection diagram

Figure 1. SPV1020 connections (for PSSO36 package)



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
12-Aug-2010	1	Initial release.
17-Nov-2010	2	Updated title on cover page.
20-May2011	3	Updated Figure 1: SPV1020 connections (for PSSO36 package) .

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